



Agri-Services in Andhra Pradesh for Inclusive Rural Growth: Baseline Survey Findings & Policy Implications

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1. Introduction

The purpose of this report is to present the findings from farm, trader, and input retailer surveys and focus group discussions undertaken in 2010 by IFPRI and collaborators (Michigan State University and CESS, Hyderabad, Andhra Pradesh). We draw implications from the findings for policymakers, donors, and other public stakeholders, and for rural business hubs in the private sector.

This report presents findings from a survey-based study of AP (comparable to companion studies we did on UP and MP), based on farm household samples where there is a confluence of input supply options (among state/cooperative retail, private modern rural retail or “Viswas,” and traditional input retailers), as well as among output traders (rural brokers, and mandi commission agents).

The latter confluence is found in the catchment areas of Viswas – and so it is uniquely in those areas where farmers have all three input market channel choices as well as two output market channel choices and they can thus be studied together and compared. In those catchment areas we sampled farm households and all three of the service categories and surveys were done. These were complemented with case studies of Viswas (as well as visits and interviews with the other main RBH in the area, Coromandel’s Mana Gromor), key informant interviews with diverse players in the agrifood sector, and focus group discussions (FGDs).

The report proceeds as follows. Chapter 2 discusses samples and methods used in the primary surveys and focus group discussions, and notes the key characteristics of the sampled farm households, crop traders, rural business hubs, small input retail shops, and state and coop stores selling inputs. The subsequent chapters (3-8) present findings concerning markets (household patterns of acquisition or demand, and supply by rural business hubs (which we call modern rural retail), state and coop input stores and extension and credit facilities, and small input retail shops and other small informal players). These input markets include, in the order of the chapters, seed, fertilizer, pesticides and herbicides, credit, and extension. The last of those chapters is on rice and chili output markets, with the supply side of procurement services being mainly the mandi traders, processors, and rural brokers (as in the output market case the RBHs are not active). The final chapter discusses the implications of the findings first for policymakers concerned with optimizing rural services (linked to agriculture) for small farmers, and then to rural business hubs wanting to maximize the orientation of their business model to help small farmers while growing their business.

1.1. Introducing the “new” player in the rural agri-services market: the “Rural Business Hub” Company

As noted above, the project’s purview is to study the broad range of suppliers of agri-services, and the farm households’ uses and choices over them. That broad range has, until relatively recently, been composed mainly of traditional private sector suppliers of services (rural/field

brokers, mandi wholesalers, small input retailers, money lenders, private banks) and public sector suppliers of services (state and coop stores, state banks).

To this double set has recently been added a third set of options for the farmer, and that is the modern private sector supplier of services (the “rural business hub” (RBH) companies such as Viswas, Hariyali Kisaan Bazaar, Coromandel’s Gromor, or ITC’s Choupal Saagar.

We designed our sample and our survey to take into account (for the first time in the empirical farm household literature in India) all three of the sets of service-supplier options, traditional/private, public/coop, and modern/private. Uniquely in the catchment areas of RBHs, all three of these options now face Indian farmers.

Before we set out the issues and research questions posed about the service provision of these three sets, we provide a bit of detail on RBH companies in general and the one on which we focus as the representative of this group, Viswas, in this subsection, by way of introduction and because that is the reference RBH company in AP used for the sample frame. We provide the main points here; the subject of Viswas, in terms of general operations, as well as comparisons with other RBH companies (see for example Chakravarti et al. 2007, Narang and Singh, 2008, Bell et al. 2008).

The RBHs tend to have been started by large companies, various of which are conglomerates with operations in other sectors, such as DSCL (the parent company of Viswas), ITC (Choupal Saagar), Future Group (Aadhar Retail), Coromandel (Mana Gromor), Tata (Tata Kisaan Sansar), and Mahindra. Viswas is an exception in that it is a stand-alone initiative of a small company.

RBHs are in general terms a set of platforms all under “one roof” managed by a private company, with various services and products retailed or wholesaled to farm and rural households (output procurement, input wholesale, provision of extension and finance, and retail of consumables, as well as sometimes farmer and rural youth training, insurance, and health services).

“Viswas” is the rural retail chain set up by Viswas Business Synergy Ltd via its partner Papillion Market Innovators Ltd, both of Hyderabad. They started in AP in 2005 and had rolled out some 330 small shops/stores by mid 2010 had 166 stores in AP and several in other southern states. They started by selling fertilizers, pesticides, seeds, and some small equipment, and selling well-known brands (one is Coromandel’s Gromor; Coromandel also has its own rural business hub chain called Mana Gromor). They report providing technical assistance to farmers, as well as having various financial services (credit cards and home loans) and insurance activities (selling insurance for ICICI and MetLife India).

1.2. Issues, Conventional Wisdoms cum Hypotheses, and Research Questions concerning the rural market for agri-services

The working hypothesis of this project is that there is some lack in agricultural services supplied to small farmers in the study states (Madhya Pradesh, Andhra Pradesh, and Andhra Pradesh). That lack can be in types, in quantity, and in quality. The lack can also be in distribution or in

other words “coverage” – that is, there is a given type and amount and quality of a service, but the supply goes to medium or large farmers and does not get to the small farmer, or if it does, it is more expensive than to the others strata. This is potentially a major problem constraining agricultural and market development. The lack of these services is determinant of the inability of rural households, including women, to achieve agricultural productivity and market access for inputs and outputs. This undermines competitiveness of farmers and inclusiveness of the poor, women, and States.

At first glance, that working hypothesis would seem to be unfounded. One might attack it by noting that it seems that in rural India there is rather an “embarrassment of riches” in terms of rural services. That image could be defended by observing the following:

- a) For output procurement/wholesale, there are some 5000 regulated public wholesale markets (mandis), both primary (in cities and towns) and secondary (in rural areas), and many thousands of permanent and temporary unregulated feeder markets, “haats,” below the mandis.
- b) For input supply, there are many state and cooperative (such as the Primary Agricultural Cooperative Societies or PACS) stores selling seeds, fertilizers, and some pesticides; and there are thousands of small “informal” input shops.
- c) For extension, there are state extension officers, state agricultural universities, other public extension like All-India Radio and KVKs, and there are private companies like Bayer and Syngenta promoting their products with extension.
- d) For credit, there are a number of banks with rural branches, such as SBI and other commercial banks; there is the kisan credit card (KCC) scheme to help farmers avail of credit; there are NGOs providing micro credit; there are thousands of small-scale village money lenders as well as mandi commission agents who might also provide credit to farmers.

Nevertheless, despite there being so many rural agri-services “on paper,” there is much doubt hanging over public debate, expressed in discussion groups with farmers, and in our own field observations before project, suggesting that it is possible that in the various services noted above there are various lacks (in type, amount, quality, cost, or distribution/coverage). The hypotheses “in the air” in the debate include the many points of “conventional wisdom” that one hears often in the debate. These are the main points of conventional wisdom by theme of services that we observe in the debate and that allow us to have a set of hypotheses to test regarding lacks in services.

- a) In output markets, conventional wisdom appears to contend that while, yes, there are many mandis, small farmers are in thrall to traders who tie credit to their providing them output; that farmers mainly sell into “long chains” of many hands, with the rural/field broker still dominant; that modern players emerging on the scene (like processors and rural business hubs) pay the farmer less in order to bolster profits.

- b) In input markets, conventional wisdom appears to contend that while, yes, there are many small input shops, these tie small farmers to them by linking credit to making inputs available; that their quality is poor and their supply inconsistent. Yet conventional wisdom also holds that state and cooperative stores are there “for the small farmer”, supplying needed seeds and fertilizer at subsidized prices. The conventional wisdom also holds that modern players emerging on the scene, such as rural business hubs, are selling to the elite of farmers, and at higher prices, hobbled by their not being able to offer credit.

In extension “markets”, conventional wisdom is mixed, as it contends at once that there are masses of state extension officers attending to every nook and cranny of the rural space, and it also often contends that the quality of extension is poor. This wisdom does not often have a perspective on “private extension” of input suppliers. (In AP, a “conventional wisdom” is that private input dealers are said to be filling the gap as extension agents and are sometimes accused of having vested interests in promoting the sales of their products irrespective of whether it suits the farmers’ needs.

- c) In credit markets, conventional wisdom focuses vigorously on (again) the old image of an overwhelming importance and presence of the village moneylender, with little formal private sector or state presence in lending.
- d) Finally, conventional wisdom is spellbound by an image of rural image as consisting of “millions of small farmers”, with very little heterogeneity imagined among them, either of land (and thus near ignoring of the medium and larger farmers except when they crop up as linked to money lending or in some special cases) or of non-land assets.

We did a careful search of the Indian literature on the above services, and found – despite the vigorous debate and positions strongly taken - very little published research that used farm household, trader, and input retailer surveys to test the above hypotheses (conventional wisdoms). There is truly a large gap in the literature and thus in hard facts for policymakers and private sector to use in planning. We try to address that gap.

To address the gap we turn the above points of hypothesis into research questions that guide the chapters.

First, where do small (versus medium and large farmers) obtain their inputs, their credit, their extension, and sell their output? Are small farmers obtaining certain services disproportionately (to those sources’ shares in the overall market) from certain vendor types? Do those vendor types tend to charge more or less for those services than other vendors? For example, then, are small farmers more apt to buy inputs from the state/coop services, and thus pay lower prices than do larger farmers who may not depend as much on the state/coop vendors?

Second, turning the first question from what the demanders do to what the suppliers (of all the services noted above) do, to what farm strata (and in what proportions) do the three different vendor types (traditional, state/coop, RBH) sell, and are those shares proportional to the farmers’ strata in the farm population? Or their shares in volumes marketed in the zones? For example,

then, do Viswas (or other RBH firms in AP such as Coromandel's Gromor) firms sell disproportionately less of their inputs to small farmers than do for example the state/coop stores?

Third, while the above questions focused on the dependence of small farmers on specific vendors, the distribution of sales (or procurement) by different service suppliers to small farmers versus others, the third question is focused on quality of products and terms of services. Are products and services provided by the different service providers on different terms (such as with or without credit) and with different quality? Are small farmers self-reporting satisfaction or dissatisfaction with the services they receive?

One can infer from coverage, price, and quality of the services whether there are equity impacts of the incidence in the market of the different service providers, which is a center issue in our research.

Chapter 2. Samples, Survey Methods, Sample Characteristics

In this chapter we discuss the sampling method and resultant samples for all the actors studied in our case studies (the rural business hubs) and the surrounding study areas for which the RBHs are nodal points, our surveys of farm households, wholesalers, and input retailers, and our “FGD” (focus group discussions) with farmers in selected study villages. In each section we follow the sampling discussion with a brief overview of the methods used in the case studies, surveys, and FGDs, and then describe the salient characteristics of the actors, based on study findings. As in each chapter, the tables are in the chapter annex.

2.1. Rural business Hubs and zones: sample, characteristics

The six zones of the survey in AP were selected around nodes, the latter being Viswas centers, so that the catchment area (as treatment) and nearby (as control) would be an area where farmers had the choice of all three possible types of agri-service providers – state/coop, modern/private, traditional/private.

As of 2010, Viswas had 166 stores in AP. These stores are more or less central to their catchment areas plus control areas, which together became our study zones.



But as there were 166 AP Viswas centers in 2010 when we did the survey, that meant there were potentially 166 study zones. That would have spread our sample too thin. Thus **we selected 6 of the Viswas stores.** The 6 Viswas stores were chosen both for case studies, as well as nodal points around which (in their catchment areas and in control villages (beyond the catchment of Viswas) nearby) we sampled households, wholesalers, and input retailers, and undertook focus group discussions.

We chose 6 study zones – rather than fewer or more - in order to combine two objectives – have enough zones to have variation over zone types (and thus assess the interaction of zone type and results), but not have too many zones so as to reduce the size of a zone sample of households below about 120, so as to have robust tests between Viswas users and non-users per zone and variation over villages, and so as to not have unmanageable logistics given our budget and limit of 800 households per state studied. We made a reasoned sampling of 6 of the 166 Viswas centers to get geographic and zone type variation.

The reason for using RBHs as nodal points is that we could then have study areas where households faced all the input supply options – ranging from private traditional (private input retailers, private wholesalers), to public sector (input supply, public sector procurement (that can be direct from farmers, although usually is from mills or wholesalers)), to modern private (rural business hubs, here mainly Viswas (but also Coromandel’s Mana Gromor stores) in our areas). Far from these nodes all three choices are not effective choices for farmers. But we also have farmers far enough from the hubs that they serve as control groups.

The zones do not correspond to administrative zones or regions of the government of AP but rather are study names that we give to approximate the main geographies to which they correspond. The study locations cover the whole of the state and represent all agro-climatic conditions and geographic regions.

The ‘west’ zone is a zone with degraded lands and scanty and erratic rainfall. The study locations are in Nandikotkur of Kurnool district and Tadipatri of Anantapur district. These are ecologically fragile area with a low proportion of land under irrigation. Both these study locations are bigger towns with populations of 74,199 and 137,811. These two in turn are just 35 kilometers away from their district headquarters having populations of 352,832 and 308,228. Moreover, the first study location is just 150 kilometers away from Hyderabad, which is a city of more than eight million. The west zone is primarily a rainfed cropping zone near Hyderabad and mainly dry crops (peanuts, red gram, sorghum, and maize) with some fruit crops in the shallow red soils. The proportion of irrigated land is only 24% and 13% in these two districts and the water table is very deep.

The ‘center’ zone consists of Telangana districts, which have an agriculture less developed than that of the east zone. The two study locations are Miryalaguda (population of the town is 158,910) in Nalgonda district and Choppadandi (population: 48,689) in Karimnagar district. The first study location is 50 kilometers away from the district headquarters, which is a city with a population of 163,382. The second study location is 20 kilometers away from Karimnagar. The two locations have different rainfall levels - the first low and the second high. The zone is located between the west zone and the east zone adjoining the Bay of Bengal. The level of development is also medium per the first Human Development Report released by UNDP for Andhra Pradesh.

The ‘east’ zone consists of two study locations in coastal Andhra, which is agriculturally developed and has a more commercialized agriculture than the other two regions, at least per secondary information. The two study locations are in Akiveedu (population of 74,766) of West

Godavari district, which is considered to be the “rice bowl” of AP, and Pedakurapadu (population, 48,569) of Guntur district, which is referred as the commercial agricultural capital of AP. Both are just 25 kilometers away from cities of 219,212 and 123,697. These are near the coast. This is the most densely populated area of the state. The East zone grows mainly rice and chilies.

The west zone is the least developed zone followed by the center. The east zone is a very good zone with high agricultural performance. While Akiveedu of West Godavari is in the premier rice growing area of the state, Pedakurapadu of Guntur is the traditional center for growing chilies. The farm size is somewhat higher in the west followed by the center and the east. However, larger farms in the ‘west’ are larger partly because soils are poor and irrigation scant, so larger farms are needed for viability. In India, generally one considers that two hectares of rainfed land are equivalent to one hectare of irrigated land (in terms of productivity). The farm sizes of the west, when one compares to the east and center, should be adjusted (when discussing productivity) to account for the west being more rainfed and the center and east more irrigated.

Viswas has its greatest concentration of outlets in the eastern zone (just as the RBH companies in our other two study states of UP and MP have most of their outlets in the agriculturally more developed zones), followed by central and western zones in accordance with the agricultural and marketing potential of these zones.

While we call the Viswas outlets “rural” business hubs, most of them are actually near tier 4 cities and towns (of 10,000 to 500,000). All of the study locations are around towns/cities that have populations of more than 48,000, roughly of 50,000-150,000. Moreover, most of these are close to larger cities and half are near Hyderabad. In the dense AP countryside, “peri-urban” and “rural” seem to blend together. The upshot is that these study zones are not in remote areas or highly rural or hinterland areas, but in very dense peri-urban areas (which in fact is the situation for most of AP farmers). AP rural areas are very densely populated and nothing is far from a town. AP itself, with a population of 85 million (as of March 2011), has a population density of 308. The population density is close to that of India as a whole (368) and is the fifth largest populated state in the country.

2.2. Farm Households: sample, survey methods, key characteristics

2.2.1. Sampling of Farm Households

Household surveys were conducted in 39 villages in the catchment area of 6 Viswas stores, equally distributed over the West, Center, and East study zones in AP. We refer in this report to West zone, Center zone, and East zone in general but given the set-up of the survey, this refers only to the catchment areas of the stores (plus control areas beyond the catchment areas). The numbers of households interviewed are almost equal in number for user and non-users in these zones.

A household survey and a village survey were conducted during June-July 2010 in the three regions (six study locations) noted above. To draw samples, all the villages in the catchment area of the Viswas stores were identified and were assigned to the following categories by estimation of Viswas: a) high-intensity use (category I): more than 50 farmers in the village buy agri-input

inputs from Viswas; b) medium-intensity use (category II): between 20 and 50 farmers in the village buy agri-inputs from Viswas; c) low-intensity use (category III): less than 20 farmers in the village buy agri-inputs from Viswas. The sample was set up in this way as to give a representative idea of the catchment areas of Viswas. The latter category was considered the control area, near, but in the outskirts or outside, the area considered the catchment zone.

Two villages were then randomly selected in each of categories I and II, and 1 in category III. Within the selected villages, a census was conducted as to obtain a list of all the farmers (people “that cultivate land”). The census was conducted so as to divide farmers into RBH users and non-RBH users. From this census list, 30 farm households were then randomly selected, i.e. 20 RBH users and 10 non-RBH users in the case of category I villages and 15 RBH users and 15 non-RBH users in the case of category II villages. From category III villages, 15 farm households were randomly selected.

The sampling plan was set up in such a way that for each RBH, 70 RBH users and 65 non-RBH users would be interviewed. In AP as a whole, the catchment cum control areas of six Viswas were covered and 810 households were interviewed, i.e. 420 RBH users and 390 non-RBH users. In the presentation of our results, we will make the distinction between West, Center, and East AP households. Given the set-up of the survey, the numbers of households interviewed are almost equal in number for each of these categories in these zones.

Note that because we have the data from our full census of farms in each village, in the results we present “non-population-weighted” (just using the sample as is) and “population weighted” statistics; the latter corrects for the dis-proportional sampling to show the sample average using true population weights for the strata.

2.2.2. Method of the Farm Household Survey

The survey teams were composed solely of the collaborating research institute’s (CESS) supervisors and enumerators, who had received training from IFPRI staff at a separate site. The survey was not presented as having anything to do with Viswas, rural business hubs, or the donor USAID, so as not to bias the results. Rather, the survey was presented to farmers as about rural services in general, in order to inform government policymakers about the use of such services in rural areas.

The questionnaire took about two hours to administer to the head of household. No Viswas staff or government officials were allowed to be present, including the team did not come accompanied to the village in any way, and only the enumerator and the household were present at the interview, so as not to bias the results.

The survey instrument had sections on the household characteristics and assets, input purchase behavior, output sales behavior, and access to other services such as extension. Except at the end of the instrument, rural business hubs were not singled out but were just part of a set of possible input suppliers and output procurers. The questionnaire asked about the past year as well as for some variables, the households’ actions and holdings five years ago.

The interview was conducted formally, with the enumerator simply reading each question in turn, and noting the response, with instructions to not discuss, suggest, or assess, so as to ensure lack of bias.

2.2.3. Characteristics of the Farm Households in the Sample

This section presents the main findings regarding characteristics of the sample, as found in the tables in the annex to this chapter.

In all the tables where zone stratification is done, we use the three regions noted above (west, center, east). In the tables where farm size stratification is done, we use the strata as defined by the Government of India: “marginal” farmers are those with more than 0 up to and including 1 ha; “small farmers” are those with more than 1 and up to 2 ha; **medium farmers (which can be medium and large) are all those above 2 ha.**

As we sampled disproportionately for RBH (primarily Viswas) users, the average behavior for a given variable for the sample does not necessarily equal that average for the population as a whole in the study areas. We thus present two averages per table where we stratify by user: the unweighted average, and the population weighted average, using the weights from our census of the villages.

Table 2.1.1 shows our stratification (three strata). On average over the three zones, our sample is composed 65% of small/marginal farms – 29% marginal, and 36% small farms. The rest, 35%, are what we call “medium” farms. (Note that this is a farm size distribution averaging between our UP and MP samples (see the companion reports), somewhat larger than UP farmers and somewhat smaller than MP farmers, both mainly sampled in the commercial agriculture zones.) The shares are roughly similar over the Center and East zones (with about 70% small/marginal and 30% medium), but markedly larger in the west zone – with only 52% small/marginal (and half the number of marginal farmers as in the other two zones, only at 17% versus about 32-37% in the other two zones).

A hypothesis to test is that the farms are larger in the west because the irrigation share is lower and land productivity is very low with degraded lands and scanty and erratic rainfall. In this report we do not examine yields, but here do show in the text table below that almost all the farms have irrigation in the east and center zones (where even the medium farmers have irrigation); but in the west, the shares are lower, with the lowest (only about a third) of the medium farmers with irrigation. This means that in “irrigated land equivalent terms” the three zones are not that different in farm size.

	West	Center	East	All AP
Shares of sample households by farm strata having irrigation:				
Marginal Farmers	60.9%	91.0%	95.3%	87.0%
Small farmers	52.6%	94.8%	96.0%	81.5%
Medium farmers	36.4%	94.7%	98.9%	69.7%

Table 2.1.2 shows RBH user (versus non-user) and farm size strata. The user profile is slightly more oriented to the medium farmers (42% of the RBH stratum are “medium” (semi medium and medium and large in the table, “medium” per our stratification) farmers, while only 28% of the non-RBH stratum are “medium” farmers). Marginal/small are 58% of RBH sample and 71% of the non-RBH sample. The differences are moderate (and similar to findings in the MP and UP studies). This confirms our expectation that medium farmers would be more apt to be using the Viswas system, but the pattern is modest, not sharp.

Note in the table that the population-weighted overall shares of the strata show a “real population” (from our census) for our sample villages that is 70% marginal/small – compared with 59% in the sample. This means that in selecting disproportionately to get RBH users among the overall sample, we biased the sample toward a somewhat larger farm size, but the effect is modest. In any case, as noted, we show the population weighted averages throughout so the reader can see the results for the “true population” for the variables, while at the same time being able to compare the user and non-user strata and farm size strata.

Table 2.1.3 shows that for the overall sample of users the average farm size is 2.61 ha, and for the non-user, 2.05. The average for the whole sample is 2.34 ha per farm. The population weighted average is 2.13 ha. (Contrast this with the sample average of 1.7 ha per farm in our UP sample and 4 ha in our MP sample (with the latter’s “true” distribution at 3.5 ha/farm) Thus the AP sample is more like the UP sample in terms of averaging out at the high side of the range of the “small” stratum or low side of the medium stratum.

Note in Table 2.1.4 that the average farm size in the sample for the west zone is 3.1, versus only 1.9 and 2.0 in the other two zones; we noted this split before. In fact, if the west were excluded, it would be similar to UP farm sizes.

The above two tables (for our sample) can be contrasted with Table 2.1.5 which shows the distribution of farms over farm size strata in the whole state of AP – using government statistics. The average here is 1.26 (versus the “true population-weighted” average of 2.13 for our sample villages). Hence our sample areas true farm populations (not the sample) are about 70% larger on average than the state as a whole. This is not surprising given that these are the more commercial zones and relatively nearer to towns and peri-urban, and also that we made sure to include the drier larger-farmed west zone perhaps giving that characteristic larger weight than had the sample been just random over the state.

Moreover, Table 2.1.5 shows that 76% of the farmers in the state are marginal or small – versus only 70% in the “true” population of the study zones. This is an important point: the state-wide and the sample-area populations, in terms of shares of marginal/small farmers, are close. But in terms of that state-wide average farm size, and the sample-area farm size, the difference is greater. The interpretation is twofold: (1) the west zone has particularly larger farms than the rest of the state (in the categories above small farms), and its disproportionate inclusion raises the average of the sample on farm size but not much on share of marginal/small farmers; (2) the center and east zones of the study are similar in farm size distribution to the rest of the state.

Table 2.1.5 and Table 2.1.6 show an **important point that is often neglected in policy debates.**

In Table 2.1.5, per state data for AP, the marginal/small farmers have 77% of the farm population, but only 47% of the farm land in the state. That is, marginal/small farmers are a big majority in population, but a minority in farmland (and as we will show, in output). That means that “medium” farmers, having but 23% of the farm population, have the majority of farm land (53% of the land), and as we will show, even more of the marketings.

In Table 2.1.6, while 70% of our sample-areas (true population) in terms of number of farmers are marginal/small, those two strata farm only 37% of the farmland of the sample areas (true population), and 59% of the farm population in the sample, and 33% of the farmland (in the sample). This means that in the true-population (not the sample) of our study areas, 30% of the farmers are “medium” yet they control 63% of the farmland.

Table 2.1.7 shows other characteristics (beside land distribution) of the sample. Illiteracy declines from 39% to 24% over the three land strata, while above-secondary education rises from 7% to 11% of the household heads. The households average 4-5 persons. The share of Hindus in the total rises as land size increases: 90% of the marginal are Hindu, 91% of the small, and 95% of the medium farmers. Share of households that are in a scheduled caste/tribe plummets from 23% of marginal farmers to 17% of small to only 6% of medium farmers. The share of households with APL cards rises from 2.6 and 2.1 for marginal and small, to 9.8% for the medium farmers. BPL ration cards are owned by 95% for the marginal and small – yet also 84% of the medium farmers. Few farmers had no ration card. Interestingly, the distance from the Viswas store increased quickly from 5 to 10 to 15 km over the farm strata. This may mean that the marginal and small farmers need input services closer to their living areas as it seems unlikely that they purchase in nearby places for want of money and time.

Table 2.1.8 shows the shares of households that visited any RBH, by farm size. The results reinforce the points above. The share of households having visited an RBH (any RBH) over the past year (before the survey) is strikingly high (including in the population weighted shares). It is from 62% among marginal to 52% among the other strata. This is a striking rate of penetration and exposure in the catchment areas – which feature Viswas, but also a common RBH called Gromor (Coromandel).

2.3. The Sample & Methods used in the wholesale survey

2.3.1. Sampling Methods used in the Wholesale Survey

The wholesalers/brokers were sampled in two sets.

The first set was in the nearest mandis in the towns or cities where the study zones are: Nandikotkur and Tadipatri in the west, Miryalaguda and Choppadandi in the Center, and Akiveedu and Pedakurapadu in the East. 50 wheat and rice wholesalers (“commission agents”) were selected in the mandis of these six towns/cities. These were chosen randomly from the list of these traders in the mandis. If one refused, then the next to his right was interviewed.

The second set was the village broker/collector. 30 of these were selected, one from each study village. The typical village broker dealt in both wheat and rice, and was chosen at random from the 1-2 that are based in the nearest town or in the larger villages.

This made for a sample of 83 traders.

2.3.2. Wholesale Survey Methods

The survey teams were composed solely of the collaborating university enumerators, who had received training from IFPRI staff at a separate site. The survey was not presented as having anything to do with Viswas, rural business hubs, or the donor USAID, so as not to bias the results. Rather, the survey was presented to wholesalers as about rural services in general, in order to inform government policymakers about the use of such services in rural areas.

The questionnaire took about one hour to administer to the wholesaler. No Viswas staff or government officials were present, including the team did not come accompanied to the village or mandi in any way, and only the enumerator and the wholesaler (perhaps with his helpers or associates) were present at the interview, so as not to bias the results.

The survey instrument had sections on the wholesaler's characteristics and assets, grain procurement and marketing behavior, costs in the last transaction, and credit and other services practices. The questionnaire asked about the past year as well as for some variables, the wholesaler's actions and holdings five years ago.

The interview was conducted formally, with the enumerator simply reading each question in turn, and noting the response, with instructions to not discuss, suggest, or assess, so as to ensure lack of bias.

2.3.3. Characteristics of Wholesalers

The sample was 83 traders in all, out of which were **43 rice traders** and **9 chili traders** and the rest in other grain and vegetables trading.

Table 2.2.1 shows the seasonality of paddy and chili trading and varieties of paddy traded. In the sample, half of the paddy/rice traders are in the west and half in the east. They tend to trade in both the kharif and rabi seasons, so there is no sharp seasonality in wholesale activity. By contrast, the chili traders are almost all in the east region; trading is sharply seasonal, concentrated mainly in the kharif (rainy season). Swrana variety (the "super-fine" or highest quality rice) paddy is traded mainly in the west (by all traders) and center (only a third), less in the east (only a seventh). This appears to mean that the more common rice is the focus of the east, while the higher quality rice is more important in the west, but this is to be explored further.

Table 2.2.2 shows characteristics of paddy traders by zone: frequency of sales, area of operations, type of firm, market information access, and length of operation and number of stalls if in a mandi. Interestingly, while we saw seasonality is not sharp overall (for rice trading), most traders (half in the west and a third in the center and east) trade only intermittently (not

continuously). Moreover, the traders tend to operate only locally (very different from the grain traders we studied in UP and MP), with very little pan-India operations (only 8% of the traders in the center zone did that), and even in overall AP (none in the west, and 12 and 23% in the center and east). Most traders are in a single firm, not a partnership firm, except in the center zone. The traders tend to have just one stall if they are in a mandi.

Moreover, the market information findings show a strong correlation of the degree of commercialization of the zone and the types of information the traders are using. The use of SMS/internet rises sharply from 25 to 39 to 77% of traders going from west to center to east. Even mandi price information from radio and newspapers rises from 75 to 92 to 100% over the regions. None use Chicago Board of Trade or NCDEX (except 19% of traders, for the latter, in the center), very different from UP and MP traders. All receive information from millers.

Interestingly, the “time as rice trader” drops sharply going from west to east (for instance, the category of “less than a decade” has a quarter of traders in west and center, but 54% of traders in the east). This could mean that the paddy trade is growing and there are new entrants, in particular in the most commercial zone (the east). Most in the west and center have been in business 10-20 years, while only 30% of those in the east have.

Table 2.2.3 focuses on the same as Table 2.2.2 but for chilies. Again, the chili traders are concentrated in the east, and 86% trade all year; note that chilies are produced under irrigation and tend to be harvested little by little over a season and then over several seasons per year, so the trader is continuously active. The east zone chili traders tend much more to be active in all AP – but not pan-India. This surprised us as we had expected AP chili traders to be active in selling to markets in other regions of India. Most of the traders are in partnership firms.

The east-zone chili traders appear more “modern” than the paddy traders from the viewpoint of information: all are using sms/internet, all getting radio information, 43% of them using NCDEX information, all using processor/packer information, and most are on the mandi board. Also most of them (86%) have been around from 10 to 20 and even more years.

Table 2.2.4 shows education of paddy traders. All are literate. Most are in the 6th to 10th standard level, with some in the higher secondary. The level however is less than we observed among grain traders in UP and MP.

Table 2.2.5 shows education levels of chili traders. The results are similar to those of paddy traders.

Table 2.2.6 show warehouses and godowns of traders. Surprisingly few (compared with UP and MP) of the traders operate rural warehouses: only in the east zone among only 20% of only rice traders, and only averaging one warehouse. Most are there since more than a decade. For urban warehouses, again the numbers are very small (compared with our findings in UP and MP): only 15, 13, and 8% of the traders in paddy have urban godowns/warehouses, and a mere 8% of chili traders. However, the chili storage requirements are fulfilled as there are a large number of cold storage facilities in the nearby town, which is 100 kilometers away. They tend to have been operating a decade or more.

Table 2.2.7 shows ownership and rental of trucks by wholesalers by zone. The share of those owning trucks is slight, from 12% in the west and center to only 28% in the east – with no change over the past half-decade. Those owning trucks also have but one each. Rather, traders tend to rent trucks. About two-thirds of the traders rent trucks to collect product from farmers: 58% in the west (same five years ago), 28% in the center (19% five years ago), and 60% in the east (56% five years ago). About the same share rent trucks to deliver product to clients: in similar shares. So the truck rental market is developing.

Table 2.2.8 shows milling facilities owned by traders of paddy. Interestingly, in the west, all the paddy traders own mills – showing vertical integration. This is much less in the center and east (although about third do in the east). This has not changed over the past five years. Moreover, none of the paddy wholesalers in the west buy for millers (as their agents) (as these traders have their own mills), but about half of the paddy traders in the other zones are essentially agents of mills.

Moreover, interestingly, all the chili traders own their own processing facilities, and have done so without change for the past five years at least. However, about half of them also buy chilis for other mills, as their agents.

2.4. The Input Retailer Survey

2.4.1. Context, Themes, Sample, Methods

Several stylized facts about Andhra Pradesh are key context to interpret the results. These points are based on our interviews in February/March 2010 with key informants in the AP Directorate of Agriculture and with key informants in all three segments of the input retail sector and also with input companies operating in AP.

First, there are three segments of the input retail sector in AP: (1) “state retailers” linked to the State Department of Agriculture (as part of their involvement in provision of seeds, fertilizer, credit, and extension) such as AP Agro stores and the PACs (cooperatives); for fertilizer it was known a priori that a dominant share (our government key informants noted around 62%, up from 40% five years ago) of the fertilizer in the state is distributed via cooperatives; (2) (informal sector) traditional private input retailers (mainly small shops in villages and towns); (3) modern input retailers which are mainly rural business hubs, which in AP mainly include Mana Gromor, Viswas, and HKB, among several others. The latter category is relatively new (mainly emerging in the past five years) while the other two segments have been present for a long time. In general, it is known *a priori* from key informant interviews that fertilizer, chemicals, and seeds are available from all of the retail segments, but beyond that we started the survey with only anecdotal evidence about further services and types of inputs.

In this report we use input retailer survey data from Andhra Pradesh to address a set of basic themes using the sample survey data: (a) characteristics of stores; (b) seed retail by the sample of retailers; (c) chemical retail; (d) fertilizer retail; (e) animal husbandry inputs retail; (f) farm equipment retail; (g) clientele volume and composition; (h) credit provision to clients; (i) degree

of formalization (invoices, taxes); (j) provision of “extension” services to farmers and receipt of them from input companies; (k) qualitative perceptions of access constraints to sourcing inputs.

The main factual and research questions are the following:

- a) Do input retailers have diverse product offerings – hence do traditional stores have less, and modern stores have more, diversity of offer thus supporting greater diversification of agriculture? This tests the hypothesis that modern stores have more diverse offer.
- b) Do input retailers sell products packaged and branded – and thus (by very rough proxy) indicate higher quality and lower probability of adulteration than loose and unbranded products¹ – and how does this differ by traditional versus modern stores? This tests the hypothesis that modern stores package and brand more.
- c) Do input retailers sell products in diverse unit sizes – and in particular in marginal units accessible to the limited budgets of marginal farmers – and does this offering differ by traditional versus modern stores? This tests the hypothesis that traditional stores tend to sell small units and modern stores large units.
- d) Do input retailers offer credit to clients – and does that serve a large share of clients? Does this differ by traditional versus modern? This tests the hypothesis (conventional wisdom) that traditional stores widely practice, and practice with the majority of their clientele, the offer of credit.
- e) Do input retailers differ in their degree of “formalization” – proxied by provision of invoices to and requirement of payment of taxes by clients – and does this differ between traditional and modern retailers? This tests the hypothesis that modern stores are more formalized.
- f) Do input retailers participate in the information market, in offering farmers extension advice (general or specific) and in receiving extension from the input companies? This tests the hypothesis that this is done mainly by the modern stores.
- g) Do traditional and state stores mainly have marginal & small farmer clients, and modern stores mainly have medium & large farmers clients? Is the answer explicable from the implied advantages and disadvantages to market to small farmers implied by the findings above (concerning unit size, credit and extension provision, taxation, etc.)?
- h) Do input retailers face constraints in accessing (sourcing) inputs? This tests the hypothesis of whether modern stores face less constraint.

¹We had to use a proxy for input quality and/or integrity/adulteration because we lacked access to lab facilities to physically test sample products, the only way to establish whether a particular item is of a composition and/or quality other than that which is labeled or announced, or is a fraud or counterfeit, or is adulterated. In principle, sealed/packaged branded products are less probable cases of these problems, but in practice one cannot say that with certainty, as key informants signaled that branded packaged items can have any of these problems. Moreover, we did not make fine distinctions on sophistication of packaging, veracity of labeling, specific chemical formulations, and we did not inspect products for tampering of packages or past-dates. Finally, initially we had thought we could have the respondents sort between “national/international brands” and “local brands” but this became confusing and cumbersome and finally not usable. To grasp this would require a narrowly focused survey of a few products and prior knowledge of the branding range for them. Our survey is thus “first broad brush strokes” and these more detailed explorations would need to be in further research.

The data used come from the authors' own survey in May/June 2010 in the catchment areas of the modern retailers; the one chosen is one of the most numerous in the state, the rural business hubs of (Viswas in Andhra Pradesh (AP). The survey used a formal instrument with questions posed to the store manager.

The sample consisted of 101 input retailers: 88 in the traditional sector (approximately 1 chosen at random in each of the 39 villages selected as discussed above, 8 stores in the government sector, i.e. Primary Agricultural Society and IFFCO-KRIBHCO outlets (approximately 2 from the nearest town to the Viswas outlet, and 6 private modern sector stores (Viswas themselves) in the catchment areas of 6 Viswas stores, equally distributed over West, Center, and East AP study zones.

The fact that the traditional and state stores were chosen in the catchment areas of modern retailers means that they can be said to be in potential competition for roughly the same market area, and thus comparable, controlling for the geographic, socioeconomic, agricultural, and market infrastructure context. However, while we can perform statistical tests comparing over traditional stores, the very small sample of modern retailers and state stores makes a statistical test infeasible between the traditional and state stores on one hand, and the small sample of modern stores on the other. However, it should be noted that the modern stores chosen are all from a single company/chain, known *a priori* to have roughly similar practices across stores in given zones, so that while a sample drawn across many modern stores spread across the state was logistically infeasible, the few stores per zone that were chosen are deemed to be roughly representative of the Viswas stores. The same can be said of the state stores, responding in their practices to general directives.

As with the other surveys, a formal questionnaire was administered to the shop or store manager. No government official or Viswas official accompanied the survey team (except of course at the Viswas interview). The purpose of the survey was explained as about rural services, and not about rural business hub comparison with others, so as not to bias the survey.

In this chapter we present only the input retail characteristics, and then their behavior in the other chapters.

2.4.2. Input Retailer Characteristics

Table 2.3.1 shows size, years of operation, and types of products sold (whether only farm inputs or farm inputs plus FMCG). The average size of the traditional input shop is about 534 square feet (two-thirds as big as that of UP), compared with only 383 square feet for the Viswas. The Viswas is thus even smaller than many input shops; this is quite different from the RBHs in UP and MP where the stores are much larger than traditional shops. The state stores are about 941 square feet, about half that of the state/coop stores in UP and 50% smaller than the state stores in MP.

Most of the state and traditional stores have been in place more than five years; Viswas are mainly more recent, all in the past five years in the west and center, and most older than 5 years

in the east zone where they started. While Viswas operate all year, the traditional and state stores operate all year in the west and central zone, but interestingly, half only seasonally in the east zone where we had expected operation all year.

Table 2.3.2 shows footfalls and their composition over farm size strata, according to the store managers. The footfalls per day are greater in kharif than in rabi seasons for traditional retailers, but not much for Viswas and state stores. It is not clear why this is, as it is so in the more irrigated and less irrigated zones, so it does not depend on great multi-seasonal farming.

Over all AP, the footfalls are about 60 per day in kharif and 30 in the rabi season – about the same figures as we found for small shops in UP. By contrast, Viswas is only getting about 26 in kharif and 20 in rabi, less than a small shop – and about a tenth of what the RBHs in UP and MP get per day. State/coop stores actually average just about 10% above the small numbers entering the Viswas stores in kharif, but about a quarter more in rabi.

Traditional stores' managers self-report that about 57% of their clientele are small and marginal farmers; the Viswas stores self-report that that share is 35% only, and state/coop stores, 61%. These figures can be kept in mind when we present the actual sales (as reflected from the perspective of farmers' transaction data) of the vendor types to the farm strata. **The point here is that vendor types self-report, in the case of traditional shops and the state/coop, a small majority of their clients are small/marginal farmers, while Viswas reports that a minority are small/marginal farmers.**

Annex to Chapter 2. Samples, Survey Methods, Sample Characteristics
Section 2.1. Farm Household Characteristics

Table 2.1.1 Share of farms in sample, by strata (marginal, small, and medium as per our study), across zones				
	West (N=270)	Center (N=270)	East (N=270)	Overall (N=810)
Marginal (0-1 ha)	17.0	36.7	31.9	28.5
Small (>1-2 ha)	35.2	35.6	37.4	36.0
Medium (>2 ha)	47.8	27.8	30.7	35.4
Overall (N=810)	100%	100%	100%	100%

Table 2.1.2 Share of farms in sample, by Government-defined farm size strata, across RBH user and non-users (%)

	User (N=423)	Non-User (N=387)	Un weighted overall (N=810)	Population weighted overall*
Marginal (< 0-1ha)	22.9	34.6	28.5	32.85
Small (>1- 2 ha)	35.0	37.2	36.0	36.87
Semi-medium (>2 - 4 ha)	27.7	18.9	23.5	20.22
Medium (>4 to 10 ha)	12.8	8.5	10.7	9.15
Large (>10 ha)	1.7	0.8	1.2	0.94
Total (N=810)	100%	100%	100%	100%

*Using 0.15 as the user weight and 0.85 as non-user weight, as calculated on the basis of the census of villages done for the survey.

Table 2.1.3 Average farm size (in Ha.) per government-defined stratum in sample, across RBH users and non-users

	User (N=423)	Non-User (N=387)	Un weighted overall (N=810)	Population weighted overall*
Marginal (<0-1ha)	0.72	0.68	0.69	0.69
Small (>1.0 ha to 2.0 ha)	1.61	1.51	1.56	1.53
Semi-medium (>2.0 ha to 4 ha)	3.13	3.02	3.09	3.04
Medium (>4.0 to 10.0 ha)	6.24	6.60	6.37	6.55
Large (>10 ha)	13.31	16.00	14.12	15.60
Overall	2.61	2.05	2.34	2.13
*weights as in table 2.1.2				

Table 2.1.4 Average farm size (in Ha.) as per study defined strata, over zones				
	West (N=270)	Central (N=270)	East (N=270)	Overall (N=810)
Marginal (0-1 ha)	0.69	0.67	0.72	0.69
Small (>1-2 ha)	1.59	1.53	1.56	1.56
Medium (>2 ha)	5.03	4.01	3.99	4.46
Overall	3.08	1.91	2.04	2.34

Table 2.1.5 Government data on farm numbers and area by Government-defined farm size strata, at AP level			
Farm size strata	Number of ‘holdings’	Area (Ha)	Ha/holdings (Area/Number)
Marginal farmers (<0- 1ha)	5,009,938	2,501,959	0.50
small (>1.0 ha to 2.0 ha)	2,120,848	3,004,011	1.42
Semi-medium (>2.0-4 ha)	1,202,632	3,207,010	2.67
medium (>4.0 to 10.0 ha)	419,642	2,379,113	5.67
Large (>10 ha)	48,013	726,463	15.13
Overall	9,392,165	11,818,556	1.26
<i>Source: Ministry of Agriculture. 2010. Agricultural Census. Delhi: Government of India</i>			

Table 2.1.6 Share of government-defined farm strata in total farmland of the sample, RBH user vs. non-user

	RBH User	RBH non User	Un weighted overall	Population weighted overall*
Marginal (< 1ha)	6.3	11.4	8.5	10.7
Small (1.0 ha to 2.0 ha)	21.6	27.5	24.0	26.6
Semi-medium (2.0 ha to 4 ha)	33.1	27.8	30.9	28.6
Medium(4.0 to 10.0 ha)	30.5	27.4	29.2	27.9
Large (10 ha and above)	8.4	6.0	7.4	6.4
Total	100	100	100	100.0
*Weights as in table 2.1.2				

Table 2.1.7 Characteristics of households, by farm size (as per study-defined strata)					
	Marginal (0-1 ha) (N=231)	Small (>1- 2 ha) (N=292)	Medium (>2 ha) (N=287)	Un weighted overall (N=810)	Population weighted overall*
Age of household head (average in years over N=810 households)	43.64	45.06	45.59	44.84	44.7
% of household heads who are (N=810 households):					
- Not literate	39.4	34.6	24.4	32.3	33.9
- Literate without formal schooling	6.5	7.2	5.2	6.3	6.4
- Literate but below primary (less than 1)	2.6	2.1	0.7	1.7	1.9
- Primary (1-5)	17.7	17.8	19.2	18.3	18.1
- Small (6-8)	6.5	11.0	11.5	9.9	9.4
- Secondary (8-10)	18.6	18.8	26.5	21.5	20.6
- Higher than secondary (11-12)	5.2	4.5	6.6	5.4	5.3
- Diploma/certificate course	1.3	0.3	1.4	1.0	1.0
- Graduate	2.2	3.4	4.2	3.3	3.1
- Post graduate or above	0.0	0.3	0.3	0.3	0.2
Total for education shares	100%	100%	100%	100%	100%
Household size (average in number over N=810 households)	4.01	4.42	4.90	4.48	4.4
Religion: % Hindu	89.6	90.8	95.1	92.0	91.4
Member of scheduled caste/tribe (N=810 households)	22.9	17.1	5.6	14.7	16.4
% of households reporting of owning (N=810 households) :					
APL ration card	2.6	2.1	9.8	4.9	4.2
BPL ration card	95.2	95.5	84.0	91.4	92.5
Antayoda ration card	0.4	0.3	0.0	0.2	0.3
No ration card	1.7	2.1	6.3	3.5	3.0
Total	100%	100%	100%	100%	100%
Distance to RBH (Simple average over N=810 households) :					
Mean (in kms.)	5.2	10.2	15.9	10.7	9.7
Median (in kms.)	4.0	10.0	15.0	8.0	9.0
*Using 0.38 -as weight for marginal, 0.37 for small and 0.25 for medium, calculated from census done for the survey.					

Table 2.1.8 Farmers' visits to RBHs, by farm size (as per study-defined strata), in shares of households.

(N=810 HHs)	Marginal (0-1 ha) (N=231)	Small (>1-2 ha) (N=292)	Medium (>2 ha) (N=287)	Un weighted overall (N=810)	Population weighted overall*
% of households that visited RBH in the past 12 months	62.3	51.4	51.6	54.6	55.6
If no, % of households that visited RBH before past 12 months	5.19	3.11	2.78	3.56	3.8
% of households that never visited VISWAS	31.17	44.98	43.20	40.24	39.3
No Response	1.34	1.03	2.42	1.60	1.5
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Section 2: Wholesalers' characteristics

Table 2.2.1. Grain trading and chilly trading in immediate past rabi (2010) and kharif (2009) by zones				
	West	Central	East	Total
N= No. of traders	26	32	25	83
1.1 % of traders trading (N= 83 traders):				
a. Rice in kharif	15.4	75.0	52.0	55.4
b. Rice in rabi	11.5	81.2	48.0	49.4
1.2 % of traders trading in rice, % of traders trading (N=43 traders; multiple answers possible)				
a. Swrana variety rice	100	38.5	15.4	51.3
b. Any other variety rice	75	15.4	38.5	42.9
c. Variety not reported	46.1	46.2	0	41.9
1.1 % of traders trading (N= 83 traders):				
a. Chilly in kharif	0.0	0.0	28.0	8.4
b. Chilly in rabi	7.7	0.0	4.0	3.6
Chilly varieties traded are not sufficiently reported in the survey, and hence not included here.				

Table 2.2.2. Characteristics of the paddy trader and his business by zones				
	West	Central	East	Total
1. Frequency of sales: % of traders selling (N= 43 traders)				
1.1. Continuously over the year	50	61.5	61.5	60.5
1.1. Intermittently	50	30.8	38.5	34.9
1.2 Not reported	0	7.7	0	4.6
Total=100%				
2. Area of operations: % of traders operating (N= 43 traders)				
2.1 Locally	100	80.8	76.9	81.4
2.2. In whole of AP	0	11.5	23.1	13.9
2.3 Pan-India	0	7.7	0	4.6
Total=100%				
3. Type of firm: % of traders (N= 43 traders)				
3.1 Owning single firm	100	42.3	92.3	62.8
3.2 Owning partnership firm	0	57.7	7.4	37.2
Total=100%				
4. % of traders reporting to access market information now through (multiple answers possible) (N= 43 traders)				
4.1 SMS/internet:	25	38.5	76.9	48.8
4.2 Market yard price information via radio and newspapers _	75	92.3	100	93.0
4.3 CBOT (Chicago Board of Trade)	0	0	0	0
4.4 NCDEX:	0	19.2	0	11.6
4.5 Millers	100	100	100	100
5. % of traders who are members in the mandi board (N= 43 traders)	0	53.8	7.7	34.9
6. Length of operation in mandi/ village as trader: % of traders operating for (N= 43 traders)				
6.1 Less than 10 years	25	26.9	53.8	34.9
6.2 10-20 years	75	42.3	30.8	41.9
6.3 More than 20 years	0	30.8	15.4	23.2
Total=100%				
7.1 If trader is a commission agent, average no. of stalls per trader in the surveyed mandi (simple average over N=25 traders, who are commission agents at the surveyed mandi)	1	1	1	1
7.2 If trader is a commission agent, average no. of stalls per trader in any other mandi (simple average over N=25 traders, who are commission agents at the surveyed mandi)	0	1	1	1

Table 2.2.3. Characteristics of the chilly trader and his business by zones				
	West	Central	East	Total
1. Frequency of sales: % of traders selling (N= 9 traders)				
1.1. Continuously over the year	0	0	85.7	66.7
1.1. Intermittently	100	0	14.3	33.3
Total=100%				
2. Area of operations: % of traders operating (N= 9 traders)				
2.1 Locally	0	0	14.3	11.1
2.2. In whole of AP	0	0	66.7	66.7
2.3 Pan-India	0	0	0	0
2.4 Not reported	100	0	0	22.2
Total=100%				
3. Type of firm: % of traders (N= 9 traders)				
3.1 Owning single firm	0	0	28.6	22.2
3.2 Owning partnership firm	0	0	55.5	55.6
3.3 Not reported	100	0	0	22.2
Total=100%				
4. % of traders reporting to access market information now through (multiple answers possible) (N= 9 traders)				
4.1 SMS/internet:	0	0	100	77.8
4.2 Market yard price information via radio and newspapers	100	0	100	100
4.3 CBOT (Chicago Board of Trade)	0	0	0	0
4.4 NCDEX:	0	0	42.8	33.3
4.5 Millers	100	0	100	100
5. % of traders who are members in the mandi board (N= 43 traders)	0	0	85.7	66.7
6. Length of operation in mandi/ village as trader: % of traders operating for (N= 9 traders)				
6.1 Less than 10 years	50	0	14.3	22.2
6.2 10-20 years	50	0	28.6	33.3
6.3 More than 20 years	0	0	57.1	44.4
Total=100%				
7.1 If trader is a commission agent, average no. of stalls per trader in the surveyed mandi (simple average over N=7 traders, who are commission agents at the surveyed mandi)	0	0	1	1
7.2 If trader is a commission agent, average no. of stalls per trader in any other mandi (simple average over N=6 traders, who are commission agents at the surveyed mandi)	0	0	1	1

Table 2.2.4. Education level of paddy trader by zones				
	West	Central	East	Total
% of traders (N= 43 traders):				
3.1 Not literate	0	0	0	0
3.2 Literate without formal schooling	0	0	0	0
3.3 Literate but below primary (below 1 st standard)	0	3.8	23.1	9.3
3.4 Literate till primary (1 st -5 th standard)	0	23.1	23.1	20.9
3.5 Literate till middle school (6 th -8 th standard)	0	26.9	30.1	25.6
3.6 Literate till secondary level (8 th - 10 th standard)	0	38.5	15.4	27.9
3.7 Literate till higher secondary level (11 th - 12 th standard)	7.5	7.7	7.7	13.9
3.8 Diploma (or certificate course) holder	0	0	0	0
3.9 Graduate	2.5	0	0	2.3
3.10 Post graduate or above	0	0	0	0
Total=100%				

Table 2.2.5. Education level of chilly trader by zones				
	West	Central	East	Total
% of traders (N= 9 traders):				
3.1 Not literate	0	0	0	0
3.2 Literate without formal schooling	0	0	0	0
3.3 Literate but below primary (below 1 st standard)	50	0	14.3	22.2
3.4 Literate till primary (1 st -5 th standard)	50	0	14.3	22.2
3.5 Literate till middle school (6 th -8 th standard)	0	0	42.8	33.3
3.6 Literate till secondary level (8 th - 10 th standard)	0	0	14.3	11.1
3.7 Literate till higher secondary level (11 th - 12 th standard)	0	0	14.3	11.1
3.8 Diploma (or certificate course) holder	0	0	0	0
3.9 Graduate	0	0	0	0
3.10 Post graduate or above	0	0	0	0
Total=100%				

Table 2.2.6 Warehouses and godowns by zones				
	West	Central	East	Total
1. % of traders operating warehouses in rural areas for (N= 83 traders):				
1.1 Rice	0	0	20	6
1.2 Chilies	0	0	0	0
2 Average no. of rural warehouses for				
2.1 Rice	0	0	1	0.3
2.2 Chilies	0	0	0	0
3 % of rural warehouses of rice operating for (N=5 traders having rural rice warehouses):				
3.1 Less than 10 years	0	0	40	40
3.2 10 years or more	0	0	60	60
Total=100%				
4. % of rural warehouses of chilies operating for (N= 0 traders having rural warehouses for chilies):				
4.1 Less than 10 years	0	0	0	0
4.2 10 years or more	0	0	0	0
Total=100%				
5. % of traders operating godowns in urban areas for (N= 83 traders):				
5.1 Rice	15.4	12.5	8	11.9
5.2 Chilies	0	0	8	2.4
6. Average no. of urban go downs for:				
6.1 Rice	1	1	1	1
6.2 Chilies	0	0	1	0.4
7. % of urban go downs of rice operating for (N= 10 traders having urban rice go downs):				
7.1 Less than 10 years	0	0	50	7.1
7.2 10 years or more	100	100	50	92.9
Total=100%				
8. % of urban go downs of Chilies operating for (N= 2 traders having urban go downs for chilies):				
8.1 Less than 10 years	0	0	0	0
8.2 10 years or more	0	0	100	100
Total=100%				

Table 2.2.7. Trucks owned and rented by wholesalers by zones				
	West	Central	East	Total
1. % of traders owning trucks (N= 83 traders)				
1.1 Now	11.5	12.5	28	16.9
1.2 Five years ago	11.5	12.5	28	16.9
2. Average no. of trucks owned (N= 20 traders):				
2.1 Now (Simple average over N=____ traders owning trucks now)	1	1	1	1
2.2 Five years ago (Simple average over N=____ traders who owned trucks five years ago)	1	1	1	1
3. % of traders renting trucks to collect rice/ chilies from other brokers/farmers (N= 52 rice and chilly traders)				
3.1 Now	57.7	28.1	60	47
3.2 Five years ago	57.7	18.8	56	42.2
4. % of traders renting trucks to deliver rice/chilies to clients (retailers, other wholesalers, processors) (N= 52 rice and chilly traders)				
4.1 Now	50	31.3	48	42.2
4.2 Five years ago	50	18.8	48	37.3

Table 2.2.8 Milling facilities owned by wholesalers across zones				
	West	Central	East	Total
1. % of traders owning rice milling facilities(N= 43 traders)				
1.1 Now	100	15.4	38.5	30.2
1.2 Five years ago	100	15.4	38.5	30.2
2. Of those owning rice milling facilities,% of traders using this himself to mill rice (N= 13 traders)				
2.1 Now	25.0	100	100	76.9
2.2 Five years ago	25.0	0	100	46.1
3. % of traders who buy rice on behalf of millers (N= 43 traders)				
3.1 Now	0	53.8	48	46.5
3.2 Five years ago	0	53.8	48	46.5
4. % of traders owning chilly processing facilities(N=9 traders)				
4.1 Now	0	0	100	77.8
4.2 Five years ago	0	0	100	77.8
5. Of those owning chilly processing facilities,% of traders using this himself to process chilies (N= 7 traders)				
5.1 Now	0	0	100	100
5.2 Five years ago	0	0	100	100
6. % of traders who buy chilly on behalf of millers (N= 9 traders)				
6.1 Now	50	0	42.9	44.4
6.2 Five years ago	50	0	42.9	44.4

Section 2.3. Input Retailers Sample Characteristics

Table 2.3.1. Characteristics of Input Retail

N=no. of retailers	Average Size of store (sq.ft.)	% of retailers reporting							
		Years of operation		Periodicity of operation		No. of stores owned		Types of commodities sold	
		≤ 5 years	>5 years	Seasonal	Round the Year	1 only	More than 1	Agro Inputs only	FMCG along with agro inputs
1. In West Zone (N=32)	251	28.1	71.9	0	100	96.9	3.1	3.1	96.9
1.a. Traditional	247	23.3	76.7	0	100	96.7	3.3	3.3	96.7
1.b. RBH(N=2)	310	100	0	0	100	100	0	0	100
1.c. State Store (N=0)		0	0	0	0	0	0	0	0
2. In Central Zone(N=35)	955	37.1	62.9	28.6	71.4	91.4	8.6	5.7	94.3
2.a. Traditional	1036	32.3	67.7	32.3	67.7	90.3	9.7	6.5	93.5
2.b. RBH(N=2)	348	100	0	0	100	100	0	0	100
2.c. State Store (N=2)	300	50	50	0	100	100	0	0	100
3. In East Zone(N=34)	441	23.5	76.5	50	50	76.5	23.5	5.9	94.1
3.a. Traditional	277	25.9	74.1	51.9	48.1	88.9	11.1	3.7	96.3
3.b. RBH(N=1)	600	0	100	0	100	100	0	0	100
3.c.State Store (N=6)	1155	16.7	83.3	50	50	16.7	83.3	16.7	83.3
4. In All AP (N=101)	559	29.7	70.3	26.7	73.3	88.1	11.9	5	95
4.a. Traditional	534	27.3	72.7	27.3	72.7	92	8	4.5	95.5
4.b. RBH(N=5)	383	80	20	0	100	100	0	0	100
4.c.State Store (N=8)	941	25	75	37.5	62.5	37.5	62.5	12.5	87.5

Table 2.3.2. Characteristics of Clientele of Input Retailers							
	Average clientele per day in			For all clients visiting a store Per Day the average share of			
	Kharif 2009	Rabi 2010	Summer 2010	Marginal Farmers (<1 Ha)	Small Farmers (1-2Ha)	Medium Farmers (2-4Ha)	Large Farmers (>4Ha)
1. In West Zone (N=32)	35	23	6	27	35	30	13
1.a. Traditional Private(N=30)	37	24	6	28	36	28	13
1.b. RBH(N=2)	10	15	8	10	20	55	15
1.c. State Store (N=0)	0	0	0	0	0	0	0
2. In Central Zone(N=35)	48	31	11	26	30	33	10
2.a. Traditional Private(N=31)	49	30	9	26	31	33	10
2.b. RBH(N=2)	40	30	13	10	23	55	13
2.c. State Store (N=2)	45	43	43	40	23	25	13
3. In East Zone(N=34)	78	41	4	22	29	36	17
3.a. Traditional Private(N=27)	90	44	4	20	28	38	14
3.b. RBH(N=1)	30	10	10	20	30	40	10
3.c.State Store (N=6)	28	33	4	28	33	25	36
4. In All AP(N=101)	54	32	7	25	31	33	14
4.a. Traditional Private(N=88)	58	32	7	25	32	33	12
4.b. RBH(N=5)	26	20	10	12	23	52	13
4.c.State Store (N=8)	32	35	14	31	30	25	30

Chapter 3: Seed Markets in AP

Given the amount of seed production and direct and indirect subsidy expenditures by the government and public sector institutions and given the importance of seed markets for Indian agriculture, there is a surprising dearth of information on the effective functioning of the seed supply chain in India. The purpose of this research is to better understand how farmers access seeds through markets in the state of Andhra Pradesh. A better understanding of this chain is an important step for the design of appropriate policies in this important agricultural input sector.

This chapter presents descriptive statistics from our farm household (supplemented by qualitative information from our FGDs (focus group discussions)) and from our input retailer surveys, on access to and use of seeds by rural households in the catchment area (and control villages outside of the catchment) of the Rural Business Hubs of Viswas in Andhra Pradesh (AP). (The sample frame and survey methods were discussed in Chapter 2.)

3.1. Background Context: Seed Suppliers in AP from which Farmers can Choose

Rice and chilies seeds are produced by the government of Andhra Pradesh via research institutes at the universities. Private companies also produce paddy and chili seed and sell in the state. Finally, some farmers multiply breeder and foundation seed for sale to other farmers.

Both paddy and chili seeds are sold via the following set of outlets:

- (1) traditional input stores
- (2) PACS (primary agricultural credit society, a state organization of farmers found in most states);
- (2) state seed stores (located mainly at district head, with extension agents also on-selling for them);
- (3) universities' direct retail of breeder and foundation seed to select farmers;
- (4) rural business hubs like Viswas and Coromandel's Mana Gromor;
- (5) mandi traders.

The state stores and PACS sell subsidized seed, in theory somewhat cheaper than private outlets.

On the packages of seed (as with all other packaged goods in India), the Weights and Measures Act requires that the manufacturer determine and inscribe the "Maximum Retail Price (MRP)." This is the price against which tax is levied. In theory, the retailer is not supposed to sell that package at a price above the MRP; in practice, retailers sometimes or often do, depending on the product, the situation, and so on; the enforcement only comes with a consumer lodging a formal complaint with the Consumers Ministry, and that is time consuming and very uncommon. Hence,

the MRP acts as more of a manufacturer-suggested price that the government requires it put on the packages.

3.2. Farm Household Survey Findings on Seed Use & Acquisition

3.2.1. Overview of seeds

First, seed is mainly available at MRP. Table 3.1.1 shows farmer reports of availability of seed at MRP over farm strata. 75% of the farmers note that seed is always or usually available at MRP or below. That rate only gradually increased from marginal farmers (at 70%) to medium farmers (at 80%). Only 5% could not find seed at the MRP or higher. Thus the farmers were signaling moderate violation of MRP.

Second, seed markets are extremely active in AP. Table 3.1.2 shows that seed purchase (in terms of share that bought any) is widely distributed over farmers – barely skewed by farm size. The table shows that 92% (population-weighted thus “true” distribution) of the farm households bought some seed, similar across farm strata. This is in contrast with the conventional view that marginal farmers rely only or mainly on own seed.

Third, while rice-focused, AP agriculture is diverse. Table 3.1.2 also shows that most of the transactions (48, 13, and 13%) were in rice, chilies, and cotton seed. The other 25% of seed transaction were scattered over small shares in peanuts, maize, sunflowers, gram, arhar/tur, and vegetables and pulses and spices. This pattern is much more diversified than in our study zones in MP and UP.

Fourth, seed markets are judged by AP farmers to be performing well. Table 3.1.3 shows constraints in access to seed (in general), over regions of AP (west, central, east). Surprisingly, farmers in AP reported that timely availability of seeds was a “major bottleneck” in only 1% of the cases (farms), similar across regions. A small share (11% overall, dropping from the poorer west with 17% to 8-9% in the other regions) reported timeliness of seed availability a “small bottleneck. No farmer reported not even considering to buy.

Equally positive was the farmers’ view of the pricing situation. A mere 1.7% overall (rising from none in the west to 3.8% in the east) felt that pricing of seed was a “major bottleneck.” Fully 73% (falling from the west to the east) felt pricing of seeds was “no bottleneck”. Even seed access was not found to be a problem: only 1% of the households said they could not find the required quantity as a “major bottleneck.” Finally, even seed quality was held to be satisfactory: seen as no bottleneck by 95% of the farmers, similar over zones.

Fifth, Table 3.1.4 shows characteristics of seed vendors (retailers) used, in general, differentiating over state/coop retail, modern retail (rural business hubs), and traditional retail (like small shops and mandis). The number of observations is by number of transactions by the sample. The table shows that in general, state/coop and modern rural retail are on average about 4-5 times further from the farmer than are the small shops selling seed.

Moreover, Table 3.1.4 **undermines a myth that is “conventional wisdom” – that farmers depend substantially on credit for seed from their seed vendors.** Over the nearly 1500 transactions of seed done by the sample farmers, 93% were paid on cash/spot (not on credit); another 5% were on credit (paid at harvest), and other 1% on credit for about a week. Even from small shops, those shares were only 81%, 10%, and 8%; thus even traditional retailers provided credit for only 18% of the transactions.

3.2.2. Focus on Paddy Seed

First, Table 3.1.5 shows purchases of paddy seeds in kharif 2009 in the AP sample, by farm size. The table shows that **57% of the sample farms purchased paddy seed in the past year** (before the survey in mid-2010). The differences over strata for those who bought paddy seed went from 78 kg to 126 kg to 248 kg, roughly following farm size. The average AP paddy farmer buying seed bought just over a quintal – 138 kg.

Second, Table 3.1.5 also shows that **the poor do NOT pay more for their paddy seed** than do the other strata – over the three strata the transaction-data-derived wheat price was 18.2, 18.1, and 17.8. This mirrored our results in UP and MP.

Third, Table 3.1.6 shows that only **3.3% of the farmers buying paddy seed bought from state/coop sources, 0.4% from rural business hubs, and fully 87.5% from traditional shops.** **Contrary to conventional wisdom, the government plays nearly no direct role in the paddy seed market in AP.**

Table 3.1.6 shows derived paddy seed prices over vendor types. The state/coop and the traditional shops’ prices are about the same (17.9 rs/kg), while the RBH price is about 16% above that. The low share of purchases from the RBH might be explained by the higher price. However, the RBH might have higher quality seed which would balance the nominal price.

Fourth, Table 3.1.7 shows the sources of paddy seed, by farm size stratum, for those who bought seed. The findings are striking and counter to conventional wisdom about paddy seed markets.

NOTE that while previous tables contained a “combined” category (where a household had several transactions, from different vendors), in this table and the following two tables, we have “de-combined” the transactions data, and “mapped” individual transactions into the vendor categories, so that we have precise information on the sources from which farmers are buying seeds.

Contrary to conventional wisdom, the state/coop sector plays a very minor role in paddy seed markets. Marginal farmers (who bought seed) bought only 3.3% of their paddy seeds from state/coop stores. Just like in the UP and MP where small and medium farmers bought a higher share from state stores (than did the marginal farmers), in AP the small and medium farmers buy 6.7% and 6.5% respectively from state/coop stores. The overall

market share of the state/coop sector is a mere 6%. Most of this was state stores for the small and medium, and PACS for the marginal farmers.

Modern retailers are nearly absent from paddy seed sale in AP, unlike in UP: it constituted none of the marginal farmer's, and only 0.6% and 0.3% of the medium farmers paddy seed purchases. Most of the seed sale in this category was actually from other RBHs (especially Mana Gromor of Coromandel) and not Viswas.

Despite conventional wisdom that the state is a major player in seed markets, in AP (even more than we found in MP and UP), the state is a very minor player. The main players are traditional categories. Fully 94% of the paddy seed in AP is sold by traditional categories. While one would think that this would differ a lot over strata – it does not: traditional sources are 97% of marginal, 93% of small, and 93% of medium farmers' purchased paddy seed.

Conventional wisdom would have it that that means “neighbor selling to neighbor” – but even that is no longer correct: 54% of purchased paddy seed is from small private shops, and only 33% from other farmers. Again surprisingly, this does not vary much over the farm strata.

Thus, small traditional shops are 10 times more important than state/coop stores in paddy seed retail in AP.

Moreover, as we found in the UP and MP studies, the use rate is higher among marginal farmers – with 84 kg/ha of purchased seed, versus only 72 and 74 for the other strata. The smaller farmers say this is because they are left buying poorer quality seed and have to use more to get the needed germination.

Note that if one multiplies the average purchase per farm in the sample, and uses that as a denominator, and that of the medium farmers, only, and uses that as a numerator, one finds **that medium farmers buy 50% of the marketed paddy seed. This shows the importance of the medium/large farmers in the market. Recall they constitute only 35% of the sample in the areas.**

Fifth, Tables 3.1.8 and 3.1.9 use the totality of purchases by households from the various types of outlets and reverses the perspective by showing that information as the composition of total sales of each supplier category. We will focus on 3.1.8 for discussion as it shows kg term.

Importantly, the table shows that for all state/coop categories of outlets, only 9% (of the minor amount that they sell to the market) of paddy seed sales go to marginal and 35% to small farmers, and 57% to medium farmers. This contradicts the conventional view that the (subsidized) state/coop outlets are focused on selling to the poor, as more than half is going to medium (bigger than small) farmers. The most important category, the PACS, has a slightly better record to marginal farmers, 19% of their sales – versus only 3% for state seed stores. Overall, taking “selling to small/marginal” as an indicator of being “pro-poor”, the PACS are somewhat more pro-poor than the state seeds stores, as the former sell 50% to the small/marginal (although they are 65% of the population in the study areas), and the state stores

only sell 41% of their seed to small/marginal farmers. But keep firmly in mind that these are client shares of a tiny pie – that is only 6% of all the purchased paddy seed of the farmers. The government is a very minor player in the seed market.

As in MP and UP, however, we find in AP also that while the above has the surprise that the state/coop's sales are skewed toward medium farmers – the bias actually mirrors the dominance of the medium farmers in the land distribution and therefore roughly in overall seed purchase.

By contrast, and again a surprise, the RBHs actually have a similar client profile to that of the state/coop stores. This is mainly due to “other RBH” (mainly Mana Gromor) selling to small farmers, as Viswas sold seed only to medium farmers.

Finally, traditional categories – by far the main actors in the paddy seed market – are selling 52% of their seed to the medium farmers. But keep in mind that while 35% of the farmers in the sample are medium, they have about 70% of the land area. One would thus expect that at least half of sales of seeds would go to medium farmers, even though they are a minority of households.

Moreover, it is interesting to see that there is no farm size bias in the client-distribution of seeds from private retailers and from “other farmers” (neighbor sales) over farm size strata. We had expected the “inter-farmer” sales to be focused on marginal farmers, but there is no size bias.

Sixth, Table 3.1.10 shows the reasons (over transactions) why the different farm size strata choose their paddy seed supplier. The strongest reasons are timely availability (49% of the transactions having that reason reported, similar over farm strata) and quality assurance (43%). There is a slight positive correlation of the importance of quality assurance and farm size, and negative correlation with farm size of importance of timeliness.

But for all the farmers, “gives credit” is not a reason for choice of vendor – in less than 1% of the cases. That triangulates with our finding that few farmers buy seed on credit. This is also what we found in the UP and MP studies.

Also, interestingly, farmers are not “shopping by price”: the price only comes out as important vendor selection criterion in 5% of the cases, slightly negatively correlated with farm size.

Eighth, Table 3.1.11 shows the correlations between reasons for vendor choice and the transaction being with one or the other type of vendor. RBHs rank first for quality assurance (at 67%), followed by state/coop (at 55%), with the traditional shops or farmer exchange at 43%. These quality assurance spreads are much less than in the findings in the other two states we studied (MP and UP). The farmers just do not see much difference in quality over the vendors in AP.

By contrast, there is a very sharp difference in how farmers rank the vendors for timeliness – with traditional categories (shops and inter-farm exchange) twice as often cited as timely. Note

also that the state/coop stores are cited as cheaper (but recall that price plays little role in vendor choice, and the share of state/coop stores in the seed market is tiny).

Again, credit is cited as extremely small consideration, with traditional shops as coming out the best and only in the ranking – but still less than 1% of the reasons given! This again triangulates with our finding about the minor role of credit from seed vendors. This is similar to what we found in the UP and MP studies, and also corroborated by our focus group discussions in AP – but very different from outdated – and now simply wrong - “conventional wisdom”.

Table 3.1.12 shows paddy seeds relative to MRP reported over transactions, by farm size strata. As noted earlier, the average prices are not much different over farm strata – with marginal farmers paying 18.4/kg, small farmers, 18, and medium farmers, 18.2. The marginal farmers also buy a slightly higher share at above MRP. **The poor pay only slightly more for their paddy seed.** This seems partly due to the fact that all three strata buy nearly all their seed from small shops (mainly) and neighbors (secondly). It appears that larger farmers do not have much “bargaining power” to get better prices from vendors.

Moreover, as noted with overall seeds, the share of paddy seed sold at over the MRP is modest – about 24% for the whole sample. This is a somewhat more for the marginal farmers – at 30%, versus 20% for the small farmers. Interestingly, 17% of the transactions took place with seed below MRP. Thus the market appears to be “supple” and responding to supply and demand.

The data also show that “tagging” (where an input shop says “farmer, you buy seed and you also have to buy pesticide or fertilizer”) is very minor.

Table 3.1.13 explores again the pricing of paddy seed, but this time using farm transaction information to assemble averages and shares by vendor type. As in the other states, state retail of seed charges the farmer the lowest price – only 17.7 versus 19.5 for modern retail and 18.7 for small shops. But keep in mind that very little (3%) of the farmers’ purchase of paddy seed is from the state/coop source, so this benefit is extremely narrowly distributed. Modern retail charges 4% more – which might (we could not test for this as we did not have data on germination rates of seeds from the different vendors) be compensated by higher quality, and potentially have the same “effective” price as small shops and other farmers. But the differences are small in any case.

The table also shows that the “charge more than MRP” problem only occurs among the small shops (as we found in the MP and UP studies), but the problem is modest, at 26% of transactions. Also, in the focus group discussions the farmers said that small shops excelled in providing inputs in a timely way, even if they “adapted” the price to demand while doing so. The timeliness was foremost in the farmers’ mind, and that appears to be the main reason for the focus on the small shops in their purchase patterns. This is the same finding – and reason – as we found in the UP study.

Table 3.1.14 shows that **paddy seed sale – even from the large majority which is from small shops – is mainly branded and invoiced.** The majority (66%) of seed is sold “branded”. This does not differ much over farm strata – so it is not that the marginal farmers are mainly buying

loose seed while the medium buy packaged branded seed. Only a quarter of the seed is bought unbranded (which typically, we observe, means loose, from open bags). Again this is only a bit more common among marginal farmers (at 32% of their transactions, versus 20% for the other strata). We were surprised at the large share of transactions in which a formal bill was issued to the farmer – in 71% of the transactions.

Most important, the share of paddy seed transactions where the farmer reported “satisfaction” was very high – nearly 100% in all cases. This is especially noteworthy, as the farmers were reporting this mainly (de facto) about small stores, and so there could be no reason to report satisfaction to an outside survey team if it were not felt.

Table 3.1.15 shows attributes of paddy seed transaction, but by vendor type. The table shows that fully 64% of the transactions from traditional categories are branded; given that about a third of that is from inter-farm transactions, nearly all the paddy seed sold by the small shops is branded. Of course in the other vendor types (by which we always mean state/coop retail, modern retail, and traditional retail), the paddy seed is all sold branded. A formal receipt is given in 68% of the transactions; again this would mean that for the majority of the small shops there is a receipt, at least as reported by the farmers.

3.2.3. Focus on Chili Seed

First, Table 3.1.16 shows that 19% of the sample bought chili seed in the past year (before the survey in mid-2010), with essentially no correlation with farm size (just a moderate hump among small farmers). This share confounds share buying seed with share producing chili. Note that overall, 153 of the 800 farmers in the survey produce chili; hence about 19% of the farmers grow chilies and they all buy chili seed.

The prices of chili seeds are very high; we double checked our data for any error by contacting a range of vendors to make sure of the seed prices. The price per kg is about 28,000 rupees, somewhat less for marginal farmers who might be buying slightly lower quality seed or varieties that are cheaper, as there is a range of prices over varieties.

Second, Table 3.1.17 shows that 87% of the farmers growing chilies buy from traditional sources. This is an underestimate as another 10% buy from several channels. Only 2.6% buy from modern retail (RBHs) – more important than in the case of paddy seed, but still very minor. The share buying at state/coop stores is less than 1%. Again, the state plays almost no role in the seed market.

As the great majority of chili seed is bought from traditional channels, note that the average expenditure of a farmer is 8144 rs – some 180 USD for a third of a kg of seed – a large investment.

The price in the RBH is slightly below that of the small shops, but it is hard to evaluate this because the effect of confounding varieties can obscure the price difference.

Third, Table 3.1.18 shows the “pie chart” in kg (per seed vendor category, the share of its total sales of chili seed going to the three strata of farmers), and Table 3.1.19 shows the same in rupees terms. The role of the state/coop in chili seed sale is again shown to be extremely small (much smaller than in the case of paddy, which was very minor also). **Only 0.3% of the chili seed market is in the hands of the state/coop vendors.** The little they sell is all to the marginal farmers.

The modern retailers (RBHs) have only 5.4% of the market (in population weighted terms) or 6.3% in our sample. Nearly all their sales (88%) are to the medium farmers, and none to the marginal. Among the RBHs, different from paddy where other RBHs (mainly Mana Gromor) are more important, here Viswas had two-thirds of the RBH share.

The traditional categories have at least 87% of the chili seed market (and even more but for the cases of “combinations” of purchases from different channels). Within the traditional category, the private small shop has an overwhelming majority (85%) of the traditional category’s sales. The rest is mainly mandi trader sales (with 10% of traditional category), with a little bit from other farmers (0.7%), own seeds (2%), other farmers (0.7%).

Table 3.1.20 shows chili seed sources by farm size stratum in kg. Marginal farmers rely for only 2.2% of their chili seeds on all state/coop stores. (The other strata buy none there.)

By contrast, the marginal farmers buy no chili seed from modern rural retailers; the small buy 2.1% of their seed from RBHs (only from Viswas). But the medium farmers rely most on the modern retailers – for 10.7% of their seed (three quarters from Viswas and the rest from other RBHs like Mana Gromor).

As expected from the earlier tables, all the strata rely mainly on the traditional categories for chili seed. The marginal farmers do the most – at 95% (nearly all from small shops, but some 4% from mandis). The small farmers rely for 91% of their chili seed on traditional categories – but with more diversity of vendors – from 76/91 or 84% of that category from small shops, 14/91 or 15% from mandi traders/commission agents, and then a bit (1.4/91 or 1.5%) from other farmers.

The data also show that the lion’s share (61%) of the chili seed market is in purchases by medium farmers.

Table 3.1.21 shows reasons given by farmers for choice of vendor of chili seed, as “major reason” in shares of transactions. The importance of quality assurance is much more than we have observed (in this study and those of UP and MP) for grains, as in the case of chili seed the farmers noted that in 44% of the transactions they chose the vendor mainly for quality reasons; this actually sharply decreased from marginal to medium farmer (while in grain usually it is only the medium farmers that we have found to report a focus on quality assurance when picking the vendor). Moreover, timely availability is important for all the strata, at 30%. Minor reasons for vendor choice include proximity, price, and credit. Very few said that there is “no other option” of vendor – hence again our common result that these rural areas have competition among vendors and choice for farmers.

Note the high share (81%) of spot (not “on credit”) transactions in chili seed. This interesting given that it is a substantial outlay. In fact the share is even higher for the smallest farmers, at 88%, and lowest for the medium farmers (at 72%, hence some 28% of their transactions they pay later, on credit). This triangulates with information from the input retailers noting that the (rare) times they give credit, they prefer to give it to medium, not small farmers, as the risk is less and the pull is greater to hold on to the clients that form the majority of the market (as we noted above from the data).

Table 3.1.22 show the “major reason” farmers gave for their choice of chili seed vendor. For the extremely few purchases from state/coop retail of seed, the one farmer that thus bought said it was for quality reasons. For going to modern retail, there was a mix of reasons given, nearly equal over the reasons.

But for the using of small shops, the reasons were clear – mainly related to quality (42%), time availability (31%), and a little bit to credit (14%); note that credit was extended in about 20% of the transactions of the small shops for chili seed (this is higher than in paddy seed but still quite limited). Price was not a factor (only 7%), which perhaps makes sense given these seed are so expensive no matter what. Interestingly, proximity did not matter.

As with paddy and now with chili seeds, and as with AP so with MP and UP results from our companion studies, farmers nearly never say that they used a vendor because of “no other option” – there appear to be lots of market channel options open to Indian farmers in the zones.

Table 3.1.23 shows chili seed prices paid by the farm strata, and comparisons with MRP. On average, the marginal farmers pay 6% higher prices than do the medium, and the small pay 3% higher prices than do medium farmers. This spread is not substantial; we had expected a larger spread. Factors such as buying in volume are probably not significant in the case of chili seeds which are expensive but bought in low volumes by all. The median price shows more spread: the marginal farmers pay 11% more than do medium farmers.

Sales of chili seeds conform fairly closely with MRP (more than do paddy seed sales) – with only 11% of transactions reported above MRP. Very interestingly, a large share of transactions (52% for the whole sample, but especially for small farmers) is reported actually under MRP. We are not sure of the reason for this.

As with paddy seeds, for chili seeds, nearly none of the transactions exhibited “tagging” (despite conventional wisdom believing that to be a widespread practice, where shop keepers force farmers to buy expensive and perhaps unneeded pesticides along with immediately needed seeds).

Table 3.1.24 shows chili price information this time by vendor type. It is telling that the traditional retail is the cheapest of the three vendor types – just a bit below modern retail, and well below state retail. Interestingly and unlike paddy seed, the main instances of sale above MRP are among the modern retailers. Rather, the small shops sell at MRP or even more common, below MRP, according to the information from 201 transactions from the 19% of the sample who buy chili seed.

Table 3.1.25 shows attributes of chili seed purchases, by farm size. Nearly all the chili seeds are sold branded, around 92%. Unbranded is only 0.5%, with the rest unknown. Moreover, formal bill received is 93% of the time, slightly correlated with farm size. Moreover, the rate of satisfaction is very high – fully 97%, not varying over farm strata.

Table 3.1.26 shows the same but by vendor type. Interestingly, while all transactions from modern and state/coop were branded, as much as 92% of those from small shops were also. The same shares held for receiving formal bill or invoice.

3.3. Findings from the Input Retailers Survey, regarding Seed Retail

To our knowledge, this is the first reporting of results on retail of seed over outlet category in India, at least for AP. The following are the key results. We have results for , rice, and chilies presented here, and also have (but do not present) the results for vegetables, maize, and dal.

First, Table 3.2.1 shows the shares of various input sales outlets selling any seeds, and within their sales, the share of seeds, and within seeds, the shares of various types of seeds. Over all AP, about 55% of the input stores (of all types) sell seed; of the small input shops, this is 57%, of Viswas, 8%, and of state stores, only 25%.

For stores selling seeds, among traditional stores, the share of seeds in all their sales is about 40% for all AP; this is a bit below what we found in UP and MP for this variable. The share is U shaped over zones, with higher share in west and east and only a quarter in the center. For RBHs, the share is less than half that, about 10-20% of their sales. For state/coop stores (in the center zone), the share is very low, about 6% of sales, so one can see that the input retail survey corroborates what is shown by the household survey.

Most common (for 56% of the stores) was the sale of conventional paddy seed; by self-declaration, as much as 29% said they also sell hybrid rice seed.

Table 3.2.2 shows hybrid rice seed retail by the stores. Over all three zones, of retailers selling seed, all the Viswas sell hybrid paddy seed, none of the state/coop stores do, and only 37% of the small traditional shops do. The main sales of this are in the irrigated center and east zones, not the west zone. The great majority of this seed is sold packed (including by traditional shops). Traditional shops sell all unit sizes (small, medium, and large sacks) while Viswas only sells large units. That could be a reason for the slight penetration of the small and marginal farmers in the seed market by the latter vendor. The share of the leading 3 suppliers (of hybrid seed) is around 80% in both types of vendors, indicating apparent market concentration on the supply side.

Table 3.2.3 shows similar information but for conventional paddy seed. Over all three zones, of retailers selling seed, the Viswas reported selling “no conventional paddy seed”; all the state/coop stores sell it, and 74% of the traditional shops do. The sales are in all zones by these vendors. The retailers report selling all packed, none loose. Traditional and state shops sell in most unit sizes (small, medium, and large sacks). Again, the share of the leading 3

suppliers/brands (of conventional paddy seed) is around 85% in both types of vendors, indicating apparent market concentration on the supply side.

Annex to Chapter 3 on Seeds

Annex to Chapter 3 on Seeds

Section 3.1. Seed Purchase by Sample Households

Table 3.1.1 Farmers' reports of availability of seed at MRP, by farm size, in shares of farmers					
N=810 HHs	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Un weighted overall	Population weighted overall*
% of households who reported seed to be available at MRP price or below (N=745 households) :					
Always/usually available	70.3	75.4	79.5	75.3	74.49
Sometimes available	25.0	19.6	15.6	19.7	20.65
Not available	4.7	5.1	5.1	5.0	4.95
Total	100	100	100	100	100
% of households who if can't get seed at MRP, get at higher price (N=37 households)					
Always available	10.0	7.1	0.0	5.4	6.43
Usually available	80.0	78.6	92.3	83.8	82.56
Not available	10.0	14.3	7.7	10.8	11.02
Total	100	100	100	100	100
% of household who reported that if seed not available, then they: (N=4)					
Did not buy & used own seeds	0.0	0.0	0.0	0.0	0.0
Didn't buy, switched to other crop	0.0	0.0	0.0	0.0	0.0
Bought lower quality	100.00	50.0	0.0	50.0	56.5
Bought but paid higher price than MRP	0.0	50.0	100.0	50.0	43.5
Total	100	100	100	100	100
*Weights as in table 2.1.7					

Table 3.1.2. Purchase of any kind of seed, by farm size, in shares of farms - and of buyers, the shares of <u>transactions</u> over crop types					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Un weighted overall (N=810)	Population weighted overall*
% of households that bought any seeds (N=810 HHs)	91.8	94.5	89.5	92.0	
Of seed buyers, % of any seed transactions(N= 1510 transactions) in:					
Paddy (%)	60.63	44.46	33.17	43.18	47.78
Groundnut (%)	4.06	4.82	6.98	5.56	5.07
Sunflower (%)	0.94	3.93	8.25	5.10	3.87
Gram (%)	1.25	1.07	7.46	3.77	2.74
Arhar /tur (%)	2.50	4.29	5.40	4.37	3.88
Maize (%)	2.81	6.61	7.46	6.16	5.38
Chilies (%)	12.81	14.46	12.54	13.31	13.36
Cotton (%)	11.88	14.29	13.17	13.31	13.09
Other (this category includes: urad, moong, tea, tobacco, tomato, mango, turmeric, cabbage, sorghum, onion, banana, castor, horse gram and others) (%)	3.13	6.07	5.56	5.23	4.82
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 3.1.3: Constraints in access to seed in the 12 months before the survey, by zone

In the past 12 months, which factors did you consider bottlenecks in having access to seeds (N=Number of households)	West (N=261)	Central (N=250)	East (N=234)	Total (N=745)
1.1 % of households who considered timely availability of seeds (N= 745 households):				
1.1.1 Major bottleneck (%)	0.4	0.4	2.1	0.9
1.1.2 Small bottleneck (%)	16.9	7.6	9.0	11.3
1.1.3 No bottleneck (%)	82.8	92.0	88.9	87.8
1.1.4 Did not consider buying (%)	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%
1.2 % of households who considered price of seeds (N=745 households):				
1.2.1 Major bottleneck (%)	0.0	1.6	3.8	1.7
1.2.2 Small bottleneck (%)	21.8	22.4	30.8	24.8
1.2.3 No bottleneck (%)	78.2	76.0	65.4	73.4
1.2.4 Did not consider buying (%)	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%
1.3 % of households who did not find the required quantity (N=745 households):				
1.3.1 Major bottleneck (%)	0.4	0.4	2.1	0.9
1.3.2 Small bottleneck (%)	6.5	5.6	5.1	5.8
1.3.3 No bottleneck (%)	93.1	94.0	92.7	93.3
1.3.4 Did not consider buying (%)	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%
1.4 % of households who considered quality of seeds (N=745 households):				
1.4.1 Major bottleneck (%)	0.0	0.8	0.9	0.5
1.4.2 Small bottleneck (%)	4.6	6.0	4.3	5.0
1.4.3 No bottleneck (%)	95.4	93.2	94.9	94.5
1.4.4 Did not consider buying (%)	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%

Table 3.1.4: Characteristics of seed vendor used

	State Retail (N=127)	Modern retail (N=48)	Traditional retail (N=1313)	Total (N=1488)
1. Distance to vendor (N= 1488 transactions):				
1.1 Mean distance in Km. (simple average over all seed transactions by households; N= 1488 transactions)	11.93	12.66	2.87	12.29
1.2 Median distance in Kms. (average over all seed transactions by households; N= 1488 transactions)	12.00	8.00	0.0	8.0
2.% of transactions where the method of payment is (N= 1485 transactions):				
2.1 Cash (%)	100.0	93.2	81.3	93.4
2.2 On credit (paid < 1 week) (%)	0	0.5	8.3	0.7
2.3 On credit (paid > 1 week) (%)	0	0.5	0	0.5
2.4 On credit (paid at harvest)	0	5.4	10.4	5.1
2.5 Other (%)	0	0.3	0	0.3
2.7 Total (%)	100	100	100	100

Table 3.1.5. Purchases of paddy seeds (kharif 2009), by farm size, in Rs & Kg					
Paddy Seed	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Un weighted overall (N=810)	Population weighted overall*
1. Share of farms that bought paddy seed (in N=810 HHs)					56.65
2. 1 Simple average paddy seed expenditures (Rs /farm) (N=810 household) (zeroed out average: i.e. average over all households including both buyers and non buyers of paddy seeds)	947.17	1363.55	2480.80	1629.33	1484.64
2.2 Simple avg. kg/farm (N=810 household): (zeroed out average: i.e. average over all households including both buyers and non buyers of paddy seeds)	52.02	75.20	139.27	90.64	82.41
3.1 Simple avg. expenditure Rs./farm just of paddy seed buyers (i.e. not-zeroed out average over N=450 households)	1424.11 (N=141)	2280.85 (N=165)	4410.31 (N=144)	2693.83 (N=450)	2487.65
3.2 Simple avg. kg/farm just of paddy seed buyers (i.e. not-zeroed out average over N=450 households)	78.23 (N=141)	125.79 (N=165)	247.59 (N=144)	149.86 (N=450)	138.17
4. Derived price paid per stratum	18.21	18.13	17.81	17.98	18.08
*Weights as in table 2.1.7					

Table 3.1.6. Purchases of paddy seed (kharif 2009), by retail type, in shares of farms buying, and for buyers, Rs & Kg spend					
PADDY SEED	State Retail (N=54)	Modern Retail (N=27)	Traditional Retail (N=640)	Combination (N=89)	Un weighted overall (N=810)
1.1 % of household that buys paddy seed (N=810 households):					56.65
1.2 Of HHs that buy from any source, % HH's buying from the various sources (N=450 households)	3.3	0.4	87.3	8.9	100.0
2. 1 Simple average paddy seed expenditures (Rs /farm) (N=810 household) (zeroed out average: i.e. average over all households including both buyers and non buyers of paddy seeds)	982.29	260.0.	1719.51	1409.79	1629.33
2.2 Simple avg. kg/farm (N=810 household): (zeroed out average: i.e. average over all households including both buyers and non buyers of paddy seeds)	54.59	12.50	95.92	76.45	90.64
3.1 Simple avg. expenditure paddy seed expenditure (Rs/farm) for paddy seed buyers only (i.e. not-zeroed out average over N=450 households)	2423.00 (N=15)	1560.00 (N=2)	2725.83 (N=393)	2537.62 (N=40)	2693.83 (N=450)
3.2 Simple avg. kg/farm just of paddy seed buyers (i.e. not-zeroed out average over N=450 households)	134.66	75.00	152.07	137.62	149.86
4. Derived price paid per stratum	17.99	20.8	17.92	18.43	17.98

Table 3.1.7 Paddy seed sources (kharif, 2009), by farm size, in % of kg					
PADDY SEED	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Un weighted overall	Population weighted overall*
Paddy seed from: (N= 450 HHs; for households that are buying paddy seeds)					
1. State Categories	3.3	6.7	6.5	6.0	5.9
1.1 PACS (%)	2.7	2.4	2.3	2.4	2.4
1.2 State seed store	0.5	4.0	3.6	3.2	3.1
1.3 Provincial Cooperative Federation (State agro retail store)	0.0	0.3	0.6	0.4	0.4
1.4 Seed village scheme	0.0	0.0	0.0	0.0	0.0
1.5 Subtotal state categories	0.0	0.0	0.0	0.0	0.0
2. Modern Categories	0.0	0.6	0.3	0.4	0.4
2.1 Other RBH	0.0	0.6	0.3	0.31	0.32
2.2 VISWAS (%)	0.0	0.0	0.1	0.04	0.04
3. Traditional Categories	96.7	92.8	93.1	93.6	93.7
3.1 Private retailer	54.0	52.9	54.2	53.8	53.7
3.2. Producer association	0.0	0.0	0.0	0.0	0.0
3.3. Other Farmers (%)	33.8	31.8	32.5	32.5	32.5
3.4. Commission Agent	2.8	3.3	0.1	1.6	1.9
3.5. Direct from seed company	5.6	4.7	3.8	4.4	4.5
3.6. Cold Store	0.0	0.0	0.1	0.0	0.0
3.7. Mandi Trader	0.0	0.0	0.8	0.4	0.4
3.8. Other sources (%) (own seed)	0.6	0.0	1.7	1.0	0.8
4. Total (summing over 1.5, 2.1, 3.1,3.2, 3.3, 3.4, and 5.1)	100%	100%	100%	100%	100%
5. Avg.qty of paddy seeds purchased (Kg. /HH)	52.02	75.20	139.27	90.64	82.41
6. Avg. paddy area per household (ha/HH)	0.62	1.04	1.88	1.21	1.12
7. Use rate of paddy seeds (Kg/Ha)	83.9	72.3	74.1	74.9	73.6
*weights as in table 2.1.7					

Table 3.1.8 Pie Chart: Paddy Seed Sales totals by retail type to farm strata						
Paddy SEED	Marginal (0-1ha)	Small (>1-2 ha)	Medium (> 2 ha)	Overall	Un weighted Total Kg	Population weighted Total Kg*
Paddy seed from: (N=450 HHs; for households that are buying paddy seeds)						
<u>1. State Categories (%)</u>	8.8	34.5	56.6	100%	4070.00 (6.0%)	1232.9 (5.9%)
1.1 PACS	18.6	31.4	50.0	100%	1610.00	502.1
1.2 State seed store	2.7	38.4	58.9	100%	2190.00	656.1
1.3 Provincial Cooperative Federation (State agro retail store)	0.0	22.2	77.8	0.0	270.00	74.7
1.4 Seed village scheme	0.0	0.0	0.0	0.0	0.00	0.0
1.5 Subtotal state categories	0.0	0.0	0.0	0.0	0.00	0.0
<u>2. Modern Categories (%)</u>	0.0	50.0	50.0	100%	240.00 (0.4%)	74.4 (0.4%)
2.1 Other RBH	0.0	57.1	42.9	100%	210.00	66.9
2.2 VISWAS	0.0	0.0	100.0	100%	30.00	7.5
<u>3. Traditional Categories(%)</u>	16.9	31.0	52.1	100%	63229 (93.6%)	19545.9 (93.7%)
3.1 Private retailer	16.4	30.8	52.8	100%	36305	11192.1
3.2. Producer association	0.0	0.0	0.0	0.00	0	0.0
3.3. Other Farmers (%)	17.0	30.6	52.4	100%	21924	6770.6
3.4. Commission Agent	28.8	66.5	4.7	100%	1060	389.3
3.5. Direct from seed company	20.9	33.8	45.3	100%	2960	940.5
3.6. Cold Store	0.0	0.0	100.0	100%	30	7.5
3.7. Mandi Trader	0.0	0.0	100.0	100%	300	75.0
3.8. Other sources (%) (own seed)	10.0	0.0	90.0	100%	650	171.0
4. Total	16.4	31.2	52.4	100%	67539.0 (100%)	20853.2 (100%)
*Weights as in table 2.1.7						

Table 3.1.9 Pie Chart: Paddy Seed Sales totals by retail type to farm strata						
Paddy SEED	Margin al (0-1ha)	Small (>1-2 ha)	Medium (> 2 ha)	Overall	Un weighted Total Rs.	Population weighted * Total Rs.
Paddy seed from: (N=450 HHs; for households that are buying paddy seeds)						
<u>1. State Categories (%)</u>	8.5	35.6	56.0	100.00	69011 (5.7%)	20980.7 (5.6%)
1.1 PACS	18.1	30.2	51.7	100.00	26190	8112.9
1.2 State seed store	2.9	40.8	56.3	100.00	38301	11594.9
1.3 Provincial Cooperative Federation (State agro retail store)	0.0	22.1	77.9	0.0	4520	1249.9
1.4 Seed village scheme	0.0	0.0	0.0	0.0	0	0.0
<u>2. Modern Categories (%)</u>	0.0	52.8	47.2	100.00	4920 (0.4%)	1541.7 (0.4%)
2.1 Other RBH	0.0	59.1	40.9	100	4400	1412.0
2.2 VISWAS	0.0	0.0	100.0	100	520	130.0
<u>3. Traditional Categories(%)</u>	17.1	30.6	52.3	100.00	1137394 (93.9%)	351397.9 (94.0%)
3.1 Private retailer	16.4	30.2	53.4	100.00	680639	209337.3
3.2 Producer association	0.0	0.0	0.0	0.00	0	0.0
3.3 Other Farmers	17.3	30.8	51.9	100.00	359485	111242.6
3.4 Commission Agent	30.3	64.8	5.0	100.00	20150	7403.1
3.5 Direct from seed company	22.5	31.5	46.0	100.00	58745	18625.1
3.6 Cold Store	0.0	0.0	100.0	100.00	600	150.0
3.7. Mandi Trader	0.0	0.0	100.0	100.0	6800	1700.0
3.8 Other sources (Own seed)	14.8	0.0	85.2	0.0	10975	2954.9
4. Total					1211325 (100%)	373920.3 (100%)
*Weights as in table 2.1.7						

Table 3.1.10 Reason for choice of paddy seed retailer, by farm size, in shares of transactions					
PADDY SEED	Marginal (0-1 ha) (N=194)	Small (>1-2 ha) (N=249)	Medium (> 2 ha) (N=208)	Un weighted overall (N=651)	Population weighted overall*
Major reason for the selection of retailer: (N=651 transactions)					
He is close by (%)	1.55	2.41	3.85	2.61	2.44
Gives lowest price (%)	6.70	2.81	3.85	4.30	4.55
Quality is assured (%)	40.21	43.37	47.60	43.78	43.23
Gives credit when needed (%)	0.0	1.20	0.48	0.61	0.57
Timely available (%)	51.03	50.20	44.23	48.54	49.02
Other (%)	0.52	0.0	0.0	0.15	0.20
Cannot answer one (%)	0.0	0.0	0.0	0.0	0.00
Total	100%	100%	100%	100%	100%
Average distance from retailer in Km. (simple Avg. over all paddy transactions by households ; N= 649 transactions)	7.31	8.55	9.39	8.45	8.29
% of paddy transactions wherein spot-cash payments were made (N= 649 transactions):	93.8	93.6	97.1	94.8	94.55
*Weights as in table 2.1.7					

Table 3.1.11 Reasons for choice of paddy seed retailer, by retail type, in shares of transactions				
PADDY SEED	State Retail N=40	Modern Retail N=3	Traditional Retail N=606	Overall N=649
Major reason for the choice of retailer: (N=649 transactions)				
He is close by (%)	0.0	0.0	2.8	2.6
Gives lowest price (%)	25.0	0.0	3.0	4.3
Quality is assured (%)	55.0	66.7	42.9	43.8
Gives credit when needed (%)	0.0	0.0	0.7	0.6
Timely available (%)	20.0	33.3	50.5	48.5
Other (%)	0.0	0.0	0.2	0.2
Cannot answer (%)	0.0	0.0	0.0	0.0
Total	100%	100	100	100
Average distance from retailer in Km. (simple Avg. over all paddy transactions by households ; N= 649 transactions)	12.35	8.19	7.33	8.44
% of paddy transactions wherein spot-cash payments were made (N= 649 transactions):	100.0	100.0	94.6	94.9

Table 3.1.12 Paddy seed prices relative to MRP reported by farmers in transactions, over strata					
Paddy Seed Prices	Marginal (0-1 ha) (N=193)	Small (>1-2 ha) (N=247)	Medium (> 2 ha) (N=206)	Un weighted overall (N=646)	Population weighted overall*
Mean Price (Rs/ kg): (averaging over all paddy seeds transaction; N=646 transactions)	18.36	17.92	18.16	18.13	18.15
Median Price (Rs/ kg): (averaging over all paddy seeds transaction; N=646 transactions)	17.14	16.67	16.67	16.67	16.85
% of transactions where the prices were reported to be (N=650 transactions):					
Higher than MRP	29.90	19.68	22.71	23.69	24.32
At MRP	56.19	60.24	62.32	59.69	59.22
Lower than MRP	13.92	20.08	14.98	16.62	16.46
Total	100%	100%	100%	100%	100%
% of transactions with no tagging of other agri inputs (N=650 transactions):	99.48	100.0	100.0	99.85	99.80
*Weights as in table 2.1.7					

Table 3.1.13 Paddy seed prices relative to MRP reported by farmers in transactions, over retail types					
PADDY SEED	State Retail N=20	Modern Retail N=2	Traditional retail N=570	Combined N=57	Overall N=649
Mean Price (Rs/ kg): (averaging over all paddy seeds transaction; N=649 transactions)	17.70	19.50	18.65	18.56	18.61
Median Price (Rs/ kg): (averaging over all paddy seeds transaction; N=649 transactions)	16.33	19.50	16.66	18.66	18.66
% of transactions where the prices were reported to be (N=650 transactions):					
Higher than MRP	0.0	0.0	26.4	5.3	23.7
At MRP	65.0	100.0	58.5	70.2	59.8
Lower than MRP	35.0	0.0	15.1	24.6	16.5
Total	100%	100%	100%	100%	100%
% of transactions with no tagging of other agri inputs (N=650 transactions):	100.0	100.0	99.8	100.0	99.8

Table 3.1.14 Attributes of paddy seed purchased, by farm size, as shares of transactions					
PADDY SEEDS	Marginal (0-1 ha) (N=194)	Small (>1-2 ha) (N=249)	Medium (> 2 ha) (N=208)	Un weighted overall (N=651)	Population weighted overall*
Branding: % of paddy seeds transaction where the seed sold was (N=651 transactions):					
Unbranded	31.96	21.29	20.19	24.12	25.07
Brand not known	8.76	7.63	12.98	9.68	9.40
Branded	59.28	71.08	66.83	66.21	65.53
Total	100%	100%	100%	100%	100%
% of paddy seed transaction where the bill received on purchase was (N= 650 transaction):					
None	29.53	24.50	21.63	25.08	25.69
Written on plain paper	3.63	4.02	3.37	3.69	3.71
Formal bill given with the name of the shop printed	66.84	71.49	75.00	71.23	70.60
Total	100%	100%	100%	100%	100%
% of paddy seeds transactions where the household reported to be satisfied with the purchase	99.48	100.0	100.0	99.85	99.80
*Weights as in table 2.1.7					

Table 3.1.15 Attributes of paddy seed purchased, by retail type, in shares of transactions					
PADDY SEEDS	State Retail N=20	Modern Retail N=2	Traditional retail N=572	Combined N=57	Overall N=651
Branding: % of paddy seeds transaction where the seed sold was (N=651 transactions):					
Unbranded	0.0	0.0	26.6	8.8	24.1
Branded not known	5.0	0.0	9.6	12.3	9.7
Branded	95.0	100.0	63.8	78.9	66.2
Total	100%	100%	100%	100%	100%
% of paddy seed transaction where the bill received on purchase was (N= 650 transaction):					
None	0.0	0.0	27.5	10.5	25.1
Written on plain paper	0.0	0.0	4.2	0.0	3.7
Formal bill given with the name of the shop printed	100.0	100.0	68.3	89.5	71.2
Total	100%	100%	100%	100%	100%
% of paddy seeds transactions where the household reported to be satisfied with the purchase	100.0	100.0	99.8	100.0	99.8

Table 3.1.16. Purchases of chili seeds (kharif 2009, Rabi 2010), by farm size, in Rs & Kg					
Chili Seed	Marginal (0-1 ha) (N=231)	Small (>1-2 ha) (N=292)	Medium (> 2 ha) (N=287)	Un weighted overall (N=810)	Popula tion weighte d overall *
1. Share of farms that bought chili seed (in N=810 HHs)	16.5	22.3	17.4	18.9	18.9
2. 1 Simple average chili seed expenditures (Rs /farm) (N=810 household) (zeroed out average: i.e. average over all households including both buyers and non buyers of chili seeds)	727.18	1700.09	2491.53	1694.33	1528.2
2.2 Simple avg. kg/farm (N=810 household): (zeroed out average: i.e. average over all households including both buyers and non buyers of chili seeds)	0.03	0.06	0.09	0.06	0.1
3.1 Simple avg. expenditure chili seed expenditure (Rs/farm) for chili seed buyers only (i.e. not-zeroed out average over N=153 households)	4037.76 N=38	7166.53 N=65	12657.00 N=50	8183.72 N=153	7350.2
3.2 Simple avg. kg/farm just of chili seed buyers (i.e. not-zeroed out average over N=153 households)	0.14	0.26	0.48	0.30	0.3
4. Derived price paid per stratum (obtained by dividing 2.1 by 2.2)	24239.33	28334.83	27683.67	28238.83	26615.8

Table 3.1.17. Purchases of chili seed (kharif 2009, Rabi 2010), by retail type, in shares of farms buying, and for buyers, Rs & Kg spend					
CHILI SEED	State Retail N=54	Modern Retail N=27	Traditional retail N=640	Combination N=89	Un weighted overall N=810
1.1 % of household that buys chili seed (N=810 households):					18.9
1.2 Of HHs that buy from any source, % HH's buying from the various sources (N=153 households)	0.7	2.6	86.9	9.8	100.0
2.1 Simple average chili seed expenditures (Rs /farm) (N=810 household) (zeroed out average: i.e. average over all households including both buyers and non buyers of chili seeds)	90.81	6578.33	1752.56	1204.51	1694.33
2.2 Simple avg. kg/farm (N=810 household): (zeroed out average: i.e. average over all households including both buyers and non buyers of chili seeds)	0.003	0.24	0.06	0.04	0.06
3.1 Simple avg. expenditure chili seed expenditure (Rs/farm) for chili seed buyers only (i.e. not-zeroed out average over N=153 households)	3360.00 N=1	19735.00 N=4	8143.49 N=133	5781.66 N=15	8183.73 N=153
3.2 Simple avg. kg/farm just of chili seed buyers (i.e. not-zeroed out average over N=153 households)	0.12	0.74	0.30	0.21	0.31
4. Derived price paid per stratum *(obtained by dividing 2.1 by 2.2)	28000.0	27409.71	29209.33	30112.75	28238.83

Table 3.1.18: Pie Chart: Chili Seed Sales by retail type to farm strata in Kg. (inferred from farm transaction data)						
Chili seeds	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Overall	Un weighted overall Kg.	Population weighted * overall Kg.
Chili seed from: (N=153 HHs; for households that are buying Chili seeds)						
<u>1. State Categories (%)</u>	100.0	0.0	0.0	100.0	0.12 (0.3%)	0.05 (0.3%)
1.1 PACS	0.0	0.0	0.0	0.0	0.0	0.0
1.2 State seed store	100.0	0.0	0.0	100.0	0.12	0.05
1.3 Provincial Cooperative Federation (State agro retail store)	0.0	0.0	0.0	0.0	0.0	0.0
1.4 Seed village scheme	0.0	0.0	0.0	0.0	0.0	0.0
<u>2. Modern Categories (%)</u>	0.0	12.2	87.8	100.0	2.96 (6.3%)	0.8 (5.4%)
2.1 Other RBH	0.0	0.0	100.0	100.0	0.9	0.2
2.2 Viswas	0.0	17.5	82.5	100.0	2.06	0.6
<u>3. Traditional Categories (%)</u>	12.7	39.0	48.3	100.0	40.94 (86.7)	12.8 (87.8%)
3.1 Private retailer	14.2	38.2	47.6	100.0	34.74	10.9
3.2 Producer association	0.0	0.0	0.0	0.0		0.0
3.3 Other Farmers	0.0	100.0	0.0	100.0	0.25	0.1
3.4 Commission Agent	0.0	100.0	0.0	100.0	0.5	0.2
3.5 Direct from seed company	0.0	0.0	0.0	0.0		0.0
3.6 Mandi Trader	5.6	46.1	48.2	100.0	4.25	1.3
3.7 Cold Store	0.0	0.0	0.0	0.0		0.0
3.8 Other sources (own seeds)	0.0	0.0	100.0	100.0	1.2	0.3
<u>4. Combine (%)</u>	4.7	37.3	58.0	100.0	3.19 (6.8)	1.0 (6.6%)
5. Total	100.0	0.0	0.0	100.0	47.21 (100%)	14.6 (100%)
*Weights as in table 2.1.7						

Table 3.1.19 Pie Chart: Chili Seed Sales by retail type to farm strata in Rs. (inferred from farm transaction data)						
Chili SEED	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Overall	Un weighted Total Rs.	Population weighted * Total Rs.
Chili seed from: (N=153 HHs; for households that are buying chili seeds)						
1. State Categories (%)	100.0	0.0	0.0	100.0	3360 (0.3%)	1276.80 (0.3%)
1.1 PACS	0.0	0.0	0.0	0.0	0	0.00
1.2 State seed store	100.0	0.0	0.0	100.0	3360	1276.80
1.3 Provincial Cooperative Federation (State agro retail store)	0.0	0.0	0.0	0.0	0	0.00
1.4 Seed village scheme	0.0	0.0	0.0	0.0	0	0.00
2. Modern Categories (%)	0.0	13.2	86.8	100.0	78940 (6.3%)	20987.80 (5.4%)
2.1 Other RBH	0.0	0.0	100.0	100.0	27500	6875.00
2.2 Viswas	0.0	20.3	79.7	100.0	51440	14112.80
3. Traditional Categories (%)	13.2	39.5	47.3	100.0	1086975 (86.5%)	341965.95 (87.6%)
3.1 Private retailer	14.8	38.9	46.3	100.0	920060	290688.20
3.2 Producer association	0.0	0.0	0.0	0.0	0	0.00
3.3 Other Farmers	0.0	100.0	0.0	100.0	5625	2081.25
3.4 Commission Agent	0.0	100.0	0.0	100.0	10200	3774.00
3.5 Direct from seed company	0.0	0.0	0.0	0.0	0	0.00
3.6 Mandi Trader	6.6	51.0	42.4	100.0	109650	35062.50
3.7 Cold Store	0.0	0.0	0.0	0.0	0	0.00
3.8 Other sources (own seed)	0.0	0.0	100.0	100.0	41440	10360.00
4. Combine (%)	4.2	37.4	58.4	100.0	86725 (6.9%)	26047.00 (6.7%)
5. Total	12.0	37.6	50.4	100.0	1256000 (100%)	390277.55 (100%)

*Weights as in table 2.1.7

Table 3.1.20 Chili seeds: from which vendor types do the farm strata buy (kharif, 2009, Rabi 2010), in % of kg					
Chili seeds	Marginal (0-1 ha) N=41	Small (>1-2 ha) N=81	Medium (> 2 ha) N=79	Overall	Population weighted * overall 201=N
Chili seed from: (N=153 HHs; for households that are buying Chili seeds)					
1. State Categories (%)	2.2	0.0	0.0	0.3	0.84
1.1 PACS	0.0	0.0	0.0	0.0	0.00
1.2 State seed store	2.2	0.0	0.0	0.3	0.84
1.3 Provincial Cooperative Federation (State agro retail store)	0.0	0.0	0.0	0.0	0.00
1.4 Seed village scheme	0.0	0.0	0.0	0.0	0.00
2. Modern Categories (%)	0.0	2.1	10.7	6.3	3.45
2.1 Other RBH	0.0	0.0	3.7	1.9	0.93
2.2 Viswas	0.0	2.1	7.0	4.4	2.53
3. Traditional Categories (%)	95.1	91.2	81.6	86.7	90.28
3.1 Private retailer	90.7	75.7	68.2	73.6	79.53
3.2 Producer association	0.0	0.0	0.0	0.0	0.00
3.3 Other Farmers	0.0	1.4	0.0	0.5	0.52
3.4 Commission Agent	0.0	2.9	0.0	1.1	1.07
3.5 Direct from seed company	0.0	0.0	0.0	0.0	0.00
3.6 Mandi Trader	4.4	11.2	8.5	9.0	7.94
3.7 Cold Store	0.0	0.0	0.0	0.0	0.00
3.8 Other sources (own seeds)	0.0	0.0	5.0	2.5	1.25
4. Combine (%)	2.7	6.8	7.6	6.8	5.44
5. Total	100.0	100.0	100.0	100.0	100.00
6. Average quantity of chili seeds purchased (Kg./household)	0.03	0.06	0.09	0.06	0.1
7. Average chili area per household (Ha/household)	0.84	0.23	0.35	0.23	0.49
8. Use rate of chili seeds (Kg/Ha)	0.04	0.26	0.26	0.26	0.20
*Weights as in table 2.1.7					

Table 3.1.21 Reason for choice of Chili seed retailer, by farm size, in shares of transactions					
CHILI SEED	Marginal (0-1 ha) (N=41)	Small (>1-2 ha) (N=81)	Medium (> 2 ha) (N=79)	Un weighted overall (N=201)	Population weighted overall*
Major reason for the selection of retailer: (N=201 transactions)					
He is close by (%)	2.44	3.70	6.33	4.48	3.88
Gives lowest price (%)	2.44	12.35	7.59	8.46	7.39
Quality is assured (%)	53.66	44.44	29.11	40.30	44.11
Gives credit when needed (%)	9.76	12.35	18.99	14.43	13.03
Timely available (%)	31.71	24.69	35.44	30.35	30.05
No Other Option	0.00	0.00	1.27	0.50	0.32
Other (%)	0.00	2.47	1.27	1.49	1.23
Cannot answer one (%)	0.00	0.00	0.00	0.00	0.00
Total	100%	100%	100%	100%	100%
Average distance from retailer in Km. (simple Avg. over all chili seed transactions by households ; N= 207 transactions)	14.4	14.7	16.93	15.54	15.14
% of chili seed transactions wherein spot-cash payments were made (N= 207 transactions):	87.8	79.0	72.2	78.1	80.64
*Weights as in table 2.1.7					

Table 3.1.22 Reasons for choice of chili seed retailer, by retail type, in shares of transactions				
CHILI SEED	State Retail N=1	Modern Retail N=16	Traditional Retail N=190	Overall N=207
Major reason for the choice of retailer: (N=207 transactions)				
He is close by (%)	0.0	18.8	3.2	4.3
Gives lowest price (%)	0.0	25.0	7.4	8.7
Quality is assured (%)	100.0	18.8	42.1	40.6
Gives credit when needed (%)	0.0	25.0	14.2	15.0
Timely available (%)	0.0	12.5	31.1	29.5
No other option	0.0	0.0	0.5	0.5
Other (%)	0.0	0.0	1.6	1.4
Cannot answer (%)	0.0	0.0	0.0	0.0
Total	100	100	100	100
Average distance from retailer in Km. (simple Avg. over all chili seed transactions by households ; N= 207 transactions)	15.00	3.5	16.52	15.50
% of chili seed transactions wherein spot- cash payments were made (N= 207 transactions):	100.0	62.5	79.5	78.3

Table 3.1.23 Chili seed prices relative to MRP reported by farmers in transactions, over strata					
Chili Seed Prices	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (> 2 ha)	Un weighted overall	Population weighted overall*
Mean Price (Rs/ kg): (averaging over all chili seeds transaction; N=198 transactions)	27207.32	26428.80	25615.81	26269.00	26521.39
Median Price (Rs/ kg): (averaging over all chili seeds transaction; N=198 transactions)	29000.00	27000.00	25500.00	27000.00	27385.00
% of transactions where the prices were reported to be (N=201 transactions):					
Higher than MRP	9.76	6.17	17.72	11.44	10.42
At MRP	53.66	20.99	36.71	33.83	37.33
Lower than MRP	36.59	72.84	45.57	54.73	52.25
Total	100%	100%	100%	100%	100%
% of transactions with no tagging of other agri inputs (N=201 transactions):	100.0	100.0	97.5	99.0	99.38
*Weights as in table 2.1.7					

CHILI SEED	State Retail N=1	Modern Retail N=10	Traditional retail N=173	Combined N=17	Overall N=201
Mean Price (Rs/ kg): (averaging over all chili seeds transaction; N=207 transactions)	28000.00	26000.00	25850.90	25970.59	25879.13
Median Price (Rs/ kg): (averaging over all chili seeds transaction; N=207 transactions)	28000.00	27000.00	27000.00	25000.00	27000.00
% of transactions where the prices were reported to be (N=201 transactions):					
Higher than MRP	0.0	60.0	9.8	0.0	11.4
At MRP	100.0	0.0	35.3	35.3	33.8
Lower than MRP	0.0	40.0	54.9	64.7	54.7
Total	100%	100%	100%	0.0	100%
% of transactions with no tagging of other agri inputs (N=201 transactions):	100.0	100.0	98.8	100.0	99.0

Table 3.1.25 Attributes of chili seed purchased, by farm size, as shares of transactions					
CHILI SEEDS	Marginal (0-1 ha) (N=41)	Small (>1-2 ha) (N=81)	Medium (> 2 ha) (N=79)	Un weighted overall (N=201)	Population weighted overall*
Branding: % of chili seeds transaction where the seed sold was (N=201 transactions):					
Unbranded	0.00	0.00	1.3	0.5	0.3
Brand not known	9.8	4.9	7.6	7.0	7.4
Branded	90.2	95.1	91.1	92.5	92.2
Total	100%	100%	100%	100%	100%
Bill received: % of chili seed transaction where the household reported to have received (N=201 transaction):					
No bill		2.5	5.1	3.0	2.2
Bill written on plain paper	9.8	3.7		3.5	5.1
Formal bill given with the name of the shop printed	90.2	93.8	94.9	93.5	92.71
Total	100%	100%	100%	100%	100%
% of chili seeds transactions where the household reported to be satisfied with the purchase	97.6	96.3	98.7	97.5	97.4
*Weights as in table 2.1.7					

Table 3.1.26 Attributes of chili seed purchased, by retail type, in shares of transactions					
CHILI SEEDS	State Retail N=1	Modern Retail N=10	Traditional Retail N= 173	Combined N=17	Overall N=201
Branding: % of chili seeds transaction where the seed sold was (N=201 transactions):					
Unbranded	0.0	0.0	0.6	0.0	0.5
Brand not known	0.0	0.0	7.5	5.9	7.0
Branded	100.0	100.0	91.9	94.1	92.5
Total	100%	100%	100%	100%	100%
Bill received: % of chili seed transaction where the household reported to have received (N= 201 transaction):					
No bill	0.0	0.0	3.5	0.0	3.0
Bill written on plain paper	0.0	0.0	4.0	0.0	3.5
Formal bill given with the name of the shop printed	100.0	100.0	92.5	100.0	93.5
Total	100%	100%	100%	100%	100%
% of chili seeds transactions where the household reported to be satisfied with the purchase	100.0	100.0	97.1	100.0	97.5

3.2. Input Retailer Sales of Seed

	Average share of seed sales in total input sales (only for those retailers whose share of seed sales is >0)	Of all retailers % of retailers Selling Seeds	For Retailers Selling seeds, % of Retailers Selling								
			Seeds of ¹								
			Conventional rice	Hybrid rice	Cotton	Maize	Red gram	Black gram	Bengal gram	Leafy vegetables	Other vegetables
1. In West Zone (N=32)	40	65.6	76.2	14.3	4.8	90.5	81	19	14.3	4.8	38.1
1.a. Traditional Private(N=30)	42	66.7	80	15	5	95	85	20	15	5	35
1.b. RBH(N=2)	10	50	0	0	0	0	0	0	0	0	100
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=35)	23	54.3	52.9	58.8	41.2	5.9	17.6	0	0	17.6	29.4
2.a. Traditional Private(N=31)	27	51.9	53.8	61.5	46.2	7.7	23.1	0	0	23.1	38.5
2.b. RBH(N=2)	20	100	0	100	50	0	0	0	0	0	0
2.c. State Store (N=2)	6	50	100	0	0	0	0	0	0	0	0
3. In East Zone(N=34)	48	44.1	15.4	15.4	84.6	0	0	0	0	0	0
3.a. Traditional Private(N=27)	50	51.9	16.7	16.7	83.3	0	0	0	0	0	0
3.b. RBH(N=1)	20	100	0	0	100	0	0	0	0	0	0
3.c.State Store (N=6)	0	0	0	0	0	0	0	0	0	0	0
4. In All AP (N=101)	36	54.5	52.9	29.4	37.3	39.2	39.2	7.8	5.9	7.8	25.5
4.a. Traditional Private(N=88)	40	57.1	55.6	28.9	37.8	44.4	44.4	8.9	6.7	8.9	26.7
4.b. RBH(N=5)	18	80	0	50	50	0	0	0	0	0	25
4.c.State Store (N=8)	6	25	100	0	0	0	0	0	0	0	0

¹Row sum over category may exceed 100% as the same retailer sells seeds of multiple crop varieties.

Table 3.2.2. Characteristics of Hybrid Rice Seed Retail

	Of all rice-seed retailers % of retailer Selling hybrid rice seeds	For retailers selling Hybrid rice seeds , % of Retailers Selling					Sales	
		Packaging types ¹		In Units ¹			Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg)
		Packed Only	Loose Only	Small (<5kg)	Medium (5-10kg)	Large (>10 kg)		
1. In West Zone (N=3)	15.8	100	0	33.3	33.3	100	82	20.3
1.a. Traditional Private(N=3)	15.8	100	0	33.3	33.3	100	82	20.3
1.b. RBH(N=0)	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0
2. In Central Zone(N=10)	58.8	100	0	20	20	90	82	26.2
2.a. Traditional Private(N=8)	61.5	100	0	25	25	87.5	81	28.3
2.b. RBH(N=2)	100	100	0	0	0	100	85	17.5
2.c. State Store (N=0)	0	0	0	0	0	0	0	0
3. In East Zone(N=2)	66.7	50	50	100	0	0	78	20
3.a. Traditional Private(N=2)	66.7	50	50	100	0	0	78	20
3.b. RBH(N=0)	0	0	00	0	0	0	0	0
3.c.State Store (N=0)	0	0	0	0	0	0	0	0
4. In All AP (N=15)	38.5	93.3	6.7	33.3	20	80	81	24.2
4.a. Traditional Private(N=13)	37.1	92.3	7.7	38.5	23.1	76.9	81	25.2
4.b. RBH(N=2)	100	100	0	0	0	100	85	17.5
4.c.State Store (N=0)	0	0	0	0	0	0	0	0

¹ Row sum may exceed 100% as a retailer may sale multiple packaging and unit types simultaneously.

Table 3.2.3. Characteristics of Conventional Rice Seed Retail

	Of all rice - seed retailers % of retailers Selling conventional rice seeds	For retailers selling conventional rice seeds, % of Retailers Selling					Sales	
		Packaging types ¹		In Units ¹			Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg)
		Packed Only	Loose Only	Small (<20kg)	Medium (20-30kg)	Large (>30kg)		
1. In West Zone (N=16)	84.2	100	0	31.3	56.3	62.5	82	19.7
1.a. Traditional Private(N=16)	84.2	100	0	31.3	56.3	62.5	82	19.7
1.b. RBH(N=0)	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0
2. In Central Zone(N=9)	52.9	100	0	33.3	77.8	0	86	21.7
2.a. Traditional Private(N=7)	53.8	100	0	14.3	71.4	0	86	23.43
2.b. RBH(N=0)	0	0	0	0	0	0	0	0
2.c. State Store (N=2)	100	100	0	100	100	0	85	16
3. In East Zone(N=2)	100	100	0	50	100	50	75	16
3.a. Traditional Private(N=2)	100	100	0	50	100	50	75	16
3.b. RBH(N=0)	0	0	0	0	0	0	0	0
3.c.State Store (N=0)	0	0	0	0	0	0	0	0
4. In All AP (N=27)	71.1	100	0	33.3	66.7	40.7	83	20
4.a. Traditional Private(N=25)	73.5	100	0	28	64	44	82	20.45
4.b. RBH(N=0)	0	0	0	0	0	0	0	0
4.c.State Store (N=2)	100	100	0	100	100	0	85	16

¹Row sum may exceed 100% as a retailer may sale multiple packaging and unit types simultaneously.

Table 3.2.4 Input retailers' Access to inputs

	Of all retailers % of Retailers reporting of facing problem in accessing ¹					Of all retailers % of retailers receiving Government inspections	Average No. of inspections received per year
	Seeds	Chemicals	Fertilizers	Animal Husbandry Inputs	Equipment		
1. In West Zone (N=32)	0	6.3	0	0	6.3	90.6	5
1.a. Traditional Private(N=30)	0	0	0	0	0	96.7	5
1.b. RBH(N=2)	0	100	0	0	100	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0
2. In Central Zone(N=35)	0	5.7	11.4	0	5.7	94.3	4
2.a. Traditional Private(N=31)	0	3.7	7.4	0	0	92.6	4
2.b. RBH(N=2)	0	50	0	0	50	100	3
2.c. State Store (N=2)	0	0	33.3	0	16.7	100	3
3. In East Zone(N=34)	0	0	11.8	0	0	94.1	6
3.a. Traditional Private(N=27)	0	0	11.1	0	0	92.6	6
3.b. RBH(N=1)	0	0	0	0	0	100	6
3.c.State Store (N=6)	0	0	16.7	0	0	100	8
4. In All AP (N=101)	0	4	7.9	0	4	93.1	5
4.a. Traditional Private(N=88)	0	1.2	6	0	0	94	5
4.b. RBH(N=5)	0	60	0	0	60	60	2
4.c.State Store (N=8)	0	0	25	0	8.3	100	6

¹Usually row sum may not be 100% - it may be less than 100% if there are many non responses or may exceed 100% if a retailer has problems in accessing more than one input simultaneously.

Chapter 4: Fertilizer Markets in AP

Given the amount of fertilizer subsidies by the government² and given the importance of chemical fertilizer for Indian agriculture, there is a surprising dearth of information on the effective functioning of the fertilizer supply chain in India. The purpose of this research is to better understand how farmers access chemical fertilizer in the state of Andhra Pradesh. A better understanding of this chain is an important step for the design of appropriate policies in this important agricultural input sector.

This chapter presents descriptive statistics from our farm household (supplemented by qualitative information from our FGDs (focus group discussions)) and from our input retailer surveys, on access to and use of chemical fertilizer by rural households in the catchment areas of the Rural Business Hubs of Viswas in Andhra Pradesh (AP). (The sample frame and survey methods were discussed in Chapter 2.)

4.1. Background Context: Fertilizer Suppliers in AP from which Farmers can Choose

The state and cooperative distribution system is subsidized directly to the manufacture by the government; thus the prices at the state and coop stores are supposedly (in theory) lower and reflect the subsidy.

The private stores like the state and coop stores have an “MRP”, maximum retail price, stated by the government, which they are supposed to respect and not exceed (although the survey below reports it is not always respected).

Farmers buy fertilizer from several types of outlets.

- (1) PACS**
- (2) State stores (mainly in district head)**
- (3) Traditional shops - Private input stores (not connected to or related to the state/coop system)**
- (4) RBHs such as Viswas, Mana Gromor, and others**

The fertilizer manufacturers in the cooperative sector like IFFCO and KRIBHCO supply fertilizers at a subsidized rate to the A.P. Cooperative Marketing Federation (MARKFED), Hyderabad. Markfed in turn supplies to the PACS.

4.2. Farm Household Survey Findings

4.2.1. Overall Fertilizer Use & Acquisition

First, Table 4.1.1, which depicts overall fertilizer purchase patterns by the farm households in the AP sample, shows that 100% of the sample bought fertilizer in the year before the

² The Indian government was projected to contribute \$9.2 billion to fertilizer subsidies in 2007-08 and \$22.5 billion in 2008-09. The Indian government aims to cap prices at certain levels as to make fertilizers affordable to farmers.

survey (in mid-2010). There was no farm size bias – as all three strata had this high rate. These rates held whether in the west, center, or east.

Second, Table 4.1.1 shows that urea and DAP dominated the 3717 purchase transactions or our sample, at 56% (versus about three-quarters found in our MP and UP surveys). In contrast with our MP and UP studies, we find in AP that other fertilizers have significant roles in AP: MOP-MAP at 14%, NPK at 12%, and then other nutrients (gypsum, zinc, iron, etc.) at 5%, and others at 13%. The patterns surprisingly did not differ much over farm strata, except for “other nutrients” and “other”. The sample farmers applied fertilizers nearer to the ideal ratio of nitrogenous, phosphatic and potassic fertilizers viz., 4:2:1 in AP compared to farmers from MP and UP. However, they still continued to apply more nitrogen than required and lower phosphorous than recommended. It could also be seen from the table that the application of micronutrients like Zinc and other nutrients go up from marginal to medium farmers. The other nutrients here refer to the combination of micronutrients and bio-fertilizers sold.

Third, Table 4.1.2, which shows what farmers reported as “major bottlenecks.” The degree of bottlenecks is less than reported in our report on UP, but similar to the fairly positive situation of the fertilizer market in Madhya Pradesh. The table shows only 11% of the farmers (slightly negatively correlated with farm size) felt **timely access to fertilizer was a major bottleneck. For price, this was only 7%** (with actually a slight ascent from marginal to medium farmers). **For fertilizer quality, the farmers judge the situation very positive:** there was nearly no expression of major bottlenecks in the case of quality of fertilizer – with just 1% of the medium farmers and nearly none other, saying there was a problem. **Even access to types of fertilizer was adjudged a non-issue: only 1% of the farmers felt it was a major bottleneck.**

Fourth, Table 4.1.3, depicting farmers’ assessment of the availability of fertilizer at MRP by farm size strata, shows a moderate problem of pricing. Farmers (as shown in the above table) noted that they do not judge it as a serious bottleneck, but do note a price problem when comparing the prices they pay with the MRP for the fertilizers. **22% (going from 26 to 17 to 22% as one goes from marginal to small to medium farmers) of the farmers find that fertilizer is not available at the MRP or below.** (In MP we found this number to be only 5%, and UP, where there is in addition a strong problem of access, the share of transactions above MRP is 20%). Marginal farmers have a – slightly – greater problem in accessing fertilizers at MRP than do medium farmers.

If the fertilizer was not available at MRP, 98% of the time farmers said they could still find the fertilizer, but just had to pay above MRP. Nearly all who could not get it at MRP just paid a price over the MRP to get it. Only 1% avoided using fertilizer (even among the marginal farmers) because of the higher price. Also, 14% of farmers bought fertilizers of lower quality because of higher prices.

Table 4.1.4 shows farmers’ assessment of availability of fertilizer, but this time by region (west, center, and east). Here differences are revealed – but in patterns we did not expect. While in the west and center 60% noted that fertilizer was “usually available” at MRP or below, that dropped to 44% in the East. The flip side of this is that only 17 and 15% in the west

and center reported fertilizer not available at MRP or below, while that rose to 33% in the most-ag-developed zone, the east.

The interpretation of this surprising pattern could be that supply is similar across zones, but demand is simply higher in the intensive-farming east; it is possible that this excess demand drives up the price past the MRP in the east to an extent not found in the other zones. It is worth noting that the two districts of study locations in east are among the top 50 fertilizer-consuming districts of the country.

The table shows that if the fertilizer was not available at MRP or below, it was available above MRP most of the time (as noted in the previous table), with consistency over zones, except for the east, where the situation was both better (as the “always” versus “usually” available was much higher than in other zones, but was “not available” in 5% of the cases, a pocket of non-served farmers in the dynamic east.

Table 4.1.5 shows branding and invoicing by vendor type, as reported by farmers. **It shows that only 1% of the fertilizer is sold without brand.** But there was a surprisingly high share of “brand is not known” (although it is branded) reported by farmers; this could imply there was an understanding that there is a brand, but little “brand consciousness”. The farmers reported in 98% of the cases that a formal bill was provided (with the name of the shop).

The table shows that right across the retail types, the farmers reported they were “satisfied” with the purchase. This is similar to the positive situation in MP, but very different from the severe fertilizer problem we found in UP.

Table 4.1.6 shows branding and invoicing by zone. Interestingly, while the “without brands” sale of fertilizer is reported as low (1% of the 3716 transactions), it was nearly only in the east zone where it was found (around 1.5%). This is all very minor, but the interest is that it is in the dynamic east that farmers are reporting issues with fertilizer markets, small or medium problems. Again, over the zones the farmers report receiving formal bills. Moreover, the same 99% “satisfied with transaction” was reported.

Table 4.1.7 shows, by zone, farmers reports of prices paid over their 3716 transactions (purchases of fertilizer), all of which were recorded in the survey questionnaires. **The share of fertilizer (transactions) at which the fertilizer was sold at or below MRP was 66% overall – with 34% sold above MRP.** The latter was much higher in the west (at 52%) and only 22 and 30% in the center and east. It is interesting that farmers, in their subjective declarations about pricing problems, were more vociferous about it in the east, but the objective problem is clearer in the west (where we expected it to be).

Moreover, contrary to conventional wisdom that “**tagging**” (selling one product by requiring that another (higher margin) product be bought at the same time) is widespread, our survey shows that tagging of other products with fertilizers is **very low at 2%** with a slightly higher percent in the west.

Table 4.1.8 shows the pricing versus MRP for types of vendors. **State/coop retail performs by far the best – with only 10% of the transactions from them above the MRP. By contrast, it was 27% for RBHs and fully 44% for traditional shops (private shops, unconnected with the state/coop system). That the “pricing problem” is mainly in the traditional shops was like our findings in the companion study in the UP.**

Table 4.1.9 shows major reasons for choice of fertilizer vendor, by zone. By far the main criterion is timely availability – at 53% over zones – dropping sharply from 66% in the west to 43% in the east. Quality assurance is a strong second, at 29%, with somewhat higher share in the center. By contrast, price and credit are minor reasons (only 7 and 8% respectively) – but interestingly, more in the dynamic east (at 9 and 18% for price and credit as major reasons). We had expected the dynamic east to be more quality-oriented, and the west, more price and credit and proximity oriented, as the former is more “modern” and latter factors more “traditional.” But what seems to be emerging is that while the east overall is more advanced, there is a pocket of 10-20% of it that perceives price and access problems, and has more traditional orientation.

At strong odds with conventional wisdom that input vendors provide substantial credit to farmers, we find that only in 10% of the transactions is any credit provided (allowed to get the fertilizer first and then pay for it later). This was mainly at the harvest. This countering of the myth of “tied credit” where traders or input retailers provide credit to farmers, is one of the most robust finding we are showing strongly in all three states, AP, UP, and MP, of the study.

Table 4.1.10 shows major reasons for choice of fertilizer vendor, by vendor type. The state retailer comes out highest ranked on quality (a major reason for choosing it in 36% of the transactions, versus only 32% for RBHs and 26% for traditional shops). Timely availability was a main reason given much more in choice of traditional shops, while price was the main reason for 16 and 14% of the transactions in state and modern retail, but very little in traditional shops.

Credit was only a factor in choice of traditional shops, but only in 12% of the cases – triangulating with the finding that little credit is given by these shops. The latter is shown in the latter rows of the table, where we show that no transaction was on credit from the state/coop, only 1% from the RBH, and only 15% of transactions from the traditional shops.

4.2.2. Focus on Urea (as the main fertilizer)

First, Table 4.1.11, which depicts purchases of urea by farm size stratum, shows that fully 93% of households bought urea – with a slight farm size bias (inverse with farm size); this latter could be due to the fact that half the sample’s medium farms are in the west zone, which has sharply lower irrigation rates; that will be explored in the subsequent table showing by zones. The volume/farm for those that used urea was 308 kg, 608 kg, and 955 kg, for an average over urea-users of 624 kg. Table 4.1.13 shows that these imply high use rates: around 421, 365, and 184 kg/ha over the three strata. This pattern depicts several things that we

have found in the other two states: (1) the use rates are quite high, at Punjab³ levels, for those that use; (2) the use rate is much higher on marginal farms – that in all three study states are, when then use inputs, over-using significantly compared with medium farmers; (3) the rate on small farms is like that we found in UP, and both higher than we found in MP (where it appears use more closely coincides with recommended use, but not in these other two). Also, AP farms are small and in intensive production.

Moreover, the marginal farmers pay on average 2% more for their urea than do small and medium farmers, as shown in Table 4.1.11. This is about half the inter-strata difference that we found in UP and MP, so the fertilizer market, as far as pricing goes, is slightly more “poor friendly” than the other two states.

Table 4.1.12 depicts purchases by farm households from the various retail categories. Much more than in the UP and MP, AP farmers mix market channels to buy fertilizer (buying from several types of vendors). 11% buy (only) from state/coop stores, only 3.6% from RBHs, and 45% only from traditional retail, and 40% from several vendor types (we call combined sources).

The urea state/coop retail (a minor player) has however a slightly (3%) lower price than the main player in the market, the traditional retailer – 5.11 rs/kg versus 5.25 rs/kg.

Table 4.1.13 shows the sources of urea, by farm size stratum, for those who bought urea. The findings are **striking and counter to conventional wisdom about fertilizer markets.**

NOTE that while previous tables contained a “combined” category (where a household had several transactions, from different vendors), in this table and the following two tables, we have “de-combined” the transactions data, and “mapped” individual transactions into the vendor categories, so that we have precise information on the sources from which farmers are buying urea.

Contrary to conventional wisdom, the state/coop sector plays a minority role in urea markets. Marginal farmers (who bought urea) bought only 20% of their urea from state/coop stores. Just like in the UP and MP where small and medium farmers bought a higher share from state stores (than did the marginal farmers), in AP the small and medium farmers buy 31% and 32% respectively from state/coop stores. **The overall market share of the state/coop sector is a mere 30% in the sample and 27% in the study areas (population-weighted, true overall).** This is nearly all PACS sales, not state stores.

Modern retailers have a minor share of the urea market in AP, around 10% in the study areas. RBH sales constituted 11% of the marginal farmer’s, 10% of the small farmer’s, and 11% of the medium farmer’s urea purchases (in kg terms). Most (80%) of the urea sale in this category was actually from other RBHs (especially Mana Gromor of Coromandel) and not Viswas.

³ See <http://blog.livemint.com/budget2010/2010/02/17/farming-is-dead-long-live-subsidies/>

Despite conventional wisdom that the state is a major player in fertilizer markets, in AP the state is a minor player. The main players are traditional categories. Fully 60% of the urea in AP is sold by traditional categories (in our sample; in the census-weighted results, the share is 63%). The share declines from 69% for marginal farmers to 59 to 57% for medium farmers – not a steep decline with farm size. This is mainly traditional shops – the other sources (commission agents in the village, fertilizer companies, producer association, mandis, all are very minor, together 1.5%).

Thus, traditional shops are 2 times more important than state/coop stores in urea retail in AP.

Tables 4.1.14 and 4.1.15 use the totality of purchases of urea by households from the various types of outlets and reverses the perspective by showing that information as the composition of total sales of each supplier category, like a “pie chart” of sales to different clients by vendors. We will focus on 4.1.14 for discussion as it shows kg term.

Importantly, the table shows that for all state/coop categories of outlets, only 11% (of the amount that they sell to the market) of urea sales go to marginal and 38% to small farmers, and 52% to medium farmers. This contradicts the conventional view that the (subsidized) state/coop outlets are focused on selling to the poor, as more than half is going to medium/large farmers. The most important category in this sale is the PACS, nearly all the urea sale in the state/coop category.

As in MP and UP, however, we find in AP also that while the above has the surprise that the state/coop’s sales are somewhat skewed toward medium farmers – the bias actually mirrors the dominance of the medium farmers in the land distribution and therefore roughly in overall urea purchase.

By contrast, and again a surprise, the RBHs actually have a similar client profile to that of the state/coop stores, about 49% to medium farmers, and 51% to small/marginal. While Viswas has a fourth of all RBH marketings in the study areas, they are somewhat more oriented in their sales to the small/marginal farmers in the case of urea, compared with the RBH market leader (mainly Mana Gromor).

Finally, traditional categories – the main actors in the urea market – are selling 54% of their urea to small/marginal farmers, and 46% to the medium farmers. But keep in mind that while 35% of the farmers in the sample are medium, they have about 70% of the land area. One would thus expect that at least half of sales of urea would go to medium farmers, even though they are a minority of households.

4.3. Findings from the Input Retailers Survey, regarding Chemical Fertilizer Retail

This section reports on results on retail of chemical fertilizer over outlet category.

Table 4.2.1 shows the share of each category of retailer selling fertilizer in general, and shares of stores selling different types of fertilizer. **In all the study areas, for the share of traditional stores selling fertilizer, there is a pronounced inverted U curve from west to center to east,**

with 50% on the tails and 75% in the center. This pattern is well-above that found in the companion UP study. By contrast, only the state/coop stores in the center and east and RBHs stores in the east zone sold fertilizer. These findings triangulate with the modest role of state/coop and RBH fertilizer found in the purchases of the households.

Moreover, it is striking how important fertilizer sales are to stores selling fertilizer: for traditional stores, this is fully half. The share is very low for RBH stores.

Finally, striking is that while in UP and MP, the RBHs tend to have a diverse set of fertilizers, more so than the traditional shops, that is the opposite in AP. In AP the traditional stores are more apt than the other vendor types to sell fertilizer, and when they do, to offer a greater variety – making traditional fertilizer retail appear much more developed – relative to Viswas or the state stores – than in the other two states we studied.

Table 4.2.2. and Table 4.2.3 show major fertilizers (urea and DAP) by retailed unit sizes and branding by retail type; we only show these as the gist of their story is similar across fertilizer types. The story is simple: **the main fertilizers are sold branded, in a variety of units, and mainly packaged**, by the various vendor types.

Annex to Chapter 4: Fertilizer Tables

Section 4.1.: Fertilizer Purchases by Farm Households

Table 4.1.1 Purchase of any kind of fertilizer, by farm size, in shares of farmers - and of buyers, shares of transaction over fertilizer types					
	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
1. Share households bought fertilizer (in %) (N=810)	100.0	100.0	100.0	100.0	100.0
2. For fertilizer buyers, % of any fertilizer transaction in: (N=3717 transactions):					
a) Urea	32.5	30.4	29.1	30.5	30.9
b) DAP	25.7	24.7	25.4	25.3	25.3
c) MOP-MAP	14.4	14.4	13.6	14.1	14.2
d) NPK	11.8	12.0	10.2	11.3	11.5
e) SSP	0.9	0.9	1.1	1.0	0.9
f) Other nutrients (gypsum, zinc, iron etc.)	3.9	4.2	6.3	4.9	4.6
g) Other	10.7	13.4	14.3	13.0	12.6
h) Do not know	0.0	0.1	0.0	0.0	0.0
Total	100	100	100	100	100
*Weights as in table 2.1.7					

Table 4.1.2 Access to fertilizer, by farm size, in share of households (multiple answers possible)					
	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
% of households reporting major bottlenecks in access to fertilizer as (N=810 households):					
Timely availability of fertilizer	12.6	11.6	9.4	11.1	11.4
Price of fertilizer	6.1	6.9	9.4	7.5	7.2
Quality of fertilizer	0.0	0.3	1.1	0.5	0.4
Type of fertilizer	1.7	0.3	0.7	0.9	1.0
*Weights as in table 2.1.7					

Table 4.1.3 Farmers' reports of availability of fertilizer at MRP, by farm size, by shares of farmers					
	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
% of households reporting that fertilizer available at MRP price or below (N=810 households):					
Usually available	50.7	55.8	56.5	54.6	54.0
Sometimes available	22.9	26.7	20.6	23.5	23.7
Not available	26.4	17.5	21.6	21.5	21.9
Total	100	100	100	100	100
% of households reporting that if fertilizer not available at MRP price or below available at higher price? (N=174 households)					
Always available	31.2	45.1	41.9	39.1	39.0
Usually available	67.2	52.9	54.8	58.6	58.8
Not available	1.6	2.0	3.2	2.3	2.2
Total	100	100	100	100	100
If not always available at the MRP, % of household reported that (N=35 households):					
Did not buy (%)	3.3	0.0	0.0	1.2	1.2
Bought, but lower quality (%)	13.1	17.7	11.3	13.8	14.3
Bought, but at higher than MRP price (%)	83.6	82.4	88.7	85.1	84.4
Total (%)	100	100	100	100	100
*Weights as in table 2.1.7					

Table 4.1.4. Availability of fertilizer by zone				
	West N=270	Central N=270	East N=270	Total N=810
% of household who reported that the wanted fertilizer available at MRP price or below (N=810 households):				
Usually available (%)	60.0	60.4	43.8	54.7
Sometimes available (%)	23.3	24.4	23.1	23.6
Not available (%)	16.7	15.2	33.1	21.6
Total (100%)	100.0	100.0	100.0	100.0
% of household who reported that if wanted fertilizer not available at the MRP, was available at higher price (N=174 households):				
Always available (%)	28.9	22.0	52.3	39.1
Usually available (%)	71.1	78.0	43.2	58.6
Not available (%)	0.0	0.0	4.5	2.3
Total (100%)	100.0	100.0	100.0	100.0
If not always available at the MRP, % of household reported that (N=35 households):				
Did not buy (%)	0.0	4.9	0.0	1.1
Bought, but lower quality	13.3	17.1	12.5	13.8
Bought, but paid higher price than MRP price (%)	86.7	78.0	87.5	85.1
Total (100%)	100.0	100.0	100.0	100.0

Table 4.1.5 Perceived branding and invoicing of fertilizer, by retail outlet type				
N=total number of purchases	State Retail N=17	Modern Retail N=338	Traditional Retail N=3361	Total N=3716
% of transactions where the households reported of buying (N=3716 transactions):				
Branded fertilizer (%)	15.4	17.9	13.3	14.3
Fertilizer without brands (%)	0.0	0.5	1.0	0.7
Fertilizer for which the brand is not known (%)	84.6	81.6	85.7	85.0
Total (100%)	100.0	100.0	100.0	100.0
% of transactions where the households reported of getting (N=3716 transactions):				
No bill with purchase (%)	1.0	0.2	1.4	1.2
Bill written on plain paper (%)	0.0	1.0	1.0	0.8
Formal bill given with the name of the shop printed (%)	99.0	98.8	97.6	98.0
Total (100%)	100.0	100.0	100.0	100.0
% of transactions where the households reported to be satisfied with the purchase (N=3716 transactions)	99.8	99.8	99.1	99.4

Table 4.1.6 Perceived branding and invoicing of fertilizer, by zone				
N=total number of purchases	West N=1043	Central N=1208	East N=1465	Total N=3716
% of transactions where the households reported of buying (N=3716 transactions):				
Branded fertilizer (%)	13.6	13.5	15.4	14.3
Fertilizer without brands (%)	0.3	0.1	1.5	0.7
Fertilizer for which the brand is not known (%)	86.1	86.4	83.1	85.0
Total (100%)	100.0	100.0	100.0	100.0
% of transactions where the households reported of getting (N=3716 transactions):				
No bill with purchase (%)	1.9	0.7	1.1	1.2
Bill written on plain paper (%)	0.1	0.0	1.8	0.8
Formal bill given with the name of the shop printed (%)	98.0	99.3	97.1	98.0
Total (100%)	100.0	100.0	100.0	100.0
% of transactions where the households reported to be satisfied with the purchase (N=3716 transactions)	99.3	99.4	99.3	99.4

Table 4.1.7. Pricing of fertilizers, by zone				
	West N=1043	Central N=1208	East N=1465	Total N=3716
% of transactions where the unit price is (N=3716 transactions):				
Higher than MRP (%)	52.3	22.3	30.2	33.8
Equal to MRP (%)	47.0	66.2	53.7	55.9
Lower than MRP (%)	0.8	11.5	16.1	10.3
Total (100%)	100.0	100.0	100.0	100.0
% of transactions where the input seller make the household buy another product with fertilizer (N=3716 transactions)	2.6	1.9	1.9	2.1

Table 4.1.8. Pricing of fertilizers, by retail outlet				
N=total number of purchases ()	State Retail N=879	Modern Retail N=403	Traditional Retail N=2434	Total N=3716
% of transactions where the unit price is (N=3716 transactions):				
Higher than MRP (%)	10.4	26.6	43.5	33.8
Equal to MRP (%)	72.2	58.6	49.5	55.9
Lower than MRP (%)	17.4	14.9	7.0	10.3
Total (100%)	100.0	100.0	100.0	100.0
% of transactions where the input seller make the household buy another product with fertilizer (N=3716 transactions)	0.2	16.1	0.5	2.1

Table 4.1.9. Reasons for choice of fertilizer vendor used, by zone (100%=total number of transactions)				
N=total number of purchases	West N=1043	Central N=1208	East N=1465	Total N=3716
% of transactions where the major reason for the choice of vendor (N=3716):				
He is close by (%)	1.0	1.8	3.8	2.3
Gives lowest price (%)	3.4	7.2	9.4	7.0
Quality assured (%)	26.3	36.1	24.2	28.7
Gives Credit when needed (%)	3.1	1.8	18.0	8.5
Timely available (%)	65.5	52.5	43.2	52.5
No other option (%)	0.2	0.6	0.3	0.3
Other (%)	0.7	0.1	1.1	0.6
Cannot answer	0.0	0.0	0.0	0.0
Total=100%	100.0	100.0	100.0	100.0
Average distance in kms. to vendor (simple average over N=3716 transactions):				
Mean distance	15.39	5.46	4.96	8.05
Median distance	14.00	5.00	2.0	6.50
% of transaction where the method of payment is (N=3716 transactions):				
Cash on purchase (%)	96.9	98.3	77.5	89.7
On credit (paid < 1 week) (%)	0.0	0.0	1.2	0.5
On credit (paid > 1 week) (%)	0.0	0.2	1.0	0.5
On credit (paid at harvest)	3.1	1.4	20.2	9.3
Other (%)	0.0	0.0	0.1	0.0

Table 4.1.10: Characteristics of fertilizer vendor used, by retail outlet				
N=total number of transactions	State Retail N=879	Modern Retail N=403	Traditional Retail N=2434	Total N=3716
Major reason for the choice of vendor (N=3716 transactions):				
He is close by (%)	2.4	1.7	2.4	2.3
Gives lowest price (%)	16.4	13.9	2.5	7.0
Quality assured (%)	35.6	31.5	25.7	28.7
Gives credit (%)	1.4	0.9	12.4	8.5
Timely available (%)	43.7	50.9	55.9	52.5
No other option (%)	0.2	1.0	0.3	0.3
Other (%)	0.3	0.0	0.9	0.6
Cannot answer one	0.0	0.0	0.0	0.0
Total=100%	100.0	100.0	100.0	100.0
Average distance in kms. to vendor (N= simple average over N=3716 transactions):				
Mean distance	1.05	9.75	9.93	8.05
Median distance	0.0	8.00	7.00	6.00
% of transaction where the method of payment is (N=3716 transactions):				
Cash on purchase (%)	99.8	97.8	84.8	89.7
On credit (paid < 1 week) (%)	0.0	0.5	0.7	0.5
On credit (paid > 1 week) (%)	0.0	0.2	0.7	0.5
On credit (paid at harvest)	0.2	1.2	13.9	9.3
Other (%)	0.0	0.2	0.0	0.0

Table 4.1.11 Urea purchases by farm size, in Rs & kg					
Urea	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
1.1% of sample that buys urea (N=810 households)	95.7	93.8	87.8	92.2	93.0
1.2 Of HHs that buy urea from any source, the share of HHs buying from the various sources (N=747 households)	29.6	36.7	33.7	100.0	
2.1 Simple average urea expenditure in Rs./farm, (N=810 household) (zeroed out average: i.e. average over all households including both buyers and non buyers of urea)				2975.8	
2.2 Simple average kg/farm (N=810 household): (zeroed out average: i.e. average over all households including both buyers and non buyers of urea)				572.7	
3.1 Simple average urea expenditure (Rs/farm) for urea buyers only (i.e. not-zeroed out average over N=747 households)	1628.0	3149.6	4953.5	3243.7	3022.4
3.2 Simple avg. kg/farm just urea buyers (i.e. not-zeroed out average over N=747 households)	308.2	608.8	955.2	624.1	581.2
4. Derived urea prices per kg	5.28	5.17	5.19	5.20	5.20
*Weights as in table 2.1.7					

Table 4.1.12 Purchases of Urea, by retail type, in share of households buying from any source and for buyers, Rs & kg					
	State Retail N=80	Modern Retail N=29	Traditional Retail N=366	Combined N=290	Overall N=765
1.1% of sample that buys urea (N=810 households)					92.2
1.2 Of HHs that buy urea from any source, the share of HHs buying from the various sources (N=747households)	11.1	3.6	45.2	40.0	100.0
2.1 Simple average urea expenditure in Rs./farm, (N=810 household) (zeroed out average: i.e. average over all households including both buyers and non buyers of urea) (figures in the parentheses are % of the total value)	2987.53 (24%)	3648.01 (29%)	2311.63 (18%)	3743.43 (29%)	2975.75 (100%)
2.2 Simple average kg/farm (N=810 household): (zeroed out average: i.e. average over all households including both buyers and non buyers of urea) (figures in the parentheses are % of the total value)	584.37 (27%)	440.30 (21%)	391.37 (18%)	724.65 (34%)	572.67 (100%)
3.1 Simple average urea expenditure (Rs/farm) for urea buyers only (i.e. not-zeroed out average over N=747 households)	3064.14	4069.0	2660.56	3877.13	
3.2 Simple avg. kg/farm just urea buyers (i.e. not-zeroed out average over N=747 households)	599.35	771.15	506.76	750.3	
4.Urea prices per kg**	5.11	5.28	5.25	5.17	
**T-test – Significance level over prices, 1%					

Table 4.1.13 Urea sales by retail type across farm strata in % of Kg.					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
For households buying urea, % of Kg. bought from (N=747 households):					
1. State Categories (%)	20.15	31.08	31.98	29.80	27.15
1.1 PACS (%)	20.15	31.08	31.81	29.72	27.11
1.2 State seed store (%)	0.00	0.00	0.17	0.08	0.04
1.3 State agro retail store (%)	0.00	0.00	0.00	0.00	0.00
1.4 Provincial cooperative federation (PCF)/Markfed (%)	0.00	0.00	0.00	0.00	0.00
1.5 Society (for specific crops) (%)	0.00	0.00	0.00	0.00	0.00
2. Modern Categories (%)	10.79	9.92	10.49	10.33	10.39
2.1 VISWAS (%)	4.41	2.16	1.51	2.20	2.85
2.2 Other RBH (%)	6.39	7.76	8.97	8.13	7.54
3. Traditional Categories	69.06	59.00	57.53	59.87	62.46
3.1 Traditional retailer/small private retailer	67.39	57.57	56.05	58.38	60.92
3.2 Commission agent in village (farmers selling purchased agri- inputs in the village)	0.85	1.43	0.85	1.06	1.06
3.3 Fertilizer company outlet	0.00	0.00	0.00	0.00	0.00
3.4 Cold store	0.00	0.00	0.00	0.00	0.00
3.5 Producer association	0.00	0.00	0.00	0.00	0.00
3.6 Mandi trader	0.81	0.00	0.63	0.43	0.47
3.7 Other	0.00	0.00	0.00	0.00	0.00
4. Total	100	100	100	100	100
5. Avg. qty of urea purchased (Kg. /HH)	294.76	569.64	824.61	572.68	528.93
6. Avg. farm size per household (Ha/HH)	0.70	1.56	4.47	2.34	1.96
7. Use rate of urea (Kg/Ha)	421.09	365.15	184.48	244.74	341.24
*Weights as in table 2.1.7					

Table 4.1.14 “Pie chart” Urea sales totals by retail type to farm strata in Kg.						
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted total Rs	Population weighted* total Kgs.
% of Kg. bought from each retail type by farm strata (N= 747 households):						
<u>1. State Categories (%)</u>				100%	678698 (29.8%)	209784.0 (29%)
1.1 PACS (%)	10.58	37.78	51.63	100%	676808	209311.5
1.2 State seed store (%)	10.61	37.89	51.50	100%	1890	472.5
1.3 State agro retail store (%)	0.00	0.00	100.00	100%	0.0	0.0
1.4 Provincial cooperative federation (PCF)/Markfed (%)	0.0	0.0	0.0	0.0	0.0	0.0
1.5 Society (for specific crops) (%)	0.0	0.0	0.0	0.0	0.0	0.0
<u>2. Modern Categories (%)</u>				100%	235259 (10.3%)	73642.7 (10%)
2.1 VISWAS (%)	16.36	34.80	48.84	100%	50160	16726.8
2.2 Other RBH (%)	31.34	35.61	33.05	100%	185099	56915.9
<u>3. Traditional Categories</u>				100%	1363496 (59.8%)	431309.0 (61%)
3.1 Traditional retailer/small private retailer	18.06	35.71	46.23	100%	1329546	420633.3
3.2 Commission agent in village (farmers selling purchased agri- inputs in the village)	18.07	35.73	46.19	100%	24200	7861.2
3.3 Fertilizer company outlet	12.56	48.76	38.68	100%	0.0	0.0
3.4 Cold store	0.0	0.0	0.0	0.0	0.0	0.0
3.5 Producer association	0.0	0.0	0.0	0.0	0.0	0.0
3.6 Mandi trader	0.0	0.0	0.0	0.0	0.0	0.0
3.7 Other	29.74	0.00	70.26	100%	9750	2814.5
<u>5. Total</u>					2277453 (100%)	714735.6 (100%)
*Weights as in table 2.1.7						

Table 4.1.15 “Pie Chart” Urea sales totals by retail type to farm strata in Rs.						
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted total Kg	Population weighted* total Kg
% of Rs. bought from each retail type by farm strata (N= 747 households):						
<u>1. State Categories (%)</u>	10.26	37.75	52.00	100%	134050 (30.6%)	41740.5 (30%)
1.1 PACS (%)	10.28	37.85	51.87	100%	133700	41653.0
1.2 State seed store (%)	0.00	0.00	100.00	0.0	350	87.5
1.3 State agro retail store (%)	0.0	0.0	0.0	0.0	0.0	0.0
1.4 Provincial cooperative federation (PCF)/Markfed (%)	0.0	0.0	0.0	0.0	0.0	0.0
1.5 Society (for specific crops) (%)	0.0	0.0	0.0	0.0	0.0	0.0
<u>2. Modern Categories (%)</u>	16.34	34.55	49.12	100%	45300 (10.3%)	14247.5 (10%)
2.1 VISWAS (%)	30.21	37.50	32.29	100%	9600	3216.0
2.2 Other RBH (%)	12.61	33.75	53.64	100%	35700	11031.5
<u>3. Traditional Categories</u>	17.91	36.04	46.05	100%	258750 (59.6%)	82372.0 (60%)
3.1 Traditional retailer/small private retailer	17.93	36.05	46.02	100%	252300	80328.5
3.2 Commission agent in village (farmers selling purchased agri- inputs in the village)	11.83	49.46	38.71	100%	4650	1527.5
3.3 Fertilizer company outlet	0.0	0.0	0.0	0.0	0.0	0.0
3.4 Cold store	0.0	0.0	0.0	0.0	0.0	0.0
3.5 Producer association	0.0	0.0	0.0	0.0	0.0	0.0
3.6 Mandi trader	30.56	0.00	69.44	100%	1800	516.0
3.7 Other	0.0	0.0	0.0	0.0	0.0	0.0
<u>4. Total</u>					438100 (100%)	138360.0 (100%)
*Weights as in table 2.1.7						

	Average Share of Fertilizer sales in total input sales (for retailers selling fertilizer)	Of all retailers % of Retailers Selling Fertilizer	For Retailers Selling Fertilizers, % of Retailers selling									
			Fertilizer Types ¹									
			Urea	DAP	SSP	MO P	Complex fertilizers	Organic fertilizer like rhizobium, PSB	foliar fertilizer	micronutrient	Plant Growth Promoter	Organic Manure
1. In West Zone (N=32)	54	46.9	93.3	93.3	73.3	93.3	86.7	6.7	0	40	40	6.7
1.a. Traditional Private(N=30)	48	50	93.3	93.3	73.3	93.3	86.7	6.7	0	40	40	6.7
1.b. RBH(N=2)	0	0	0	0	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=35)	60	74.3	96.2	100	57.7	80.8	96.2	3.8	26.9	34.6	19.2	7.7
2.a. Traditional Private(N=31)	54	74.1	95	100	65	85	95	5	35	45	20	5
2.b. RBH(N=2)	0	0	0	0	0	0	0	0	0	0	0	0
2.c. State Store (N=2)	86	100	100	100	33.3	66.7	100	0	0	0	16.7	16.7
3. In East Zone(N=34)	52	76.5	96.2	96.2	69.2	92.3	96.2	0	19.2	38.5	26.9	0
3.a. Traditional Private(N=27)	46	70.4	100	100	68.4	94.7	100	0	26.3	52.6	31.6	0
3.b. RBH(N=1)	10	100	0	0	0	0	0	0	0	0	100	0
3.c. State Store (N=6)	79	100	100	100	83.3	100	100	0	0	0	0	0
4. In All AP (N=101)	54	66.3	95.5	97	65.7	88.1	94	3	17.9	37.3	26.9	4.5
4.a. Traditional Private(N=88)	49	64.3	96.3	98.1	68.5	90.7	94.4	3.7	22.2	46.3	29.6	3.7
4.b. RBH(N=5)	10	20	0	0	0	0	0	0	0	0	100	0
4.c. State Store (N=8)	82	100	100	100	58.3	83.3	100	0	0	0	8.3	8.3

¹Row sum over category may exceed 100% as the same retailer sells fertilizers of multiple varieties.

	For retailers selling urea , % of retailers selling					Sales	
	In packaging types¹		Unit types¹			Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Loose	Packed	Small	Medium	Large		
1. In West Zone (N=14)	0	100	71.4	71.4	100	84	5.24
1.a. Traditional Private(N=14)	0	100	71.4	71.4	100	84	5.24
1.b. RBH(N=0)	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0
2. In Central Zone(N=25)	4	96	68	72	100	85	5.11
2.a. Traditional Private(N=19)	0	100	68.4	68.4	100	84	5.14
2.b. RBH(N=0)	0	0	0	0	0	0	0
2.c. State Store (N=6)	16.7	83.3	66.7	83.3	100	89	5
3. In East Zone(N=25)	0	100	52	100	88	82	5.09
3.a. Traditional Private(N=19)	0	100	68.4	100	94.7	81	5.12
3.b. RBH(N=0)	0	0	0	0	0	0	0
3.c.State Store (N=6)	0	100	0	100	66.7	86	5
4. In All AP (N=64)	1.6	98.4	62.5	82.8	95.3	84	5.13
4.a. Traditional Private(N=52)	0	100	69.2	80.8	98.1	83	5.16
4.b. RBH(N=0)	0	0	0	0	0	0	0
4.c.State Store (N=12)	8.3	91.7	33.3	91.7	83.3	88	5

¹Row sum over category may exceed 100% as the same retailer sells fertilizers in multiple packaging types and unit types.

Table 4.2.3. DAP retail unit sizes packaging and sales							
	For retailers selling DAP , % of retailers selling					Sales	
	In packaging types¹		Unit types¹			Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Loose	Packed	Small	Medium	Large		
1. In West Zone (N=14)	0	92.9	71.4	71.4	100	81	10.05
1.a. Traditional Private(N=14)	0	92.9	71.4	71.4	100	81	10.05
1.b. RBH(N=0)	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0
2. In Central Zone(N=26)	3.8	96.2	69.2	73.1	100	85	9.53
2.a. Traditional Private(N=20)	0	100	70	70	100	83	9.48
2.b. RBH(N=0)	0	0	0	0	0	0	0
2.c. State Store (N=6)	16.7	83.3	66.7	83.3	100	90	9.72
3. In East Zone(N=25)	0	100	52	100	88	83	9.73
3.a. Traditional Private(N=19)	0	100	68.4	100	94.7	84	9.73
3.b. RBH(N=0)	0	0	0	0	0	0	0
3.c.State Store (N=6)	0	100	0	100	66.7	80	9.72
4. In All AP (N=65)	1.5	96.9	63.1	83.1	95.4	83	9.72
4.a. Traditional Private(N=53)	0	98.1	69.8	81.1	98.1	83	9.72
4.b. RBH(N=0)	0	0	0	0	0	0	0
4.c.State Store (N=12)	8.3	91.7	33.3	91.7	83.3	85	9.72

¹Row sum over category may exceed 100% as the same retailer sells fertilizers in multiple packaging types and unit types.

Chapter 5: Pesticide, Herbicide, and Fungicide Markets in AP

Given the large size of the farm chemicals economy in India, and the role it plays in tropical agriculture beset by pests and fungi in warm moist environments, in situations where a pest attack on a poor tropical farmer's crop can leave his family in even worse poverty, there is a surprising dearth of information on the effective functioning of the pesticide supply chain in India. The purpose of this research is to better understand how farmers access pesticides and herbicides in the state of Andhra Pradesh. A better understanding of this chain is an important step for the design of appropriate policies in this important agricultural input sector, and the effective outreach of modern companies to poor farmers to provide appropriate and affordable chemicals when the need is there.

This chapter presents descriptive statistics from our farm household survey and from our input retailer surveys, on access to and use of pesticides and herbicides by rural households in the catchment areas (and control areas) of the Rural Business Hubs of Viswas in Andhra Pradesh (AP). (The sample frame and survey methods were discussed in Chapter 2.)

5.1. Background Context: Pesticide and Herbicide Suppliers in AP from which Farmers can Choose

Pesticides and herbicides are produced by private sector firms, large (such as Bayer, Excel, Syngenta, Rallis (Tata)), medium, and small. The firms can be formal sector or informal, with well-known brands, or minor local brands, and in some cases, spurious brands and labels.

The major pesticide companies have a wide variety of brands and types. These are sold via both modern and traditional retailers.

The options for the farmer to buy these chemicals are thus the following:

- (1) Private traditional retailer**
- (2) Rural Business Hubs such as Viswas and Mana Gromor**
- (3) PACS (a narrow range)**
- (4) State stores (a narrow range)**

In principal, there are MRP's listed by the government for major chemicals.

5.2. Farm Household Survey Findings Regarding Pesticide and Herbicide Use & Acquisition

5.2.1. Chemicals in General

First, Table 5.1.1, which depicts overall pesticide and herbicide purchase patterns by the farm households, shows a surprisingly high number, 99%. This does not vary over the strata.

Second, as shares of transactions, 56% were for pesticides, 31% were for fungicides, 9% were for herbicides, and 3% were for plant growth promoters. Interestingly, the shares do not differ much over farm strata.

Third, Table 5.1.2 depicts farmers' reports of availability of chemicals at MRP, by farm size stratum, shows surprisingly that 90% of the farmers felt that they could "always or usually find chemicals sold at MRP". Interestingly, this barely varied over strata (92 to 90% from marginal to medium). On average only 10% (barely varying over farm strata) felt that chemicals were simply not available at the MRP.

5.2.2. Pesticides

Table 5.1.3, which depicts purchases of pesticides by farm size stratum, shows that 95% of households bought pesticides, with nearly no correlation over farm size. This goes along with the fact that AP is one of the leading pesticide using states in India.

The **expenditure on pesticide for those buying (nearly all the farms) was substantial:** at 2436 for marginal, 2407 for small, and 8495 rupees for medium farms – hence ranging from 50 to 100 to nearly 200 USD per farm.

Abstracting from the composition of the set of pesticides, the expenditure per household (for those buying) jumped by a ratio of 1 to 3.5 in value terms and 1 to 2.8 in physical terms from marginal to medium farms. The difference between these ratios is mirrored in the derived price from rupee expenditure divided by liters bought: **the price for those who bought pesticides was sharply lower for the marginal and small than for the medium farmers.** It is difficult to know statistically whether the poor pay less for specific pesticides, or the set of pesticides bought in the marginal versus the other strata is sharply different. This requires further exploration. The conventional wisdom is that marginal farmers are buying local brands and spurious products, but our data do not allow us to test this (and we have not seen such a test in India).

Table 5.1.4 depicts the purchases of pesticides by retail category. It shows that only 0.4% of the farmers buying pesticides do so at state/coop stores, a very minor source, versus 17% from RBHs (mainly Viswas and Mana Gromor), much more than for fertilizer and seeds, and 45% from traditional shops. Fully 37% buy from a combination of sources (which is much higher than we found in the companion studies of MP and UP). Below we "map" the transactions in the combination category into specific categories to give the composition of purchases in rupees and liters.

For those buying pesticides, the expenditure/farm was highest at the traditional shops (4133 rs) versus only 3520 at the RBHs and 2792 at the state stores. At first this may seem surprising seeing that expenditures at RBHs are smaller for a given farmer than are those at small traditional shops, but this may be due partly to the fact that the RBHs are physically of modest size, with the pesticide shelves not much more than one sees in traditional shops.

Table 5.1.5 shows the sources (in terms of the retail category directly selling to the farmer) of pesticides purchased by the different farm size strata. The figures are shown in shares of liters

bought, with the shares of rupee expenditures in parentheses. The category of “combined retail sources” from the prior table has now been “de-combined” and the transactions mapped to the various vendor categories.

The share of liters bought by all the strata from state/coop stores hovers at around 1% for all strata, very negligible. Two-thirds are from PACs and the rest from the state agro stores.

By contrast, and now much larger than in the above table where a combined category was allowed, we find that 34% of the liters of pesticide in the sample (and 39% in the true-population of the survey areas, after correcting for our disproportionate sampling) were bought from RBHs; the share is actually higher for marginal farmers (39%) than the 33 and 32% for the other categories. Here the result for Viswas is strikingly different than in the seed and fertilizer categories; we find that most (37%/39%) of the pesticide market among RBHs is from Viswas.

However, **by far the main player is still the traditional category**, with 60% of the pesticide market. This actually (and against our expectations) from 60% for marginal farmers to 66% for small and medium. This is overwhelmingly the small private retailer, who has 59/60% of the traditional category’s market. The commission agent in the village was mentioned by our key informants, but as usual one can only take key informant statements as just hypotheses: here we find their share is a mere 1/60th of the traditional category, no more important a retailer than the government. Nearly the same goes for the mandi trader selling chemicals.

Note that the use rate in terms of liters per ha is sharply higher for marginal and small farmers (at 7.6 and 6.8 lt/ha) compared with medium farmers (at 3.4). This is a common finding in the world literature: it is usually explained as smaller farmers wanting to use their smaller land more intensively, or having less information/extension to know what correct amounts to use, or being more risk averse to disease and thus using “overkill,” or using chemicals with less quality and so more has to be used. We have no ability to test any of these reasons with the data and so offer them as qualitative potential explanations for future work to delve into.

Tables 5.1.6 and 5.1.7 are based on household pesticide purchase data, but then “flip” the perspective by showing them as sales from the various vendor categories to the three farm strata. As the stories are not much different between the liter and rupee versions (the two tables), we focus on the liter story. The “state categories” row shows that only 12% of the liters sold go to marginal farmers, 31% to small farmers, and fully 57% to the minority of farmers that are medium. This roughly mirrors land shares in the market, and so is not surprising. Pesticides are not subsidized by state vendors.

Interestingly, RBHs sell a slightly larger share of their pesticides to small/marginal farmers (61%) than do state stores noted above (43%). The private small traditional shops also sell a lower share (50%) of their pesticides to small/marginal farmers. **This flies in the face of our assumption that the modern retailer would be more oriented to the medium farmers; in fact they are more focused on marginal/small farmers in the pesticide market than are the other two vendor categories.**

Table 5.1.8 shows the farmers' major reason (as a share of transactions) for choice of a given vendor; the results are shown over farm strata. As we found in the other companion studies in UP and MP, the most important reason (in 42% of the transactions, not differing much over strata) given by the farmers for choice of pesticide vendor is timely availability – as one would expect as the key informants told us that farmers apply pesticides after the pest attack or when a neighbor has one. The second most important reason is quality assurance – at 35% of transactions, with, surprisingly even a slightly negative farm size correlation.

Interestingly, proximity is a very minor consideration – at only 2% of the transactions, (roughly 2% for small/marginal and 1% for medium farmers). Also interesting is the fact that “gives lowest price” is only 11% of the citations of major reason, and credit, only 10%, with little variation over farm size. The latter is triangulated with our finding that very few pesticide purchases are on credit.

5.2.3. Herbicides

Table 5.1.9, which depicts purchases of herbicides by farm size stratum, shows that only 31% of households bought herbicides, with a slight negative correlation over farm size. This share is much lower than in UP and especially in MP (from our companion studies).

The expenditure on herbicides for those buying (nearly all the farms) was much less than for pesticides, around a quarter for the marginal, two-thirds for the small, and half for the medium. The farms spent 688, 1849, and 4971 rupees by marginal, small, and medium strata - hence ranging from 15 to 40 to 110 USD per farm.

Abstracting from the composition of the set of herbicides, the expenditure per household (for those buying) jumped by a ratio of 1 to 7 in value terms and 1 to 8.9 in physical terms from marginal to medium farms. The difference between these ratios is mirrored in the derived price from rupee expenditure divided by liters bought: **the price for those who bought herbicides was sharply (20%) lower for the medium, compared with the small/marginal farmers (the opposite situation as that seen in pesticides).** We are not sure why, and do not have anything in our data set to explore this difference as we do not have the brands nor any quality parameters. This requires further exploration. We have not seen an exploration of this in the Indian empirical literature.

Table 5.1.10 depicts the purchases of herbicides by retail category. It shows that none of the farmers buy herbicides at state/coop stores. 16% buy only from RBHs (mainly Viswas and Mana Gromor), much more than for fertilizer and seeds, and 41% buy only from traditional shops. Fully 44% buy from a combination of sources (which is much higher than we found in the companion studies of MP and UP). Below we “map” the transactions in the combination category into specific categories to give the composition of purchases in rupees and liters.

For those buying herbicides, the expenditure/farm was lowest at the traditional shops (1531 rs) versus 1919 from the RBHs. The price at the traditional shop is just 5% higher than that of the RBH, close.

Table 5.1.11 shows the sources (in terms of the retail category directly selling to the farmer) of herbicides purchased by the different farm size strata. The figures are shown in shares of liters bought, with the shares of rupee expenditures in parentheses. The category of “combined retail sources” from the prior table has now been “de-combined” and the transactions mapped to the various vendor categories.

There was no herbicide bought from state/coop stores, even after “de-combining” the combined category from the previous table.

By contrast, and now much larger than in the above table where a combined category was allowed, we find that 27% of the liters of pesticide in the sample were bought from RBHs; the share is actually higher (as with pesticides) for marginal farmers (33%) than the 24 and 27% for the other categories. Here the result for Viswas is strikingly different than in the seed and fertilizer categories; we find that most (20%/27%) of the herbicide market among RBHs is from Viswas.

However, **by far the main player is still the traditional category**, with 73% of the pesticide market. This rises (against our expectations), but only slightly, from 67% for marginal farmers to 73-76% for small and medium. This is overwhelmingly the small private retailer, who has nearly all of the traditional category’s market.

Note that the use rate in terms of liters per ha is roughly similar over the strata, at 0.7-0.8 liters.

Tables 5.1.12 and 5.1.13 are based on household herbicide purchase data, but then “flip” the perspective by showing them as sales from the various vendor categories to the three farm strata. As the stories are not much different between the liter and rupee versions (the two tables), we focus on the liter story. Interestingly, RBHs sell a slightly larger share of their herbicides to small/marginal farmers (55%) than to medium farmers. The private small traditional shops also sell a lower share (43%) of their herbicides to small/marginal farmers. **This flies in the face of our assumption that the modern retailer would be more oriented to the medium farmers; in fact they are more focused on marginal/small farmers in the herbicide market than are the traditional vendors.**

Table 5.1.14 shows the farmers’ major reason (as a share of transactions) for choice of a given vendor; the results are shown over farm strata. As we found in the other companion studies in UP and MP, the most important reason (in 39% of the transactions, not differing much over strata) given by the farmers for choice of herbicide vendor is timely availability. The second most important reason is quality assurance –at 36% of transactions, with a slightly positive farm size correlation.

Interestingly, as with pesticides, proximity is a very minor consideration – at only 4% of the transactions (actually with a positive correlation with farm size). Also interesting is the fact that “gives lowest price” is only 13% of the citations of major reason, and credit, only 8%, with little variation over farm size.

5.2.4. Fungicides

Table 5.1.15, which depicts purchases of fungicides by farm size stratum, shows that fully 74% of households bought herbicides, with a slight positive correlation over farm size. This share is far higher than in the MP and UP companion studies.

The expenditure on fungicides for those buying was less than for pesticides but more than for herbicide. The farms spent 1481, 2803, and 5552 rupees by marginal, small, and medium strata - hence ranging from 33 to 62 to 123 USD per farm.

Abstracting from the composition of the set of fungicides, the expenditure per household (for those buying) jumped by a ratio of 1 to 3.75 in value terms and 1 to 5 in physical terms from marginal to medium farms. The difference between these ratios is mirrored in the derived price from rupee expenditure divided by liters bought: **the price for those who bought fungicides was sharply (25%) lower for the medium, compared with the small/marginal farmers (the opposite situation as that seen in pesticides).** We are not sure why, and do not have anything in our data set to explore this difference as we do not have the brands nor any quality parameters. This requires further exploration. We have not seen an exploration of this in the Indian empirical literature.

Table 5.1.16 depicts the purchases of fungicides by retail category. It shows that few (0.5%) of the farmers buy fungicides at state/coop stores. As with herbicides, 16% buy fungicides only from RBHs (mainly Viswas and Mana Gromor), much more than for fertilizer and seeds, and 45% buy only from traditional shops. Fully 39% buy from a combination of sources (which is much higher than we found in the companion studies of MP and UP). Below we “map” the transactions in the combination category into specific categories to give the composition of purchases in rupees and liters.

For those buying herbicides, the expenditure/farm was lowest at the traditional shops (3097 rs) versus 3098 from the RBHs. The price at the traditional shop is a surprising 50% higher than that of the RBH. We are not sure of the reason for this difference; that would be a topic of future research.

Table 5.1.17 shows the sources (in terms of the retail category directly selling to the farmer) of fungicides purchased by the different farm size strata. The figures are shown in shares of liters bought, with the shares of rupee expenditures in parentheses. The category of “combined retail sources” from the prior table has now been “de-combined” and the transactions mapped to the various vendor categories.

There was a slight amount of fungicide bought from state/coop stores, only 1%, even after “de-combining” the combined category from the previous table.

By contrast, we find that 40% of the liters of fungicide in the sample were bought from RBHs. In sharp contrast with the other chemicals, the share is much lower for marginal farmers (29%) than the 40 and 43% for the other categories. Thus, fungicide is the one category where RBHs are

shown to have a medium farm bias. We find that most (35%/36%) of the herbicide market among RBHs is from Viswas.

However, **by far the main player is still the traditional category**, with 59% of the fungicide market. This drops (per expectations), from 69% for marginal farmers to 56-57% for small and medium. This is overwhelmingly the small private retailer, who has nearly all of the traditional category's market.

Note that as with pesticide, marginal (with 6.3 liters) and small (with 7.7 liters) use more per ha than the medium farmers (at 5 liters) perhaps for the same hypothesized reasons noted for pesticides.

Tables 5.1.18 and 5.1.19 are based on household fungicide purchase data, but then “flip” the perspective by showing them as sales from the various vendor categories to the three farm strata. As the stories are not much different between the liter and rupee versions (the two tables), we focus on the liter story. Interestingly, RBHs sell a smaller share of their fungicides to small/marginal farmers (36%) than to medium farmers. The private small traditional shops also sell a lower share (43%) of their fungicides to small/marginal farmers. Both the traditional shops and the RBHs distribute their sales along the lines of land shares and the ensuing market shares of the clients.

Table 5.1.20 shows the farmers' major reason (as a share of transactions) for choice of a given vendor; the results are shown over farm strata. As we found in the other companion studies in UP and MP, the most important reason (in 44% of the transactions, not differing much over strata) given by the farmers for choice of fungicide vendor is timely availability. The second most important reason is quality assurance – at 31% of transactions, with little farm size correlation.

Interestingly, as with pesticides and herbicides, proximity is a very minor consideration – at only 2% of the transactions. Also interesting is the fact that “gives lowest price” is only 9% of the citations of major reason, and credit, only 14%, with little variation over farm size.

5.3. Results concerning Pesticides and Herbicides from our Input Retailer Survey

Table 5.2.1 shows the share of stores selling pesticides and herbicides and fungicides, the shares in their sales of these chemicals, and the shares selling each of the types. The table shows that 81% of all traditional shops, all of the RBHs, and a third of the state stores, sell some of these chemicals, in all the study zones. These shares do not differ much over zones, except for state stores, among which one finds those selling chemicals mainly in the dynamic east zone.

Of those that sell chemicals, the share of their overall input sales is appreciable – some 42% of the sales of all shops (like the other states); predictably from our farm results, the share of sales from chemicals was highest in the RBHs, where it is 56% on average (but sharply increasing west to east as can be predicted, up to 70% of sales in the east). The share in traditional shops was 45%, and in state/coop stores, only 11%.

Essentially all or nearly all of the stores of any category that sold chemicals, sold all three kinds.

Table 5.2.2.-5.2.10 show shows retailers’ practices in terms of packaging, unit sizes, and branding of three specific types of pesticides, three types of herbicides, and three fungicides. All the 9 types of chemicals studied are sold by all the vendor types packed, not loose.

Moreover, **all retail types are selling a range of unit sizes**, with a slight occurrence of more larger units (but also small units) in the RBHs, and smaller units in the traditional shops – but the unit sizing patterns differ very little – contrary to our expectation, and the conventional wisdom, that modern retail sells in large units and traditional shops sell in small units, and thus segment the market.

Interestingly, across all vendor types, across all chemicals, the share in sales of that chemical type that are from brands of the top three companies is always the lion’s share – from 75% to 90%. We thus did not find that small traditional shops have many small companies’ brands – but all the vendor types have a similar concentration of brands (not necessarily the same brands, but just a concentration).

The price data appear somewhat “noisy.” Several tentative points appear.

The first is that in 8 of 9 chemicals, one or more of the vendor types did not have the chemical in question; this implies that a farmer wanting a given chemical has to take the time to “shop around”. However, 7/9 of the chemicals are missing in the state stores, 3/9 missing in the RBH stores, and 0/9 missing in the traditional stores. This finding corroborates the focus group finding that farmers find the traditional shops to have the widest selection.

The second point is that there is great variability (perhaps some due to noise in the data) across regions for a given chemical in its price. But this also corroborates the focus group finding that farmers feel there is lots of price variability over stores and areas in the price of even a branded standard chemical.

The third point is that there is no clear pattern in which kind of vendor sells chemicals cheaper. Sometimes several chemicals are cheaper in traditional shops, others are same price as in RBHs, others are dearer. Unless this is the fruit of data noise, it means that sometimes some products are offered cheap by let’s say RBHs as promotion products. This is certainly what we heard in key informant interviews, and seems to be born out in the data. But this should be considered still an untested hypothesis.

Table 5.2.11 shows retailers’ practices selling farm equipment. Again, a relatively narrow set of traditional shops, and most of Viswas in west and center, but not east, sell equipment. The share in sales is small – only about 10% of traditional shop’s sales, 26% of Viswas, and very few state stores. The small traditional shops sell only small equipment such as sprayers – but also so do the RBH stores – different from the situation in UP and MP where larger equipment is also sold at the RBHS.

Chapter 5 Annex: Tables on Pesticides, Fungicides, and Herbicides

Section 5.1. Purchases of households of Pesticides and Herbicides and Fungicides

Table 5.1.1 Purchase of any kind of chemicals, by farm size, in shares of farms – and of buyers, shares of transactions over chemical types					
	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
% of households that bought any chemicals (N=810 households)	98.70	99.32	99.30	99.14	99.08
Of all chemicals transactions, % of transactions in (N=3710 transactions):					
Insecticides (%)	53.38	56.67	59.76	57.01	56.19
Herbicides (%)	9.45	9.64	8.08	9.00	9.18
Fungicides (%)	33.08	30.43	30.16	31.00	31.37
Plant Growth Promoters (%)	3.97	3.12	2.00	2.91	3.16
Other (%)	0.11	0.14	0.00	0.08	0.09
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 5.1.2. Farmers' reports of availability of chemicals at MRP, by farm size, in shares of farmers

	Marginal (0-1 ha) N=228	Small (>1-2 ha) N=290	Medium (>2 ha) N=285	Un weighted overall N=803	Population weighted overall*
% of households who reported that chemicals are available at MRP (N=803 households):					
Always available (%)	69.74	68.62	72.98	70.49	70.14
Usually available (%)	21.49	20.00	16.84	19.30	19.78
Not available (%)	8.77	11.38	10.18	10.21	10.09
Not responded (%)	0.0	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Pesticides / Insecticides	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
1.Share of households that bought Pesticides in last twelve months (N=810 households)	93.94	95.89	95.82	95.31	95.13
2.1 Simple average pesticide expenditure in Rs/household (zeroed out average; averaging over all households including both buyers and non buyers; N=810 households)	2284.04	4312.17	8095.08	4983.65	4487.21
2.2 Simple average liters of pesticide bought per household (zeroed out average; averaging over all households including both buyers and non buyers; N=810 households)	5.31	10.60	15.24	10.59	9.75
3.1 Simple average pesticide expenditure in Rs. /household (Not zeroed out average over pesticide buyers; N= 772 households)	2435.59	4507.44	8494.84	5247.05	4716.99
3.2 Simple average liters of pesticides bought per household (Not zeroed out average over pesticide buyers; N= 772 households)	5.66	11.08	15.99	11.15	10.25
4. Derived price for pesticides Rs/L (derived by dividing 2.1 by 2.2)	430.14	406.81	531.17	470.60	446.77
*Weights s in table 2.1.7					

Pesticides	State Retail N=5	Traditional Retail N=368	Modern Retail N=138	Combination N=299	Total N=810
1.1% of households that bought pesticides(N=810 households)					95.3
1.2 Of households that buy pesticide from any source, % of households buying from various sources (N= 772 households)	0.4	45.2	17.1	37.3	100.00
2.1 Simple average pesticide expenditure, in Rs. per household (zeroed out average over all households including both buyers and non buyers of pesticide; N=810 households)	2791.66	3943.51	3374.95	7146.54	4983.65
2.2 Simple avg. of Liters of pesticide bought per household (zeroed out average over all households including both buyers and non buyers of pesticide; N= 810 households) (figures in parentheses are % of the total)	11.76	9.04	8.42	13.73	10.58
3.1 Simple average pesticide expenditure, in Rs. per household (not zeroed out average over all pesticide buyers; N= 772 households)	2791.66	4132.99	3520.42	7417.2	5247.04
3.2 Simple avg. of Liters of pesticide bought per household (not zeroed out average over all pesticide buyers; N= 772 households)	11.76	9.46	8.79	14.24	11.15
4. Derived Pesticide price (Rs/L) (derived by dividing 2.1 by 2.2)	237.37	436.23	400.83	520.51	471.04

Table 5.1.5 Pesticide sources, by farm size, % of liters (with % of Rs spend in parentheses)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of liters of pesticide bought by households across vendors (N=772 households) (figures in the parentheses show % of Rs. spent in purchasing pesticides by households across different vendors):					
<u>State Categories</u>	0.89 (0.8)	0.97 (0.87)	1.3 (0.57)	1.1 (0.7)	0.89 (0.7)
1.1 PACS (%)	0.51 (0.3)	0.00 (0.0)	0.4 (0.26)	0.3 (0.2)	0.51 (0.3)
1.2 State Agro retail store	0.38 (0.4)	0.12 (0.17)	0.9 (0.31)	0.5 (0.3)	0.38 (0.3)
1.3 Provincial cooperative federation (PCF)/ Markfed	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<u>Modern Categories</u>	39.12 (41.2)	33.22 (29.96)	32.0 (31.5)	33.5 (32.3)	39.12 (32.5)
2.1 VISWAS	36.75 (33.5)	29.84 (25.07)	27.0 (25.36)	29.5 (26.4)	36.75 (26.6)
2.2 Other RBH	2.36 (7.7)	3.37 (4.9)	5.0 (6.14)	4.0 (6.0)	2.36 (5.9)
<u>Traditional Categories</u>	59.99 (58.1)	65.81 (69.2)	66.7 (67.9)	65.4 (67.0)	59.99 (66.7)
3.1 Private retailer/small private retailer	58.49 (56.0)	63.50 (66.75)	64.7 (65.83)	63.4 (64.8)	58.49 (64.5)
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	0.84 (0.7)	1.29 (1.46)	0.7 (0.2)	0.9 (0.7)	0.84 (0.8)
3.3 Cold stores	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
3.4 Producer association	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
3.5 Mandi trader	0.62 (1.4)	0.88 (0.86)	1.1 (0.57)	0.9 (0.8)	0.62 (0.8)
Total	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)
Avg qty L/HH	5.31	10.60	15.24	10.59	9.75
Avg. farm size (ha)	0.70	1.56	4.47	2.34	1.96
Use Rate L/ha	7.6	6.8	3.4	4.5	4.9
*Weights as in table 2.1.7					

Table 5.1.6 Pie Chart: pesticide sales totals by retail type to farm strata (in liters)						
Pesticides	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Un weighted Total Vol. (Liters)	Population weighted Total Vol. (Liters)*
% of liters of pesticide bought from different vendors by farm strata (N=772 households):						
<u>1.State Categories</u>	11.59	31.28	57.14	100%	91.31 (1.1%)	27.63 (0.89%)
1.1 PACS (%)	12.66	0	35.4	100%	48.02	6.56
1.2 State Agro retail store	10.4	8.39	81.24	100%	43.29	11.85
1.3 Provincial cooperative federation (PCF)/ Markfed	0	0	0	0	0	0
<u>2. Modern Categories</u>	17.4	36.3	46.3	100%	2686.8 (33.5%)	849.49 (39.1%)
2.1 VISWAS	18.56	37.03	44.4	100%	2366.21	753.8
2.2 Other RBH	8.8	30.9	60.3	100%	320.54	95.69
<u>3. Traditional Categories</u>	13.67	36.85	49.48	100%	5243.4 (65.4%)	1635.87 (59.9%)
3.1 Private retailer/small private retailer	13.75	36.68	49.56	100%	5082.69	1585.29
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	13.4	50.92	35.68	100%	74.63	24.52
3.3 Cold stores	0	0	0	0	0	0
3.4 Producer association	0	0	0	0	0	0
3.5 Mandi trader	9.93	34.52	55.55	100%	74.82	22.77
3.6 Direct sale by company	0	100	0	100%	4.08	1.51
3.7 Other	0	0	100	100%	7.17	1.79
4. Total					8021.45 (100%)	2513 (100%)
*Weights as in table 2.1.7						

Table 5.1.7 Pie Chart: pesticide sales totals by retail type to farm strata (in Rs.)						
Pesticides	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Un weighted Total Rs.	Population weighted Total Rs.*
% of Rs. spent on pesticides, bought from different vendors by farm strata (N=772 households):						
<u>1.State Categories</u>	16.4	24.5	59.1	100%	26445.0 (0.7%)	8374.0 (0.7%)
1.1 PACS (%)	0.0	0.0	0.0	100%	15630.0	5146.7
1.2 State Agro retail store	16.4	24.5	59.1	100%	10815.0	3227.3
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0	0.0	0.0	100%	0.0	0.0
<u>2. Modern Categories</u>	23.0	29.9	47.1	100%	1233765.6 (32.3%)	379038.4 (32.5%)
2.1 VISWAS	26.9	27.4	45.7	100%	1006439.0	310046.6
2.2 Other RBH	4.2	42.0	53.8	100%	227427.3	69031.3
<u>3. Traditional Categories</u>	15.2	36.8	48.0	100%	2557281.5 (67.0%)	777574.7 (66.7%)
3.1 Private retailer/small private retailer	15.5	36.7	47.8	100%	2473331.5	751712.2
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	14.7	70.6	14.7	100%	25160.0	8829.6
3.3 Cold stores	0.0	0.0	0.0	100%	0.0	0.0
3.4 Producer association	0.0	0.0	0.0	100%	0.0	0.0
3.5 Mandi trader	29.0	71.0	0.0	100%	29690.0	9629.8
3.6 Direct sale by company	0.0	0.0	0.0	100%	1100.0	407.0
3.7 Other	0.0	0.0	0.0	100%	28000.0	7000.0
5. Total					3817492.1 (100%)	1164987.0 (100%)
*Weights as in table 2.1.7						

Table 5.1.8 Reason for choice of pesticide retailer, by farm size, in shares of transactions					
Pesticides	Marginal (0-1 ha) N=497	Small (>1-2 ha) N=782	Medium (>2 ha) N=836	Un weighted overall N=2115	Population weighted overall*
% of transactions wherein households stated the major reason for the selection of retailer as: (N=2115 transactions)					
He is close by (%)	2.21	2.43	0.72	1.70	1.92
Gives lowest price (%)	11.27	12.66	9.33	11.02	11.30
Quality is assured (%)	34.00	38.24	30.26	34.09	34.63
Gives credit when needed (%)	10.87	7.54	11.12	9.74	9.70
Timely available (%)	41.65	38.75	48.33	43.22	42.25
No other option (%)	0.0	0.0	0.24	0.09	0.06
Other (%)	0.0	0.38	0.0	0.14	0.14
Total	100%	100%	100%	100%	100.0
*Weights as in table 2.1.7					

Herbicides/weedicides	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
1.Share of households that bought herbicides in last twelve months (N=810 households)	31.6	32.9	27.2	30.5	30.98
2.1 Simple average herbicides expenditure in Rs/household (zeroed out average; averaging over all households including both buyers and non buyers; N= 810 households)	195.90	511.66	1079.81	619.58	533.71
2.2 Simple average liters of herbicides bought per household (zeroed out average; averaging over all households including both buyers and non buyers; N= 810 households)	0.48	1.26	3.30	1.75	1.47
3.1 Simple average herbicides expenditure in Rs. /household (Not zeroed out average over pesticide buyers; N= 247 households)	687.66	1848.80	4970.86	2399.31	2188.08
3.2 Simple average liters of herbicides bought per household (Not zeroed out average over pesticide buyers; N= 247 households)	1.71	4.55	15.21	6.79	6.14
4. Derived price for herbicides Rs/L (derived by dividing 2.1 by 2.2)	408.13	406.08	327.22	354.05	387.14
*Weights in table 2.1.7					

Table 5.1.10 Purchases of herbicides, by retail type, in share of farms buying, and for buyers Rs & Liters (L)					
Pesticides	State Retail N=5	Traditional Retail N=368	Modern Retail N=138	Combination N=299	Total N=810
1.1% of households that bought herbicides(N=810 households)					30.5
1.2 Of households that buy herbicides from any source, % of households buying from various sources (N= 247 households)	0.00	16.4	41.3	44.1	100
2.1 Simple average herbicides expenditure, in Rs. per household (zeroed out average over all households including both buyers and non buyers of pesticide; N= 810 households) (figures in parentheses are % of the total)	0.0 (0.0%)	322.89 (18.3%)	472.97 (26.8%)	970.09 (54.9%)	619.58 (100%)
2.2 Simple avg. of Liters of herbicides bought per household (zeroed out average over all households including both buyers and non buyers of pesticide; N= 810 households) (figures in parentheses are % of the total)	0.0 (0.0%)	0.74 (14.9%)	1.15 (23.1%)	3.08 (62.0%)	1.76 (100%)
3.1 Simple average herbicides expenditure, in Rs. per household (not zeroed out average over all pesticide buyers; N= 247 households)	0.0	1530.74	1919.41	3179.09	2399.31
3.2 Simple avg. of Liters of herbicides bought per household (not zeroed out average over all pesticide buyers; N= 247 households)	0.0	3.53	4.68	10.05	6.79
4. Derived herbicide price (Rs/L) (derived by dividing 2.1 by 2.2)**	0.0	433.64	410.13	316.33	353.36
**T-test over prices, significant at 1%					

Table 5.1.11 Herbicide sources, by farm size, % of liters (with % of Rs spend in parentheses)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of liters of herbicide bought by households across vendors (N=247 households) (figures in the parentheses show % of Rs. spent in purchasing herbicides by households across different vendors):					
<u>State Categories</u>	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
1.1 PACS (%)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
1.2 State Agro retail store	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
<u>Modern Categories</u>	33.1 (34.6)	24.4 (24.4)	26.7 (33.7)	26.7 (31.2)	26.7 (30.5)
2.1 VISWAS	28.5 (30.4)	22.7 (23.0)	17.4 (24.4)	19.7 (24.6)	20.3 (24.7)
2.2 Other RBH	4.5 (4.2)	1.8 (1.4)	9.3 (9.3)	7.0 (6.5)	6.3 (5.9)
<u>Traditional Categories</u>	66.9 (65.4)	75.6 (75.6)	73.3 (66.3)	73.3 (68.8)	73.3 (69.5)
3.1 Private retailer/small private retailer	67.0 (65.4)	72.1 (70.7)	73.3 (66.3)	72.5 (67.5)	72.2 (67.8)
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	0.0 (0.0)	2.3 (2.3)	0.0 (0.0)	0.6 (0.7)	0.8 (0.8)
3.3 Cold stores	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
3.4 Producer association	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
3.5 Mandi trader	0.0 (0.0)	1.0 (2.1)	0.0 (0.0)	0.3 (0.6)	0.3 (0.8)
3.6 Direct sale by company	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
3.7 Other	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Total	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)
Avg qty L/HH	0.49	1.26	3.31	1.75	1.48
Avg. farm size (ha)	0.7	1.56	4.46	2.34	1.96
Use rate L/ ha.	0.7	0.8	0.7	0.7	0.8
*Weights as in table 2.1.7					

Table 5.1.12 Pie Chart: herbicide sales totals by retail type to farm strata (in liters)						
Herbicides	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Overall	Un weighted Total Vol. (Liters)	Population weighted Total Vol. (Liters)*
% of liters of herbicides bought from different vendors by farm strata (N=279 households):						
<u>1.State Categories</u>	0.0	0.0	0.0	0.0	0 (0.0%)	0 (0.0%)
1.1 PACS (%)	0.0	0.0	0.0	0.0	0	0.0
1.2 State Agro retail store	0.0	0.0	0.0	0.0	0	0.0
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0	0.0	0.0	0.0	0	0.0
<u>2. Modern Categories</u>	15	31	53	100%	359.51 (26.7%)	104.4 (26.7%)
2.1 VISWAS	17	37	45	100%	276.8	79.5
2.2 Other RBH	9	10	81	100%	82.8	24.8
<u>3. Traditional Categories</u>	11.9	31.3	56.8	100%	986.09 (73.3%)	287.1 (73.3%)
3.1 Private retailer/small private retailer	12.0	30.4	57.6	100%	974.48	282.8
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	0.00	100.00	0.00	100%	8	3.0
3.3 Cold stores	0.0	0.0	0.0	100%	0	0.0
3.4 Producer association	0.0	0.0	0.0	100%	0	0.0
3.5 Mandi trader	0.00	100.00	0.00	100%	3.5	1.3
3.6 Direct sale by company	0.00	100.00	0.00	100%	0.1	0.0
3.7 Other	0.0	0.0	0.0	100%	0	0.0
4. Total					1343.6 (100%)	391.5 (100%)
*Weights as in table 2.1.7						

Table 5.1.13 Pie Chart: herbicides sales totals by retail type to farm strata (in Rs.)						
Herbicides	Marginal (0-2 ha)	Small (>1-2 ha)	Medium (>2 ha)	Overall	Un weighted Total Rs.	Population weighted Total Rs.*
% of Rs. spent on herbicides, bought from different vendors by farm strata (N=279 households):						
<u>1.State Categories</u>	0.0	0.0	0.0	0.0	0.0 (0.0%)	0.0 (0.0%)
1.1 PACS (%)	0.0	0.0	0.0	0.0	0.0	0.0
1.2 State Agro retail store	0.0	0.0	0.0	0.0	0.0	0.0
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0	0.0	0.0	0.0	0.0	0.0
<u>2. Modern Categories</u>	16.7	36.5	46.7	100%	154610.0 (31.2%)	44948.8 (30.5%)
2.1 VISWAS	16.7	36.5	46.7	100%	122120.0	36328.3
2.2 Other RBH	0.0	0.0	0.0	0.0	32490.0	8621.7
<u>3. Traditional Categories</u>	10.9	34.0	55.0	100%	341565.0 (68.8%)	102256.0 (69.5%)
3.1 Private retailer/small private retailer	11.2	32.3	56.5	100%	334765.0	99740.6
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	0.0	100.0	0.0	100%	3290.0	1217.3
3.3 Cold stores	0.0	0.0	0.0	0.0	0.0	0.0
3.4 Producer association	0.0	0.0	0.0	0.0	0.0	0.0
3.5 Mandi trader	0.0	100.0	0.0	100%	3010.0	1113.7
3.6 Direct sale by company	0.0	100.0	0.0	100%	500.0	185.0
3.7 Other	0.0	0.0	0.0	0.0	0.0	0.0
4. Total					496175.0 (100%)	147204.9 (100%)
*Weights as in table 2.1.7						

Table 5.1.14 Reason for choice of herbicides retailer, by farm size, in shares of <u>transactions</u>					
Pesticides	Marginal (0-1 ha) N=88	Small (>1-2 ha) N=133	Medium (>2 ha) N=113	Un weighted overall N=334	Population weighted overall*
% of transactions wherein households stated the major reason for the selection of retailer as: (N=334 transactions)					
He is close by (%)	1.14	5.26	3.54	3.59	3.26
Gives lowest price (%)	13.64	14.29	10.62	12.87	13.13
Quality is assured (%)	34.09	32.33	40.71	35.63	35.09
Gives credit when needed (%)	7.95	8.27	7.96	8.08	8.07
Timely available (%)	43.18	39.85	35.40	39.22	40.00
No other option (%)	0.0	0.0	1.77	0.60	0.44
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Fungicide	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
1.Share of households that bought Fungicides in last twelve months (N=810 households)	72.7	75.0	75.3	74.4	74.2
2.1 Simple average fungicide expenditure in Rs/household (zeroed out average; averaging over all households including both buyers and non buyers; N=810_households)	1066.3	2047.7	4018.0	2426.9	2167.3
2.2 Simple average liters of fungicide bought per household (zeroed out average; averaging over all households including both buyers and non buyers; N=810 households)	4.4	12.2	22.6	13.4	11.8
3.1 Simple average fungicide expenditure in Rs./household (Not zeroed out average over fungicide buyers; N= 603 households)	1480.9	2802.7	5551.7	3347.0	2987.7
3.2 Simple average liters of fungicides bought per household (Not zeroed out average over fungicide buyers; N= 603 households)	6.1	16.7	31.2	18.5	16.3
4. Derived price for fungicides Rs/L (derived by dividing 2.1 by 2.2)	240.1	167.8	177.5	180.3	197.7
*Weights as in table 2.1.7					

Fungicide	State Retail	Traditional Retail	Modern Retail	Combination	Total
1.1% of households that bought fungicides(N=810 households)					74.4
1.2 Of households that buy fungicide from any source, % of households buying from various sources (N= 603 households)	0.5	45.4	15.6	38.5	100.0
2.1 Simple average fungicide expenditure, in Rs. per household (zeroed out average over all households including both buyers and non buyers of fungicide; N=810 households)	4426.6	2268.3	2032.4	2837.8	2426.9
2.2 Simple avg. of Liters of fungicide bought per household (zeroed out average over all households including both buyers and non buyers of fungicide; N= 810 households) (figures in parentheses are % of the total)	12.4	11.2	14.7	16.0	13.4
3.1 Simple average fungicide expenditure, in Rs. per household (not zeroed out average over all fungicide buyers; N= 603 households)	4426.6	3097.3	3098.2	3721.3	3347.0
3.2 Simple avg. of Liters of fungicide bought per household (not zeroed out average over all fungicide buyers; N= 603 households)	12.4	15.3	22.4	21.0	18.5
4. Derived Fungicide price (Rs/L) (derived by dividing 2.1 by 2.2)	357.0	202.5	138.3	177.4	181.1

Table 5.1.17 Fungicide sources, by farm size, % of liters (with % of Rs spend in parentheses)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of liters of fungicide bought by households across vendors (N=603 households) (figures in the parentheses show % of Rs. spent in purchasing fungicides by households across different vendors):					
State Categories	1.7 (1.3)	0.1 (0.5)	1.5 (1.5)	1.1 (1.2)	1.4 (1.1)
1.1 PACS (%)	1.5 (1.1)	0.0 (0.0)	0.8 (0.3)	0.7 (0.3)	0.8 (0.5)
1.2 State Agro retail store	0.2 (0.2)	0.1 (0.5)	0.7 (1.2)	0.5 (0.8)	0.3 (0.6)
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Modern Categories	29.1 (21.1)	38.9 (31.2)	42.6 (35.5)	39.9 (32.1)	36.1 (28.4)
2.1 VISWAS	28.7 (19.9)	37.4 (29.6)	41.1 (28.8)	38.5 (27.8)	34.9 (25.7)
2.2 Other RBH	0.4 (1.2)	1.5 (1.7)	1.5 (6.7)	1.4 (4.3)	1.1 (2.8)
Traditional Categories	69.1 (77.5)	61.0 (68.3)	55.9 (63.0)	59.0 (66.8)	62.8 (70.5)
3.1 Private retailer/small private retailer	67.0 (73.6)	57.5 (54.5)	55.7 (62.6)	57.6 (64.8)	60.7 (63.8)
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	1.8 (3.4)	1.6 (1.3)	0.2 (0.4)	0.8 (1.1)	1.3 (1.9)
3.3 Cold stores	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
3.4 Producer association	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
3.5 Mandi trader	0.3 (0.5)	1.9 (2.6)	0.0 (0.0)	0.5 (0.9)	0.8 (1.1)
3.6 Direct sale by company	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
3.7 Other	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Total	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)	100.0 (100.0)
Avg qty L/HH	4.44	12.26	22.6	13.46	11.9
Avg. farm size (ha)	0.70	1.56	4.47	2.34	1.96
Use rate of fungicides L/ha	6.3	7.7	5.0	5.8	6.1
*Weights as in table 2.1.7					

Table 5.1.18 Pie Chart: Fungicide sales totals by retail type to farm strata (in liters)						
Fungicide	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Un weighted Total Vol. (Liters)	Population weighted Total Vol. (Liters)
% of liters of fungicide bought from different vendors by farm strata (N=603 households):						
<u>1.State Categories</u>	19.2	2.2	78.6	100%	90.84 (1.1%)	334.7 (1.4%)
1.1 PACS (%)	28.8	0.0	71.2	100%	53.5	15.4
1.2 State Agro retail store	5.4	5.4	89.3	100%	37.33	9.8
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0	0.0	0.0	0.0	0.0	0.0
<u>2. Modern Categories</u>	9.2	26.5	64.3	100%	3154.97 (39.9%)	927.0 (36.1%)
2.1 VISWAS	9.4	26.4	64.2	100%	3044.26	894.8
2.2 Other RBH	3.6	29.8	66.5	100%	110.71	32.2
<u>3. Traditional Categories</u>	14.8	28.2	57.1	100%	4662.81 (59%)	1412.9 (62.8%)
3.1 Private retailer/small private	14.7	27.2	58.2	100%	4558.46	1375.1
3.2 Commission agent in village (farmer selling purchased agri-inputs in village)	29.7	57.1	13.2	100%	61.15	21.8
3.3 Cold stores	0.0	0.0	0.0	0.0	0.0	0.0
3.4 Producer association	0.0	0.0	0.0	0.0	0.0	0.0
3.5 Mandi trader	7.2	92.8	0.0	100%	43.2	16.0
3.6 Direct sale by company	0.0	0.0	0.0	0.0	0.0	0.0
3.7 Other	0.0	0.0	0.0	0.0	0.0	0.0
4. Total					7908.62 (100%)	2365.14 (100%)

Table 5.1.19 Pie Chart: Fungicide sales totals by retail type to farm strata (in Rs.)						
Fungicide	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Un weighted Total Rs.	Population weighted Total Rs.
% of Rs. spent on Fungicide , bought from different vendors by farm strata (N=810 households):						
<u>1.State Categories</u>	16.8	12.9	70.3	100%	18625 (1.2%)	5351.2 (1.1%)
1.1 PACS (%)	47.7	0.0	52.3	100%	5345	1667.8
1.2 State Agro retail store	4.4	18.1	77.6	100%	13280	3683.4
1.3 Provincial cooperative federation (PCF)/ Markfed	0.0	0.0	0.0	0.0	0.0	0.0
<u>2. Modern Categories</u>	9.5	30.7	59.8	100%	518365 (32.1%)	155068.3 (28.4%)
2.1 VISWAS	10.3	33.6	56.1	100%	448705	136289.5
2.2 Other RBH	3.9	12.1	84.0	100%	69660	18778.8
<u>3. Traditional Categories</u>	16.7	32.3	51.0	100%	1078970 (66.8%)	334945.7 (70.5%)
3.1 Private retailer/small private	16.3	31.4	52.3	100%	1047020	323423.1
3.2 Commission agent in village (farmer selling purchased agri-inputs	44.9	36.8	18.3	100%	17800	6276.0
3.3 Cold stores	0.0	0.0	0.0	0.0	0.0	0.0
3.4 Producer association	0.0	0.0	0.0	0.0	0.0	0.0
3.5 Mandi trader	7.8	92.2	0.0	100%	14150	5246.6
3.6 Direct sale by company	0.0	0.0	0.0	0.0	0.0	0.0
3.7 Other	0.0	0.0	0.0	0.0	0.0	0.0
5. Total					1615960 (100%)	495365.2 (100%)

Table 5.1.20 Reason for choice of Fungicide retailer, by farm size, in shares of transactions					
Fungicide	Marginal (0-1 ha) N=301	Small (>1-2 ha) N=390	Medium (>2 ha) N=364	Un weighted overall N=1055	Population weighted overall*
% of transactions wherein households stated the major reason for the selection of retailer as: (N=1055 transactions)					
He is close by (%)	1.0	2.3	1.4	1.6	1.6
Gives lowest price (%)	9.3	8.7	9.6	9.2	9.2
Quality is assured (%)	29.2	35.1	29.1	31.4	31.4
Gives credit when needed (%)	15.6	11.8	14.3	13.7	13.9
Timely available (%)	44.9	41.5	44.8	43.6	43.6
No other option (%)	0.0	0.0	0.8	0.3	0.2
Other (%)	0.0	0.5	0.0	0.2	0.2
Total	100%	100%	100%	100%	100.0
*Weights as in table 2.1.7					

5.2. Retail of Pesticides and Herbicides, and Equipment

Table 5.2.1. Characteristics of Chemical Retailers					
	Average Share of Chemical sales in total input sales (only for those retailers whose share of chemical sales is >0)	Of all retailers % of Retailers Selling Chemicals	For Retailers Selling Chemicals, % of Retailers selling Chemical Types ¹		
			Pesticides/ Insecticides (consider all insecticide types sold)	Herbicides (consider all herbicide types sold)	Fungicides(consider all fungicide types sold)
			1. In West Zone (N=32)	49	84.4
1.a. Traditional Private(N=30)	50	83.3	100	100	100
1.b. RBH(N=2)	45	100	100	100	100
1.c. State Store (N=0)	0	0	0	0	0
2. In Central Zone(N=35)	38	74.3	96.2	96.2	96.2
2.a. Traditional Private(N=31)	45	85.2	95.7	95.7	95.7
2.b. RBH(N=2)	60	100	100	100	100
2.c. State Store (N=2)	2	16.7	100	100	100
3. In East Zone(N=34)	39	70.6	100	87.5	100
3.a. Traditional Private(N=27)	41	74.1	100	85	100
3.b. RBH(N=1)	70	100	100	100	100
3.c.State Store (N=6)	21	50	100	100	100
4. In All AP (N=101)	42	76.2	98.7	94.8	98.7
4.a. Traditional Private(N=88)	45	81	98.5	94.1	98.5
4.b. RBH(N=5)	56	100	100	100	100
4.c.State Store (N=8)	11	33.3	100	100	100

¹Row sum over category may exceed 100% as the same retailer sells chemicals of multiple varieties

Table 5.2.2. Characteristics of Chemical Retailers Selling Pesticide Type 1 (Technical name: Monocrotophos)

	For Retailers Selling Pesticide Type 1, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=12)	100	0	0	100	100	50	0	86	255
1.a. Traditional Private(N=12)	100	0	0	100	100	50	0	86	255
1.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=6)	100	0	0	83.3	83.3	83.3	0	84	236.6
2.a. Traditional Private(N=6)	100	0	0	83.3	83.3	83.3	0	84	23.6
2.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=8)	100	0	0	100	100	37.5	0	79	437.5
3.a. Traditional Private(N=7)	100	0	0	100	100	28.6	0	79	475.7
3.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
3.c.State Store (N=1)	100	0	0	100	100	100	0	80	170
4. In All MP (N=26)	100	0	0	96.2	96.2	53.8	0	83	306.9
4.a. Traditional Private(N=25)	100	0	0	96	96	52	0	83	312.4
4.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
4.c.State Store (N=1)	100	0	0	100	100	100	0	80	170

¹NR- Not Reported

²Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.3. Characteristics of Chemical Retailers Selling Pesticide Type 2 (Technical name: Chlorpyrifos)

	For Retailers Selling Pesticide Type 2, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=7)	100	0	0	85.7	100	57.1	0	83	257.1
1.a. Traditional Private(N=7)	100	0	0	85.7	100	57.1	0	83	257.1
1.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=4)	100	0	0	100	100	50	0	83	310
2.a. Traditional Private(N=4)	100	0	0	100	100	50	0	83	310
2.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=3)	100	0	0	100	100	66.7	0	85	240
3.a. Traditional Private(N=3)	100	0	0	100	100	66.7	0	85	240
3.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=14)	100	0	0	92.9	100	57.1	0	83	268.5
4.a. Traditional Private(N=14)	100	0	0	92.9	100	57.1	0	83	268.5
4.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.4. Characteristics of Chemical Retailers Selling Pesticide Type 3 (Technical name: Chloronicotinyl; brand like Classic)

	For Retailers Selling Pesticide Type 3, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=5)	100	0	0	100	80	40	0	81	206.4
1.a. Traditional Private(N=4)	100	0	0	100	75	50	0	76	160.5
1.b. RBH(N=1)	100	0	0	100	100	0	0	100	390
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=4)	100	0	0	100	100	75	0	85	222.5
2.a. Traditional Private(N=3)	100	0	0	100	100	66.7	0	82	246.6
2.b. RBH(N=1)	100	0	0	100	100	100	0	95	150
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=1)	100	0	0	100	100	100	0	75	200
3.a. Traditional Private(N=1)	100	0	0	100	100	100	0	75	200
3.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=10)	100	0	0	100	90	60	0	82	212.2
4.a. Traditional Private(N=8)	100	0	0	100	87.5	62.5	0	78	197.7
4.b. RBH(N=2)	100	0	0	100	100	50	0	98	270
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.5. Characteristics of Chemical Retailers Selling Herbicide Type 1 (Technical name: Pendimethaline; brand like Stompxtra)									
	For Retailers Selling Herbicide Type 1, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=15)	100	0	0	100	100	46.7	0	80	267.3
1.a. Traditional Private(N=13)	100	0	0	100	100	46.2	0	76	257.6
1.b. RBH(N=2)	100	0	0	100	100	50	0	100	330
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=2)	100	0	0	100	100	100	0	95	390
2.a. Traditional Private(N=1)	100	0	0	100	100	100	0	90	400
2.b. RBH(N=1)	100	0	0	100	100	100	0	100	380
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=8)	100	0	0	100	100	62.5	0	61	336.4
3.a. Traditional Private(N=7)	100	0	0	100	100	57.1	0	65	341.6
3.b. RBH(N=1)	100	0	0	100	100	100	0	30	300
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=25)	100	0	0	100	100	56	0	75	299.2
4.a. Traditional Private(N=21)	100	0	0	100	100	52.4	0	73	292.4
4.b. RBH(N=4)	100	0	0	100	100	75	0	83	335
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.6. Characteristics of Chemical Retailers Selling Herbicide Type 2 (Technical name: Isopropylamine Salt of Glyphosate; brand like Glysel)

	For Retailers Selling Herbicide Type 2, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=11)	100	0	0	100	100	63.6	0	85	294.5
1.a. Traditional Private(N=10)	100	0	0	100	100	60	0	83	299
1.b. RBH(N=1)	100	0	0	100	100	100	0	100	250
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=1)	100	0	0	100	100	0	0	85	230
2.a. Traditional Private(N=1)	100	0	0	100	100	0	0	85	230
2.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=7)	100	0	0	100	100	100	0	62	334.2
3.a. Traditional Private(N=6)	100	0	0	100	100	100	0	65	350
3.b. RBH(N=1)	100	0	0	100	100	100	0	50	240
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=19)	100	0	0	100	100	73.7	0	76	305.7
4.a. Traditional Private(N=17)	100	0	0	100	100	70.6	0	77	312.9
4.b. RBH(N=2)	100	0	0	100	100	100	0	75	245
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.7. Characteristics of Chemical Retailers Selling Herbicide Type 3 (Technical name: Glyphosate)

	For Retailers Selling Herbicide Type 3, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=7)	100	0	0	100	100	57.1	0	86	315.7
1.a. Traditional Private(N=6)	100	0	0	100	100	50	0	83	326.6
1.b. RBH(N=1)	100	0	0	100	100	100	0	100	250
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=3)	100	0	0	100	100	66.7	0	63	273.3
2.a. Traditional Private(N=3)	100	0	0	100	100	66.7	0	63	273.3
2.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=5)	100	0	0	100	100	80	0	83	298
3.a. Traditional Private(N=4)	100	0	0	100	100	75	0	84	285
3.b. RBH(N=1)	100	0	0	100	100	100	0	80	350
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=15)	100	0	0	100	100	66.7	0	80	301.3
4.a. Traditional Private(N=13)	100	0	0	100	100	61.5	0	79	301.5
4.b. RBH(N=2)	100	0	0	100	100	100	0	90	300
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.8. Characteristics of Chemical Retailers Selling Fungicide Type 1 (Name: Bavistin)

	For Retailers Selling Fungicide Type 1, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=9)	100	0	0	88.9	100	33.3	0	81	522.2
1.a. Traditional Private(N=8)	100	0	0	87.5	100	37.5	0	78	525
1.b. RBH(N=1)	100	0	0	100	100	0	0	100	500
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=10)	100	0	0	100	100	40	0	80	459
2.a. Traditional Private(N=7)	100	0	0	100	100	28.6	0	81	441.4
2.b. RBH(N=2)	100	0	0	100	100	50	0	70	500
2.c. State Store (N=1)	100	0	0	100	100	100	0	90	500
3. In East Zone(N=1)	100	0	0	100	100	0	0	80	700
3.a. Traditional Private(N=1)	100	0	0	100	100	0	0	80	700
3.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=20)	100	0	0	95	100	35	0	80	499.5
4.a. Traditional Private(N=16)	100	0	0	93.8	100	31.3	0	80	499.3
4.b. RBH(N=3)	100	0	0	100	100	33.3	0	80	500
4.c.State Store (N=1)	100	0	0	100	100	100	0	90	500

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.9. Characteristics of Chemical Retailers Selling Fungicide Type 2 (Technical name: carbendazim; brand like Saaf)

	For Retailers Selling Fungicide Type 2, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=6)	100	0	0	100	100	33.3	0	83	470
1.a. Traditional Private(N=6)	100	0	0	100	100	33.3	0	83	470
1.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=8)	100	0	0	100	100	37.5	0	84	746.4
2.a. Traditional Private(N=8)	100	0	0	100	100	37.5	0	84	746.4
2.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=2)	100	0	0	100	100	100	0	83	355
3.a. Traditional Private(N=1)	100	0	0	100	100	100	0	85	310
3.b. RBH(N=1)	100	0	0	100	100	100	0	80	400
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=16)	100	0	0	100	100	43.8	0	83	593.8
4.a. Traditional Private(N=15)	100	0	0	100	100	40	0	83	606.7
4.b. RBH(N=1)	100	0	0	100	100	100	0	80	400
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.10. Characteristics of Chemical Retailers Selling Fungicide Type 3 (Technical name: Benzimidazole)

	For Retailers Selling Fungicide Type 3, % of Retailers Selling							Sales	
	Packaging types ²			In Units ²				Share of all top three companies in sales (% of total sales)	Price per unit of the leading company product (in Rs./kg or liter whichever applicable)
	Packed Only	Loose Only	NR ¹	Small	Medium	Large	NR ¹		
1. In West Zone (N=4)	100	0	0	100	100	50	0	76	212.7
1.a. Traditional Private(N=4)	100	0	0	100	100	50	0	76	212.7
1.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
2. In Central Zone(N=3)	100	0	0	100	66.7	33.3	0	75	133.6
2.a. Traditional Private(N=3)	100	0	0	100	66.7	33.3	0	75	133.6
2.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=0)	0	0	0	0	0	0	0	0	0
3. In East Zone(N=0)	0	0	0	0	0	0	0	0	0
3.a. Traditional Private(N=0)	0	0	0	0	0	0	0	0	0
3.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
3.c.State Store (N=0)	0	0	0	0	0	0	0	0	0
4. In All MP (N=7)	100	0	0	100	85.7	42.9	0	76	178.8
4.a. Traditional Private(N=7)	100	0	0	100	85.7	42.9	0	76	178.8
4.b. RBH(N=0)	0	0	0	0	0	0	0	0	0
4.c.State Store (N=0)	0	0	0	0	0	0	0	0	0

¹NR- Not Reported

² Row sum may exceed 100% as a retailer may sale multiple packaging types and unit types simultaneously.

Table 5.2.11. Types of equipment retailed								
	Average share of Equipment in total input Sales(only for those retailers whose share of equipment sales is >0)	% of retailers Selling Equipment	For retailers selling equipment, % of retailers selling			Sales		
			Equipment Types ¹			Share of all top three companies in sales of equipment types (% of total sales)		
			Small ²	Medium ²	Large ²	Small ²	Medium ²	Large ²
1. In West Zone (N=32)	45	6.3	100	0	0	100	0	0
1.a. Traditional Private(N=30)	0	0	100	0	0	0	0	0
1.b. RBH(N=2)	45	100	0	0	0	100	0	0
1.c. State Store (N=0)	0	0	0	0	0	0	0	0
2. In Central Zone(N=35)	15	8.6	66.7	0	0	66.67	0	0
2.a. Traditional Private(N=31)	0	0	0	0	0	0	0	0
2.b. RBH(N=2)	20	100	100	0	0	100	0	0
2.c. State Store (N=2)	5	16.7	0	0	0	0	0	0
3. In East Zone(N=34)	5	2.	100	0	0	60	0	0
3.a. Traditional Private(N=27)	10	3.7	100	0	0	60	0	0
3.b. RBH(N=1)	0	0	0	0	0	0	0	0
3.c.State Store (N=_6)	0	0	0	0	0	0	0	0
4. In All AP (N=101)	21	5.9	83.3	0	0	76.67	0	0
4.a. Traditional Private(N=88)	10	1.2	100	0	0	60	0	0
4.b. RBH(N=5)	26	80	100	0	0	100	0	0
4.c.State Store (N=8)	5	8.3	0	0	0	0	0	0

¹Row sum over category may exceed 100% as the same retailer sells equipment of multiple varieties.
²Small equipment are sprayers and hand tools, medium equipment are water pumps iron plough and cultivator, and large equipment are disker, power tiller, tractor, harvester, thresher, tractor sprayers, transplanter, and iron cart.

Chapter 6. Financial Services Markets in Andhra Pradesh

The purpose of this chapter is to better understand how farmers access financial services in the state of Andhra Pradesh. A better understanding of this chain is an important step for the design of appropriate policies in this important sector, and perhaps the effective outreach of modern companies to poor farmers to provide appropriate and affordable financial services when the need is there.

This chapter presents descriptive statistics from our farm household survey and from our crop trader and input retailer surveys, on supply of and access to financial services, in particular, credit, insurance, and money orders, by rural households in the catchment area and control area of the Rural Business Hubs of Viswas in Andhra Pradesh (AP). (The sample frame and survey methods were discussed in Chapter 2.)

6.1. Background Context: Financial services providers in AP from which Farmers can Choose

One source of credit, at least in theory, in the formal sector is direct loans from commercial and other banks, for agricultural or non-agricultural purposes.

Another source of credit is from self-help groups accessing micro-credit. This is much more important in AP than in the other two study states (UP and MP), as shown in companion studies.

Another source of credit is from the “informal sector” - the money lender or family members.

A final source of funds, important in UP and MP (per our surveys and in the study zones), is the Kisan Credit Card (KCC) scheme set up in the late 1990s by NABARD (the National Bank for Agriculture and Rural Development). We treat this in this chapter, despite its minor level that we find in AP, to provide comparability with the other studies.

6.2. Survey findings on Access by Households to Credit and Supply of Credit by various Actors

6.2.1. Overall

Table 6.1.1 shows a high share (92%) of farmers got credit from some source in the year before the survey. This can be contrasted with our finding of just 25% in UP (using the same survey questionnaire and sampling method as in AP). Surprisingly, the share is similar over farm strata, and even drops slightly from 94% among marginal farmers to 93 and 89% for the other two strata. This again is sharply different from our UP results, where credit use as a share of farmers had tripled over strata.

It is interesting that the amount borrowed rose from 32,000 to 49,000 to 70,000 over the farm strata – less quickly than the rise in farm size, indicating that credit access seems progressive rather than regressive, at least in amount received. Note that the average over all farms and the average over farms that borrowed are similar averages, because of the widespread use of credit.

The table shows that it is far more common for farmers to get credit from micro finance (MF) and self-help groups (SHG) (about 70% of the sample) than from the KCC (1.5% of the sample). The table also shows the amounts received based on types of credit for those who used those types. It is noteworthy that the amount is much higher for those using KCCs (getting 50-75,000 rs) compared with the amount borrowed by the households via micro finance (MF) and self-help groups (SHG), which is only about 15,000 rs.

Table 6.1.2 shows the availability of credit providers over villages in the sample; these data were collected in our village questionnaire. This information merely shows what types of lenders were in the study villages, not to what lenders villagers had access (say, in other areas outside their village). Several points are striking.

(1) All the types of lenders are more present (in terms of share of villages) in the more dynamic agriculture areas – the center and east – and much less so (except for traditional village money lenders, which are in nearly all the villages in all zones) in the poorer west. This pattern holds not just for banks (private and nationalized), as one might expect, but also for lending institutions that one expects would be more concentrated in poorer zones: such as informal savings/credit groups (only 30% of the villages in the west versus 70-90% of villages in center/east), micro finance institutions (50% in the west, versus 60-70% in center/east), and cooperatives (only 10% in the west versus 30-40% in the center/east).

(2) The banks are in few villages, only about 10% on average in the sample. This is not surprising given that they are typically found in towns.

(3) For the villagers whose villages do not have banks or PACs, the table shows that they only have to go about 10 km to find a bank or PAC, so there is little distance constraint.

(4) Of the three “formal” institutions, only a minority (on average around 15%) of the nationalized banks and PACs are said by the village informant to give loans to farmers, as do only 15%; the private bank is surprisingly a bit more apt to, with a quarter of them making loans to farmers in the west, and a half in the center/east. By contrast, money lenders and micro-finance institutions nearly all give loans to farmers. These patterns are perhaps to be expected; the mystery is the informal savings groups, said by the village informants to have only a minority (15%) that lend to farmers.

6.2.2. MF and SHG

Table 6.1.3 shows participation in microfinance (MF) and self-help groups (SHG). The share is very high: 72% - and surprisingly, declines only slightly from marginal (78%) to small (72%) to medium farmers (67%). Interestingly, nearly all the MF and SHGs were reported by farmers to have been started by government or donor projects – not by NGOs or own initiative or banks or companies. The average contribution by month of members of the savings groups is modest: about 77 rs (about 2 USD). Table 6.1.5 shows that by the same token, nearly all the credit from these sources is from government/donor based MFIs/ SHGs.

Table 6.1.4 shows the same but by zone. Interestingly, there is a marked inverted U curve over zones of MF and SHG participation, with but 65% in the west and east and 86% of farmers in the central zone. Moreover, participation is sharply negatively correlated with farm size in the east and central zones, but not correlated with farm size in the west zone (except for the large farmers that nearly do not use this source in any zone).

Table 6.1.6 shows loan payout from MFIs/SHGs by source to farm households by farm size strata. We focus on the only important result, that of the government/donor MFI/SHG row: the payout is 30% to marginal, 40% to small, and 30% to medium farmers, roughly like the share in the population, but progressive with respect to the share in land of these strata. The total payout over the sample using these sources (583 farms) is 6.4 million rupees – hence a payout of 11,000 rupees per household using the system, or about 2.8 thousand USD.

6.2.3. KCC

Table 6.1.7 shows, in strong contrast to our findings in UP and MP, that there is very minor KCC ownership in AP, yet with that, sharply regressive distribution (as we also found in the MP and UP results). Only 1.4% (versus 30% in UP sample and 45% in MP) of AP households owns a KCC. There is a sharp farm size bias – rising from 0 for marginal farmers to 1.7% for small farmers to 2.1% for medium farmers. 46% of the sample that got these cards to them from nationalized banks (similar to our results in UP and MP). 18% get the cards from the regional rural banks, with only medium farmers accessing this source. Only 9% get the cards from the PACS, and these are only medium farmers. The yearly limit on loans on their cards of those owning cards rises from 27,000 rupees to 66,000 rupees – about 1 to 3 between the small and medium farmers.

Table 6.1.8 shows KCC ownership by zone. The share of farms with KCCs rises from 0.7% in the west to 1.9% and 1.5% in the center and east. The main inter-zone differences in where farmers got their KCCs are: (a) the share from nationalized banks rises fast from west to east, from none to 40% to 75% of those with KCCs got them from this source; (c) all the farmers with KCCs in the west got them from regional rural banks, but none in the other zones.

Table 6.1.9 shows actual loans by source (such as PACs) to the farm strata. As only small and medium farmers got KCC loans, we treat only those. All the KCC payout was from nationalized banks for the small farmers, and 78% from those banks for the medium farmer, and a bit from the PACs and regional rural banks.

Table 6.1.10 shows loan payouts (from KCCs) by source to farm strata. The payout from the nationalized banks is 77% to medium farmers; for PACs and regional banks, it is 100% to medium farmers. Thus, the KCCs are highly regressive in AP.

6.2.4. Sources other than MF/SHG and KCC

Table 6.1.11 shows the use of credit by households receiving credit from a source other than KCC, MFI, and SHG. The share is in fact quite high: around 90% in the west and 70-80% in the center/east. The shares are regressive in the west, but moving from a plateau of 90% for the marginal, semi-medium, and medium, to 75% for the large. The pattern is the opposite in the center and east. These patterns corroborate the findings in the prior table: KCC, MFI and SHG are more available in the center/east and so use of other sources is somewhat less. The typical reason for non-use is “no need.” Minor reasons are inability to find lenders or too-high interest rates.

Table 6.1.12 shows to whom lenders (other than MFI and SHG, the main sources of rural credit in our AP sample) lend, by shares over farm strata. The private banks lend mainly to small farmers (82% of their loans total); nationalized banks lend 53% of their funds to medium farmers; cooperatives are even more regressive, lending 65% to medium farmers.

Interestingly, village money lenders lend only 25% of their funds to marginal farmers – and about 42% to small farmers and 34% to medium farmers. **NOTE that the share of village**

money lenders in the overall “pie” of these non-KCC and non-MFI/SHG sources is only 7% - a similar minor role to what we found in UP and MP. Loans from friends/relatives are even more than theirs, at 11%.

Moreover, output retailers only lend 6%.

Table 6.1.13 shows reasons for choice of lender (for non-KCC and non-MFI/SHG loans). Interestingly, there is no strong pattern in the reasons, either by reason, or by farm size strata. They are all (proximity, conditions, reliability, and availability) given roughly equal weight. But very little (1%) of the transactions are because farmers had “no other option.”

Table 6.1.14 shows interest rates and collateral use for non-KCC and non-MFI/SHG loans. The interest rates reported are quite high, and differ little over farm strata: from 17 to 18% per annum. Only half the households declared, for this kind of loans, that land was used “as collateral,” and that rose from 45% for marginal farmers to 58% for medium. 38% of the transactions were declared to require “no collateral” – with that share going down from 42% to 33% over marginal to medium farmers. The great majority (85%) of the loans were for farm inputs – going up from 82% for marginal farmers to 89% for medium farmers.

Table 6.1.15 shows the same but by zone. Contrary to expectation, the interest rate on this kind of loan actually rises from 17% in west and center to 20% in the east. We had expected a decline over zones as the east tends to have more sources of credit and thus perhaps more competition on the supply side. On the other hand, investment projects and farming probably pay more in the east and thus ability to pay may be higher. Interestingly, the use of land as collateral drops sharply going from west (63% of transactions) to 56 to only 35% of transactions in the east. “No collateral” was declared as from 28% to 35% to 50% going from west to east (for this type of loan). The use of this kind of loan for farm inputs also slightly dropped, from 89% in the west to 85 to 81% in the east.

6.3. Data on Credit Provision by Crop Wholesalers and Farm Input Retailers

Data from the input retail and grain trader surveys counters conventional wisdom that these are important sources of credit to farmers – rather, they are only modest.

Table 6.2.1 shows that 47% of grain traders pay farmers immediately (versus 78% in our UP study). This differs a lot over zones: in the west and central zones, about 55% pay immediately in full, while only 28% do in the east. But in the west, another 23% pay partially immediately, as do 40% in the east, so that in east and west, around three-quarters pay all or some right away. 80% pay in cash, and 20% by check.

Importantly, and against common wisdom, only 13% of the paddy traders give any credit to farmers. Interestingly, this is only 42% of the traders - 15% and 34% in the west and center, versus 80% in the east (where we expected it to be lower than in the west and center, due to more other credit sources in the east). **But only 13% of the total volume over all paddy traders has credit attached** (25% in the east versus 3% in the west and center), so it is a minor share of the market that shows credit-output market linkages. **We also asked what share of clients over all**

traders got credit, and the average was 10% (with a high of 30% in the east), and of those giving credit, 43% overall. Even for the traders who extend credit (a subset of all paddy traders), the share is only 31% overall (and 15% in the west and 22% in the center, and 39% in the east). **These low shares of volume (13%) and farmers (10%) getting credit, belie the traditional image of the importance of tied credit-output market relations.**

For traders extending credit, the reporting was scant by the traders; it was only mainly reported in the east, where the traders said it was mainly for inputs at the start of the season. The traders who did extend credit reported in the west and center that it was mainly to small farmers, while in the east it was mainly to large farmers and some to small farmers.

The share of traders' clients receiving credit is similarly minor. Only 11% of the paddy traders' clients received credit (could pay trader later), with the share of traders thus loaning (by allowing later payment by the client) rising from none in the west, to only 3% in the center, to 31% in the east, overall. For traders who provide the clients credit, that share is 30% of traders in the center and 45% in the east. **Thus, overall, the share of clients who get credit from all paddy traders is none in the west and .03*.3 or 1% in the center, and 12% in the east, hence very minor. For those few clients getting credit in the east, there is a fairly even spread over client types.**

Table 6.2.2 shows that traditional input retailers extend credit – 63% of them in the west, 74% in the center, and 89% in the east, or 75% overall (versus half in UP). This is a somewhat higher rate than our study in UP shows. The RBH tends not to provide credit, while some state stores do. In those zones only traditional and state/coop stores extend input credit. Most of this is for chemicals, and a little for seed and fertilizer, and little for animal husbandry inputs. Most of the credit is charged separately from the bill, not incorporated in the bill.

However, Table 6.2.3 shows that for the 75% of stores providing input credit – they do so to only 22% of their clients. **That means that $.75 * .22$, or 17%, of farmers buying inputs in AP get credit from input retailers.** This again destroys conventional wisdom that input retailers are heavily engaged in credit to clients. Moreover, the input retailers note that the share of clients getting credit dropped over the past five years from 35% to 22%, so if the same share of stores are giving credit, that means that **five years ago, 26% of AP farmers got credit from input retailers.**

Table 6.2.4 shows what share of their clients that input retailers think are using KCC and getting government subsidy for equipment purchase. Predictably for KCC, and corroborating the household survey results, the traditional retailers say only 3.6% of their clients are using KCC (although state stores, that sell very little inputs to farmers, say a quarter of their clients use them). Moreover, for equipment subsidies, traditional shops say only 2% of their clients use subsidies for equipment (recall little equipment is bought at these stores), versus 20% for RBHs and 17% for state stores.

6.4. Insurance and money transfers

Table 6.2.5 shows the share (from village questionnaires) of villages that have insurance and money transfer facilities or services. Insurance services are widely available in the villages (much more so than in our study for example of UP): 67% and 100% of the villages report that they have providers of general and life insurance. Weather insurance is available only in 10% of the villages (none in the east but 10% in the west and 20% in the center). Crop insurance is also uncommon: only 20% overall and 30, 20, and 10% in west, center, and east. **Insurance availability appears negatively correlated with access to irrigation.**

17% of the villages have money transfer facilities, much more than in UP. This is highest in the center (where it is 40% of the villages).

Table 6.2.6 shows the use of insurance from the household survey. 64% of the households used (had policy) insurance, with similar numbers over the zones. The most popular insurance is the **life insurance. 61% (more than twice what we found in UP and MP) of the farmers bought life in the past 12 months (about the same in all zones). As in UP and MP, in AP the use of weather and crops insurance has not taken off in rural areas as only 0.7% and 3.5% of farmers reported to have these types of insurance.**

Table 6.2.7 shows use of insurance by households, by farm size. As in the UP and MP studies, we find in AP that insurance use is sharply correlated with farm size: from 48% of marginal farmers, to 61% of small, to 80% of medium. These shares are still much higher (for all strata) than in the UP and MP surveys. These shares track the shares over strata for life insurance. Crop insurance is more sharply regressive with only 1% of marginal versus 6% of medium farmers using it. Interestingly, for the roughly 40% of the sample who did not use insurance, most (58%) said they are not even aware of insurance services. Only 35% said they have no need. Cost and inability to find insurers are minor reasons, as is the belief that the award is too small.

Table 6.2.8 shows that for farmers that bought insurance, the **most important provider of life insurance in rural AP is by far LIC (88% of the transactions, similar to the UP and MP surveys)** although 75% of the farmers also stated that they did have a choice between different providers of insurance. The average distance that farmers had to go was 14 km (similar to the UP and MP studies). The reported yearly premium paid for life insurance was 5433 (similar to that paid in UP but about half that reported by farmers in MP). **Table 6.2.9 shows that the premium falls from west to east, from 6470 to 4130 rupees.**

Table 6.2.10 shows use of money transfers by farm size. In sharp contrast with UP and MP (where very few farmers used money transfers), in AP, as much as 36% of the sample uses them. The use is even positively correlated with farm size, from 27% of marginal farmers to 43% of medium farmers. This suggests the importance of nonfarm workers from family sending funds to families.

Chapter 6 Annex: Financial Services Tables

Table 6.1.1 Any Borrowing , borrowing from KCC, and borrowing from Micro Finance/ Self Help groups by farm size					
	Marginal (0-1 ha) (N=231)	Small (>1-2 ha) (N=292_)	Medium (>2 ha) (N=287)	Un weighted overall (N=810)	Population weighted overall*
% of HHs that got any credit (inclusive of KCC, MFI/SHG and any other credit sources) in past 12 months (N=810)	93.50	92.80	89.20	91.70	92.2
Simple average amount received as credit (inclusive of KCC, MFI/SHG and any other credit sources) in past 12 months (Rs/HH) (zeroed out average over borrowers & non borrowers for N=810 households)	31190.09	48998.48	69589.64	51060.64	47379.08
Of HHs that received any credit(inclusive of KCC, MFI/SHG and any other credit sources) in past 12 months, simple average amount received as credit (Rs/HH) (non zeroed out average over borrowers only; N=734 households)	33356.06	52823.64	78253.41	55721.49	51783.40
Of HHs that actually OWN KCC , simple average amount received as credit (Rs/HH) (zeroed out average over households all households owning KCC but both borrowers and non borrowers from KCC, N=11 households)	0.0	21000	75000	50454.54	26520
Of HHs that actually USED KCC in past 12 months, simple average amount received as credit (Rs/HH) (non zeroed out average over households using KCC, N=8 households)	0.0	52500	75000	69375	38175
Of HHs who are members of any micro finance / Self help group, average amount received as credit (Rs./HH)(zeroed out average over all micro finance group members but are both borrowers and non borrowers from therein , N=584 households)	10878.89	12199.81	9989.583	11066.03	11145.30
Of HHs who are members of any micro finance / Self help group, average amount received as credit (Rs./HH)(non zeroed out average over all micro finance group members who have borrowed from therein , N=403 households)	15063.08	17128.21	15721.31	16036.13	15991.74
*Weights as in table 2.1.7					

Table 6.1.2 Availability of credit providers in the villages (from village questionnaire/ dataset)				
	West	Central	East	Total
% of villages that report the presence of that financial institution in the village: (N=30 villages):				
Private bank	0	10	20	10
Nationalized bank	0	20	20	13
Cooperative Society/PACs	10	40	30	27
Money lender	90	100	90	93
Informal savings-credit group	30	90	70	63
Micro-finance institution	50	70	60	60
Others	20	60	40	40
For those that have no access to any of the formal financial institutions (i.e. private, nationalized banks and cooperative societies/PACs) in the village, average distance to get to Bank and or PAC (in km) (averaging over villages that do not have access to any formal financial institutions in the village, N=20 villages)	12	10	7	10
% of financial institutions that make loans to farmers (100% is all the financial institutions in that category):				
Private Bank (N=15 private banks)	25	40	50	40
Nationalized bank (N=25 nationalized banks)	20	11	17	16
Cooperative Society (N=23 cooperative society)	14	14	11	13
Money Lender (N=30 money lender)	100	100	100	100
Informal savings-credit group (N=27 informal savings-credit group)	11	20	13	15
Micro-finance institution (N=30MFI)	90	90	80	87

MF/SHG

Table 6.1.3 Participation in Micro Finance/ Self Help Group, by farm size stratum					
	Marginal (0-1 ha) (N=231)	Small (>1-2 ha) (N=292)	Medium (>2 ha) (N=287)	Un weighted overall (N=810)	Population weighted overall*
% of households who belong to micro finance/ self help groups (N=810 households)	77.90	72.30	66.90	72.00	73.08
Of households who belong to micro finance/ self help groups , % of households reporting SHG/ micro finance group to be started by: (N=583 households)					
NGO	0.0	0.0	0.0	0.0	0.0
Own initiative	0.0	0.0	0.0	0.0	0.0
Nationalized banks	0.0	0.0	0.0	0.0	0.0
Private banks	1.1	0.0	0.0	0.3	0.4
Company	0.0	0.0	0.0	0.0	0.0
Govt./donor project	97.8	99.1	100.0	99.0	98.8
Combined	1.1	0.5	0.0	0.5	0.6
Other	0.0	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%	100%
Simple avg. monthly contribution on to savings in the group now (Rs/HH) (non zeroed out average over N=583 households who belong to micro finance/ self help groups)	81.63	71.07	79.27	77.03	77.1
*Weights as in table 2.1.7					

Table 6.1.4: Participation in Micro Finance/ Self Help Group				
	West	Central	East	Total
% of households who belong to micro finance/ self help groups (N=810)	64.40	85.90	65.60	72.00
Of households who belong to micro finance/ self help groups by farm size category(100% is all the farmers in that category):				
Marginal (< 1ha) (N=180 households)	16.70	37.50	36.20	30.90
Small (1.0ha to 2.0 ha) (N=211 households)	37.40	34.90	36.70	36.20
Semi-medium (2.0 to 4.0ha) (N=129 households)	25.30	19.80	22.00	22.10
Medium (4.0 to 10 ha)(N=56 households)	17.20	7.80	4.50	9.60
Large (10ha and above) (N=7 households)	3.40	0.0	0.60	1.20
Of households who belong to micro finance/ self help groups , % of households reporting SHG/ micro finance group to be started by: (N=583 households)				
NGO	0.0	0.0	0.0	0.0
Own initiative	0.0	0.0	0.0	0.0
Nationalized banks	0.0	0.0	0.0	0.0
Private banks	0.0	0.40	0.60	0.30
Company	0.0	0.0	0.0	0.0
Govt./donor project	100.00	99.10	97.70	99.00
Combined	0.0	0.40	1.10	0.50
Other	0.0	0.0	0.60	0.20
Total	100%	100%	100%	100%

Table 6.1.5 Micro Finance/ self Help groups, actual loans - sources per stratum in Rs					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Share of credit amount received through MFI/SHG from any source in each farm size strata (N=583 households receiving loans through MFI/SHG in the past twelve months):					
NGO	0.0	0.0	0.0	0.0	0.0
Own initiative	0.0	0.0	0.0	0.0	0.0
Nationalized banks	0.0	0.0	0.0	0.0	0.0
Private banks	0.0	0.0	0.0	0.0	0.0
Company	0.8	0.0	0.0	0.2	0.3
Govt./donor project	96.9	98.5	100.0	98.5	98.3
Combined	2.3	0.8	0.0	1.0	1.1
Other	0.0	0.8	0.0	0.3	0.3
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 6.1.6 MFI/SHG loan payout by source to farm size strata, Rs						
Credit borrowed	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted overall Value (in Rs)	Population weighted* overall value (Rs.)
Shares of Rs. paid out to farm strata through MFI/SHG by (N=583 households receiving loans through MFI/SHG in the past twelve months):						
NGO	0.0	0.0	0.0	100%	0.0	0.0
Own initiative	0.0	0.0	0.0	100%	0.0	0.0
Nationalized banks	0.0	0.0	0.0	100%	0.0	0.0
Private banks	0.0	0.0	0.0	100%	0.0	0.0
Company	100.0	0.0	0.0	100%	15000 (0.2%)	5700 (0.3%)
Govt./donor project	29.8	40.0	30.1	100%	6362560 (98.5%)	2142969.2 (98.3%)
Combined	69.2	30.8	0.0	100%	65000 (1.0%)	24500.0 (1.1%)
Other	0.0	100.0	0.0	100%	20000 (0.3%)	7400.0 (0.3%)
Total	30.3	40.0	29.7	100%	6462560 (100%)	2180569.2 (100%)
*Weights as in table 2.1.7						

KCC

Table 6.1.7 Owning (not necessarily using) Kisaan Credit Card (KCC), by farm size stratum					
	Marginal (0-1 ha) (N=231)	Small (>1-2 ha) (N=292)	Medium (>2 ha) (N=287)	Un weighted overall (N=810)	Population weighted overall*
% of households owning KCC (N=810 households)	0.00	1.70	2.10	1.40	1.15
Of households using KCC, % of households reporting the source of KCC: (N= 8					
PACs	0.00	0.00	16.70	9.10	4.18
Nationalized bank	0.00	40.00	50.00	45.50	27.30
Regional rural bank	0.00	0.00	33.30	18.20	8.33
Society	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00
Don't know	0.00	60.00	0.00	27.30	22.20
Total	100%	100%	100%	100%	100%
Simple avg. yearly limit on card (Rs/HH (non-zeroed out average over N= 11 households who own KCC)	0.0	26666.7	66166.7	53000.0	26408.4
*Weights as in table 2.1.7					

Table 6.1.8: Ownership of Kisan Credit Cards (KCC)				
	West	Central	East	Total
% of farmers owning a KCC (N=810 households)	0.70	1.90	1.50	1.40
% of farmers owning KCC by farm size category(100% is all the farmers in that category):				
Marginal (< 1ha) (N=231 households)	0.00	0.00	0.00	0.00
Small (1.0ha to 2.0 ha) (N= 292 households)	0.00	2.10	3.00	1.70
Semi-medium (2.0 to 4.0ha) (N=190 households)	1.40	0.00	1.60	1.10
Medium (4.0 to 10 ha) (N=87 households)	0.00	13.6	0.00	3.40
Large (10ha and above) (N=10 households)	12.50	0.00	0.00	10.00
Of households using KCC, % of households reporting the source of KCC: (N=8 households)				
PACs	0.00	20.00	0.00	9.10
Nationalized Bank	0.00	40.00	75.00	45.50
Regional Rural Bank	100.00	0.00	0.00	18.20
Society	0.00	0.00	0.00	0.00
Don't know	0.00	40.00	25.00	27.30
Other	0.00	0.00	0.00	0.00
Total	100%	100%	100%	100%

Table 6.1.9 KCC, actual loans - sources per stratum in Rs					
	Marginal (0-1 ha) (N=0)	Small (>1-2 ha) (N=2)	Medium (>2 ha) (N=6)	Un weighted overall	Population weighted overall*
Share of credit amount received through KCC from any source in each farm size strata (N=8 households receiving loans through KCC in the past twelve months):					
PACs	0.0	0.0	11.1	9.0	2.8
Nationalized bank	0.0	100.0	77.8	82.0	56.4
Regional rural bank	0.0	0.0	11.1	9.0	2.8
Society	0.0	0.0	0.0	0.0	0.0
Don't know	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0
Total	0.0	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 6.1.10 KCC loan payout by source to farm size strata, Rs						
Credit borrowed	Marginal (0-1 ha) (N=0)	Small (>1-2 ha) (N=2)	Medium (>2 ha) (N=6)	Total	Un weighted overall Value (in Rs)	Population weighted* overall value (Rs.)
Shares of Rs. paid out to farm strata through KCC by (N=8 households receiving loans through KCC in the past twelve months):						
PACs	0.00	0.00	100	100%	50000 (9.0%)	12500 (8.3%)
Nationalized bank	0.00	23.08	76.92	100%	455000 (82.0%)	126350 (83.5%)
Regional rural bank	0.00	0.00	100	100%	50000 (9.0%)	12500 (8.3%)
Society	0.00	0.00	0.00	100%	0.00	0.00
Other	0.00	0.00	0.00	100%	0.00	0.00
Total	0.0	18.9	81.1	100%	555000 (100%)	151350 (100%)
*Weights as in table 2.1.7						

NOT MF/SHG OR KCC, OTHERS

Table 6.1.11 Use of Credit (other than that from KCC and MFI and SHG) by HHs by farm stratum and region				
	West	Central	East	Total
% of households that received credit (other than that from KCC and MFI/SHG) during last 12 months (N= 810)	89.60	83.70	68.50	80.60
% of households that received credit (other than that from KCC and MFI/SHG) during last 12 months by farm size category (100% is all the farmers in that category):				
Marginal (< 1ha) (N=231households)	91.3	74.7	68.6	75.8
Small (1.0ha to 2.0 ha) (N= 292 households)	89.5	87.5	66.3	80.8
Semi-medium (2.0 to 4.0ha) (N=190 households)	91.8	92.5	64.1	82.6
Medium (4.0 to 10 ha)(N= 87 households)	87.5	86.4	94.1	88.5
Large (10ha and above) (N=10 households)	75.0	0.0	100.0	80.0
If no credit received, % of households reporting the reason for that as (N=156 households):				
No need	85.70	76.70	77.60	78.80
Unable to find lender	7.10	14.00	4.70	7.70
Interest rate are too high	0.00	4.70	12.90	8.30
Did not have the collateral	7.10	4.70	4.70	5.10
Total	100.00	100.00	100.00	100.00

Table 6.1.12 To whom lenders lend – by farm strata, in Rs						
	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Total	Un weighted Overall Value (Rs)	Population weighted* overall value (Rs.)
% of credit amount received: (N=810 households who receive credit from sources other than KCC and MFI/SHGs)						
Private bank	18.3	81.7	0.0	100%	164000 (0.43%)	60980.0 (0.52%)
Nationalized bank	15.5	31.3	53.2	100%	10738610 (28.2%)	3304304.8 (28.3%)
Co-operative society or district co-operative society	9.5	25.5	65.0	100%	1370000 (3.6%)	401280.0 (3.4%)
Regional rural bank	23.8	46.2	30.0	100%	1147000 (3.0%)	385840.0 (3.3%)
Private money lender	24.7	41.7	33.6	100%	2728500 (7.2%)	906115.0 (7.8%)
Friend/ neighbor /relative	21.3	27.6	51.1	100%	4196000 (11.03%)	1304060.0 (11.16%)
Input retailers	27.7	30.1	42.2	100%	332000 (0.87%)	106960.0 (0.92%)
Output retailers	8.1	13.9	78.0	100%	2345000 (6.2%)	649950.0 (5.6%)
Private processing company	0.0	0.0	0.0	100%	0	0.0
VISWAS	0.0	0.0	0.0	100%	0	0.0
Other RBH	0.0	0.0	0.0	100%	0	0.0
Combine	8.0	32.9	59.1	100%	14091200 (37.04%)	4225554.0 (36.2%)
Other	18.5	70.7	10.7	100%	933000 (2.45%)	334940.0 (2.87%)
Total	13.8	32.6	53.6	100%	38045310 (100%)	11679983.8 (100%)

Table 6.1.13 Reason for the selection of lender, by farm size, in terms of shares of transactions for households who receive credit from sources other than KCC and MFI/SHG

	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transactions where households reported the reason of choosing a lender (other than KCC and MFI/SHG) as: (N=871 transactions)					
Lender is close by	17.1	15.8	17.5	16.8	16.7
Lender gives best conditions	23.9	21.5	26.1	23.9	23.5
Lender is reliable	24.4	27.1	25.5	25.8	25.7
Lender is always available	33.2	33.4	29.8	31.9	32.4
No other option	1.0	2.2	1.1	1.5	1.5
Other	0.5	0.0	0.0	0.1	0.2
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

6.1.14 Interest rate and Collateral use for credit (obtained from sources other than KCC and MFI/SHGs), share of transactions					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Average annual interest rate (%) per transaction: (N=872 transactions)	18.68	17.57	16.59	17.43	17.75
% of credit transactions (from sources other than KCC and MFI/SHGs) for which households reported the collateral for the loan to be (N=872 transactions):					
Land	45.4	52.1	57.7	52.8	50.9
Equipment and others	2.4	1.9	1.4	1.8	2.0
Other	10.2	9.5	7.4	8.8	9.3
No collateral	42.0	36.6	33.4	36.6	37.8
% of credit transactions (from sources other than KCC and MFI/SHGs) for seasonal agricultural inputs (N=872 transactions)	82.4	83.6	88.9	85.4	82.4
*Weights as in table 2.1.7					

6.1.15 : Interest rates, collateral and use of credit				
	West	Central	East	Total
Average annual interest rate (%) per transaction: (N=872 transactions)	16.61	16.64	19.54	17.43
% of credit transactions (from sources other than KCC and MFI/SHGs) for which households reported the collateral for the loan to be (N=872 transactions):				
Land	63.2	56.3	34.7	52.8
Equipment and others	1.0	1.9	2.9	1.8
Other	8.1	7.2	12.0	8.8
No collateral	27.7	34.7	50.4	36.6
% of credit transactions (from sources other than KCC and MFI/SHGs) for seasonal agricultural inputs (N=872 transactions)	89.1	85.0	81.3	85.4

WHOLESALEERS

Table 6.2.1. Wholesaler Payment and credit terms by zones (reference point is paddy)				
	West	Central	East	Total
1 Terms of payments made to farmers:				
% of traders paying farmers (N= 43 traders)				
1.1 Full immediately	53.8	56.3	28	47
1.2 Partial payments immediately	23.1	3.1	40	20.5
1.3 Full payments after some times	23.1	40.6	32	32.5
1.4 Not reported	0	0	0	0
Total=100%				
2 Mode of payment:				
% of traders paying farmers (N= 43 traders)				
2.1 In cash	80.8	68.8	92	79.5
2.2 By check	19.2	31.3	8	20.5
2.3 Not reported	0	0	0	0
Total=100%				
3. % of traders extending credit to farmers (N= 43 paddy traders)				
4.1 Average share of volume extended as credit to farmers (Simple average over all paddy traders; N= 43 traders)	2.3	7.5	31	13
4.2 Average share of volume extended as credit to farmers (Simple average over paddy traders who are extending credit; N= 18 traders)	15	21.82	38.75	30.71
5. For traders extending credit to farmers, % of traders extending credit as (N= 43 traders) (multiple answers possible):				
5.1 Funds to buy inputs at start of season	15.4	34.4	80	42.2
5.2 Cash loans for equipment	11.5	9.4	24	14.5
5.3 Defer need to pay CA commission until later	3.8	0	20	7.2
5.4 Cash loan for social/educational purpose	0	15.6	36	16.9
5.5 Not reported	84.6	65.6	20	57.8
6.1 Average share of suppliers receiving credit (%) (average over all paddy traders; N= 43)	5.38	7.97	31.48	14.24
6.2 Average share of suppliers receiving credit (%) (Simple average over paddy traders who are extending credit to their suppliers; N= 18 traders)	35	23.18	39.35	33.77
7. For traders giving credit to suppliers, average share of paddy traders extending credit to suppliers; N= 43 traders)				
7.1 Small farmers (%)	90	69.38	37.24	53.36
7.2 Large farmers with large volumes (%)	5	27.5	39.72	32.29
7.3 Rural brokers (%)	0	1.56	11.52	6.96
7.4 Ware house operators (%)	0	0	2.72	1.51
7.5 Other brokers in mandi (%)	5	0.94	1.40	1.56
7.6 Other suppliers (%)	0	0	7.40	4.11
7.7 Not reported (%)	0	0	0	0
Total =100%				
8.1 Average share of clients receiving credit from traders (%) (over all paddy traders; N= 43)	0	2.81	30.56	10.29
8.2 Average share of clients receiving credit from traders (%) (Simple average over paddy traders who are extending credit to clients; N= 18 traders)	0	30	44.94	42.70
9. In the clientele receiving credit, avg share of paddy traders who are extending credit to their clients; N= 18 traders)				
9.1 Traders (%)	0	0	12.47	10.1
9.2 Small local retailers (%)	0	0	19.24	15.57
9.3 Formal-sector processing companies (%)	0	25	12.76	15.10

9.4 Informal small processors (%)	0	75	36.06	43.48
9.5 Supermarket chains who then sell in bulk or on-process (%)	0	0	6.59	5.33
9.6 Direct consumers (%)	0	0	12.88	10.43
9.7 Not reported (%)	100	0	0	0
Total=100%				

Table 6.2.2. Characteristics of terms of input retailer sales to clientele: credit provision

	Of all retailers % of retailers Providing credit	For retailers providing credit , % of retailers							
		Providing Credit For ²					Charging Interest		
		Seed	Chemical	Fertilizer	Animal Husbandry Inputs	Equipment	Separately	Factored in bill	NR ¹
1. In West Zone (N=32)	62.5	20	80	30	0	0	44.4	50	5.6
1.a. Traditional Private(N=30)	63.3	21	78.9	0	0	0	47.1	52.9	0
1.b. RBH(N=2)	50	0	100	0	0	0	0	0	100
1.c. State Store ((N=0)	0	0	0	31.6	0	0	0	0	0
2. In Central Zone(N=35)	68.6	25	79.2	37.5	0	4.2	8.7	13	0
2.a. Traditional Private(N=31)	74.1	30	95	25	0	0	90	10	0
2.b. RBH(N=2)	0	0	0	0	0	0	0	0	0
2.c. State Store (N=2)	66.7	0	0	100	0	25	66.7	33.3	0
3. In East Zone(N=34)	88.2	43.3	70	76.7	3.3	0	75	25	0
3.a. Traditional Private(N=27)	88.9	54.2	70.8	70.8	4.2	0	75	25	0
3.b. RBH(N=1)	0	0	0	0	0	0	0	0	0
3.c.State Store (N=6)	100	0	66.7	100	0	0	75	25	0
4. In All AP (N=101)	73.3	31.1	75.7	51.4	1.4	1.4	71	27.5	1.4
4.a. Traditional Private(N=88)	75	36.5	81	44.4	1.6	0	72.1	27.9	0
4.b. RBH(N=5)	20	0	100	0	0	0	0	0	100
4.c.State Store (N=8)	83.3	0	40	100	0	10	71.4	28.6	0

¹NR- Not Reported.
²Row sum may exceed 100% as the same retailer may provide credit on more than one input.

INPUT RETAILERS

Table 6.2.3. Characteristics of terms of sales to clientele: credit provision by input retailers		
	For all retailers (both extending credit and not extending credit)	
	Average Share of Cliental Receiving Credit on an average day in season now	Average Share of Cliental Receiving Credit on an average day in season five years ago
1. In West Zone (N=32)	10	27
1.a. Traditional Private(N=30)	12	30
1.b. RBH(N=2)	0	0
1.c. State Store ((N=0)	0	0
2. In Central Zone(N=35)	23	27
2.a. Traditional Private(N=31)	21	29
2.b. RBH(N=2)	0	0
2.c. State Store (N=2)	75	34
3. In East Zone(N=34)	31	45
3.a. Traditional Private(N=27)	29	43
3.b. RBH(N=1)	0	0
3.c.State Store (N=6)	48	64
4. In All AP (N=101)	24	34
4.a. Traditional Private(N=88)	22	35
4.b. RBH(N=5)	0	0
4.c.State Store (N=8)	56	53

Table 6.2.4. Characteristics of terms of sales to input retail clientele: credit, and subsidies provision		
	Of all input retailers, % of retailers who reported of	
	Being aware of their clientele using KCC to purchase agro inputs	Being aware of their clientele using government subsidy for purchase of equipment from his store
1. In West Zone (N=32)	3.1	0
1.a. Traditional Private(N=30)	3.3	0
1.b. RBH(N=2)	0	0
1.c. State Store ((N=0)	0	0
2. In Central Zone(N=35)	11.4	5.7
2.a. Traditional Private(N=31)	3.7	0
2.b. RBH(N=2)	0	50
2.c. State Store (N=2)	50	16.7
3. In East Zone(N=34)	2.9	8.8
3.a. Traditional Private(N=27)	3.7	7.4
3.b. RBH(N=1)	0	0
3.c.State Store (N=6)	0	16.7
4. In All AP (N=101)	5.9	5
4.a. Traditional Private(N=88)	3.6	2.4
4.b. RBH(N=5)	0	20
4.c.State Store (N=8)	25	16.7

INSURANCE AND MONEY TRANSFER

	West	Central	East	Total
% of villages that have availability of: (N=30)				
- General insurance	40	90	70	67
- Life insurance	100	100	100	100
- Weather insurance	10	20	0	10
- Crop Insurance	30	20	10	20
- Money transfers	0	40	10	17

Table 6.2.6: Insurance use by households (from the household survey)				
	West	Central	East	Total
% of the households that used in the last 12 months: (N= 810)	62.6	68.5	60.0	63.7
For households that used insurance in last 12 months, % of households using (N=810 households)				
- General insurance (%)	3.0	9.6	5.6	6.0
- Life insurance (%)	60.4	65.6	55.6	60.5
- Weather insurance (%)	0.0	1.5	0.7	0.7
- Crop insurance (%)	4.1	1.1	5.2	3.5
For households that used insurance in last 12 months, % of transactions in which households reported the reason of non usage as (N=2636 transactions)				
Not aware	49.4	62.7	62.5	58.2
No need	39.0	32.8	32.4	34.7
Unable to find reliable insurer	10.9	3.7	1.9	5.5
Cost too high	0.6	0.6	1.0	0.7
Rewards are too small	0.1	0.1	0.4	0.2
Not available	0.0	0.1	1.8	0.6
Total	100.00	100.00	100.00	100.00

6.2.7. Use of Insurance, by farm size					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of the households that used in the last 12 months: (N= 810)	47.6	60.6	79.8	63.7	60.5
For households that used insurance in last 12 months, % of households using (N=810 households)					
- General insurance (%)	1.7	4.5	11.1	6.0	5.1
- Life insurance (%)	46.3	56.8	75.6	60.5	57.5
- Weather insurance (%)	0.9	0.3	1.0	0.7	0.7
- Crop insurance (%)	0.9	2.7	6.3	3.5	2.9
For households that used insurance in last 12 months, % of transactions in which households reported the reason of non usage as (N=2636 transactions)					
Not aware	60.5	57.4	57.0	58.2	58.5
No need	32.3	36.8	34.7	34.7	34.6
Unable to find reliable insurer	6.4	4.6	5.6	5.5	5.5
Cost too high	0.4	0.7	1.0	0.7	0.7
Rewards are too small	0.2	0.1	0.3	0.2	0.2
Not available	0.2	0.4	1.3	0.6	0.5
Total	100.00	100.00	100.00	100.00	100.00
*Weights as in table 2.1.7					

Table 6.2.8. Provider, distance, premium, choice for insurance for those using					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
For households using insurance, % of households reporting the insurance provider to be (N= 573 households):					
LIC	93.04	88.30	80.37	85.51	88.1
Other	6.96	11.70	19.63	14.49	11.9
Total	100.0	100.0	100.0	100.0	100.0
Average distance to provider (in km) (non zeroed out average over insurance users; N=573 households)	12.12	14.50	14.67	14.07	13.6
Average yearly premium (in Rs.) (non zeroed out average over insurance users; N=573 households)	3788.86	4424.70	7003.31	5433.53	4827.7
% of insurance using households who reported to have the scope of choosing between providers (N= 573 households)	75.7	76.2	72.4	74.3	75.1
*Weights as in table 2.1.7					

Table 6.2.8. Provider, distance, premium, choice for insurance by zones				
	West	Central	East	Total
For households using insurance, % of households reporting the insurance provider to be (N= 573 households):				
LIC	89.6	84.3	82.9	85.5
Other	10.4	15.7	17.1	14.5
Total	100.0	100.0	100.0	100.0
Average distance to provider (in km) (non zeroed out average over insurance users; N=573 households)	18.71	9.95	13.93	14.07
Average yearly premium (in Rs.) (non zeroed out average over insurance users; N=573 households)	6470.67	5627.55	4130.02	5433.53
% of insurance using households who reported to have the scope of choosing between providers (N=573 households)	67.3	75.6	79.7	74.3

Table 6.2.10 Use of money transfer, by farm size					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of households that used money transfers in the last 12 months (N=810)	27.3	37.0	42.9	36.3	34.8
For those that did not use money transfers, % of households reporting the reason for non use as (N=516 households):					
Not aware	67.9	61.4	70.1	66.3	66.0
No need	28.6	35.3	26.2	30.2	30.5
Unable to find reliable service	3.6	2.2	3.0	2.9	2.9
Cost too high	0.0	1.1	0.6	0.6	0.6
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Chapter 7: Use of Extension and Technical Assistance by Farm Households in AP

The purpose of this chapter is to better understand how farmers obtain extension and technical assistance in Andhra Pradesh. A better understanding of this is an important step for the design of appropriate policies in this important sector, and perhaps the effective outreach of modern companies to poor farmers to provide appropriate and affordable extension services when the need is there.

This chapter presents descriptive statistics from our farm household survey and from our input retailer surveys, on supply of and access to extension and technical assistance by rural households in the catchment area (and control areas) of the Rural Business Hubs of Viswas in Andhra Pradesh (AP). (The sample frame and survey methods were discussed in Chapter 2.)

7.1. Background Context: Extension services providers in AP from which Farmers can Choose

Farmers can access extension services and technical assistance through a variety of means in AP.

In the public and cooperative sector, extension is provided in several ways:

- (1) By the AP Agriculture Department via village extension officers;**
- (2) All-India Radio and TV; the government broadcasts “Kisaan Vani” with agricultural market and production information to farmers;**
- (3) KVK (Krishi Vigyan Kendra, or Farm Science Center).**
- (4) Extension agents of the Plant Protection Unit (PPU) of the Ministry of Agriculture, located in each state, in several districts;**
- (5) ATMA (Agricultural Technology Management Agency), an autonomous agency coordinating across government ministries for extension**
- (6) “Kisaan Melas” or crop fairs organized by the government.**

In the private sector there are various sources of “extension” and training, including:

- 1) Input companies, such as Bayer or Syngenta, that send agents to villages;**
- 2) Processing companies;**
- 3) Traditional input retailers giving advice;**
- 4) Viswas and other RBHs like Mana Gromor of Coromandel**
- 5) Donor projects and NGOs**
- 6) Other farmers.**

7.2. Farm Household Survey Findings regarding access to Extension & Technical Assistance in AP

Three tables show results about the realized access of households to extension, first by zones, then by farm size strata, then by RBH user strata.

First, Table 7.1.1, which depicts farmers’ use of extension, shows that fully 95% of farm households used **extension (from some source, public or private, as discussed below)** in the

past year. The rates did not differ greatly over regions: 97% in the west, 92% in center, and 96% in the east. Compare these rates with the 18% we found in the companion survey in UP and with the 80% we found in MP.

If farmers did not use extension, fully 53% on average said they did not need it; this differed very sharply over zones, with 85% in the east and west, and only 26% in the center. While in the east and west only around 15% said they did not find the service at the right time, this was as high as 74% in the center zone – the only zone where there appears to be a problem of extension access at least for a small (8%) part of the sample in the central zone.

Second, Table 7.1.2, depicts extension use over farm strata, confounding zones. It shows that the **marginal farmers do not access extension less (in terms of share of households) than do the two other strata.** Interestingly, the reason for not using extension is mainly “no need” for marginal and small farmers, but “unable to find extension at the right time” for medium farmers.

Third, Table 7.1.3, which depicts **extension use comparing RBH users versus non-users, shows that the two groups access extension nearly equally, and if they did not use it, do not do for the same reasons.**

Four tables show results about households’ assessment of the availability, timeliness, and cost of (any type) of extension by zone, and by farm strata.

First, Table 7.1.4 depicts the assessment of availability of extension by those that wanted it, across the regions. **Striking is that 85% of the farmers found the “timely availability” extension to be “no bottleneck”, and another 15% only a “small bottleneck.” The latter actually increased as the agricultural performance of the zone rises: from 10% in the west to 20% in the east.**

The quality of and access to extension were judged even better than the strongly positive results for timeliness. 89% of the farmers found extension quality as well as accessibility to be no bottleneck, and only about 10% found it a small bottleneck. None found it a major bottleneck.

Table 7.1.6 shows that fully 96% of the farmers said they are satisfied with extension received. Those few that were not said nearly only that they already knew what they were advised. Table 7.1.7 shows a slight increase over farm size strata regarding satisfaction, but the differences are slight.

Second, Table 7.1.5 shows for the zones the farmers’ assessment of timeliness, cost, and quality of extension. Again, there are no striking differences across farm strata in judgments of extension. The marginal and medium farmers even share the statistics of about 87%-90% finding “no bottleneck” with timeliness and quality and relevance of extension. The small farmers registered slightly less positive numbers, but really very close.

Three tables show the “functional composition” (the type of information got or sought from extension), covering fertilizer, irrigation, seed, and then disease, soil problems, weather problems, and marketing problems, how to get credit, and then general advice – by zone, by farm stratum, and by RBH user category.

First, Table 7.1.6, which depicts this functional composition by zone, shows that by far the main (in share of “transactions”) use of extension is to advise of disease problems – fully 41%, similar over all zones. A distant second, at 16% overall (rising from west to east) is use of fertilizer. The third place use is for advice on new seed varieties (at about 10%, similar over zones). Irrigation and weather problems share fourth place at about 7-8% of uses. The rest (soil problems, marketing advice, and credit) are minor. None said they provide tests of crops.

Second, Table 7.1.7 shows the same as above but by farm strata. Surprisingly, there was not much difference in the profile of uses over farm size strata: the patterns over strata follow basically what we note above for the zones.

Third, Table 7.1.8 shows the same as above but distinguishes RBH users from non-users. Again, very striking is the similarity of the use types over these two strata.

The tightness of the distribution in 7.1.7 and 7.1.8 over farm strata’s experience with extension in AP is strikingly different from what we found in UP, where the overall experience was far worse, and the regressive distribution of extension far stronger.

The next three tables show the composition of providers of extension.

Table 7.1.9 shows this composition by zone. With striking similarity to our findings in MP (but opposite of UP) we find that **private sources constitute the majority (68%) of the 1292 “transactions” or events of extension – while public sector sources are only 32% of the extension “transactions” (events or uses). This flies in the face of the assumption often made that “extension means government extension agent visits.”**

Also, while one might expect the more dynamic east to rely more on private sources, rather, like in MP, the more dynamic zone actually relies slightly more on public sources (39% in the east versus only 31 and 27% in the west and center).

The table also provides the breakdown of the sources by public and private sources by zone.

For the composition of public sources of extension, we find that by far the frontrunner is the state extension officer – with 47% of the events, with an interesting inverted U shape over zones. In second place is the KVK, at 21% of events (again with a strong inverted U shape with most in the center). By contrast, NGO/donor projects are absent in the center zone but form fully 25% of public extension in the west and east, for overall 18%. The plant protection unit is overall only 9%, but it is more important in the dynamic east, at 14% there.

By strong contrast, the ATMA is a mere 1% of extension occurrences, roughly the same over zones. Moreover, the university directorate of extension plays a tiny role, at about 0.7%.

As for the private sector sources, by far the most important (with 45% of occurrences) private companies' (like Bayer) promoting their own products to farmers; as expected, this rises quickly from west (39%) to center (44%) to east (53%). This is like the pattern in MP.

Interestingly, the RBHs are important providers of extension, taken together, at 17% of all occurrences (actually declining from west to east, as we found in the UP, perhaps because the private input companies put more effort in the dynamic zones and so the RBH presence is felt more in the less dynamic zones). The extension officer from fertilizer companies like IFFCO, play a minor role, at about 7% in all zones. Interestingly, some 29% of the answers did not fit into our categories and require more exploration.

The table also shows the reasons for choosing extension sources. By far the most important in the west and center is timely availability, and in the east, that is tied with quality, relevance, and timeliness. Proximity is a minor consideration. As usual in the three surveys in three states, we found that "no other option" is extremely minor. Farmers in these zones have options.

Moreover, the table shows that the distance to the extension source is trivial – about 3 km in the east and 1-2 in the other zones. The number of contacts is high – about 4 on average in the east, and 2 in the west. Very few extension advisories had to be paid for by the farmer.

Table 7.1.10 shows the same as above but in terms of farm strata. **It is striking that the mix of public and private does not differ much over strata** – the public share is 33% for marginal, 28% for small, and 36% for medium farmers. The converse is that private sources are just as important for smaller farmers as larger: 67% for marginal, 72% for small, and 64% for medium.

For public sources, **the share of extension events by the state extension officer is unexpectedly only slightly biased toward smaller farmers, with the share of events going from 49% and 50% for the marginal and small to 44% for the medium farmers.** The KVK is actually somewhat biased toward smaller farmers: 21% of the marginal's extension events and 26% of the small farmer's, versus 18% for the medium farmer.

Interestingly, NGO/donor project extension is actually biased toward medium farmers: 12-14% for marginal-small farmers, and 23% of medium farmers' extension.

For private sources, interestingly, the private companies extension is even slightly more important for marginal/small farmers than for medium farmers. The importance of RBH extension goes from 13% to 14% to 21% for marginal to medium farmers, so it is slightly biased toward larger farmers, as in the other states.

For reasons for extension agent choice, timeliness is equally important to all the strata, and quality and relevance is actually similarly weighted over the strata. Proximity matters little to any strata, but we found that extension is usually close by anyway.

Table 7.11 shows the same as the above, but by RBH user category. Interestingly, the dependence of RBH users on state extension is somewhat lower than the non-RBH user (43%

versus 52%) ,and more dependent on NGO/donor projects (21% versus 14%), but similar in use of plant protection unit, KVK, and other public extension. From private sources, of course the RBH users depend more on RBH extension than do the non-users (28% versus 4%), and less on private input companies (40% versus 52%) and extension from IFFCO (4% versus 10%). Interestingly, however, the reasons for choices of extension delivery are similar between the two groups.

7.3. Input Retail Survey Findings regarding access to Extension & Technical Assistance in AP

Input providers – including state/coop, traditional input shops, and Viswas and other RBH companies, provide some extension and technical assistance to farmers, either linked to product sale or separately. The input retail survey asked the retailers about this provision, and we report the key points here.

Table 7.2.1 shows the share of input retailers providing what they term some kind of extension to farmers, and given they do, what kind (general, specific, and demonstration). Interestingly, all input store types report providing, in the great majority of them, some extension advice to farmers. Most of all the types report providing specific rather than just general advice.

Table 7.2.2 show how retailers assist input companies with input promotion. About a third of state stores and small shops report doing this (as we found in the UP study), while only 20% of the RBHs thus report. About 20-30% of the stores over categories assist input companies at “melas” (fairs). In general the picture is similar to what we found in UP and MP, but the RBHs in AP have less direct links to the input companies in terms of marketing promotions.

Table 7.2.3 show that 80% of the state and traditional input retailers in all zones report that they get “extension” from input manufacturers, while all the RBHs do. From input wholesalers, again 70% of the traditional shops do, but only a third of state stores and 20% of RBHs. From the state, 40% of small shops, 20% of RBHs, and half of state stores get extension. This picture is not far from what we found in UP and MP.

Table 7.2.4 shows that 40% of traditional shops get “promoters” from input companies, 20% of the RBHs do, and 75% of state stores. 70% of the traditional shops get credit from input suppliers (twice the rate we found in UP), 75% of state stores do, but no RBHs do.

In general the findings show more involvement of input companies with the retailers than in the UP and MP surveys.

Section 7.1 Agricultural extension use by households

USE RATES

Table 7.1.1. Farmer use of extension by zone				
	West	Central	East	Total
% of households that used agricultural extension in the last 12 months (N=810)	97.0	91.50	95.60	94.70
For households not using extension services, % of households stating the reason for not using it as (N= 43 households)				
No need (%)	87.50	26.10	83.30	53.50
Unable to find them at the right time (%)	12.50	73.90	16.70	46.50
They were too expensive (%)	0.0	0.0	0.0	0.0
Did not find the required quality (%)	0.0	0.0	0.0	0.0
Did not find relevant information (%)	0.0	0.0	0.0	0.0
Total (%)	100	100	100	100

Table 7.1.2. Use of extension services, by farm size stratum					
	Marginal (0-1 ha) N=231	Small (>1-2 ha) N=292	Medium (>2 ha) N=287	Un weighted overall N=810	Population weighted overall*
% of households that use extension in the last 12 months (N=810)	94.69	94.69	94.69	94.69	94.69
For households not using extension services, % of households stating the reason for not using it as (N= 43 households)					
No need	70.59	60.00	18.18	53.49	53.57
Unable to find extension at the right time (%)	29.41	40.00	81.82	46.51	46.43
They were too expensive (%)	0.00	0.00	0.00	0.00	0.00
Did not find required quality (%)	0.00	0.00	0.00	0.00	0.00
Did not find relevant information (%)	0.00	0.00	0.00	0.00	0.00
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 7.1.3: Use of extension (RBH users versus non-users)				
	RBH user	Non-RBH user	Un weighted Total	Population weighted overall*
% of households that used agricultural extension in the last 12 months (N= 810 households)	96.93	92.25	94.69	92.95
For households not using extension services, % of households stating the reason for not using it as (N= <u>43</u> households)				
No need	46.15	56.67	53.49	55.09
Unable to find extension at the right time (%)	53.85	43.33	46.51	44.91
They were too expensive (%)	0.0	0.0	0.0	0.00
Did not find required quality (%)	0.0	0.0	0.0	0.00
Did not find relevant information (%)	0.0	0.0	0.0	0.00
Total	100%	100%	100%	100%
*Weights as in table 2.1.2				

OVERALL ASSESSMENT BY FARMERS

Table 7.1.4: Constraints in use of agricultural extension, by zone				
	West	Central	East	Total
In the last 12 months, % of households who considered the following bottlenecks in having access to extension (N=810households)				
Timely availability of extension (N=810 households):				
Major bottleneck (%)	0.0	0.40	0.39	0.26
Small bottleneck (%)	10.31	14.57	19.77	14.86
No bottleneck (%)	89.69	85.02	79.84	84.88
Total	100%	100%	100%	100%
Price of extension (N=810 households):				
Major bottleneck (%)	0.0	0.0	0.39	0.13
Small bottleneck (%)	1.53	2.43	5.81	3.26
No bottleneck (%)	98.47	97.57	93.80	96.61
Total	100%	100%	100%	100%
Quality of extension (N=810 households):				
Major bottleneck (%)	0.0	0.0	0.78	0.26
Small bottleneck (%)	10.69	7.69	12.79	10.43
No bottleneck (%)	89.31	92.31	86.43	89.31
Total	100%	100%	100%	100%
Access to extension (N=810 households):				
Major bottleneck (%)	0.0	0.0	0.0	0.0
Small bottleneck (%)	9.92	7.69	12.79	10.17
No bottleneck (%)	90.08	92.31	87.21	89.83
Total	100%	100%	100%	100%

Table 7.1.5: Extension access and quality perceived, by farm size					
	Marginal (0-1 ha) N=214	Small (>1- 2 ha) N=277	Medium (>2 ha) N=276	Un weighted overall N=767	Population weighted overall*
In the last 12 months, % of households who considered the following bottlenecks in having access to extension (N=810 households)					
Timely availability of extension (N=810 households):					
Major bottleneck (%)	0.00	0.72	0.00	0.26	0.27
Small bottleneck (%)	13.08	19.13	11.96	14.86	15.04
No bottleneck (%)	86.92	80.14	88.04	84.88	84.69
Total	100%	100%	100%	100%	100%
Price of extension (N=810 households):					
Major bottleneck (%)	0.00	0.36	0.00	0.13	0.13
Small bottleneck (%)	1.87	4.69	2.90	3.26	3.17
No bottleneck (%)	98.13	94.95	97.10	96.61	96.70
Total	100%	100%	100%	100%	100%
Quality of extension (N=810 households):					
Major bottleneck (%)	0.47	0.36	0.00	0.26	0.31
Small bottleneck (%)	9.35	11.55	10.14	10.43	10.36
No bottleneck (%)	90.19	88.09	89.86	89.31	89.33
Total	100%	100%	100%	100%	100%
Relevant information of extension (N=810 households):					
Major bottleneck (%)	0.00	0.00	0.00	0.00	0.00
Small bottleneck (%)	7.94	14.08	7.97	10.17	10.22
No bottleneck (%)	92.06	85.92	92.03	89.83	89.78
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

FUNCTIONAL COMPOSITION

Table 7.1.6: Type and usefulness of agricultural extension use by zone				
	West	Central	East	Total
% of transaction where information was given on (N=1292 transactions):				
Use of fertilizer	13.7	15.4	19.4	16.1
Irrigation	8.2	7.8	5.1	7.1
New seed varieties	10.0	12.1	10.8	10.9
Diseases problem	41.9	42.0	38.8	40.9
Soil problems	5.4	2.2	4.7	4.1
Weather problems	6.8	9.8	7.7	8.1
Marketing advice	1.1	1.0	2.2	1.4
Help getting credit	0.0	0.1	0.1	0.1
General advice	13.0	9.3	10.1	10.8
They test my crops for problems	0.0	0.0	0.0	0.0
Information about new technology	0.0	0.1	0.6	0.2
Other	0.0	0.0	0.4	0.1
Total	100.0	100.0	100.0	100.0
% of transactions in which the households reported that they were satisfied with the quality of extension? (N=1292 transactions)				
	99.1	94.4	93.2	95.5
For transactions where households reported of not being satisfied, % of transactions where households reported the reason of dissatisfaction as (N= 58 transactions):				
Vendor too far	0.0	0.0	0.0	0.0
High cost of extension	0.0	0.0	0.0	0.0
Poor quality advice	25.0	0.0	0.0	1.9
Not relevant information	0.0	4.2	16.7	10.3
Already known what the information	75.0	91.7	70.0	79.3
Long wait	0.0	4.2	3.3	3.4
Difficult to contact	0.0	0.0	3.3	1.7
No information on new technologies	0.0	0.0	6.7	3.4
Other	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%

Table 7.1.7: Type of information from any extension, by farm size in shares of “transactions” (accessing extension)					
	Marginal (0-1 ha)	Small (>1- 2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transaction where information was given on (N=1292 transactions):					
Use of fertilizer	16.0	17.7	14.8	16.33	16.3
Irrigation	7.3	6.9	7.1	7.09	7.1
New seed varieties	10.0	11.7	10.8	10.86	10.8
Diseases problem	43.4	39.2	41.0	41.27	41.2
Soil problems	3.7	3.5	5.5	4.06	4.1
Weather problems	6.2	8.5	8.9	7.71	7.7
Marketing advice	1.4	1.9	1.1	1.49	1.5
Help getting credit	0.0	0.1	0.1	0.08	0.1
General advice	11.2	10.2	10.5	10.66	10.7
They test my crops for problems	0.0	0.0	0.0	0.00	0.0
Information about new technology	0.6	0.1	0.1	0.30	0.3
Other	0.2	0.1	0.1	0.15	0.1
Total	100%	100%	100%	100%	100%
% of transactions in which the households reported that they were satisfied with the quality of extension? (N=1292 transactions)	93.8	95.3	96.9	95.5	95.1
For transactions where households reported of not being satisfied, % of transactions where households reported the reason of dissatisfaction as (N= 58 transactions):					
Vendor too far	0.0	0.0	0.0	0.0	0.0
High cost of extension	0.0	0.0	0.0	0.0	0.0
Poor quality advice	0.0	4.76	0.0	1.9	1.8
Not relevant information	9.52	14.29	6.25	10.34	10.5
Already known what the information	76.19	76.19	87.50	79.31	79.0
Long wait	9.52	0.0	0.0	3.45	3.6
Difficult to contact	4.76	0.0	0.0	1.72	1.8
No information on new technologies	0.0	4.76	6.25	3.4	3.3
Other	0.0	0.0	0.0	0.0	0.0
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 7.1.8: Type and usefulness of agricultural extension use (RBH users versus non-users)				
	RBH user	Non-RBH user	Un weighted overall*	Population weighted overall*
% of transaction where information was given on (N=1292 transactions):				
Use of fertilizer	16.1	16.2	16.1	16.19
Irrigation	7.3	6.8	7.1	6.88
New seed varieties	12.0	9.7	11.0	10.05
Diseases problem	40.3	41.8	41.0	41.58
Soil problems	4.1	4.6	4.3	4.53
Weather problems	7.7	8.6	8.1	8.47
Marketing advice	1.3	1.6	1.4	1.56
Help getting credit	0.2	0.0	0.1	0.03
General advice	10.7	10.4	10.6	10.45
They test my crops for problems	0.0	0.0	0.0	0.00
Information about new technology	0.3	0.1	0.2	0.13
Other	0.2	0.1	0.1	0.12
Total	100%	100%	100%	100%
% of transactions in which the households reported that they were satisfied with the quality of extension? (N=1292 transactions)	96.0	94.9	95.5	95.07
Of transactions where households reported of not being satisfied, % of transactions where households reported the reason of dissatisfaction as (N=58 transactions):				
Vendor too far	0.0	0.0	0.0	0.00
High cost of extension	0.0	0.0	0.0	0.00
Poor quality advice	3.4	0.0	1.7	0.51
Not relevant information	10.3	10.3	10.3	10.30
Already known what the information	79.3	79.3	79.3	79.30
Long wait	3.4	3.4	3.4	3.40
Difficult to contact	0.0	3.4	1.7	2.89
No information on new technologies	3.4	3.4	3.4	3.40
Other	0.0	0.0	0.0	0.00
Total	100%	100%	100%	100%
*Weights as in table 2.1.2				

COMPOSITION of PROVIDERS

Table 7.1.9 Sources of Extension to Farmers, by Zone				
	West N=130	Central N=115	East N=173	Total N=418
% of transactions where households reported to receive extension advice from (N=1292 transactions):				
Public sources	31.0	27.0	39.0	32.0
Private sources	69.0	73.0	61.0	68.0
% of transactions from public sources, where households reported to receive extension advice from (N=418 transactions):				
KVK	14.6	30.4	19.7	21.1
State Extension officer	44.6	62.6	38.7	47.1
University/Directorate of extension services	0.8	0.9	0.6	0.7
NGO/Donor project	23.1	0.0	25.4	17.7
Atma	0.8	0.9	1.2	1.0
Extension Agent Plant Protection unit	5.4	4.3	13.9	8.6
Other public extension provider	10.8	0.0	0.6	3.6
None of the above	0.0	0.9	0.0	0.2
Total	100	100	100	100
% of transactions from private sources, where households reported to receive extension advice from (N= 879 transactions):				
Extension officer from fertilizer company (e.g. IFFCO)	6.1	7.9	6.3	6.8
Private company that promote own products (e.g. Bayer, Syngenta)	39.1	44.3	53.2	45.3
VISWAS	20.1	10.4	8.2	13.0
Other RBH	2.7	2.5	5.9	3.6
Extension agent private processing companies	0.7	1.3	2.2	1.4
Other private company extension provider	0.0	0.9	1.5	0.8
None of the above	31.3	32.6	22.7	29.1
Total	100	100	100	100
% of transactions where the major reasons for the choice of extension agent are (N=1292 transactions):				
He is close by (%)	18.9	18.5	9.6	15.4
He gives the lowest price (%)	0.9	0.7	1.8	1.1
Quality is assured (%)	20.5	19.7	23.8	21.4
Most relevant information (%)	13.9	15.1	21.7	17.1
Timely availability (%)	34.6	33.9	23.5	30.4
I was not looking he contacted me (%)	10.9	11.8	13.6	12.1
No other option (%)	0.0	0.0	0.3	0.1
Other	0.2	0.4	5.8	2.2
Cannot answer one (%)	0.0	0.0	0.0	0.0
Total	100	100	100	100
Average distance in Kms to place of extension (simple average over all transactions; N=1292 transactions):				
Mean distance	3.08	1.68	1.36	2.03
Average number of times that a household have contact with the source in last 2 seasons (simple average over all transactions; N=1292 transactions)				
Mean	1.77	2.12	4.08	2.67
Median	1.00	2.00	2.00	2.00
% of transactions in which households had to pay for agricultural extension (N=1292 transactions)	1.9	1.6	4.8	2.8

Table 7.1.10 Sources of Extension to Farmers, by farm size strata					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transactions where households reported to receive extension advice from (N=1292 transactions):					
Public sources	33.0	28.0	36.0	32.0	31.9
Private sources	67.0	72.0	64.0	68.0	68.1
% of transactions from public sources, where households reported to receive extension advice from (N=418 transactions):					
KVK	20.72	26.02	17.93	21.05	21.98
State Extension officer	48.65	50.41	44.02	47.13	48.14
University/Directorate of extension services	0.00	0.00	1.63	0.72	0.41
NGO/Donor project	14.41	12.20	23.37	17.70	15.83
Atma	0.90	0.00	1.63	0.96	0.75
Extension Agent Plant Protection unit	10.81	7.32	8.15	8.61	8.85
Other public extension provider	3.60	4.07	3.26	3.59	3.69
None of the above	0.90	0.00	0.00	0.24	0.34
Total	100.0	100.0	100.0	100.0	100.0
% of transactions from private sources, where households reported to receive extension advice from (N=879 transactions):					
Extension officer from fertilizer company (e.g. IFFCO)	7.39	6.50	6.75	6.83	6.90
Private company that promote own products (e.g. Bayer, Syngenta)	44.78	48.30	42.64	45.28	45.55
VISWAS	10.00	11.46	16.56	12.97	12.18
Other RBH	3.04	2.79	4.91	3.64	3.14
Extension agent private processing companies	2.17	0.93	1.23	1.37	1.48
Other private company extension provider	0.87	1.24	0.31	0.80	0.87
None of the above	31.74	28.79	27.61	29.12	29.62
Total	100.0	100.0	100.0	100.0	100.0
% of transactions where the major reasons for the choice of extension agent are (N=1292 transactions):					
He is close by (%)	16.30	16.47	13.98	15.45	15.78
He gives the lowest price (%)	0.65	1.34	1.28	1.14	1.07
Quality is assured (%)	23.91	20.00	20.97	21.44	21.73
Most relevant information (%)	13.91	16.64	19.54	17.10	16.33
Timely availability (%)	31.09	31.09	29.53	30.39	30.70
I was not looking he contacted me (%)	11.52	11.93	12.70	12.14	11.97
No other option (%)	0.43	0.00	0.00	0.11	0.17
Other	2.17	2.52	2.00	2.22	2.26
Cannot answer one (%)	0.00	0.00	0.00	0.00	0.00
Total	100.0	100.0	100.0	100.0	100.0
Average distance in Kms to place of extension (simple average over all transactions; N=1292 transactions):					
Mean distance	1.71	2.05	2.22	2.03	1.96
Average number of times that a household have contact with the source in last 2 seasons (simple average over all transactions; N=1292 transactions)					
Mean	4.94	1.96	1.78	2.67	3.05
Median	1.00	2.00	1.00	2.00	1.37
% of transactions in which households had to pay for extension (N=1292 transactions)	3.2	3.4	2.0	2.8	2.97
*Weights as in table 2.1.7					

Table 7.1.11 Sources of Extension to Farmers, by RBH user				
	RBH user	Non-RBH user	Un weighted overall	Population weighted overall*
% of transactions from public sources, where households reported to receive extension advice from (N=418 transactions):				
KVK	21.3	20.8	21.1	20.88
State Extension officer	43.3	52.2	47.1	50.87
University/Directorate of extension services	0.8	0.6	0.7	0.63
NGO/Donor project	20.8	13.5	17.7	14.60
Atma	0.4	1.7	1.0	1.51
Extension Agent Plant Protection unit	8.8	8.4	8.6	8.46
Other public extension provider	4.2	2.8	3.6	3.01
None of the above	0.4	0.0	0.2	0.06
Total	100	100	100	100
% of transactions private sources, where households reported to receive extension advice from (N=879 transactions):				
Extension officer from fertilizer company (e.g. IFFCO)	4.3	9.8	6.8	8.98
Private company that promote own products (e.g. Bayer, Syngenta)	40.2	51.5	45.3	49.81
VISWAS	23.0	0.8	13.0	4.13
Other RBH	3.7	3.5	3.6	3.53
Extension agent private processing companies	2.1	0.5	1.4	0.74
Other private company extension provider	0.4	1.3	0.8	1.17
None of the above	26.3	32.6	29.1	31.66
Total	100	100	100	100
% of transactions where the major reasons for the choice of extension agent are (N=1292 transactions):				
	N=985	N=770	N=1754	
He is close by (%)	14.8	16.2	15.5	15.99
He gives the lowest price (%)	1.4	0.8	1.1	0.89
Quality is assured (%)	22.5	20.0	21.4	20.38
Most relevant information (%)	18.8	14.9	17.1	15.49
Timely availability (%)	29.3	31.9	30.4	31.51
I was not looking he contacted me (%)	11.0	13.6	12.1	13.21
No other option (%)	0.0	0.3	0.1	0.26
Other	2.1	2.3	2.2	2.27
Cannot answer one (%)	0.0	0.0	0.0	0.00
Total	100	100	100	100
Average distance in Km to place of extension (simple average over all transactions; N=1292 transactions):				
Mean distance	2.65	1.25	2.03	1.97
Average number of times that a household have contact with the source in last 2 seasons (simple average over all transactions; N=1292 transactions)				
Mean	1.90	3.64	2.67	3.38
Median	2.00	1.00	2.00	1.15
% of transactions in which households had to pay for agricultural extension (N=_1292 transactions)	2.5	3.1	2.8	3.01
*Weights as in table 2.1.2				

7.2. Agricultural Extension Provision by Input Retailers

Table 7.2.1. Characteristics of Extension Services Provided by Input retailers to Clients				
	Of all retailers % of retailer Providing Extension advice to clients with purchase	For retailers providing extension services, % of retailers providing		
		General Extension service ²	Specific Extension service³	Type of serviceNR¹
1. In West Zone (N=32)	93.8	18.8	71.9	9.4
1.a. Traditional Private(N=30)	93.3	20	70	10
1.b. RBH(N=2)	100	0	100	0
1.c. State Store ((N=0)	0	0	0	0
2. In Central Zone(N=35)	94.3	8.6	88.6	2.9
2.a. Traditional Private(N=31)	92.6	3.7	92.6	3.7
2.b. RBH(N=2)	100	100	0	0
2.c. State Store (N=2)	100	0	100	0
3. In East Zone(N=34)	94.1	11.8	82.4	5.9
3.a. Traditional Private(N=27)	96.3	14.8	81.5	3.7

3.b. RBH(N=1)	100	0	100	0
3.c.State Store (N=6)	83.3	0	83.3	16.7
4. In All AP (N=101)	94.1	12.9	81.2	5.9
4.a. Traditional Private(N=88)	94	13.1	81	6
4.b. RBH(N=5)	100	40	60	0
4.c.State Store (N=8)	91.7	0	91.7	8.3
¹ NR- Not Reported				
² General extension services implies providing information or assistance on any issue related to farming.				
³ Specific extension services are observed to be pertaining to usage of specific inputs, like fertilizers and				

Table 7.2.2. Characteristics of Extension Service Provided to Input Companies by Input Retailers		
	Of all retailers, % of retailers reporting of	
	Assisting input companies in product promotion	Assisting input companies to “melas”
1. In West Zone (N=32)	43.8	36.7
1.a. Traditional Private(N=30)	46.7	39.3
1.b. RBH(N=2)	0	0
1.c. State Store ((N=0)	0	0
2. In Central Zone(N=35)	34.3	32.4
2.a. Traditional Private(N=31)	25.9	26.9
2.b. RBH(N=2)	50	50
2.c. State Store (N=2)	66.7	50
3. In East Zone(N=34)	23.5	20.6
3.a. Traditional Private(N=27)	29.6	25.9
3.b. RBH(N=1)	0	0
3.c.State Store (N=6)	0	0
4. In All AP (N=101)	33.7	29.6
4.a. Traditional Private(N=88)	34.5	30.9
4.b. RBH(N=5)	20	20
4.c.State Store (N=8)	33.3	25

Table 7.2.3. Characteristics of Extension Services Received by Input Retailers					
	Of all retailers % of retailers receiving extension services from¹				
	Input Companies	Input Wholesalers	Government	Universities	Others
1. In West Zone (N=32)	93.8	81.3	59.4	25	0
1.a. Traditional Private(N=30)	93.8	86.7	63.3	26.7	0
1.b. RBH(N=2)	100	0	0	0	0
1.c. State Store ((N=0)	0	0	0	0	0
2. In Central Zone(N=35)	82.9	57.1	54.3	31.4	8.6
2.a. Traditional Private(N=31)	81.5	70.4	51.9	22.2	3.7
2.b. RBH(N=2)	100	0	50	50	0
2.c. State Store (N=2)	83.3	16.7	66.7	66.7	33.3
3. In East Zone(N=34)	75.5	55.9	60.7	55.9	0
3.a. Traditional Private(N=27)	74.1	55.6	100	63	0
3.b. RBH(N=1)	100	100	66.7	0	0
3.c.State Store (N=6)	66.7	50	67.6	33.3	0
4. In All AP (N=101)	83.2	64.4	60.4	37.6	3
4.a. Traditional Private(N=88)	83.3	71.4	60.7	36.9	1.2
4.b. RBH(N=5)	100	20	40	20	0
4.c.State Store (N=8)	75	33.3	66.7	50	16.7

¹Row sum over category may exceed 100% as a retailer may obtain extension services from multiple

Table 7.2.4. Characteristics of Extension Service Received by Input Retailers from Input Companies		
	Of all retailers % of retailers reporting of	
	Receiving credit from input companies	Being provided assistants by input companies
1. In West Zone (N=32)	78.1	37.5
1.a. Traditional Private(N=30)	83.3	40
1.b. RBH(N=2)	0	0
1.c. State Store ((N=0)	0	0
2. In Central Zone(N=35)	65.7	22.9
2.a. Traditional Private(N=31)	70.4	14.8
2.b. RBH(N=2)	0	50
2.c. State Store (N=2)	66.7	50
3. In East Zone(N=34)	55.9	70.6
3.a. Traditional Private(N=27)	51.9	66.7
3.b. RBH(N=1)	0	0
3.c.State Store (N=6)	83.3	100
4. In All AP (N=101)	66.3	43.6
4.a. Traditional Private(N=88)	69	40.5
4.b. RBH(N=5)	0	20
4.c.State Store (N=8)	75	75

Chapter 8. Crop Marketing by Farm Households and Output Procurement by Wholesalers in AP

The purpose of this chapter is to better understand how farmers market crops (especially rice and chilies, the crops on which we focus in the study zones) and how wholesalers provide crop procurement services, in the state of Andhra Pradesh (AP). A better understanding of this is an important step for the design of appropriate policies in this important sector, and perhaps the effective outreach of modern companies to poor farmers to provide appropriate crop procurement services when the need is there.

This chapter presents descriptive statistics from our farm household survey and from our trader surveys, on farmer marketing of crops and supply of and access to crop procurement services by rural households in the catchment area of the Rural Business Hubs of Viswas in AP. (The sample frame and survey methods were discussed in Chapter 2.)

8.1. Background Context: Output Procurement service providers in AP from which Farmers can Choose

There were **four main channels of sale for rice (we will use the word “rice” as more familiar to the general reader than “paddy”, but know that we mean raw paddy sold by farms) and chilies and other crops of the farmers:**

- 1) **the local field-broker (collector);**
- 2) **the commission agents in the mandis in rural areas;**
- 3) **processing companies**
- 4) **seed companies**
- 5) **direct to traditional retailers**
- 6) **direct to consumers.**

The commission agents at the mandi charge a commission on the transaction, and there is also a tax (cess) and payment to weighing men and loading and unloading laborers.

8.2. Farm Household Survey Results Concerning Output Marketing by Households to Various Procurement Actors

8.2.1. Overview of Marketing of Crops by Farm Households in the study areas

The study had several key findings regarding farmers’ **marketing of overall crops.**

Table 8.1.1 shows overall crop sales by farmers in the sample, by zone and by growing season (rainy season, kharif, and winter or dry season, rabi).

The majority of farmers are at least semi-commercial farmers (sold some of their crop in one or more seasons) in all three zones: those shares are 98%, 95, and 97 over the west, center, and east zones. The seasonality is similar in west and east (with nearly all farmers selling in kharif but only a quarter to a third in rabi), versus the center (where only a half sell in

kharif but three-quarters in rabi. While these market participation rates are more than what our survey showed in the UP, they are similar to our findings in MP.

About 3.5 times more (over all farms) crop sales income is earned in kharif compared with rabi, in the overall sample, but this disguises that in the east and west, about 8 times more crop sales income is earned in kharif than rabi, while in the center, it is about half in kharif, half in rabi.

The (zeroed-out, thus including the zeroes of non-sellers) of **crop sales income is about 185,000 (about 4100 USD) overall (about 2.5 times more than the total for farms in our UP sample, which has a similar land distribution). These totals differ very sharply over zones – from 120,000 in the west and 130,000 (nearly 3000 USD) in the center of AP (only about 1.3 times the dynamic west of UP, and similar to the average in our MP study), but about 300,000 in the east zone, or 6700 USD. This shows the sharp regional disparities.** Keep in mind that these numbers are NOT total income of the households – as rural nonfarm employment and some farm wage-employment are known to be important shares of income.

Table 8.1.2 shows the above but **by farm size strata**. The overall shares of market participation (share of households selling in any season) are very close over strata – 94, 98, and 99%. While the small and medium farmers have close to the same shares selling in kharif (about 85%) and rabi (about 44%), the marginal have just a bit less in kharif (72%) versus rabi (49%). This suggests widespread irrigation available over strata.

As expected, the sales income differs sharply over strata: with totals of 82,000, 172,000, and 284,000 rupees over the three strata. As expected, seasonality declines as farm size rises: marginal and small have an inter-season ratio of sales of 4.1-4.9, while the medium farmers have but a ratio of 3.

Table 8.1.3 shows crop composition of sales. The results differ sharply over zones. In the dynamic east, 64% of sales are of chilies, and 28% paddy, and only 7% of cotton, and not much else. In the center, paddy is king with 78% of sales, and cotton has 18%, and not much else. In the west, various pulses and nuts have 55% of sales, followed by paddy at 18% and chilies a mere 7% as is maize.

Table 8.1.4. shows the above but by farm strata. The share of chilies in sales is high (around half) for the marginal and small, but drops to a quarter for the medium farms; partly this is because the presence of the latter is correlated with being in the drier west and the more paddy-focused center zones. Similarly, the paddy share in sales is a gentle U curve over the strata with average at 37%. As expected, the nuts and pulses are more important for the medium farms, but again this is correlated with the zone effect.

Table 8.1.5 shows how transactions are made, by strata. The main findings are as follows. (1) 94% of the 1426 transactions of the sample households are made in cash (not in kind or in check); this barely differs over farm strata. (2) 54% of the transactions are paid right away (with that figure being 41% for the marginal, and 57% for the others); by the end of a week after the sale (a merchant's cycle of getting, selling, paying), 85% of the transactions will have been fully paid; this however differs over farm strata: the marginal farmers have to wait the longest, with

only 75% of their sales paid within a week, while the medium farmers wait the least, with 87% of theirs paid within a week. In any case, nearly all the rest of the transactions are paid up by end of one month. (3) The farmer's receiving an input advance (credit from the trader) is more common in AP than in UP and MP, but still a minority at only 17% of the farmers. This is negatively correlated with farm size, with 24% of the marginal farmers receiving, versus only 14% of the medium farmers.

Table 8.1.6 shows the same as above but for zones. The main findings are as follows. (1) While 94% of the 1426 transactions of the sample households are made in cash, that is highest in the west at 99%, dropping to 90% in the center and 94% in the east; the rest is mainly in cash and in kind, and partly in check. (2) Interestingly, in the west, 85% of the transactions are paid right away, and the rest within the week. By contrast, in the center and east only 43% and 31% are paid right away, and in all 77% in the center within a week and 71% in the east. Nearly all the rest of the transactions are paid up by end of one month. (3) The farmer's receiving an input advance (credit from the trader) is most common in the east (with 38% of the transactions having that), while only 13% in the center and 2% in the east. This advance then may be related to chilies production.

Table 8.1.7 shows where crops are sold and when, by farm strata, in terms of shares of transactions (not volumes, which are shown in Table 8.1.8). In terms of shares of transactions, by far the most common for all strata (around 60-70% of transactions) take place at the farmer's field or village. Only a quarter take place at the wholesale market; this is more prevalent for the small and marginal farmers (which as we noted tend to be more concentrated into the more dynamic east and center).

The table shows that the time to get to the sale location is on average brief, a bit more than an hour. The time at the sales location is also not long, a few hours. The main means of transport is the tractor and truck, with few being the cart but the share of "no answer" in this question is high at 40%. The great majority of the crops are sold in bags, with only 4% loose.

Table 8.1.8 shows the above but by **shares of volume (in rupees) – and paints a very different picture than did the above table that dealt only in shares of transactions. While "sales at farm or in village" were about 65% of transactions, they are only 41% of sales.** This may be linked to the big sales items, chilies and paddy, being sold at the mandi or the mill more than at the village; that is explored below. This is initially supported as a hypothesis by the fact that medium farmers sell more at the village than do smaller farmers, but we saw above the medium farmers are less apt to sell chili and paddy. The medium farms are less apt also to have trucks, reinforcing the general point made above of smaller farms being in the more developed east and center, and medium farms more in the less developed west.

Table 8.1.9 shows the above but by zone and partially confirms some of our hypotheses above, even in terms only of transaction shares. (1) The west farmers are far more likely to sell at the farmgate/village: 89% versus only 44% and 54% in the other zones. (2) By contrast, while only 6% of the farmers sell direct to the wholesale market in the less dynamic west, 42% in the center and 26 in the east so do. These patterns are like those in the other states studied. (3) "others" is more important (12%) in the center and east, and little (2%) in the west, suggesting these are

processors buying. As expected, tractor and truck are more important in the center and east, but the data for transport means are noisy.

8.2.2. Paddy output and sales by Farm Households in the study areas

Table 8.1.10 shows paddy output by zones. The paddy area in the main paddy zones, center and east, is about 1.76 ha and 1.51 ha per farm while only 0.4 in the west). The output is 10 tons in the center and 11 tons in the east, so about 5.8 in the center to 7.5 tons per ha in the east. This is considerably above the all-India yield.

Table 8.1.11 shows the same but by farm strata. The paddy area jumps from 0.66 to 1.02 to 1.87 over the three strata, 2.8 fold. The output jumps from 3.7 tons to 5.8 tons to 13.4, or 3.6 fold. This implies higher yields on medium farms, similar to what we found in UP and MP. Note that the average price received per quintal is about 5% and 7% higher for the small and medium farms compared to the marginal farms. Medium farms (and the west) get slightly more (about 8%) prices than then marginal farms (and the east); but we do not control for paddy quality in this calculation, or net out transport costs.

Table 8.1.12 shows sales patterns of paddy by farm strata. The overall share of farmers selling paddy is 57% (slightly negatively correlated with farm size; recall again that this can be correlated with zone, as the smaller farms are in the more dynamic and commercial east). Row 3.2 shows sales by paddy-selling households; they jump four fold from 4.5 tons to 18.8 tons over the farms. That is a ratio of 4 times, while the output ratio is 3.7 times, so that the marketed surplus rate of medium farmers compared with marginal farmers is only slightly higher. These are very commercialized zones, including of small farmers. Note that the price received by the marginal farmer is 11.3 rs/kg, a bit less than the 11.8 and 11.7 of the small and the medium farmers. This closeness of price for grain over strata echoes what we found also in UP and MP.

Table 8.1.13 shows sales of paddy by buyer type. The tables shows that in shares of households selling paddy, the lion's share (60%) sell to collectors in the villages; and only 30% to wholesalers on the mandis, and a mere 15% direct to mills. The last row shows the derived price: significantly higher for direct to the mill and to the village collector (about 12 rs/kg) versus 10.2 sold at the mandi.

Table 8.1.14 tempers the above point by showing that in rupee terms (shares of total volume of sales) the **village collector only has 47% of the volume (versus above we show 60% of the farmers). The mandi wholesaler only has 18%. By contrast, "direct sale to mills" or their collection points has 29%. Selling directly to mills is sharply correlated with farm size: with the share of paddy sales by marginal farmers being only 11% direct to mills (but 4% via mill collection centers), for small farms, 17% direct (but 4% via collection centers), and for medium farmers, 33% direct to mills and 2% via mill collection centers.** There may be some kind of volume threshold to make this direct shipment worthwhile to the farmers.

Table 8.1.15 shows in kg terms (and 8.1.16 shows in rupee terms), for each type of paddy buyer, the "pie" of their total purchases of paddy (aggregated over the sales of the sample). As the stories are similar in the two tables we focus on 8.1.15. **Note from the second to last column**

that summarizes volumes bought by each type of buyer and their market shares (inferred from the household data) that village collectors handle 46% of the paddy, mandi wholesalers 21%, and millers the other 26%. Thus, the market is split half-half between the more traditional channel (selling to village brokers) and selling to transitional channels, direct to mandis and mills and bypassing the initial layer of intermediation.

The table shows that while marginal farmers depend more on the most-traditional channel of selling paddy to village collectors, by contrast, the **village collectors only acquire 19% of their paddy from marginal farmers – and fully 46% from medium farmers.**

The “transitional” (not traditional) channel of selling direct to the mandi and the mill is highly dominated by medium farmers in terms of volumes. Mandi wholesalers source 60% from medium farmers and mills 76% from medium farmers.

Table 8.1.17 shows the reasons for the choice of buyer by the different farm strata. Predictably, the smaller the farmer the more frequently he cites that the buyer “accepts a smaller quantity” as the reason, and vice versa (larger farmers want those that accept larger quantities. These two reasons make up about half the answers for “main answers” and correlate closely with the patterns noted above (that smaller farmers depend more on village collectors who can buy small volumes, but do not usually deal in large volumes, while the medium farmers sell mainly to mills and to mandis, that do). Immediate payment is actually valued a bit more by the medium farmers, and getting higher price, a bit more by the smaller farmers – but both price and immediacy of payment together are less important than volume acceptance. Proximity turns out to be unimportant for all the strata, and very few farmers, small or medium, felt they had no other option than to choose the buyer they used.

Table 8.1.18 show the main reasons for choice of buyer, over paddy buyer types. At odds with the price information given in the transactions, the farmers cite the reason for choice of mills and mandi buyers more often for higher prices, and village collectors less. However, they cite more often the provision of advances and accepting small quantities as reasons for choosing village brokers. Again, proximity is seldom a reason given by the farmers for buyer choice.

Table 8.1.19 show the timing of payments received by farmers, by farm strata, as shares of transactions (not volumes). Interestingly, there is only weak farm size correlation (increasing in land) with whether a farmer is paid on the day of sale. Roughly a quarter to a third of farmers are thus paid. Two-thirds have been paid within a week. Nearly all have been paid within a month.

Surprisingly (relative to the near absence of this practice in the UP and MP studies), a quarter of the farms received advances (payments by the buyer to the farmer at the start of the season so that the farmer can buy inputs and also be “locked in” by the buyer); moreover, there is nearly no farm size bias here.

Table 8.1.20 retakes the above theme of timing and advances, and stratifies by buyer type. Here we get a clue of why smaller farmers tend to sell to the collectors and the mandi and less to the mill direct: nearly 40% of the village broker and mandi wholesaler transactions were paid on the day of sale, while only 6% of those of the mill were. A third of the mills’ transactions were paid

in a week, and another 47% within the month. Surprisingly, however (given the answers farmers gave about their reasons for choices of buyer types), the buyer types were nearly equally willing to give input advances (and the village brokers even slightly less than the others).

Table 8.1.21 shows transaction costs derived from the most recent full transaction (sale) of paddy; this table focuses on the share of farmers paying for different cost rubrics. There is a sharp contrast by zone in the components of transaction costs. The rough pattern is that especially in the east, and less so in the center, and little in the west, one finds farmers paying for bating, transport, loading/off-loading, and weighing fees. This is of course correlated with farmers in the west selling more to brokers in the village and those in the east, to the mills and mandis.

Table 8.1.22 show the same but in rupees per quintal (100 kg). For the overall sample one sees that transport is roughly 11 rs, and bagging, loading/offloading, and weighing are some 20 rs. While market fees are much discussed in policy debate, they are only about 1 rs. Even more discussed is the payment at checkpoint or roadblock (bribes to roadside police); but these are only 0.3 rs (small, even if this is underestimate). **While transport and loading/off-loading weigh more heavily in transaction costs in the east/center, the cost per quintal to move the paddy is about 40 rs per quintal or 0.4 rs per kg, compared with a per kg producer price of about 11.5 rs – hence transaction costs are but 4% of the price. This is similar to what we found in the other states.**

8.2.3. Output and marketing of chili by the farm households

Table 8.1.23 shows output by chili farmers. The crop is mainly in the east (with half a hectare on average per farmer over all farmers, and only a tenth and a twentieth in the other two zones. Production is three tons (over the whole sample) in the east; the yield is thus about 6 tons/ha in the east. The price is similar over the two producing zones, about 855 rs/10 kg or 8.5 rs per kg.

Table 8.1.24 shows that marginal farmers (on average over all farmers) grow 3-4 times as much chili as do the other strata. As chili is labor intensive and can be tended in small plots this makes sense.

Table 8.1.25 shows that production (proxied by sales, as they are the same for this commercialized crop) is concentrated over the sample, and over farm strata – with only about 19% of the farmers sowing chili; even among marginal farmers this is just 17%. For those selling, in line 3.1, the income is impressive: for marginal farmers, 241 thousand rupees, or more than 5000 USD. This is a good example of a high-value horticulture crop.

Table 8.1.26 shows sales of chili by buyer type. The great majority of chili sellers to both village brokers and mandi wholesalers; few sell to processors. But the lines 2.1 and 2.2. reveal that sales to the mandi are far (15 times) more important than other sales sources. The price is also much higher selling to the mandi than the village broker, and similar to selling to a processing company.

Table 8.1.27 shows to which kinds of buyers the farmers of different strata sold chili. The simple finding is that around 95% is sold to the mandi, with little else.

Table 8.1.28 shows in kg, and 8.1.29 shows in rs, the sources (over farm strata) per buyer type. We focus on the mandi, as the main buyer. While marginal farmers depend somewhat more on chili, they are a minor part (16%) of the chili bought by the mandi wholesalers, who rely for about 40% each on the other two strata.

Table 8.1.30 shows the reasons for choice of chili buyer type by farm strata. It is striking that there is little variation in the reasons given, over farm strata. The main reasons of nearly equal weight are pays higher price, accepts larger quantities, gives advances, and pays immediately. The other reasons are minor (except for “accepts lower quantity”, for the marginal farmers).

Table 8.1.31 shows the above but by buyer types. The mandi scores more frequently than the main competitor, the village collector, on price, accepting large quantity, and advances, while the village collector accepts smaller quantities and pays faster.

Table 8.1.32 shows timing of payment and receipt of input advances over farm strata. The smaller farmers tend to get paid sooner, but two-thirds of the sample is paid on the day of the sale, and all within a week. **Fully 47% of the marginal farmers get an input advance from the buyers, versus only 38 and 33% for the small and medium categories. But the overall picture is a stronger “traditional” credit-output market link in the chili economy than in rice.**

Table 8.1.33 shows the payment timing and provision of input advances by type of buyer. We focus on the two main contenders, village collectors and mandi traders. While farmers said they choose village collectors because they pay immediately, in fact, the de facto transactions show that the mandi wholesaler pays more often (67% of transactions) on the day of sale, compared with the village collector (44%). But this is a minor issue as both pay within the week. Also at odds with the “qualitative” points made by the farmers, the transaction data show that only the mandi wholesalers provided input advances – not the village collectors.

Table 8.1.34 shows transaction costs derived from the most recent full transaction (sale) of chilies; this table focuses on the share of farmers paying for different cost rubrics. As with paddy, there are sharp differences over zones. As with paddy, the chili sellers paying for transport and various handling is far more in the east and somewhat in the center, and little in the west, corresponding to the latter having more local sale (to village collectors) and as with paddy, the east having more developed the mandi-farmer interface. Unlike paddy, most East zone farmers have some processing take place as part of the transaction.

Table 8.1.35 shows transaction costs in rs per quintal (100 kg). Immediately striking is that the cost is half that of paddy (24 for chili versus about 44 for paddy). The biggest single item is transport.

8.3. Insights from the Trader Surveys

Table 8.2.1 shows data for marketing of paddy by 43 traders in the zones. Several points stand out. (1) The marketing system (auction versus direct) differs sharply over zones. In the west and east, the direct system predominates, at 97% of traders doing this and 77% in the east. It is only in the center that the auction system is important, used by 56% of the paddy traders. (2) For traders using the direct market system, 81% did so in the suppliers' presence, somewhat less commonly in the east. (3) All said the grain is weighed, and only 39% said it was weighed electronically (the others said it was weighed manually). The use of electronic scales was actually more in the west, as well as the more expected use (but only around half) in the east. (4) All the traders said the grain is sampled for quality by the buyers. (5) About half the traders noted there was a single price that prevailed all day (on a given day of trading), and half said the price varied over the day.

Table 8.2.2 shows the array of services provided by paddy traders. (1) A fifth pick up crops from the fields; these tend to be the village collectors. (2) About three quarters buy by grade. (3) Few (18%) of traders label the bags. (4) About half provide bags to farmers. (5) Only 40% deliver to their buyers; this is more prevalent in the east. (6) Only 58% said they sell graded product to their clients.

Table 8.2.3 shows volumes and clientele of rice traders. Focusing on the main rice season, kharif, we see: (1) that traders in the east and west move a similar amount - in the 200+ ton range. By contrast, the traders in the center are much smaller, 10 times smaller; **(2) that 80% of paddy is bought directly from farmers (as in UP and MP results), and only 8% is bought from rural brokers;** little is bought from warehouses or mandi traders; (3) their clientele is diverse: a third of their clientele are medium/large private mills (especially in the center), a quarter are small mills, a fifth are government buyers (especially in the east), a tenth goes to local retailers and consumers, only a tenth goes to other traders. **The main clients are thus direct to mills and to government.**

Table 8.2.4 shows the last transaction of paddy of the traders. We focus on the main rice season, kharif. The last transaction is bigger than the traders noted for daily trade, which makes sense as a transaction is where paddy or rice is bought and then sold over several days; they report the last transaction is about 750 tons (three days of daily trade given what they reported about daily trade in kharif). Moreover, the size of the transaction is similar in the rice-rich east and center, so we may have an underestimate of the daily trading for the center reported in a table above. Note that nearly all the traders (32/34) had their last transaction in paddy, not rice. Only two had the transaction in rice. Half of the traders said they provided advances to farmers. (This is far higher than the minor amounts reported in our UP and MP studies). By contrast, only half of the traders said they got advances from clients (this again is much higher than in the UP and MP studies).

Table 8.2.5 shows costs and income for the last (most recent) transaction by the paddy traders. We focus again on the kharif results. The costs are given in rs/kg. As with farmers transactions, the share of transport is about 14% of the total. But the rest of the structure of the cost of transaction is then different from the farmers: 26% are handling (loading/unloading at farm and then at mandi); 16% are for mandi taxes and 16% for commissions to other traders, and 10% for milling fees. **The total cost to the trader per quintal is 27 rs – not too far from the 24 rs that the farmer pays for transaction costs.**

The table also shows the price that the trader reports paying to the farmer. There is considerable variation over the small sample; the mean is 14.3 rs/kg. Note that this is - below – the 12 rs/kg that we derived from transaction data from the farmers. Thus the traders might have been exaggerating the price they paid to farmers, or the timing of the sales was such that the trader price for that last transaction (toward end of the kharif season) was higher than the average farmgate price over the whole year. The traders report they charge a 3% commission on average. The price they get from buyers is similarly variable across the zones and in the small sample, but the mean is 15.9. That makes for a gross margin on paddy of 15.9-14.3 or 1.6 divided by 15.9, or 10% - which is about what we found in the trader surveys in UP and MP – and lower we think than the conventional wisdom has it (where it is assumed that trader margins are much higher).

Annex to Chapter 8, Tables

OVERALL CROPS

	West N=270	Central N=270	East N=270	Total N=810
% of households that sold agricultural produce in (N= 810 households):				
- Kharif 2009	94.44	54.44	96.30	81.73
- Rabi 2010	25.56	75.93	35.19	45.56
- In the last 12 months (Kharif 2009 and Rabi 2010)	98.89	94.81	97.41	97.04
Total sales income in Rs per household (zeroed-out average over all households, N=810 households):				
- Kharif 2009	103436.9	66709.4	268489.8	146022.0
- Rabi 2010	17312.1	64939.6	36851.5	39750.0
- In the last 12 months (add up total sales for Kharif 2009 and Rabi 2010)	120749.0	131649.0	305341.3	185772.0
Total sales income (in %):				
- Kharif 2009	85.7	50.7	87.9	78.6
- Rabi 2010	14.3	49.3	12.1	21.4
- Total in the last 12 months (%)	100	100	100	100

	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of HHs that sold crops: (N=810)					
- Kharif 2009	71.86	84.25	87.11	81.73	80.26
- Rabi 2010	48.48	45.55	43.21	45.56	46.08
- In the last 12 months (Kharif 2009 and Rabi 2010)	94.4	97.6	98.6	97.0	96.63
Total sales income in Rs per household (zeroed-out average over all households, N=810 households):					
- Kharif 2009	65527.8	143394.6	214019.7	146022.54	131461.6
- Rabi 2010	16312	28468.9	69953.4	39750.0	36220.4
- In the last 12 months (Kharif 2009 and Rabi 2010)	81840	171860.9	283914	185772.0	165666
Total sales income (in %):					
- Kharif 2009	80.07	83.44	75.37	78.65	80.14
- Rabi 2010	19.93	16.56	24.63	21.35	19.86
- Total in the last 12 months (%)	100.00	100.00	100.00	100.00	100.00
*Weights as in table 2.1.7					

Table 8.1.3. Crops sold in past 12 months (average over all households)				
	West	Central	East	Total
Crop income in Rs per household (zeroed-out average over all households, N=810 households):				
Paddy	55541.3	84783.3	92395.8	82954
Groundnut	63540.7	8396	0.0	60005
Sunflower	30940.56	0.0	0.	30940
Gram	129002	0.0	0.0	129002
Arhar /tur	80987	0.0	0.0	80987
Maize	42572.7	28243	42400.0	37046.4
Chilies	137710.4	15106	416243.4	362053
Cotton	114000.0	98698	68866.4	81611.3
Other (this category comprises of crops other than those mentioned above)	60462	15671	30000.0	43275
Crop sales income in %:				
Paddy (%)	18.40	78.24	28.02	37.79
Groundnut (%)	14.23	0.12	0.00	3.11
Sunflower (%)	6.83	0.00	0.00	1.48
Gram (%)	24.93	0.00	0.00	5.40
Arhar /tur (%)	15.40	0.00	0.00	3.33
Maize (%)	6.53	2.54	0.05	2.04
Chilies (%)	7.18	0.38	64.63	37.03
Cotton (%)	0.35	17.49	7.27	8.18
Other (this category comprises of crops other than those mentioned above) (%)	6.15	1.23	0.04	1.64
Total (%)	100	100	100	100

Table 8.1.4. Crops sold in past 12 months by farm strata (average over all the households)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Crop income in Rs per household (zeroed-out average over all households, N=810 households):					
Paddy	36005.9	67044.7	140562.7	82953.9	73629.46
Groundnut	28275.1	46765.3	79408.8	60005.3	47899.90
Sunflower	25066.7	14685.2	38419.4	30940.6	24563.72
Gram	26500.0	54077.1	146972.9	129002.1	66821.75
Arhar /tur	46700.0	43700.0	113209.1	80987.1	62217.28
Maize	29946.4	29875.9	44742.0	37046.2	33619.22
Chilies	234764.5	389879.6	424472.2	362053.2	339584.01
Cotton	37054.2	60903.5	133826.5	81611.9	70071.52
Other (this category comprises of crops other than those mentioned above)	46688.3	440637.1	383206.5	552973.1	276578.91
Crop sales income in %:					
Paddy (%)	39.04	33.12	40.53	37.88	37.22
Groundnut (%)	1.94	2.44	3.80	3.12	2.59
Sunflower (%)	0.40	0.62	2.26	1.48	0.95
Gram (%)	0.56	0.00	9.38	5.16	2.56
Arhar /tur (%)	1.48	2.02	4.58	3.34	2.45
Maize (%)	1.11	2.16	2.20	2.05	1.77
Chilies (%)	48.43	50.10	26.56	37.12	43.58
Cotton (%)	6.66	7.70	8.87	8.20	7.60
Other (this category comprises of crops other than those mentioned above) (%)	0.37	1.84	1.82	1.64	1.28
Total (%)	100	100	100	100	100
*Weights as in table 2.1.7					

Table 8.1.5 Crop sales, mode & timing of receipt of payment, by farm size, in shares of transactions (transactions for both Kharif 2009 and Rabi 2010)					
	Marginal (0-1 ha) N=315	Small (>1- 2 ha) N=522	Medium (>2 ha) N=589	Un weighted overall N=1426	Population weighted overall*
Out of the total no. of transactions, % of transactions where the mode of payment is in CASH: (N=1426 transactions)	93.97	93.10	95.76	94.39	94.10
% of transaction where the timing of payment is (N=1426 transactions) :					
- Immediately on day of sale	41.27	56.51	58.74	54.07	51.28
- In days after the sale	14.92	9.39	17.66	14.03	13.56
- A week after the sale	19.05	15.33	10.02	13.96	15.42
- More than a week but less than a month	23.49	17.43	13.07	16.97	18.64
- As required by the household selling crop	0.32	0.19	0.00	0.14	0.19
- Other	0.95	1.15	0.51	0.84	0.91
- Total	100	100	100	100	100
% of transactions where the crop seller had received input advances from the buyer (N=1426 transactions)	24.44	16.86	13.75	17.25	18.96
*Weights as in table 2.1.7					

Table 8.1.6: Characteristics of payments for output in the last 12 months, by zones, in shares of transactions
(transactions for both Kharif 2009 and Rabi 2010)

	West N=510	Central N=456	East N=460	Total N=1426
% of transactions where the mode of payment is in (N=1426 transactions):				
- In cash	99.02	89.47	94.13	94.39
- In kind (e.g. through agricultural input)	0.00	0.66	1.30	0.63
- Partly in cash and partly in kind	0.00	7.02	2.83	3.16
- Check	0.00	2.19	0.65	0.91
- Other	0.98	0.66	1.09	0.91
- Total (100%)	100	100	100	100
% of transaction where the timing of payment is (N=1426 transactions) :				
- Immediately on day of sale	85.29	42.54	30.87	54.07
- In days after the sale	10.78	16.23	15.43	14.03
- A week after the sale	0.20	18.20	25.00	13.96
- More than a week but less than a month	2.75	21.49	28.26	16.97
- As required by the household selling crop	0.00	0.44	0.00	0.14
- Other	0.98	1.10	0.43	0.84
- Total	100	100	100	100
% of transactions where the crop seller had received input advances from the buyer (N=1426 transactions)	2.35	13.38	37.61	17.25

Table 8.1.7 Crop sales, by sale place and transaction time, by farm size, in levels per and shares of transactions (*transactions for both Kharif 2009 and Rabi 2010*)

	Marginal (0-1 ha) N=315	Small (>1-2 ha) N=522	Medium (>2 ha) N=589	Un weighted overall N=1426	Population weighted overall*
Sale place: % of transactions that took place at (N=1426 transactions):					
- Farmer's field or own village	57.46	59.69	69.95	63.44	61.41
- Wholesale market	30.16	27.06	18.17	24.07	26.02
- Local retail market	4.76	4.41	2.21	3.58	3.99
- RBH	0.63	0.00	0.17	0.21	0.28
- Others	6.67	8.64	9.51	8.56	8.11
Average time in hours taken to travel from home to sales' location (zeroed-out average over all transactions; N=1426 transactions)	1.22	1.59	1.28	1.38	1.37
% of transaction where the transport means is reported as: (N=1426 transactions):					
- Porter/own carry (%)	6.35	4.98	5.26	5.40	5.57
- Handcart (%)	0.32	0.00	0.00	0.07	0.12
- Tractor (%)	40.00	32.57	31.75	33.87	35.19
- Truck (%)	9.52	12.84	12.05	11.78	11.38
- Car (%)	0.00	0.00	0.17	0.07	0.04
- Bicycle (%)	0.00	0.19	0.00	0.07	0.07
- Motorbike (%)	0.00	0.00	0.00	0.00	0.00
- Horse cart (%)	0.00	0.00	0.00	0.00	0.00
- Bullock cart (%)	2.86	1.92	3.57	2.81	2.69
- Others (%)	3.49	4.79	2.55	3.58	3.74
- NA (%)	37.46	42.72	44.65	42.36	41.20
- Total (%)	100	100	100	100	100
Average transaction time in hours at the sale location (zeroed-out average over all transactions; N=1426 transactions)	2.24	2.94	3.15	2.87	2.73
% of transaction where the sales unit is (N=1426 transactions):					
- Bag (%)	98.41	95.40	89.98	93.83	95.19
- Basket (%)	0.32	0.19	0.00	0.14	0.19
- Carton box (%)	0.00	0.38	0.34	0.28	0.23
- Crate (%)	0.00	0.00	0.00	0.00	0.00
- Loose (%)	0.95	3.26	9.17	5.19	3.86
- Other (%)	0.32	0.77	0.51	0.56	0.53
- Total (%)	100	100	100	100	100
*Weights as in table 2.1.7					

Table 8.1.8 Crop sales, by sale place and transaction time, by farm size, in levels per and shares of transactions in terms of Rs. Transacted (transactions for both Kharif 2009 and Rabi 2010)

	Marginal (0-1 ha) N=315	Small (>1-2 ha) N=522	Medium (>2 ha) N=589	Un weighted overall N=1426	Population weighted overall*
Sale place: % of transactions in Rs. that took place at (N=1426 transactions):					
- Farmer's field or own village	35.52	33.04	48.58	41.76	37.87
- Wholesale market	56.60	54.38	34.69	44.00	50.30
- Local retail market	2.78	5.01	1.29	2.72	3.23
- RBH	0.35	0.00	1.23	0.71	0.44
- Cold storage	0.90	0.48	0.00	0.27	0.52
- Others	3.84	7.08	14.21	10.54	7.63
- Total	100	100	100	100	100
% of transaction in Rs. where the transport means is reported as: (N=1426 transactions):					
- Porter/own carry (%)	3.40	0.86	3.50	2.61	2.49
- Handcart (%)	0.15	0.00	0.00	0.02	0.06
- Tractor (%)	39.11	32.49	37.16	35.86	36.17
- Truck (%)	26.56	30.95	17.92	23.32	26.02
- Car (%)	0.00	0.00	0.33	0.18	0.08
- Bicycle (%)	0.00	0.06	0.00	0.02	0.02
- Motorbike (%)	0.00	0.00	0.00	0.00	0.00
- Horse cart (%)	0.00	0.00	0.00	0.00	0.00
- Bullock cart (%)	1.10	0.52	1.16	0.94	0.90
- Others (%)	6.18	10.78	6.12	7.67	7.87
- NA (%)	23.48	24.34	33.81	29.38	26.38
- Total (%)	100	100	100	100	100
% of transaction in Rs. where the sales unit is (N=1426 transactions):					
- Bag (%)	99.56	99.14	92.97	95.85	97.76
- Basket (%)	0.14	0.01	0.00	0.02	0.06
- Carton box (%)	0.00	0.30	0.18	0.19	0.16
- Crate (%)	0.00	0.00	0.00	0.00	0.00
- Loose (%)	0.30	0.55	6.85	3.93	2.03
- Other (%)	0.00	0.00	0.00	0.00	0.00
- Total (%)	100	100	100	100	100
*Weights as in table 2.1.7					

Table 8.1.9 Crop sales, by sale place and transaction time, by farm size, in levels per and shares of transactions (*transactions for both Kharif 2009 and Rabi 2010*)

	West N=510	Central N=456	East N=460	Un weighted overall
Sale place: % of transactions that took place at (N=1426 transactions):				
- Farmer' s field or own village	89.00	44.52	53.91	63.5
- Wholesale market	6.29	41.89	26.09	24.1
- Local retail market	2.75	1.75	6.30	3.6
- RBH	0.00	0.22	0.43	0.2
- Cold storage	0.00	0.00	0.43	0.1
- Others	2.00	11.70	12.80	8.6
Average time in hours taken to travel from home to sales' location (zeroed-out average over all transactions; N=1426 transactions)	1.03	1.35	1.81	1.38
% of transaction where the transport means is reported as: (N=1426 transactions):				
- Porter/own carry (%)	11.96	2.85	0.65	5.40
- Handcart (%)	0.00	0.22	0.00	0.07
- Tractor (%)	16.47	55.48	31.74	33.87
- Truck (%)	7.45	11.18	17.17	11.78
- Car (%)	0.20	0.00	0.00	0.07
- Bicycle (%)	0.00	0.00	0.22	0.07
- Motorbike (%)	0.00	0.00	0.00	0.00
- Horse cart (%)	0.00	0.00	0.00	0.00
- Bullock cart (%)	6.08	1.10	0.87	2.81
- Others (%)	2.94	2.85	5.00	3.58
- NA (%)	54.90	26.32	44.35	42.36
- Total (%)	100	100	100	100
Average transaction time in hours at the sale location (zeroed-out average over all transactions; N=1426 transactions)	2.77	2.71	3.16	2.88
% of transaction where the sales unit is (N=1426 transactions):				
- Bag (%)	87.65	94.74	99.78	93.83
- Basket (%)	0.00	0.44	0.00	0.14
- Carton box (%)	0.20	0.66	0.00	0.28
- Crate (%)	0.20	0.66	0.00	0.28
- Loose (%)	11.18	3.51	0.22	5.19
- Others (%)	0.98	0.66	0.00	0.56
- Total (%)	100	100	100	100

PADDY BY HOUSEHOLD

Paddy	West N=270	Central N=270	East N=270	Overall N=810
Average area under paddy (in ha) per household (zeroed-out average over all households, N=810 households)	0.40	1.76	1.51	1.22
Average production (in quintals) per household (zeroed-out average over all households, N=810 households)	20.29	102.99	113.13	78.80
Average price received in Rs./ Quintal per household (zeroed-out average over all households, N=810 households)	1190.3	1027.2	1000	1048.2

Paddy	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Average area under paddy (in ha) per household (zeroed-out average over all households, N=810 households)	0.66	1.02	1.87	1.22	1.10
Average production (in quintals) per household (zeroed-out average over all households, N=810 households)	36.52	57.91	134.09	78.80	68.83
Average price received in Rs./ Quintal per household (zeroed-out average over all households, N=810 households)	1003.6	1056.6	1080.7	1048	1042.5
*Weights as in table 2.1.7					

SECOND, PATTERNS OF SALES OF PADDY

Table 8.1.12 Paddy sales by farm size, in Rs & kg (both Kharif 2009 and Rabi 2010)					
Paddy sales	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
1.% of households that sold paddy (in N=810 HHs)	63.6	56.8	53	57.4	58.43
2.1 Simple average of paddy sales by households in Rs./ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of paddy; N=810 households)				69962.40	
2.2 Simple average of paddy sales by households in kg/ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of paddy; N=810 households)				5988.77	
3.1 Simple average of paddy sales by households in Rs./ household (2009/10 year) (non zeroed-out avg., i.e. averaging only paddy sellers N=455households)	50945.78 (N=143)	97879.81 (N=164)	219543.63 (N=148)		110460.8
3.2 Simple average of paddy sales by households in kg/ household (2009/10 year) (non zeroed-out avg., i.e. averaging only paddy sellers N=455 households)	4510.33 (N=143)	8281.44 (N=164)	18756.12 (N=148)		9467.09
4. Derived price of paddy Rs./Kg.	11.30	11.82	11.71		11.59
*Weights as in table 2.1.7					

Table 8.1.13 Sales of paddy, by buyer type, in share of HHs, and Rs & kg (both Kharif 2009 and Rabi 2010)						
Paddy	Collector in village	Wholesaler on mandi	RBH (VISWAS and other RBH)	Mills	Others*	overall
1.1% of households that sold paddy (in N=810 households)						57.4
1.2 Of HHs that sell paddy , the share of households selling to the various buyers (N=455 households; overall % may exceed 100 as same household sells to multiple vendors)	60.2	30.1	0.4	15.5	10.3	
2.1 Simple average of paddy sales by households in Rs./ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of paddy; N=810households)	59,549.7	23,145.5	114.8	32,493.6	11,211	25,302.9
2.2 Simple average of paddy sales by households in kg/ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of paddy; N=810 households)	4939.0	2279.1	10.93	2708.4	859.3	2159.4
3.1 Simple average of paddy sales by households in Rs./ household (2009/10 year) (non zeroed-out avg., i.e. averaging only paddy sellers N=455 households)	97,779.1 (N=273)	75,731.3 (N=137)	25,725 (N=2)	208,079.4 (N=70)	106,927 (N=47)	
3.2 Simple average of paddy sales by households in kg/ household (2009/10 year) (non zeroed-out avg., i.e. averaging only paddy sellers N=455 households)	8109.7 (N=273)	7457.1 (N=137)	2450 (N=2)	17,343.5 (N=70)	8195 (N=47)	
4. Derived price of paddy Rs. Per Kg.	12.06	10.16	10.5	12.00	13.4	
Note: * Others include – transporter to mandi trader, cold storage, collection center belong to co., NGO, coop. society, farmer coop, retailers, consumer, hotel and restaurant, supermarket collection center, others (not specified).						

Table 8.1.14. Paddy sales – buyer types, by farm size, in % of Rs. (both Kharif 2009 and Rabi 2010)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Sales in % of Rs. at (N=455 household):					
Collectors in village (outside mandi) (%)	63.56	56.10	38.60	46.91	54.56
Transporter to mandi trader (%)	1.38	1.00	0.11	0.54	0.92
Wholesaler on mandi (%)	16.14	17.12	19.26	18.23	17.28
Collection center belonging to mill (%)	3.87	4.35	1.95	2.89	3.57
VISWAS (if the company is procuring at all) (%)	0.71	0.00	0.00	0.09	0.27
Other RBH (%)	0.70	0.00	0.00	0.09	0.27
Mill (%)	10.61	16.58	33.44	25.60	18.53
Cooperative society (%)	0.00	0.00	0.00	0.00	0.00
Farmer Co op (%)	0.00	0.00	0.00	0.00	0.00
Retailers (%)	0.23	0.40	0.12	0.21	0.27
Consumers	0.00	0.00	0.00	0.00	0.00
Hotels/restaurants (%)	1.93	0.00	0.00	0.25	0.73
Supermarket collection center (%)	0.00	0.00	0.32	0.18	0.08
Others (%)	0.88	4.45	6.20	5.00	3.53
Combine (%)	0.00	0.00	0.00	0.00	0.00
Total (%)	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 8.1.15 Pie – Paddy purchases by buyer type from different farm strata, in kg (both Kharif 2009 and Rabi 2010)						
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted Kg	Population weighted Kg*
Paddy sales by sources (N=455 household):						
Collectors in village (outside mandi)	18.96	34.69	46.35	100%	2213963 (45.7%)	700223.4 (47.9%)
Transporter to mandi trader	38.59	47.54	13.87	100%	30290 (0.6%)	10820.04 (0.7%)
Wholesaler on mandi	11.80	27.77	60.43	100%	1021620 (21.1%)	305121.1 (20.9%)
Collection center belonging to mill	30.39	39.52	30.09	100%	66800 (1.4%)	22506.99 (1.5%)
Other RBH	100.00	0.00	0.00	100%	4900 (0.1%)	1862 (0.1%)
Paddy millers	5.93	18.18	75.89	100%	1214045 (25.1%)	339355.9 (23.2%)
Retailers	23.14	39.67	37.19	100%	9075 (0.2%)	2973.75 (0.2%)
Hotels/restaurants	100.00	0.00	0.00	100%	14625 (0.3%)	5557.5 (0.4%)
Supermarket collection center	0.00	0.00	100.00	100%	7000 (0.1%)	1750 (0.1%)
Others	1.77	22.27	75.96	100%	257375 (5.3%)	71814.06 (4.9%)
Total					4839693 (100%)	1461985 (100%)
*Weights as in table 2.1.7						

Table 8.1.16 Pie – Paddy purchases by buyer type from farm strata, in Rs. (both Kharif 2009 and Rabi 2010)

	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted Rs.	Population weighted Rs.*
Paddy sales by sources (N=455 household):						
Collectors in village (outside mandi)	17.6	34.7	47.8	100%	26693696.1 (47.0%)	8402375 (49.0%)
Transporter to mandi trader	33.3	54.3	12.4	100%	304875 (0.5%)	109282.4 (0.6%)
Wholesaler on mandi	11.5	27.2	61.3	100%	10375186.5 (18.2%)	3087552 (18.0%)
Collection center belonging to mill	17.3	43.6	39.1	100%	1645950 (2.9%)	534621 (3.1%)
Other RBH	100.0	0.0	0.0	0.00	51450 (0.1%)	19551 (0.1%)
Processing firm	5.4	18.8	75.8	100%	14565559.3 (25.6%)	4072239 (23.7%)
Retailers	13.8	54.8	31.4	100%	121758.75 (0.2%)	40630.89 (0.2%)
Hotels/restaurants	100.0	0.0	0.0	0.00	142593.75 (0.3%)	54185.63 (0.3%)
Supermarket collection center	0.0	0.0	100.0	100%	105000 (0.2%)	26250 (0.2%)
Others	2.3	25.8	72.0	100%	2847970 (5.0%)	809393.1 (4.7%)
Total					56854039.4 (100.0%)	17156080 (100.0%)
*Weights as in table 2.1.7						

THIRD, REASONS FOR SALES OF PADDY

Table 8.1.17 Paddy sales, by farm size, reason for choice of buyer in share of transactions(both Kharif 2009 and Rabi 2010)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transaction where the reason for the choice of buyer is reported as (N=688 transactions)					
- Gives high price	22.06	25.10	19.41	22.24	22.52
- Accepts larger quantity	8.82	11.74	19.41	13.52	12.55
- Accepts smaller quantity	25.49	17.00	11.81	17.73	18.93
- Gives advances when needed	25.49	24.29	22.78	24.13	24.37
- Pays immediately	14.71	16.60	19.83	17.15	16.69
- Close by	0.98	1.62	2.95	1.89	1.71
- No other option	2.45	3.64	3.78	3.30	3.22
Total	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 8.1.18 Paddy sales, by buyer types, reason for choice of buyer in share of transactions(both *Kharif* 2009 and *Rabi* 2010)

	Collector in village	Wholesale r on mandi	RBH (VISWAS and other RBH)	Mills	Others*	Overall
% of transaction where the reason for the choice of buyer is reported as (N=688 transactions)						
- Gives high price	12.44	37.50	100.00	26.61	48.15	22.24
- Accepts larger quantity	15.42	6.67	0.00	16.51	9.26	13.52
- Accepts smaller quantity	19.65	16.67	0.00	9.17	24.07	17.73
- Gives advances when needed	30.10	14.17	0.00	22.94	5.56	24.13
- Pays immediately	18.41	23.33	0.00	11.01	7.41	17.15
- Close by	1.49	0.83	0.00	5.50	0.00	1.89
- No other option	2.49	0.83	0.00	8.26	5.56	3.34
Total	100%	100%	100%	100%	100%	100%
Note: * it includes – transporter to mandi trader, coop society						

Table 8.1.19 Paddy sales, time of payment, by farm size, in shares of transactions <i>(both Kharif 2009 and Rabi 2010)</i>					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transactions where the timing of payment is reported to be (N=687 transactions):					
- On day of sale	26.47	36.44	33.05	32.31	31.80
- In days after sale	11.27	7.69	16.53	11.79	11.26
- A week after sale	25.00	22.27	18.22	21.69	22.29
- More than a week but less than a month after sale	36.27	33.20	31.78	33.62	34.01
- As required by the seller	0.49	0.00	0.00	0.15	0.19
- Other	0.49	0.40	0.42	0.44	0.44
- Total	100%	100%	100%	100%	100%
% of transactions where the household reported to have received input advances (N=687 transactions)	28.92	23.48	24.15	25.33	25.71
*Weights as in table 2.1.7					

Table 8.1.20 Paddy sales, time of payment, by buyer type, received per transaction-events(both Kharif 2009 and Rabi 2010)

	Collector in village	Wholesaler on mandi	RBH (VISWAS and other RBH)	Mill	Others*	Overall
% of transactions where the timing of payment is reported to be (N=687 transactions):						
- On day of sale	38.56	38.33	0.00	6.42	26.42	32.31
- In days after sale	10.70	15.83	0.00	9.17	16.98	11.79
- A week after sale	18.66	22.50	0.00	35.78	15.09	21.69
- More than a week but less than a month after sale	31.84	22.50	66.67	47.71	41.51	33.62
- As required by the seller	0.00	0.83	0.00	0.00	0.00	0.15
- Other	0.25	0.00	33.33	0.92	0.00	0.44
- Total	100%	100%	100%	100%	100%	100%
% of transactions where the household reported to have received input advances (N=687 transactions)	24.1	30.0	0.0	31.2	13.2	25.33
Note: * it includes – transporter to mandi trader, coop. society						

FOURTH, TRANSACTIONS COSTS PADDY

Table 8.1.21 Transaction cost, last transaction of paddy in past 12 months, by region in % of farms paying for each cost item				
Paddy	West	Central	East	Total
Did HH Pay or not: % of households who had paid for (N=455 households) :				
Bagging	20.97	41.10	85.38	51.07
Transportation	21.77	72.60	83.08	57.49
Loading	19.35	39.73	81.54	48.62
Off-Loading	4.69	23.29	73.08	35.65
Payments at checkpoint or roadblock	0.00	0.00	0.00	0.00
Personal transport to wholesale market and/or back	7.03	9.59	20.16	12.73
Entry license fee – market	0.00	2.74	3.85	2.11
Weighing fees	6.09	17.81	36.15	21.07
Other expense	20.93	32.43	74.77	50.45

Table 8.1.22 Transaction cost, last transaction of paddy in past 12 months, by region				
Paddy	West	Central	East	Total
Average cost incurred by household in Rs./Qtl. on				
Bagging or Boxing	7.9	6.7	7.4	7.1
Transportation	5.2	10.6	11.0	10.1
Loading	3.6	5.8	4.8	5.3
Off-Loading	2.0	4.7	3.3	4.2
Payments at checkpoint or roadblock	0.0	0.4	0.3	0.3
Personal transport to wholesale market and/or back	1.8	1.5	1.2	1.5
Entry license fee – market	1.0	0.6	0.0	0.7
Weighing fees	1.5	3.1	4.2	3.3
De husking, Milling or grinding	0.0	0.0	0.0	0.0
Other expense	17.7	8.5	8.5	10.1
Total costs	40.7	41.8	40.6	42.5

CHILI BY HOUSEHOLD

CHILI OUTPUT BY HOUSEHOLDS

Paddy	West	Central	East	Overall
Average area under chili (in ha) per household (zeroed-out average over all households, N=810 households)	0.05	0.12	0.54	0.20
Average production (in quintals) per household (zeroed-out average over all households, N=810 households)	2.19	0.30	30.82	11.10
Average price received in Rs./ Quintal per household (zeroed-out average over all households, N=810 households)	727.41	856	855.5	799.8

Paddy	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Average area under chili (in ha) per household (zeroed-out average over all households, N=810 households)	0.77	0.21	0.29	0.20	0.44
Average production (in quintals) per household (zeroed-out average over all households, N=810 households)	4.55	11.81	15.66	11.10	10.01
Average price received in Rs./ Quintal per household (zeroed-out average over all households, N=810 households)	727.4	953.6	704.4	799.8	805.34

*Weights as in table 2.1.7

PATTERNS OF SALES OF CHILI

Chili sales	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall (N=___)	Population weighted overall*
1.% of households that sold Chili (in N=810 HHs)	16.45	21.92	17.42	18.77	18.72
2.1 Simple average of Chili sales by households in Rs./ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of Chili ; N=810 households)				68834.80	
2.2 Simple average of Chili sales by households in kg/ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of Chili ; N=810 households)				904.59	
3.1 Simple average of Chili sales by households in Rs./ household (2009/10 year) (non zeroed-out avg., i.e. averaging only Chili sellers N=_152 households)	240942.5 (N=38)	389879.60 (N=64)	432961.66 (N=50)		344054.02
3.2 Simple average of Chili sales by households in kg/ household (2009/10 year) (non zeroed-out avg., i.e. averaging only Chili sellers N=152 households)	2719.28 (N=38)	5040.33 (N=64)	6136.13 (N=50)		4432.28
4. Derived price of Chili Rs. / Kg.	88.61	77.35	70.56		79.93

*Weights as in table 2.1.7

Table 8.1.26 Sales of Chili , by buyer type, in share of HHs, and Rs& kg (both Kharif 2009 and Rabi 2010)						
Chili	Collector in village	Wholesaler on mandi	RBH (VISWAS and other RBH)	Transporter to mandi trader	Others*	overall
1.1% of households that sold Chili (in N=810 households)						18.7
1.2 Of HHs that sell Chili , the share of households selling to the various buyers (N=152 households; overall % may exceed 100 as same household sells to multiple vendors)	69.7	82.9	0.0	5.9	10.5	
2.1 Simple average of Chili sales by households in Rs./ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of Chili ; N=810 households)	4,776.54	183,996.13	0.00	124,125.00	5,148.94	4,776.54
2.2 Simple average of Chili sales by households in kg/ household (2009/10 year) (zeroed-out avg., i.e. averaging sellers and non-sellers of Chili ; N=810 households)	97.53	2,349.45	0.00	1,641.94	92.55	97.53
3.1 Simple average of Chili sales by households in Rs./ household (2009/10 year) (non zeroed-out avg., i.e. averaging only Chili sellers N=152 households)	24,198.11 (N=106)	398,658.28 (N=126)	0.00 (N=0)	248,250.00 (N=9)	45,375.00 (N=16)	
3.2 Simple average of Chili sales by households in kg/ household (2009/10 year) (non zeroed-out avg., i.e. averaging only Chili sellers N=152 households)	494.10 (N=106)	5,090.49 (N=126)	0.00 (N=0)	3,283.89 (N=9)	815.63 (N=16)	
4. Derived price of Chili Rs. Per Kg.	48.97	78.31	0.00	75.60	55.63	
Note: * Others include –cold storage, collection center belong to co., NGO, processing firm, coop. society, farmer coop, retailers, consumer, hotel and restaurant, supermarket collection center, others (not specified).						

Table 8.1.27. Chili sales – buyer types, by farm size, in % of Rs. (both Kharif 2009 and Rabi 2010)					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
Sales in % of Rs. at (N=152household):					
Collectors in village (outside mandi) (%)	2.0	3.9	6.5	4.6	3.83
Transporter to mandi trader (%)	1.2	4.9	4.2	4.0	3.32
Wholesaler on mandi (%)	96.8	88.3	89.3	90.1	91.78
Cold storage (%)	0.0	1.0	0.0	0.4	0.37
Collection center belonging to processing company (%)	0.0	0.0	0.0	0.0	0.00
VISWAS (if the company is procuring at all) (%)	0.0	0.0	0.0	0.0	0.00
Directly Processing firm (%)	0.0	0.0	0.0	0.0	0.00
Other RBH (%)	0.0	0.0	0.0	0.0	0.00
NGO (%)	0.0	0.0	0.0	0.0	0.00
Processing firm (%)	0.0	0.0	0.0	0.0	0.00
Cooperative society (%)	0.0	0.0	0.0	0.0	0.00
Farmer Co op (%)	0.0	0.0	0.0	0.0	0.00
Retailers (%)	0.0	1.9	0.0	0.9	0.70
Consumers	0.0	0.0	0.0	0.0	0.00
Hotels/restaurants (%)	0.0	0.0	0.0	0.0	0.00
Supermarket collection center (%)	0.0	0.0	0.0	0.0	0.00
Others (%)	0.0	0.0	0.0	0.0	0.00
Combine (%)	0.0	0.0	0.0	0.0	0.00
Total (%)	100%	100%	100%	100%	100%
*Weights as in table 2.1.7					

Table 8.1.28 Pie – Chili purchases by buyer type from farm strata, in kg (both Kharif 2009 and Rabi 2010)						
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted Kg	Population weighted Kg*
Chili sales by sources (N=152 household):						
Collectors in village (outside mandi)	3.7	29.6	66.7	100%	52375.00 (7.1)	15205.20
Transporter to mandi trader	8.4	63.9	27.7	100%	29555.00 (4.0)	9978.50
Wholesaler on mandi	15.6	43.0	41.5	100%	641401.00 (87.1)	206400.15
Cold storage	0.0	100.0	0.0	100%	2250.00 (0.3)	832.50
Retailers	0.0	100.0	0.0	100%	10800.00 (1.5)	3996.00
Total					736381 (100%)	236412.35
*Weights as in table 2.1.7						

Table 8.1.29 Pie – Chili purchases by buyer type from farm strata, in Rs. (both Kharif 2009 and Rabi 2010)

	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Total	Un weighted Rs.	Population weighted Rs.*
Chili sales by sources (N=152 household):						
Collectors in village (outside mandi)	7.0	38.1	54.9	100%	2565000 (4.6)	781976.40
Transporter to mandi trader	5.0	54.5	40.5	100%	2234250 (4.0)	719126.25
Wholesaler on mandi	17.6	43.9	38.5	100%	50230943 (90.1)	16353856.95
Cold storage	0.0	100.0	0.0	100%	240000 (0.4)	88800.00
Total					55756193 (100%)	18123579.60 (100%)

*Weights as in table 2.1.7

SECOND, REASONS FOR SALES OF CHILI

Table 8.1.30 Chili sales, by farm size, reason for choice of buyer in share of transactions(both Kharif 2009 and Rabi 2010)

	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transaction where the reason for the choice of buyer is reported as (N= 153 transactions)					
- Gives high price	23.68	31.25	29.41	28.76	27.91
- Accepts larger quantity	26.32	18.75	21.57	21.57	22.33
- Accepts smaller quantity	15.79	3.13	5.88	7.19	8.63
- Gives advances when needed	18.42	17.19	25.49	20.26	19.73
- Pays immediately	15.79	25.00	15.69	19.61	19.17
- Close by	0.00	0.00	1.96	0.65	0.49
- No other option	0.00	4.69	0.00	1.96	1.74
Total	100%	100%	100%	100%	100%

*Weights as in table 2.1.7

Table 8.1.31 Chili sales, by buyer types, reason for choice of buyer in share of transactions(both Kharif 2009 and Rabi 2010)

	Collector in village	Wholesaler on mandi	RBH (VISWAS and other RBH)	Transporter to mandi trader	Others*	Overall
% of transaction where the reason for the choice of buyer is reported as (N=153 transactions)						
- Gives high price	12.50	31.50	0.00	25.00	0.00	28.76
- Accepts larger quantity	12.50	23.62	0.00	12.50	0.00	21.57
- Accepts smaller quantity	31.25	3.94	0.00	12.50	0.00	7.19
- Gives advances when needed	0.00	22.05	0.00	25.00	50.00	20.26
- Pays immediately	37.50	17.32	0.00	25.00	0.00	19.61
- Close by	6.25	0.00	0.00	0.00	0.00	0.65
- No other option	0.00	1.57	0.00	0.00	50.00	1.96
Total	100%	100%	100%	100%	100%	100%

Note: * it includes – cold storage, collection center belong to co., NGO, processing firm, coop. society, farmer coop, retailers, consumer, hotel and restaurant, supermarket collection center, others (not specified).

Table 8.1.32 Chili sales, time of payment, by farm size, in shares of transactions <i>(both Kharif 2009 and Rabi 2010)</i>					
	Marginal (0-1 ha)	Small (>1-2 ha)	Medium (>2 ha)	Un weighted overall	Population weighted overall*
% of transactions where the timing of payment is reported to be (N=153 transactions):					
- On day of sale	71.05	59.38	62.75	63.40	64.66
- In days after sale	15.79	15.63	21.57	17.65	17.18
- A week after sale	10.53	23.44	15.69	17.65	16.60
- More than a week but less than a month after sale	0.00	0.00	0.00	0.00	0.00
- As required by the seller	0.00	0.00	0.00	0.00	0.00
- Other	2.63	1.56	0.00	1.31	1.58
- Total	100%	100%	100%	100%	100%
% of transactions where the household reported to have received input advances (N=153 transactions)	47.37	39.06	33.33	39.22	
*Weights as in table 2.1.7					

Table 8.1.33 Chili sales, time of payment, by buyer type, received per transaction-event (both Kharif 2009 and Rabi 2010)						
	Collector in village	Wholesaler on mandi	RBH (VISWAS and other RBH)	Transporter to the mandi trader	Others*	Overall
% of transactions where the timing of payment is reported to be (N=153 transactions):						
- On day of sale	43.75	66.93	0.00	50.00	0.00	63.40
- In days after sale	43.75	14.96	0.00	12.50	0.00	17.65
- A week after sale	12.50	17.32	0.00	37.50	0.00	17.65
- More than a week but less than a month after sale	0.00	0.00	0.00	0.00	0.00	0.00
- As required by the seller	0.00	0.00	0.00	0.00	0.00	0.00
- Other	0.00	0.79	0.00	0.00	100.00	1.31
- Total	100%	100%	0.0	100%	100%	100%
% of transactions where the household reported to have received input advances (N=153 transactions)	0.0	42.5	0.0	62.5	50.0	39.2
Note: * it includes – cold storage, collection center belong to co., NGO, processing firm, coop. society, farmer coop, retailers, consumer, hotel and restaurant, supermarket collection center, others (not specified).						

THIRD, TRANSACTIONS COSTS CHILI

Table 8.1.34 Transaction cost, last transaction of Chili in past 12 months, by region in % of farms paying for each cost item				
Chili	West	Central	East	Total
Did you Pay or not: % of households who had paid for (N= 152 households)				
Bagging or Boxing	20.97	41.10	85.38	51.07
Transportation	21.77	72.60	83.08	57.49
Loading	19.35	39.73	81.54	48.62
Off-Loading	4.69	23.29	73.08	35.65
Payments at checkpoint or roadblock	0.00	0.00	0.00	0.00
Personal transport to wholesale market and/or back	7.03	9.59	20.16	12.73
Entry license fee – market	0.00	2.74	3.85	2.11
Weighing fees	6.09	17.81	36.15	21.07
Processing	20.93	32.43	74.77	50.45
Other expense				

Table 8.1.35 Transaction cost, last transaction of Chili in past 12 months, by region				
Chili	West	Central	East	Total
Average cost incurred by household in Rs./Qtl. on				
Bagging or Boxing	0.0	0.0	0.0	0.0
Transportation	6.3	14.0	6.8	8.8
Loading	2.8	2.5	3.0	2.9
Off-Loading	0.5	1.3	2.0	1.9
Payments at checkpoint or roadblock	0.0	0.0	0.0	0.0
Personal transport to wholesale market and/or back	3.3	1.1	1.3	1.7
Entry license fee – market	0.0	0.5	1.0	0.9
Weighing fees	0.5	0.6	1.4	1.2
De husking, Milling or grinding	0.0	0.0	0.0	0.0
Other expense	7.0	2.9	7.2	6.3
Total cost	20.5	22.8	22.9	23.5

Section 8.2 Wholesalers' Procurement and Marketing of rice/paddy and chili

Table 8.2.1 Marketing of grains by wholesalers by zones (reference point is paddy/rice)				
	West	Central	East	Total
1. Average share of volume marketed through (Simple average over all paddy/ rice traders; N= 43 traders):				
1.1. Auction system (%)	3.08	56.63	22.4	29.54
1.2 Direct system (%)	96.92	43.13	76.8	70.12
2. In case of direct system, average share of volume marketed through negotiating with buyer in (Simple average over paddy/rice traders, who market their product through direct system; N= 29 traders)				
2.1 Suppliers' presence (%)	91.18	89	63.42	80.98
2.2 Without supplier present (%)	8.82	8.5	36.58	18.13
3. % of traders reporting of grain being weighed (N= 43 trader)	100	100	100	100
4. For traders reporting grain being weighed, % of trader reporting of (N= 43 traders)				
4.1 Grain being weighed electronically	69.2	9.4	44	38.6
4.2 Grain being weighed manually	30.8	90.6	56	61.4
5. % of traders reporting grain being sampled for quality (N= 43 traders)	100	100	100	100
5. % of traders price variation (N= 43 traders)				
5.1 Single price for a day	57	43.8	40	47
5.2 Price variation over day	56.3	56.3	60	53
5.3 Not reporting price variation	0	0	0	0

Table 8.2.2. Grain marketing related services provided by wholesalers by zones (reference point rice/paddy traders)				
	West	Central	East	Total
1. % of traders picking crops from fields in own truck (N= 43 traders)	15.4	9.4	44	21.7
1.1 For those picking crops from fields in own truck (N= 10 traders; multiple answers possible; so column total will not sum up to100%)				
1.1.1 % of traders doing this for small farmers	100	100	100	100
1.1.2 % of traders doing this for large farmers	100	100	100	100
1.1.3 % of traders doing this for warehouse operators	0	0	45.5	27.8
2. % of traders grading, sorting and then selling by grades for suppliers (N= 43 traders)	96.2	75	64	78.3
2.1 For those grading, sorting and then selling by grades for suppliers (N= 34 traders; multiple answers possible so column total may not add up to 100%)				
2.1.1 % of traders doing this for small farmers	100	100	100	100
2.1.2 % of traders doing this for large farmers	100	100	100	100
2.1.3 % of traders doing this for warehouse operators	0	8.3	68.8	20

3. % of traders labeling products that they sell to clients (N= 43 traders)	26.9	15.6	12	18.1
4. % of traders providing packing boxes/crates to suppliers (N= 43 traders)	80.8	31.3	52	53
4.1 For those providing packing boxes/crates to suppliers (N= 23 traders; multiple answers possible; so column total may not add up to 100%)				
4.1.1 % of traders doing this for small farmers	95.2	100	84.6	93.2
4.1.2 % of traders doing this for large farmers	90.5	100	100	95.5
4.1.3 % of traders doing this for warehouse operators	4.8	0	53.8	18.2
5. % of traders delivering to buyers' location (N= 43 traders)	42.3	12.5	72	39.8
5.1 For those delivering to buyers' location (N= 17 traders)				
5.1.1 % of traders delivering to small retailer or processors	90.9	75	94.4	90.9
5.1.2 % of traders delivering to large processors	90.9	100	94.4	93.9
6. % of traders grading and sorting produce to sell to client (N= 43 traders)	53.8	50	72	57.8
7. % of traders further sorting and grading supplier graded produce for particular type of buyer (N= 43 traders)	30.8	46.9	60	45.8
7.1 For those further sorting and grading supplier graded produce for particular type of buyer (N= 20 traders; multiple answers possible; so column total may not add up to 100%)				
7.1.1 % of traders doing this for small retailer/ processor	100	93.3	93.3	94.7
7.1.2 % of traders doing this for large processors	100	100	93.3	97.4

Table 8.2.3. Wholesaler Volume and clientele of transactions of rice by zones

	Rabi 2010				Kharif 2009			
	West	Central	East	Total	West	Central	East	Total
1. Average volume of rice moved per day in tons (simple average over all traders; N= 34 traders):	666.7	31.7	214.7	157.7	285.7	21.5	214.7	193.7
2. Share of different suppliers in the average volume moved per day								
2.1 Share of supply directly from farmers (%)	60	76	85	78	80	75	85	79
2.2 Share of supply from rural brokers bringing produce from farmers to sell via you (%)	30	6	9	9	15	5	9	8
2.3 Share of supply from other commission agents in this mandi (%)	7	6	4	4	3	5	2	4
2.4 Share of supply from warehouse operator (as intermediary from rural collectors to urban wholesalers)(%)	3	6	4	4	2	5	1	3
2.5 Share of supply from other sources (%)	0	6	3	3	0	10	1	6
Total	100%	100%	100%	100%	100%	100%	100%	100%
3. Share of different clients in the average volume moved per day								
3.1 Share of supply to other traders (%)	10	3	5	4	24	9	6	10
3.2 Share of supply to small local retailers (%)	10	3	11	7	7	3	14	7
3.3 Share of supply to government (%)	13	12	29	19	6	16	29	19
3.4 Share of supply to private sector mills that are medium-large (%)	27	62	22	44	34	46	21	36
3.5 Share of supply to small/informal mills (%)	18	20	24	21	19	24	23	23
3.6 Share of supply to supermarket chains selling in bulk or on-process (%)	22	0	0	2	9	0	0	2
3.7 Share of supply to direct consumers (%)	0	0	10	4	0	2	8	4
Total	100%	100%	100%	100%	100%	100%	100%	100%

Table 8.2.4. Last transaction of paddy/rice by zones								
	Rabi 2010				Kharif 2009			
	West	Central	East	Total	West	Central	East	Total
1. Average quantity of paddy bought in tons in the last transaction (simple average over all traders, N= 33 traders)	633.3	971.9	862.7	898.1	434	768.4	751	724.2
2. Average quantity sold in tons in the last transaction of :								
2.1 Paddy (N=32)	503.3	960.4	701.2	820.4	362	752.8	711.5	693
2.2 Rice(N=2)	200	0	700	450	240	0	560	346.7
3.1 % of paddy traders paying advance to farmers (N= 32 paddy traders)	11.5	53.1	48	38.6	19.2	75	48	49.4
3.2 % of paddy/and rice traders paying advance to other trader/broker (N= 34 paddy/ and rice traders)	15.3	53.1	52	41	26.9	75	52	53
3.3 % of paddy/ and rice traders receiving advance from buyers (N= 34 paddy/ and rice traders)	15.3	53.1	52	41	26.9	75	52	53
4. Average time in hours taken to complete a transaction in:								
4.1 Paddy (simple average over all paddy traders; N=32 paddy traders)	0	10	11	10	19	14	12	14
4.2 Rice (simple average over all rice traders; N= 2 rice traders)	15	0	36	26	22	0	8	17

Table 8.2.5. Costs and income from the last transaction of paddy and rice by zones:								
	Rabi 2010				Kharif 2009			
	West	Central	East	Total	West	Central	East	Total
Paddy								
1 Marketing costs of trader for per unit of paddy moved (Rs./kg.) *								
1.1 Bagging(+stitching) at farm	0.022	0.017	0.020	0.017	0.057	0.024	0.014	0.017
1.2 Loading at farm	0.043	0.033	0.015	0.021	0.060	0.029	0.012	0.020
1.3 Transportation to miller or mandi	0.068	0.052	0.028	0.034	0.040	0.038	0.027	0.031
1.4 Payments at checkpoint or road-block	0.000	0.031	0.003	0.007	0.000	0.007	0.002	0.003
1.5 If personally go to mandi, personal transport costs+incidentals	0.000	0.001	0.003	0.002	0.000	0.002	0.003	0.003
1.6 Weighing fees	0.003	0.007	0.008	0.007	0.060	0.003	0.006	0.008
1.7 If take to miller/ processor de husking/ milling/ grinding fees	0.059	0.027	0.000	0.034	0.075	0.019	0.000	0.027
1.8 If take from miller/processor to mandi, transport fee	0.005	0.000	0.000	0.005	0.000	0.000	0.000	0.000
1.9 If take from mandi to miller/processor, transport fee	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.007
1.10 Unloading fee at mandi	0.000	0.000	0.006	0.006	0.000	0.001	0.005	0.004
1.11 Unloading fee at miller	0.039	0.033	0.032	0.034	0.050	0.022	0.023	0.024
1.12 Commission paid to another trader	0.000	0.000	0.023	0.000	0.070	0.064	0.012	0.044
1.13 CESS paid on transaction	0.095	0.065	0.000	0.073	0.047	0.102	0.000	0.083
1.14 Total costs	0.333	0.267	0.137	0.239	0.467	0.311	0.104	0.270
1.11. Total costs per quintal	33.320	26.660	13.710	23.930	46.660	31.078	10.368	27.003
2 Price paid out to farmers (Rs./ quintal)								
2.1 Mean	952.6	985.410	906.830	956.160	1051.150	1238.300	1912.840	1429.350
3. Commission charged by trader (%)	2.000	2.000	3.000	2.000	4.000	2.000	4.000	3.000
4. Price received from buyers (Rs./quintal) (N= 34 traders)								
4.1 Mean	1315.310	1021.480	1199.670	1095.420	1304.190	1294.420	1948.800	1585.900
5. Sales price less purchase price	362.630	36.070	292.840	139.260	253.040	56.120	35.96	99.55
Rice:								
1 Marketing costs of trader for per unit of rice moved (Rs./kg.) *								
1.1 Bagging(+stitching) at farm	0.070	0.000	0.005	0.019	0.063	0.000	0.026	0.042
1.2 Loading at farm	0.000	0.000	0.009	0.009	0.000	0.000	0.004	0.004
1.3 Transportation to miller or mandi	0.015	0.000	0.034	0.030	0.571	0.000	0.013	0.270
1.4 Payments at checkpoint or road-block	0.300	0.000	0.001	0.060	0.038	0.000	0.000	0.060
1.5 If personally go to mandi,	0.000	0.000	0.001	0.001	0.002	0.000	0.003	0.003

personal transport costs+incidentals								
1.6 Weighing fees	0.050	0.000	0.007	0.009	0.058		0.003	0.029
1.7 If take to miller/ processor de husking/ milling/ grinding fees	0.000	0.000		0.000	0.000	0.000	0.000	0.000
1.8 If take from miller/processor to mandi, transport fee	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.006
1.9 If take from mandi to miller/processor, transport fee	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.10 Unloading fee at mandi	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.006
1.11 Unloading fee at miller	0.050	0.000	0.000	0.000	0.000	0.000	0.005	0.005
1.12 Commission paid to another trader	0.000	0.000	0.000	0.000	0.075	0.000	0.000	0.117
1.13 CESS paid on transaction	0.010	0.000	0.000	0.010	0.000	0.000	0.000	0.000
1.14 Total costs	0.495	0.000	0.056	0.138	0.807	0.000	0.066	0.543
1.11. Total costs per quintal	49.500	0.000	5.634	13.800	80.708	0.000	6.563	54.254
2 Price paid out to farmers (Rs./ quintal)								
2.1 Mean	94.740	0.000	1790.800	893.550	502.300	0.000	1284.900	893.600
3. Commission charged by trader (%)	0.000	0.000	5.000	5.000	4.000	0.000	0.000	4.000
4. Price received from buyers (Rs./quintal)								
4.1 Mean	300.000	0.000	2207.140	1783.300	950.000	0.000	1750.000	1380.600
5. Sales price less purchase price	205.260	0.000	416.340	889.750	447.700	0.000	465.100	487.000

Chapter 9 Summary and Implications

First, we found that, far from the AP countryside being a homogeneous mass of tiny farmers with similar assets and behavior, we found sharp differences in land distribution, non-land assets, and market behavior over zones and farmer strata. The implication is that there needs to be differentiated strategies and policies for very different zones within AP and over farm strata.

Second, the point above has its analogy with zones. The east and the center appear to be already in a ferment of rural development, which needs further encouragement and capacity- building. As we will show, these areas are already far from the traditional image of the Indian countryside. By contrast, the west is not only poorer and growing less rapidly, and to some extent less engaged in input and output markets, but asset-poor in irrigation and education. It is risk-prone with degraded lands and erratic and scanty rainfall. Basic and rapid asset building is the first step there, and the links with markets and new opportunities can then be encouraged.

Third, we found in the survey that the traditional private sector is much more important (in market share) than the state/cooperative sector in delivering inputs; the modern-private sector (the RBHs) is just emerging as a player. We discuss this in terms of specific inputs below, and also present preliminary results from a supplemental survey we conducted in 2011 to test the hypothesis (presented by commenters at our June 2011 outreach workshop in Hyderabad) that perhaps the small traditional shops are really just conduits for state seed distribution. (We found that they are not.)

Fourth, regarding implications specifically for seed markets, first we recall key findings and then state implications. The main seed market findings are four:

(a) AP farmers, of all strata, are very engaged (92%) in seed markets (outside of own seed use and buying from neighbors);

(b) the market share of the government (state & coop stores) is minor – most of the market is private sector (by far mainly the traditional shops, and also some modern (RBH)); how those private actors behave are the main determinants of the market conditions facing farmers; In our presentation of these results in the outreach workshop in AP for the project, the question was raised whether the small private traditional input shops are mainly just conduits for state/cooperative inputs being resold. We tested that hypothesis by resurveying traditional input shops with respect to seed, the most discussed input in this regard. We surveyed 51 of the 56 private seed suppliers that supplied seed to our sample households; the difference between 56 and 51 is that 5 shops had closed due to losses over the year. As this report goes out (and because this information is not part of the terms of reference of this report) and we have just preliminary data (as the data are being analyzed further from this supplemental survey), we report the main points here. The preliminary results show that none of them were supplied seeds by the governmental seed agencies as hypothesized by some commenters on our seed chapter results presented in draft in the June 2011 workshop. We found that only four shops received paddy seeds from primary agricultural cooperative societies (PACs), for 60% of their seed sales.

Two shops obtained foundation seed from government research institute and they multiplied in their farms to distribute to farms. None of them received seeds from governmental seed agencies in 2009-10.

(c) The marginal/small farmers depend more on the traditional retailers and the RBHs than the state/coop stores for seed;

(d) Very little (only 6%) seed is sold on credit;

e) State/coop stores sell only 6% of the paddy seed purchased and even less in case of chilies and it is a minor player in seed market in AP; of the 6%, only 9% goes to marginal farmers and 56% to the medium farmers in case of paddy seed indicating that the seed stores in AP biased towards medium farmers.

The main seed market policy implications are as follows.

(a) For the state & coop seed stores to fill their role in subsidizing the poor, they will need to correct their current strong sales bias toward medium farmers.

(b) But policymakers should recognize that 97% of the seed market is private (mainly traditional, and also some modern through the RBHs), and only the rest is state/coop stores. Policies and programs that affect private suppliers have far more effect on farmers than state direct-sales.

(c) Rural business hubs (Viswas and Gromor) sell much more seed to marginal/small farmers than does the state/coop store system in the study areas. Yet Viswas paddy seed is 16% more expensive for seed than the other retailers. The farmers note that it is the higher quality and hybrids that attract them to Viswas. That implies two things: reduce impediments to RBH expansion of seed contracting and selling; put in place programs to increase seed quality monitoring at traditional shops.

Fifth, regarding implications specifically for fertilizer markets, first we recall key findings and then note implications. The main fertilizer market findings are six.

(a) AP farmers are fully (100%) engaged in fertilizer markets, from marginal to medium farmers.

(b) The fertilizer access is much better compared to UP and almost similar to MP. Only 11% of the farmers felt timely access to fertilizers was a major bottleneck and this has slight correlation with farm size.

(c) Contrary to conventional wisdom, state/coop stores have only a minority of the urea market viz., 27%: the lion's share (67%) is sold by the traditional shops. Yet we found the latter often sell above MRP, and are more expensive than the state/coop or RBH stores with 44% of transactions from them being sold at above MRP.

(d) State/coop stores are cheapest – but sell only 11% of their urea to marginal, 38% to small farmers, and 52% to medium farmers. They are biased toward the medium farmers.

(e) The poor pay more for their fertilizer – and that is mainly because they have to depend on the traditional shops who overcharge (relative to MRP).

(f) The state/coop store and RBH are seen as having the highest quality fertilizer – and small shops as having poor quality.

The main fertilizer market policy implications are as follows.

(a) For the state & coop fertilizer stores to fill their role in subsidizing the poor, they will need to correct their current strong sales bias toward medium farmers.

(b) But policymakers should recognize that the lion's share of the fertilizer market is private (mainly traditional, and also some modern through the RBHs), and only the rest is state/coop stores. Policies and programs that affect the private suppliers have far more effect on farmers than the state direct sale programs.

(c) A problem is with small shops selling over-price and low quality. Thus, it seems that the first priority (after fixing the pro-medium farmer bias of the state/coop stores) is to get more fertilizer supply to stores, to monitor and inspect effectively the price and quality of the traditional stores.

(d) Rural business hub stores are playing a minor role at present. They are seen as having better quality compared to traditional shops, but note they have severe constraints on access to fertilizer themselves to sell. That should be remedied by easing their sourcing of fertilizer.

Sixth, regarding implications specifically for farm chemicals (mainly pesticides and herbicides), first we recall key findings and then note implications. The main farm chemicals market findings are six.

(a) AP farmers are very engaged in farm chemical markets; 99% of farmers in our sample including the marginal farmers purchase farm chemicals, unlike UP farmers, where only 66% of them purchased. 99% of the sample buys pesticides- without any variation over different farm strata, unlike the sharp correlation we found in UP across farm groups. As shares of transactions, 56% were for pesticides, 31% for fungicides and 9% for herbicides (compared to 39% for herbicides in UP), without much variation across marginal small & medium farmers.

(b) 90% of the sample feel the market is easily accessible, but with varied pricing.

(c) State/coop stores have tiny market share in chemicals, and sell almost all to medium farmers.

(d) Most of the chemicals are sold by the small shops. Farmers found their quality and pricing variable, but they are close by.

(e) The market share of the RBH (32% in value terms) is much higher in chemicals than it was in seeds and fertilizer, also forming an important part of the purchases of the poor. Viswas formed 81% of the RBH sales and Mana Gromor constituted the remaining sales. RBH share of pesticide purchases of marginal farmers is 41%, 30% of small farmers', and 32% of medium farmers'. For herbicides, those shares are 35% of the marginal farmers' expenditures, the small farmer's, 24%, and the medium's, 34%. The farmers felt their quality assurance is high, but they are not close.

The main chemical market policy implications are as follows.

- a) The state has very little direct role in chemical sales so there appear to be no key implications in that realm for direct role change.
- b) The RBH stores appear to be playing a positive role in providing quality chemicals to small farmers. This is a positive role of modern retail for farmers who demand chemicals.
- c) The small shops appear to have inconsistent quality and prices. The need for effective inspections is patent.

Seventh, regarding implications specifically for financial services markets, first we recall key findings and then note implications. The main financial services market findings are six.

- a) The share of farmers getting credit from some source is very high: 92% in AP compared to a mere 25% in UP with similar share over farm strata.
- b) All types of lenders are more present in the dynamic agricultural areas- the center and east- and much less in the poorer west.
- c) While conventional wisdom has it that crop traders and input vendors "tie" farmers to them through giving credit (advances), we found that this is low in the state. The share of input retailers to the total credit is negligible with only 1%, while output traders provide credit of only 7% in the total credit pie. This is slightly higher than our findings in MP and UP, though very low on the whole.
- d) While conventional wisdom assigns a key role in rural credit to village moneylenders, our survey showed their role to be only 12% of the total credit availed by the sample households compared to a very minor 2% in UP and MP. Even for marginal farmers it was only 19%.
- e) The lion's share (84%) of credit comes from sources other than via Kisan Credit Cards (which we found to be major in the UP study).

f) KCCs and micro finance/self-help groups distribution is biased toward medium farmers, and center/eastern AP: KCC ownership increases with farm size- from zero for marginal farmers to 1.7% of small farmers and 2.1% of medium farmers, and drops east to west, from 1.5% of farmers to 0.7%. 81% of KCC total payout over the whole sample went to medium farmers – and only 19% went to the large majority of the rural population (marginal and small farmers) and none of the marginal farmers getting no loan via KCC.

g) Nationalized banks are by far the main actors supplying 36% of total credit.

h) Apart from low share of credit via KCC, **another unique feature of AP credit pie is that the microfinance/SHGs provide 14% of total credit and 30% of marginal farmers' and 40% of small farmers' credit. The number of transactions is large, as the average loan from them is only 1/5th of that in the nationalized bank. Another interesting feature is that these MFI/SHGs are wholly started and funded by either government or donor projects.**

i) The poor pay more for credit because they have less access to the cheaper source of credit like nationalized banks and regional rural banks.

The main financial services market policy implications are as follows.

a) Policy concerning the supply and disbursal of credit from nationalized banks is important to access to credit by poor farmers in AP. It is the single main source of credit, in a situation where more than 90% of farmers take credit. Other sources thought traditionally to be important (moneylenders, traders) simply turned out to be not very significant relatively even for the poor.

b) A problem is that access to nationalized banks and cooperative societies is biased toward the medium farmers – and away from the marginal and small farmers. The data show this, but so did the discussion groups after the survey with small farmers – who complained about hurdles and constraints, some real (economic and social) and some apparent misconceptions. Erasing the constraints and correcting the misperceptions should be the policy priorities.

c) Rural business hubs did not play any role in financial markets to date, but this could be a potential line of business to help the poor. This has, for example, been recognized in HKB's new dairy business in UP and Rajasthan, where BASIX has partnered with them to provide credit to farmers supplying milk.

Eighth, regarding implications specifically for extension, first we recall key findings and then note implications. The main extension findings are six.

a) Strikingly, almost all farmers get extension advice in the AP with similar access across zones: our survey shows 96% got it from ANY source (public or private sector), with shares over zones of 97%, 92%, and 96% in west, center and east, respectively.

Compare this with 18% in UP and 80% in MP. The marginal farmers do not access extension less than the two other strata.

b) The few who did not use extension noted that it was because farmers did not need extension in 54% of cases and others could not find it. Only 2% of the population (46% of those not using extension services) did not find a provider. Surprisingly, 71% of the few marginal farmers who did not use extension felt ‘no need’ for extension, 82% of the medium farmers (of the few who did not use extension) could not find extension at the right time.

c) 96% of the farmers that got extension (from any source) were satisfied with the accessed extension services.

d) Strikingly, only 32% of the extension used by the farmers who got extension was from the public sector. (This comes in between 65% in MP and 25% in UP.) The other 68% was from the private sector.

e) 15% (nearly half of the public sector extension) is from State extension officers – the latter play a tiny role in extension in the UP. (Again, this comes in between 37% in MP and 7% in UP.) This finding is sharply different from conventional wisdom that equates “farmer extension use” with “consulting state extension officer, though it compares well with only 1% in UP.

f) 68% of the total extension received by farmers is provided by private sector in the study areas. Keep in mind this is 68% of the 95%, so private extension is touching 64% of the farmers (compared to only 14% in UP). RBHs extension touches only about 11% of the farmers – and that is mainly of medium farmers (few small farmers).

The main extension policy implications are as follows. Our finding that extension touches a majority of farmers in AP (compared with UP and MP), and that it is mainly private sector, with the state sector playing a small role, suggests that there is a case for expanding the effective provision of public sector extension in AP. Unlike the other agri-services, this is needed in all zones and across farm strata. However, and beyond the scope of this report as we did not study extension services directly (only through the farm survey), there is evidence that “on paper” there is LOTS of public extension in the state. The discussion groups with farmers say that they feel it is hard to access public extension personnel and their services are of poor quality. Making existing extension teams more effective and accessible is our main recommendation.

Ninth, regarding implications specifically for crop markets, first we recall key findings and then note implications. The main findings on crop markets in AP are ten.

a) The data show that marginal farmers, along with small and medium farmers are “small commercial farmers,” contrary to the situation in other two states, where marginal farmers are less commercial.

b) The market is very product-concentrated with paddy, and chilies having 75% of the crop market. Chili is by far the most important horticultural crop with 37% of total sales. There is significant horticultural diversification in these regions. There is farm size bias in crop composition. The medium farmers depended less on chilies (26% compared to 48% by marginal and 50% by medium farmers) and more on gram (9% compared to 1% by marginal and zero by the medium farmers), arhar, groundnut and cotton. The crop mix differs over zones, with more emphasis on gram, paddy and groundnut in the west; paddy and cotton in the center; and paddy and chilies in the east.

c) In 25% of transactions in paddy and 39% in chilies, the crop sellers received input credit advances, which higher than that in other two states. It is also in positive correlation to farm size.

d) Grain supply chains are relatively longer in paddy AP compared to in UP and MP. The supply chains are shorter in chilies. The village collectors are playing significant role in paddy: local village brokers buy 47% of farmers' paddy; that role is equal to the "transitional" chain (between traditional and modern) where sales to mills and mandi have the other 47%: mills buy 29% of paddy and mandi traders (directly buy) 18% of paddy. On the other hand, the wholesalers in mandi buy 90% of the chili, while only 5% of it is collected in the village.

e) Selling direct to the mandi is strongly correlated with farm size in both paddy and chilies. However, the correlation is positive in paddy and negative in chilies. Marginal farmers sell 64% of their paddy to village collectors; this drops to 56% for small farmers and 39% for medium farmers. By sharp contrast, 97% of marginal farmers' sales of chilies are to wholesalers on the mandis: versus 88% and 89% for the other two strata. "Dis-intermediation" or chain shortening (cutting the role of the village collector) has thus far occurred somewhat more in chilies, while paddy farmers sell traditional way at the farm gate to the village collector.

f) Interestingly, while marginal and small farmers dominate in numbers, they are minorities in the market in terms of volume (market share) – where medium farmers dominate volumes in both paddy and chilies.

g) Our trader survey showed that the auction system is used by only 30% of the traders (compare that with 50% in our MP study), which is of higher proportion in the center (57%) and declined rapidly as one goes from east (22%) to west (3%).

h) For both paddy and chilies, traders are not making large margins: The reported buy and sell prices and costs show that the paddy traders' gross margin is fairly low (as we found in MP and UP) (around 10%).

The main crop market policy implications are as follows.

a) Contrary to conventional wisdom, the margins of paddy and chili traders are modest-around 10%. There appears also to be competition, at least inter-segment, as supply

chains are shortening and mandi traders are buying the bulk of the commercial crop- chili direct from farmers, cutting out the village collector, while the village collectors continue to play a significant role in paddy. APMC reform in AP may further accelerate the development of this competition by allowing direct purchase by modern private actors. Efficiency gains in grain supply chains may also come from infrastructure development as transport and handling costs are a large part of the transaction costs.

b) There does not exist any sharp divide between crop market participation by marginal farmers and the small and medium farmers of AP, unlike in UP. Policies should be differentiated to deal with the different needs of those two groups.

c) Diversification into horticulture is significant and is shared by small and medium farmers however, so can have a poverty alleviating effect.

d) Unlike in MP, the RBHs are not yet much present in crop markets in AP. This seems like another opportunity for market modernization to be encouraged, as another option for farmers, adding to competition among service providers, which could help the poor.