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AGRI-SERVICES IN MADHYA PRADESH FOR INCLUSIVE RURAL GROWTH

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SYNTHESIS

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Baseline Survey Findings & Implications

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Submitted April 2011 to USAID/New Delhi.

This is a synthesis of the Report of the baseline survey findings of the IFPRI-PIKA Project on Rural Service Hubs: Business Catalysts for Rural Competitiveness and Inclusiveness. The full report (200 pages with all tables) is available on request. We are grateful to USAID for funding. We are thankful to Dan Miller, PK Joshi, Shiv Sivakumar, and RB Singh for comments on earlier drafts and presentations of the findings.

Contents

Chapter 1: Introduction	5
Chapter 2: Summary of Samples, Survey Methods, Sample Characteristics	7
Chapter 3: Summary of Findings on Seed Markets in MP.....	9
Chapter 4: Summary of Findings on Fertilizer Markets in MP.....	11
Chapter 5: Summary - Pesticide and Herbicide Markets in MP.....	13
Chapter 6: Summary of findings on Credit Markets in MP.....	15
Chapter 7: Summary of findings on Extension in MP.....	17
Chapter 8: RBH MP Summary of Crop Market Findings.....	19
Chapter 9: Conclusions and Implications.....	21

Chapter I

Introduction

Summary

- a) The purpose of this report is to present the findings from farm, trader, and input retailer surveys and focus group discussions undertaken in 2009 by IFPRI and collaborators (Michigan State University and the agricultural university Jawaharlal Krishi Viswa Vidyalaya, Jabalpur, Madhya Pradesh). We draw implications from the findings for policymakers, donors, and other public stakeholders, and for rural business hubs in the private sector.
- b) The project (IFPRI/USAID-PIKA project on "Rural Services Hubs" (RBH): Business Catalysts for Rural "Competitiveness with Inclusiveness") has proceeded in three steps. The present report presents the first two steps.
 - b.1) First step involves a survey-based study of each study state (UP, MP and AP), based on farm household samples where there is a confluence of input supply and output procurement options (among state/cooperative retail, private modern rural retail or "RBH," and traditional input retailers and output traders (rural brokers, mandi commission agents)). The latter confluence is found in the catchment areas of the RBHs – and so it is uniquely in those areas where farmers have all three 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 RBHs, key informant interviews with diverse players in the agrifood sector, and focus group discussions (FGDs).
 - b.2) Second step involves the RBH partner companies of the study, informed by the above new information base generated by the project, introducing innovations in the products and services they provide (in inputs, extension, enabling services like credit, output procurement and FMCG (fast-moving consumer goods) retail), or the ways in which they provide these goods and services, or the segments of users or potential users they target, or a combination of these. These innovations are focused on building the "CISS" (competitiveness, inclusiveness, sustainability, and scalability) of the agrifood system, in a way that benefits both the partner company's business and small and marginal farmers' incomes.
 - b.3) Based on the above baseline survey then innovations, the third step of the project (after this report) evaluates the innovations undertaken by the companies.
- c) This chapter notes that up to recently, farmers sourced agri-services (input sales, extension, credit, and output procurement) from (1) traditional private sector suppliers of services (rural/field brokers, mandi wholesalers, small input retailers, money lenders, private banks) and (2) public sector suppliers of services (state and coop stores, state banks).
- d) To the above 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 ITC's Choupal Saagar or Hariyali Kisaan Bazaar. The chapter then presents the main characteristics of ITC's Choupal Saagar as that is the main RBH in the study areas and the partner company (to undertake innovations) in MP.
- e) The research questions of the study then are:
 - e.1) 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 vendors 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?

- e.2) 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 RBH firms sell disproportionately less of their inputs to small farmers than do for example the state/coop stores?
- e.3) Third, while the above questions focused on the dependence of small farmers are 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?

- f) The report is structured as follows. Chapter 2 provides a view of the sampling and survey methods and the samples' characteristics. It, like the other chapters, ends with the set of tables for that chapter. Chapters 3-8 present findings on the research questions for seeds, fertilizer, pesticides and herbicides, credit, extension, and output procurement. Chapter 9 concludes with implications for policymakers and donors wanting to improve agri-service provision to small farmers, and rural business hub companies wanting to do the same plus advance their business so as to survive and grow in the market.

Chapter 2

Summary of Samples, Survey Methods, Sample Characteristics

- a) As of 2009, ITC had 11 CS's in MP. We reason-sampled (for geographic and zone-type variation) 6 of these as the "nodes" for our study zones. The reason for using the CSs as nodal points is that we could then have study areas where households faced all the input supply and output procurement 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 ITC's CS, as input suppliers and output procurement). Far from these nodes all three choices are not effective choices for farmers. But we also have (as we show below) farmers far enough from the hubs that they serve as control groups.
- b) We did case studies of the 6 CS's, as well as key informant interviews with farmers, PACs, state stores, input retail shops, crop traders, and state government, in order to have a base of information on the key economic actors in order to design the questionnaires and sample, and have qualitative background.
- c) The main characteristics of the CS's and their areas are as follows. The CS's are located in the zones we term the "East" (Chhindwara and Itarsi), "Center" (Ujjain and Sehore), and "West" (Dhar and Mandsaur). All of these are in the Malwa Plateau region, with a commonality of agro-climatic conditions. The CSs are thus located in peri-urban areas, on the outskirts of cities, on main highways and close to three or four other towns in the area. Those peri-urban areas are part of the greater metro areas of Tier 4 cities, with most around 100,000 population (except for Ujjain with nearly 500,000, nearly a Tier 3 city). They are all soy/wheat areas, with east having a bit more horticulture than the other zones.
- d) We conducted a household survey with a sample of 810 farm households in June/July 2009 in 30 villages in the catchment areas and control areas of the 6 CS's, equally distributed over the West, Center, and East zones. The questions covered the activities of all the men and women in the household. The catchment areas of the CSs were used so that farmers had the choice of all three types of service providers: state/coop, modern (CS), and traditional (input shop and mandi). For all levels we used stratified random sampling. We used treatment villages (where CS users were found) and control villages nearby. We used a treatment group (CS users) and a control group (non-users), about half-half. To stratify users and non-users, we conducted a farm household census in each chosen village. That allows us to present results in the report as both un-weighted (from the disproportionate sample) and population weighted (using the true population weights from the census).
- e) The household survey was conducted by the university collaborator with no official or other person present; it was said to be only a study of the university, no donor or international partner was mentioned. It was a formal interview (with the questions merely read and response noted) lasting about two hours. The questionnaire did not single out rural business hubs in general or ITC in particular, but was presented as a general survey about rural services related to inputs, credit, output supply, and extension.
- f) We used the Indian Government's farm size strata: "small and marginal" farmers are those with more than 0 up to and include 2 ha; semi-medium farms, ranging from above 2 ha to 4 ha; medium and large farms, above 4 ha. De facto, our sample is composed 45% of small/marginal farms (51% for the population weighted), 28% of semi-medium (27% for population weighted), and 27% of medium/large

farms (22% for population weighted). Hence, the farm size distribution in our sample is slightly weighted toward larger farms compared to the actual population in the study zones, but by little.

- g) The marginal farmer is 2 times as likely to be a non-user (of RBH) than a user – with the inverse for the medium/large farmer. The small farmer is 1.5 times as likely to be a non-user as a user, and the semi-medium farmer, as likely to be a user as a non-user. Thus medium/large farmers are more apt to be using the RBH system, but the pattern is moderate, not sharp.
- h) For the overall sample of users the average farm size is 4.9 ha, and for the non-user, 3.2 ha. The average for the whole sample is 4 ha per farm, versus a population weighted (thus "true", in the study zones) average size of 3.5 ha. This can be contrasted with the distribution of farms over farm size strata in the whole state of MP. The average here is 2.0 ha per farm household. Moreover, 68% of the farmers in the state are marginal and small – versus only 51% in the "true" population of the study zones. This is not surprising, however, as the study zones are in the main "commercialized agriculture" and soy belt of the state, where farmers are somewhat larger than in the state as a whole, averaged over commercial and semi-subsistence areas, tribal areas, and poorer drier zones.
- i) An important point that is often neglected in policy debates arises from the above data. While 51% of our sample in terms of number of farmers are marginal/small, those two strata farm only 20% of the farmland of the sample. The medium and large farmers (bigger than marginal/small) thus control 80% of the farmland and roughly that share of the wheat and soy (and vegetables). This is even true at the overall state level: while 68% of the farmers are marginal/small, they only control 29% of the land. The medium and large farmers thus control at the state level some 71% of the land. An implication is that 70–80% of the MARKET for inputs and output in the state is among medium/large farmers. We find this reflects the input sales and output procurement patterns in ALL the actors – whether state, coop, modern, or traditional.
- j) We conducted a trader survey of 86 crop traders: (1) 56 wheat and soy wholesalers in mandis (wholesale markets) in the six study zone cities, about 10 per mandi; (2) 30 village broker/collector, one in each study village. We used stratified random sampling. The trader surveys were conducted with the same approach as the household survey. A quarter of the traders also process wheat (so appear to be agents for the mills to source). The data show a general picture that emerges is mandi traders that are educated, operating at a sophisticated national level, accessing information widely, and operating all year.
- k) We conducted a survey of 172 input retailers that were selected in three sets: 145 "traditional" (small private input shops), 6 CSs (RBH), and 21 PACs. Again, the survey approach was similar to that for the households and the traders. We used stratified random sampling. The average size of the traditional input shop is about 1500 square feet, compared with 10,500 square feet for the CS and 1650 for the PAC store. The clientele shares actually roughly track the size of the strata in our sample: traditional stores report that about 45% of their clientele are marginal/small farmers; CSs reported that share to be 40%, and state stores, 44%.
- l) We conducted FGD's (focus group discussions with men and women) after the above surveys (so as not to bias them) in two villages in each of the six study areas. In each location, two separate discussions were done: one with smaller farmers together, and one with medium/larger farmers, so as to reduce bias in answers. 120 farmers participated, about 20–30% from our sample and rest from others in village. An IFPRI research team member asked the groups questions and wrote down the answers. No other non-villager was present. Qualitative questions were asked as complementary to the quantitative information from the surveys.

Chapter 3

Summary of Findings on Seed Markets in MP

- a) In the MP seed market, the farm households are final-demanders, and the following are their suppliers: (1) PACS (primary agricultural credit society, a state organization of farmers found in most states); (2) GOPM state seed stores (located mainly at district head, with extension agents also on-selling for them); (3) universities' direct retail of seed; (4) Seed Village Scheme (a program of the GOPM to promote seed production in village groups); (6) traditional input retail stores; (7) rural business hubs like Choupal Saagar; (8) mandi traders. The state stores and PACS sell subsidized seed, in theory somewhat cheaper than private outlets.
- b) Our farm survey data show that seed replacement ratios (all seed (certified and not) bought divided by seed used) is 53% for soy and 50% for wheat. These are higher than all-India GOI figures, but the latter are not comparable with ours as GOI figures are for certified seed only, and ours are for certified and non-certified purchased seed, so not strictly comparable.
- c) Seed purchase is widely distributed over farmers – and not skewed by farm size. 77% (including population weighted thus "true" distribution) of the farm households bought some seed. The small/marginal farmers had a 79% participation rate – versus 70% for the larger farmers. The latter could be because they do more of their own seed multiplication from breeder seed.
- d) Contrary to reigning conventional wisdom, availability of credit is not of significance in the choice of vendor. 94% of overall transactions across three types of vendors are made in cash only.
- e) Farmers' problems with seed access are not widespread, but in pockets. 93% of the transactions were rated as satisfactory by the farmers. For the remaining 7% cases, spurious or fake seeds were reported. Satisfaction is the highest for RBH at 98%, state/coop retail with 96%, and traditional retail with 91%. Even for small/marginal farmers the satisfaction rate was 90% of transactions, despite the problems noted in the focus groups.
- f) 24% of the kg of wheat seed bought by the sample (not population weighted, thus moderately biased toward users) was bought from state/coop retail, 13% from ITC, and 54% from traditional retail (mainly small shops but also other farmers). The equivalent for soy seed was 27% from state/coop retail, 14% from ITC, and 54% from traditional retail.
- g) For wheat seed, small farmers relied most on small shops (for 46% of their wheat seed), 12% from other farmers, 12% from ITC, and 20% from state/coop retail. By contrast, larger farmers relied somewhat more (26%) on state/coop retail, only 8% on ITC, 34% on small shops and 8% on other farmers.
- h) For soy seed, small farmers sourced 34% from small shops, 14% from other farmers, 12% from ITC, and 36% (nearly twice that for wheat seed) from state/coop retail. By contrast, larger farmers relied substantially (33%) on state/coop retail, only 11% on ITC, 32% on small shops and 8% on other farmers. Despite the conventional view that larger farmers would rely much less on the state/coop stores, instead we found they rely on them even more than do the small farmers. The ITC RBH share is modest.
- i) Importantly, the data show that for all state/coop categories of outlets, only 19% of wheat seed sales (in volume terms), and 26% of soy seed sales, go to small/marginal farmers. This contradicts sharply the conventional view that the (subsidized) state/coop outlets are focused on selling to the poor. This is a bit less surprising when one recalls

that farmers larger than the small/marginal dominate the volume of wheat and soy production, but the shares noted above are even more regressive than the volume or land distribution. That is, the sales of state and coop stores are disproportionately biased against the small/marginal farmers. The flip side of this is what the medium/large farmers said about the state and coop stores for seed purchase: they like them because the timing and quality is good and cost low. This is very contrary to the conventional view that state/coop stores are there to serve – and subsidize – the poor farmer.

- j) Importantly, and again a surprise, the data show the RBH is actually selling a slightly larger share (25%) of its wheat seed to small/marginal farmers than does the state/coop stores. For soy seed, the share to small/marginal farmers is about the same as the state/coop stores (25%). The image of modern retail as more targeted (than are state/coop and traditional stores) to the larger farmers, is incorrect.
- k) Another surprise is that traditional retailers and "other farmers" have a similar sales composition (of wheat seed) to small/marginal farmers as does the state/coop store, only about 20% to the small/marginal, and 22% in the case of soy. The traditional sector is actually more regressive (less aimed at the poor) than the state and modern sectors.
- l) Importantly, the impact of the small farmers' having less access to the state/coop stores is not really a problem in terms of the price they pay for wheat seed (as the survey data show that wheat seed is actually cheaper (15.3 rs/kg) in the traditional shop compared with the state/coop stores (16.2 rs/kg) and RBH (19 rs/kg). But these comparisons mask seed quality, which the focus groups emphatically noted was higher in the state/coop and RBHs, and lower in the traditional shops. It may thus be that the poor may pay the same or a bit more for their seed in "effective price" (and that might be a reason they use 20% more seed per ha than do the medium and larger farmers).

For soy seed, by contrast, the state/coop outlets are 10% cheaper than both traditional retail and the RBH. (This might be an underestimate of the price difference with traditional retail as the comparison masks potential quality differences).

- m) The strongest reason (in 54% of the cases) cited by the farmers for choice of seed vendor is timely availability (as with wheat seed) – but with soy seed the smaller farmers are even much more insistent on this compared to the larger farmers (60 to 44%). A strong second (and equally important over the strata) is proximity (at 22% of the cases). Again, as with wheat seed, a striking inter-strata difference is in the importance attached to soy seed quality – with 23% of the larger and only 7% of the smaller farmers citing this. Contrary to expectations, but as with wheat seed, for soy seed "lowest price" and "provides credit" are very minor reasons.
- n) Strikingly, branded packaged seed is the great majority of the way that wheat and soy seed are sold in the areas. The most "informal" was as expected the traditional shops – but less "informal" than we expected – as even for these shops, farmers noted that only 9% of the transactions were unbranded, 30% loose, and 22% with local brands. Local brands are infrequent in all vendor categories, but highest in traditional shops (at 17% of transactions) versus 11 and 4% for state and RBH. Only in "selling loose" is there somewhat the conventional image: 32% of the transactions in soy seed of the traditional shops are sold loose, and only 6 and 3% for the state/coop and RBH categories. Importantly, the traditional retail sells all unit sizes, from small to medium to large, while the state/coop stores sell medium and large, and the RBH large only. However, we showed that in fact the traditional stores are no more oriented to selling to small farmers than are the others, so that what survives of conventional wisdom is that the small shops have adapted somewhat more to the needs for small units of their small farm clients.

Chapter 4

Summary of Findings on Fertilizer Markets in MP

- a) In the MP fertilizer market, the farm households are final-demanders, and the following are their suppliers: (1) PACS (one for around 8-10 villages); (2) State stores (mainly in district head); (3) Traditional Private input stores; (4) RBHs (mainly ITC in these zones)
- b) Our input retailer survey showed for the above vendors that in all the study areas, 62% of the traditional shops sell fertilizer, all the RBHs, and 86% of the state/coop stores sell fertilizer. Moreover, it is striking how important fertilizer sales are to stores selling it: for RBHs, they are about half of input sales; for state stores, nearly 70%. For traditional stores, the share is 57% for those selling. Also, while most of the stores carry the main types of fertilizer, the RBHs tends to have by far the most diverse offer of fertilizer types beyond the main types. Roughly second are the small shops (taken together), and last, and most focused, is the state/coop store.
- c) 98% of the sample bought fertilizer in the past year. There was no farm size bias – as all three strata and all three zones had this high rate.
- d) It appears from the survey data that the fertilizer market works fairly well. Few farmers felt there were major bottlenecks in getting fertilizer, and the responses differed little over farm size strata. Only 15% of the farmers felt timely access to fertilizer, 10% felt price, and 6% felt fertilizer quality were major bottlenecks.
- e) Contrary to the expectation that the traditional retailer would be sharply less well judged, instead the data show that over state/coop, RBH, and traditional retailer got 98, 98, and 97% shares of transactions as satisfactory. Fertilizer transactions were judged satisfactory in 99% of the transactions in the west and center, and 94% in the east. The east thus still has a high rate of satisfaction among fertilizer buyers despite some problems with getting the material at MRP.
- f) Finding fertilizer at MRP is possible for nearly all the farmers. 94%, 93%, and 97% of small, semi-medium, and medium/large farmers said they can always/usually find fertilizer at the MRP. Only 5% said fertilizer was not available at MRP price, but of those only 9% then just did not buy fertilizer (instead of buying at higher price or lower quality than wanted): this means that only 0.5% of the sample simply had to go without fertilizer because of availability. However, there was regional variability: only 1-2% said they could not find fertilizer at MRP in the west and center, but 14% in the east said they could not get it at MRP; yet in the east, only 2% of the sample said they could not get fertilizer at any price.
- g) Seen from another angle, farmers reported in the west, center, and east regions that fully 95%, 91%, and 85% of transactions were at MRP. Transactions were at MRP in the state/coop retail 96% of the time, and 94% for the RBHs – while only 80% of the time in the traditional shops. Moreover, in 96-97% of the transaction in all three zones, there was no "tagging" (where to get fertilizer farmers would have to buy expensive pesticides).
- h) Per transactions data, IFFCO and KRIBHCO (Indian Farmers Fertiliser Co-operative and Krishak Bharti Co-operative) branding dominates, the two cooperative manufacturers of fertilizer, are 90% of their transactions in the state/coop retail, 73% of the transactions in RBHs, and 70% in traditional retail. Private brands are the rest.
- i) Unlike with seeds, farmers report similar shares of sales-unit sizes over the vendor types, with 88%, 81%, and 87% of the transactions in state/coop, RBH, and traditional retailers, in large sacks. The average purchase transaction amounts to 2 tons on average. This is quite similar over the three zones. We found that no matter where the farmers purchase from, transactions are of similar sizes.

- j) The main driver of fertilizer vendor choice (as it was with seed) is timely availability (in 44% of transactions); traditional retail scored by far the highest on "timely availability." In second place (and related to timeliness) is proximity – in 32% of the transactions; in proximity, state/coop outlets score by far the best (and note that they are 3 times closer to clients than the other outlet types). Quality assurance is cited as the major reason in only 10% of the transactions; for quality assurance, RBH scores by far the highest. Surprisingly, price is only a factor in 1% of the transactions.
- k) Credit was cited as the major reason for choice of vendor in only 5% of the transactions – and credit was provided in only 14% of the transactions. Credit was almost all concentrated in transactions with the state/coop store, but even for them, cash-on-the-spot characterized the transaction 78% of the time. Nearly all the rest was payment at harvest time.
- l) It is important to note that "no other option" only arose 1% of the time – suggesting that farmers feel there is competition and choice for fertilizer. There is an active market in MP for fertilizer.
- m) Urea and DAP dominated purchase transactions at 78% of transactions. 89% of households bought urea – without much farm size bias. SSP was third with 13%. NPK and "other" were distant fourths in transaction shares. We thus turn to urea as an example in the following points.
- n) Sample households buy on average 210 kg per ha. While this rate seems high (much higher than the use rates a decade earlier), and is above the GOI recommendation, there is evidence from similar zones such as in the Punjab where use rates are even higher than we observed in the MP survey data). Small farmers use nearly twice the amount of urea per ha as the medium/large farmers. The latter use much closer to the recommended amount, while relative to that the small farmers overuse. This is a common finding in developing countries in areas of commercialized agriculture, such as is the Malwa Plateau. The usual reason is that the small farmers have less knowledge and access to extension, and sometimes that smaller farmers buy poor quality fertilizer and have to or feel they have to use more. We can assess their exposure to extension, but not the physical quality of their fertilizer.
- o) Medium/large farmers pay on average 4% less for their urea than do small/marginal and semi-medium farmers.
- This appears to come from their sourcing from ITC and from wholesalers, two things small farmers do less (while sourcing from state/coop stores as do the small farmers).
- p) 52% of the kg of urea bought by the sample was from state/coop retail (similar across farm strata), 10% from ITC (with 6% for small farms versus 10% for large), and 31% from traditional retail. These results support (weakly) the conventional view in the area that "the state dominates the fertilizer market" – but we see that there is still competition and options for farmers.
- q) ITC is actually the cheapest source of urea – at only 4.6 rs/kg – versus 4.9 for state/coop retail, and 5 for traditional retail. This is an important finding as it shows that in principal modern retail can be a cheaper source of a key input – a point that flies in the face of conventional wisdom.
- r) Interesting is the observed (in the data) forward integration of wholesalers (who also have retail licenses) – selling directly mainly to medium/large farmers (not to the small farmers). This "disintermediation", we were told by fertilizer (and pesticide) wholesalers, helps allow them to price-compete for the big market of the medium/large farmers (which, as we noted above, is the majority of the market for inputs in MP).
- s) Importantly, echoing the results for seed, we find that state/coop stores sell only 28% of their urea to the small/marginal farmers – and thus 72% to the semi-medium, medium, and large. Again, as in the discussion of seed, while this shocks against conventional wisdom which sees the state/coop stores as dedicated, with their subsidized sales, to the poor farmers, the shares here roughly track the distribution of land to these different strata in the sample.
- These empirical points about distribution of fertilizer to different farm strata had their echoes and explanations in the FGDs in the areas. The smaller farmers noted that when fertilizer is in shortage, larger farmers have preferential access at the PACS, with various ambiguous practices reported by the farmers
- t) However, the sales by ITC CS are even more skewed toward the medium/larger farmers, as only 18% of their sales of urea go to the small/marginal, below the latter's share in land distribution in the sample.

Chapter 5

Summary - Pesticide and Herbicide Markets in MP

- a) In the MP pesticides and herbicides markets, the farm households are final-demanders, and the following are their suppliers: (1) Private traditional retailer; (2) RBHs (mainly ITC); (3) PACS (a narrow range of products); (4) State stores (a narrow range of products).
- b) About two-thirds of traditional shops, all of the RBHs, and only 29% of the state/coop stores, sell pesticides and herbicides. Of those that do, the share of their overall input sales is appreciable – some 42% of the sales of the traditional shops, and a third of sales of RBHs, and only 28% of the state/coop stores. It is notable that the state stores are not selling pesticides or herbicides in the east, but are in the western and central regions. Moreover, the shares of stores selling pesticides tend to be near the shares selling herbicides.
- c) Per the household survey, a surprisingly high 88% of the sample bought one of the two sets of chemicals (pesticides or herbicides) in the past year (before the survey). More surprising than the ubiquity was the near lack of a farm size or zone bias: ranging over 84%, 86%, and 95% for smaller, middle, and larger farms (87% of the overall sample), and 95, 94, and 81% of households in the three zones (west, central, east). Our understanding from key informants is that this was much less even five let alone 10 years ago.
- d) Of farmers' purchases of chemicals, 51% were of pesticides, 41% for herbicides, 6% for fungicides, and 1% for Plant Growth Promoters (PGP).
- e) Surprisingly, 93% of the farmers felt that they could "always or usually find chemicals sold at MRP" (and this varied little over strata, from 90 to 95% from small to medium/large). Only 4% felt that chemicals were simply not available at the MRP.
- f) Fully 77% of households bought pesticides, with modest correlation with farm size (71%, 78%, and 86% over the farm strata).
- g) Importantly, the average (total pesticide expenditure divided by total liters, not controlling for composition) price for those who bought pesticides was sharply higher for the poor than for the medium/large farmers – at 716 to 607, 18% more. It is difficult to know statistically whether the poor pay more for specific pesticides, but assuming, given similar pests and a broadly similar set of major brands bought by most farmers, the cost is sharply more for the small farmers.
- h) Only 4% of the farmers buying pesticides do so at state/coop stores, a very minor source, versus 13% from RBHs, 80% from traditional shops. The data show that nearly only medium/large farmers depend on state/coop sources for pesticides (at 10% of their expenditure, 10 times more the dependence on this source than have the poor), a surprising finding.
- i) The derived price per liter is 18% higher at the RBH – which implies that farmers either pay more for commodity pesticides (general brands that can be bought at any type of retailer), or buy more of the niche types of pesticides that cost more, at the RBH.
- j) Interestingly, there is a sharp "J" curve to the reliance of farm strata on the RBHs for pesticides, with 12% for the poor, and then 19% for the medium/larger farmers. Note that for the upper stratum, the physical share is much lower than the value share. For the poor, it is the opposite; this may imply that the poor go to the RBH to get commodity or cheaper products, and the larger farmers go to the RBHs to get the quality/niche products.

k) For the traditional shops, there is a reversal – the larger farmers rely on them a great deal, but the share in their "physical" purchase is a bit more than rupee outlay share – meaning apparently the larger farmers get their special products from the RBHs and their commodities from the traditional shops. The poor rely only slightly more on the traditional shops, but the rupee share tracks the real share.

Points (i) and (j) together suggest a Porter-type market segmentation in pesticides, with a high-price niche segment, and a low-price commodity segment.

l) As with other inputs, the smaller farmers lay more inputs onto their land – some 50% more. Again, this is a common finding over countries which can be due to several reasons; one might be that smaller farmers rely more on the traditional shops advice and avail less of extension and other advice, and so over-spend; another is that they rely more on their small parcel and so reduce risk by spraying heavily their crops.

m) Importantly, in terms of the "pie" of sales of each vendor type, the state/coop categories focus nearly only (87%) on the upper stratum farmers when selling pesticides, with only 3% to the poor. Interestingly, ITC comes out as the most oriented to the small farmer – with 26% (17% in rupees, as they are selling more of the "commodity" product to the poor) of its pesticide sales to the small farmers (apparently with the "commodity" side of the Porter-type bifurcation). Traditional shops actually do worse than the RBHs in sales to the poor – with only 18% of their sales to them.

n) 98% of the sample's transactions of pesticides were attended with satisfaction – regardless of vendor. Timeliness of pesticide availability is far and away the main criterion of retail choice by all strata (stated for 63% of all transactions), followed distantly by proximity (for 12%), and then by quality assurance (at 14%). As usual credit is extremely minor consideration (at 1%, including for smaller farmers). Even price is very minor – and only the middle and larger farmers said they care about price.

o) In the rankings, for timeliness, the traditional retailers are the "hands-down winners" with 74% (of the reason for

selecting them), followed by ITC at 50%, and state at 30%. The ranking reversed for quality, with ITC at the top, and for proximity, the state stood out. Credit came out as a reason in only 1% of the cases, and price was cited as a reason, and then only 17%, for choice of state/coop stores (by the bargain-hunting larger farmers!). FGDs noted that small farmers felt that (compared with ITC), the smaller retailers had a wider variety of products and smaller units available to fit their available cash. ITC was perceived to have more expensive products, bigger packs, limited product line, and sometimes had what farmers felt were unrecognizable packaging and that made the farmers nervous to use the product.

p) Fully 65% of households bought herbicides, with a striking participation even by smaller farmers (56, 64, 80% over the farm strata). The upper stratum nears levels in the US corn belt or Chinese intensive commercial rice areas in herbicide use.

q) 73% of the rupees spent on herbicides by the sample buying herbicide were spent at traditional retailers, 18% at ITC, and 5% at state stores.

r) Interestingly, the herbicide price in the RBHs is well above the traditional store's – reflecting what we heard in key informant interviews, that the more expensive, higher-quality, multinational brand are more the focus of the RBHs in herbicides. All the strata, especially the larger farmers, are buying higher priced herbicide at the RBHs, and lower-price herbicides at the traditional shops. This again appears to be a Porter-like product differentiation.

s) Again, we find higher (actually, twice) rates of herbicide application in smaller as compared to larger farms, probably for the same reasons hypothesized above for seeds, fertilizer, and pesticides.

t) For the "pie" of sales of vendors to farm strata, we find that ITC sells only 17% of its herbicide to small/marginal farmers – probably for the price reasons noted above. But traditional shops are close, selling only 20% to the small farmers. Recall once again that this is however not far from the land share of the small farmers in the sample area.

Chapter 6

Summary of findings on Credit Markets in MP

- a) Households as credit demanders have a possible source of supply via the KCC scheme. Since the late 1990s, NABARD (the National Bank for Agriculture and Rural Development), has implemented a scheme, called the Kisan Credit Card (KCC), to provide credit to farmers. Only land operators are eligible for this scheme. The KCC can be got from PACS, Nationalized banks and Regional Rural Banks. Through the KCC, the banks give the farmers loans at planting time, which they are supposed to repay at harvest, to avail of a loan the next season. The farmer can have access to a certain loan amount, but not necessarily use that amount.
- b) Another possible supply of credit in the formal sector is direct loans from commercial and other banks, for agricultural or non-agricultural purposes. Yet another possible supply of credit is from the "informal sector" - the money lender or family members.
- c) 83% of the credit transactions reported by farmers related to the KCC. This was by far the most important source of credit for farmers in the areas.
- d) The survey data showed a sharply regressive distribution of KCC: 45% (but only 32% population-weighted, thus the true share in the population) of the households own (but do not necessarily use in the past year) a KCC. There is a very sharp farm size bias - rising from 27% of small farmers to 72% of larger farmers.
- e) KCC ownership falls as one moves to the poorer east region: from 52% of farmers in the west to 40% in the east.
- f) 58% of KCC owners got their KCC from nationalized banks (with that figure 44% for small farmers and 63% for larger farmers), 24% from cooperative societies (with 35% for small farmers, versus 18% for larger farmers; note that **while the larger farmers depended less on credit from coops, the latter disbursed most of their credit to larger farmers**), and 11% from regional rural banks. It is important to note that while in seeds and fertilizer the state sources were sharply regressive (supplying by far the most to larger farmers), the **nationalized banks and the cooperative societies actually are fairly sharply progressive - providing to small farmers in excess of their role in land ownership and output.**
- g) The share of KCC acquisition via nationalized banks rises fast from west to east, from 46% to 69% - while use of the coop society declines fast from 35% to 16% from west to east.
- h) Actual use of KCCs is near ownership rate for small farmers but much less for large farmers: recall that 27% of the small farmers had KCCs, and 72% of the larger farmers; for actual use, the shares are 22% versus 47% - hence when the small farmers get their cards, they tend to use them. By contrast, the larger farmers tend to use them much less. Recall that the average limits on the cards were 48,000 for the small, and 188,000 for the larger farmers; but here we find that the actual use in the past year the use was 47,717 for small farmers versus 105,000 for large farmers for those that used the KCCs. Thus, those small farmers "lucky" enough to get a card, used it; while the larger farmers tended to get the cards and then hold them as a form of security, drawing on them if needed (and paying interest only on the amount borrowed); this was also explained to us in the FGDs by the larger farmers. Yet, we see that of the total borrowings by each stratum, about 53% is via KCCs for the smaller farmers, and about 74% via KCCs for the larger farmers.
- i) Concerning KCC payout by credit source. The results are striking and important, and as far as we know, the first time presented in the literature. The results show that Nationalized Bank's payout on KCC is sharply pro-poor relative to the share of the poor in land in the sample areas: 36% of their rupees go to the small/marginal farmers. In sharp contrast, only 11% and 17% of the regional rural banks' KCC loans go to the small/marginal farmers.
- j) The Focus Group Discussions for credit showed small farmers' problems getting KCCs: (1) banks try to avoid

them because of high risks; (2) they felt there is an "un-written norm" of a threshold of 2 ha for a loan; (3) they are concerned about taking the risk of borrowing even via the KCC as they fear their land will be confiscated if they cannot pay back; (4) they feel that one cropping season is too short to pay back the loan; (5) they felt there are too many procedural hurdles to getting the loans. Yet they feel that KCC has become a key supplier of credit.

- k) Our village-level survey showed the presence of financial institutions in the 30 sample villages, distance to bank for those without, and lenders to farmers. The greater density and diversity of lending institutions is striking in the central region; the latter has all the types, with all lending to farmers, with the most widely distributed the informal savings groups and money lenders, with a close second the nationalized banks and coop societies (with the latter two in only 30% of the villages in the center, 20% in the west). In the east, as usual less served, none of the villages has a branch of nationalized banks. Micro-finance institutions scarce – only in the center, and in 11% of the villages. For villages without institutions of lending, the nearest is only about 11 km away.
- l) **The use of credit by farm strata in the different regions shows that overall only about 34%, 30%, and 27% received credit in the past year.** Credit is highly correlated with farm size in all the regions – with a 3 to 1 ratio of large to marginal farmers' credit use rates in the west region, nearly 5 to 1 in the center, and 4 to 1 in the east region.
- m) While the public debate commonly has it that farmers do not borrow because they cannot access credit or find it too costly – those who do not borrow reported in 60%, 75%, and 63% of the cases (over regions) that they simply had no need to borrow. Reporting too-high interest was very uncommon – in only 8%, 6%, and 4% of the cases of non-borrowing in the zones. Moreover, "lacking collateral" was nearly absent from the reasons: 3, 0, and 8% of the cases.
- n) **At stunning odds with conventional wisdom, the survey data show the 73% of the rupees borrowed in any credit were from the nationalized banks (this is the KCC window). Coop banks were 8 times less important, regional rural banks 10 times less important – and private money lenders were – 30 times – less important than the nationalized banks. NGOs, input retailers, and wholesalers – were all less than 1% – together! This belies the myth that private money lenders have a major role:** while responsible for numerous small transactions, had only 3% of the share of total credit pie to the

sample – going from 4% for the smaller, 5% for the middle, and 1% for the large farmers. Similarly, as triangulated by the rest of our findings, the wholesaler plays a tiny role – at odds with long cherished conventional wisdom. We see that the majority of the bank lending goes via the KCC – which is turning out to be sharply "progressive" relative to the land distribution – but still with constraints.

- o) The reasons for choice of lender also surprise somewhat: smaller farmers pay a bit more attention to proximity, and report (slightly, at only 10%) that they have "no other option". The larger farmers are a bit more concerned with conditions of lending (as perhaps they may be given they have more options).
- p) For all farm strata, more than 80% of the credit is used for farm inputs.
- q) 69% of the transactions were reported as using land as collateral. The FGDs showed that farmers thought that their land was actually being used as collateral for KCC loans – while at least in theory the land title was used as proof of land ownership to make the loan, while the land is not actually required as collateral per se.
- r) Moreover, the farmers expressed, in the FGDs, that the nationalize banks have somewhat higher interest rate than the PACS, but give much larger loans per hectare, and the transaction costs are much lower, and they provide loans in cash (not for fertilizer purchase as with the PACS).
- s) FGD noted that the farmers try to avoid borrowing from the informal channel (whether village money lender or trader), which explains the findings of such small incidence of these sources. The farmers said that the informal lenders rates are much higher, and variable (and difficult to calculate if it is "hidden" in the traders price), and it ties the farmer to the trader.
- t) From the input retail survey, we find that contrary to the "conventional wisdom" – we found that only 37% of the input retailers self-declared to have offered credit, and of those, only 21% of their clientele get credit. That translates to only 8% of the MP farmers getting credit from input dealers (slightly below our findings in the UP). Given how small the consideration of credit is in the household survey, this latter triangulates or may even be an overestimate.
- u) Only 8% of the grain traders said they extended any credit, and that to only 3% of their clients. That translates to only 2% of the MP farmers getting credit from wholesalers (similar to our findings in the UP).

Chapter 7

Summary of findings on Extension in MP

- (a) Farmers are the final-demanders of crop and input information; in the market for information they face a plethora of suppliers of this information through "extension and technical assistance": a.1) public/cooperative sector suppliers, (1) the MP Agriculture Department via village extension officers; (2) All-India Radio and TV; (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; (5) IFFCO's information kiosks and extension officers; (f) ATMA (Agricultural Technology Management Agency), an autonomous agency coordinating across government ministries for extension; (g) Kisaan Melas" or crop fairs organized by the government; a.2) private suppliers: (a) input companies, such as Bayer or Syngenta, that send agents to villages; (b) Processing companies; (c) Traditional input retailers giving advice about chemical and seed use; (d) Choupal Saagars and other RBHs; (e) NGOs; (f) Other farmers.
- (b) 80% of the households used extension (from some source, public or private) in the past year. The rates are roughly the same over the regions.
- (c) If farmers did not use extension, fully 62% on average (with a sharp decline from 78% in the west to 45% in the east) said they did so because they had "no need" of extension. 29% of the farmers said that they did not use extension because they were "unable to find them at the right time" (and this share rose steeply as one moved from west to east, from 17 to 43%).
- (d) Smaller farmers use (public and private) extension more than do larger farmers: 83% versus 75%. For farmers not using extension, smaller farmers are much more likely than larger farmers to not use extension because, as they report, they were unable to find it when they needed it (39 versus 18%). Few said they did not use it because it lacked the needed quality (only 9% on average). RBH-users use extension about as often as non-RBH-users: 82% versus 78%.
- (e) About 88% of farmers found (public and private) extension always or usually available. As expected, this was highest in the west and central regions (summing to 90% in each), versus 82% in the east, still relatively high. Most of the farmers are finding ... some... kind of extension when they want it.
- (f) Interestingly, timeliness arose as the main "major bottleneck" – with about 22% in all zones. Quality of extension (public and private) was considered a major bottleneck again rising from 8% of farmers in the west to 15% in the east; but these are lower numbers than we expected.
- (g) For all the strata, there is a "pocket" of about 10% of the farmers who feel underserved, whether they or rich, compared to their particular needs.
- (h) For the type of extension used, "general advice" is most cited – for 55% of the farmers. Of the more specific needs, only "new seed varieties" (at 12% of farmers' uses of extension) and fertilizer (at about 10%), stand out, without marked differences over zones, surprisingly.
- (i) **A very striking finding is that a very high share (nearly all, 98, 97, and 95% over the zones!) of the farmers were ... satisfied ... with the extension they received (keep in mind that this is for ALL types of extension, private and public). Even amazing – is that the patterns are similar over the farm strata.**
- (j) We analyzed the shares of total uses (1298 events of use in the sample) over sources and found a wide panoply of options, and only 5% of the farmers (about the same over

zones) said they had no other option than the one they chose.

- j.1) 37% were uses of the state extension officers. Interestingly, the share of state extension use – drops – as one goes for West and Central where it is about 41%, to the east (where it is 29%).
- j.2.) Other public-sector extension sources are another 35% of uses: these include the KVK (twice as important in the east as the other zones), at 12%, and the All India Radio and TV, at 21% (in all zones), and ATMA at only 2%. IFFCO provides very little extension to the farmers (0.4% of the occurrences).
- j.3) Private-sector sources are the other 25%. The most important are the private companies that are promoting their own products (like Bayer, Syngenta, and so on), at 13% of extension occurrences (highest in the west); second in line is the CS (ITC), at about 10%.
- j.4) The rest is from NGOs and donor projects, which are a very minor share of extension accesses: only 1.4% in all.
- (k) Over farm size strata, the patterns are not strikingly different in terms of sources. Modest differences are found in a

sharp increase over farm size of use of KVK and ITC, and decrease over farm size of use of state extension and radio, but the impacts on the overall picture of these differences are minor.

- (l) The focus group discussions in the study zones provided additional qualitative interpretational insights. The groups noted that farmers usually use government extension agents for information about availability of agricultural inputs, and that farmers tend to trust the advice of KVKs and universities. Large pesticide companies come at the start of the season, and at the launch of new products. ITC extension is available throughout the season, but the reach is limited. From input retailers and other farmers one generally gets information about crop spraying; from the media, about pests and diseases, and general farm advice; from KVKs and universities, about varieties and production practices; from ITC, scientific production techniques for enhancing productivity. The most common information available is for spraying of chemicals and pesticides. The farmers felt there is a dearth in quality of extension services regarding new practices for enhancing productivity, new varieties, and scientific planting techniques.

Chapter 8

RBH MP Summary of Crop Market Findings

- a) Belying the image of the traditional autarchic peasant, farmers – 92-96% of farmers, whether small, medium, or larger, whether in west, Center, or East zone – sell some crops.
- b) Crop sales are concentrated (86%) into soy and wheat. There is a bit of emerging diversification into vegetables, maize, and gram. Soy is king in all the zones – with 59%, 60%, and 50% of crop sales over the west, center, and east zones. Wheat is a fairly distant second with 34, 28, and 23%. While the east is a bit more diversified, it is not much: vegetables' share of sales rises from only 2% in the west and center to still only 9% of sales in the east.

Interestingly, small farmers are actually more grain-focused than medium/larger farmers, contrary to popular image. Small/marginal farmers' sales are composed 4% of vegetables – and that goes up to 6% for semi-medium and then down to 4% for larger farmers. (Given volume differences, that means the vegetables market is dominated by medium/large farmers.)

- c) **The zones are strikingly different – with the strong impression of going from a more modern, technified, market – transformed set of zones in the west and center zones, to a more traditional and less developed zone in the east. Sales per farm are 50% higher in the west than the east.**
- d) Multi-cropping is developed – but the kharif crop (rainy season) still makes up 62% of total crop sales income. Off-season cropping requiring irrigation (in the rabi) is more among larger than smaller farmers, and more in the west than the east.
- e) **Contrary to inherited-conventional wisdom**, in these areas credit markets and output markets are not "tied". Sales are overwhelmingly "spot market" – with very little involvement of credit in any way. 90% of payments are made on the day of sale, and the rest (mainly by rural brokers, as mandi wholesalers and RBH were found to pay promptly).

Input advances (traders paying farmers some at the start of season to help them finance inputs) are extremely rare – 1% overall (2% for wheat, 1% for soy), and even only 2% of small/marginal farmers' transactions. Only 6% of the village brokers are found to give payment advances.

- f) Only 20% of crop sales took place in the villages; this average varied over zone (less in the west, more in the east (38% of the sales took place in the village in the east, versus only 8 and 13% in the other two zones) and farm size (less for larger farmers, more for small farmers). By contrast, 61% of the sales took place at the mandi (with the share ascending from 57% to 66% over the three farm size strata). Yet it is striking here how much the poor are selling directly to the wholesale market – and very little in the village where conventional wisdom has them selling in a "long chain". Sales directly in the local retail market (like haats) are only 3% (and even the poor in general and the east in general only sell 5% to the local retail market); this is a strikingly different picture than one of small farmers mainly selling to village markets that one saw in the literature in the 1960s/1970s.
- g) Contrary to our expectation that the poor receive less for their grain in the market, we found that wheat prices received by sellers over farm strata are similar, not only with no disadvantage for the smaller farmer, but actually a better price for him, as they receive 11.74/kg, and the larger, 11.51/kg. For soy the story is similar: the prices are close over the strata, at 18.2, 18.8, and 18.4 rs/kg.
- h) Contrary to our expectation of strong price differences among buyer types, we found in the detailed survey data that the **mandi wholesaler, ITC (CS), and the broker paid close to the same price (net of transaction costs) to farmers for wheat and soy.**

For wheat, the mandi and village broker paid 11.5 and 11.6, and ITC only 11.2, per the farm survey data. But the transaction costs to farmers (per the detailed farm survey data)

were slightly less selling to ITC, and so the price differences over the buyers essentially disappeared. This finding was echoed in the focus group discussions, where farmers said that they are basically indifferent between selling to ITC or the mandi, with the decision made "even on the road if they hear the price is a bit better or worse at one or the other" (suggesting that cell phone use allows them to keep in touch with a competitive markets' prices).

There were similar findings for soy: the prices to farmers (per the farm survey data) were 18.7, 18.3, and 18.9 for field broker, mandi wholesaler, and ITC. The survey showed transaction costs slightly lower for selling to ITC, but were a small share of the price, so the average prices show ITC to pay a very slight premium.

- i) Farmers in focus groups said that ITC and large mandis have electronic scales, while field brokers do not and were considered the least "transparent." Price uncertainty was considered least at the ITC (as they announce it and it stays for the day), but more at the mandi (with the price shifting over the day). However, lot-acceptance was considered more uncertain at ITC (with quality based rejection) while much more certain at the mandi where all could be sold each time. It seemed that the "net uncertainty" was perhaps similar over the buyer options.
- j) Based on results using the population-weighted sample (meaning the true distribution in the population), we find that ITC has about a 9% market share in wheat in its catchment areas. Mandi wholesalers have the lion's share, at 56%, and village brokers have a share of 27%. These shares differ sharply over farm size strata – mainly for the village broker share (with small/marginal farmers relying far more on them at 36% of their sales), and for the RBH – with small/marginal farmers three times less likely to sell wheat to RBHs as large farmers. In soy in the catchment areas, ITC has about 24% market share (in rs) (more than double what it had for wheat). Mandi wholesalers have the lion's share, at 46%, and village brokers have a share of merely 20%. Small/marginal farmers two times less likely to sell soy to RBHs as large farmers
- k) **Despite the conventional image that rural food markets are dominated by small/marginal farmers, as noted above, the small/marginal farmers actually constitute only a small minority of the market in volume terms. It is striking that while the image is of small farmers facing large mandis, in fact, the main "commercial dialogue" is between medium and large farmers and mandis, with**

the mandis buying little wheat and soy from, and relying little on, the small/marginal farmers. This is even more true of the RBHs, whose bottom line in wheat is nearly unaffected by small wheat and soy farmers choosing or not choosing to sell to them.

For wheat, field brokers/collectors buy only 27% of their wheat from small/marginal farmers (recall they are around half the sample and two-thirds the farm population in these areas). But that share is even lower among the mandi wholesalers – who source only 15% of their wheat from the marginal/small farmers. That share is yet lower again among the RBHs – sourcing only 7% of their wheat from small/marginal farmers.

For soy, we see that even (as we expected them to rely more on the smallest farmers) field brokers/collectors buy only 32% of their soy from small/marginal farmers (recall they are around half the sample and two-thirds the farm population in these areas). But that share is even lower among the mandi wholesalers – who source only 16% (like wheat) of their soy from the marginal/small farmers. That share is yet lower again among the RBHs – sourcing only 9% (like wheat) of their wheat from small/marginal farmers.

- l) Only 22% of the sample (farms in the catchment area of ITC) knows (at least in terms of his role as working with ITC) the "sanchalak" (the agent of ITC in the village). This was of course higher (44%) among users of the RBH, but still limited coverage. Also, this share in the overall sample went down quickly from west (27%) to east (17%), and from large farmers (38%) to small farmers (5%).
- m) Only 9% of the farmers in the full sample got any information on cropping practices/technology/inputs from either ITC (CS) or from the sanchalak in the past 3 years. This was mainly in the west (with 14%) and mainly medium and large farmers (14 and 12%), with small farmers getting very little, only 2%.
- n) The trader survey showed that few (only 8%) wheat traders collect grain from farmers in their own trucks; fewer (3%) sort and grade when buying from farmers. 62% of wheat traders deliver to their clients, and 42% sort and grade when sell to clients. 81% of the wholesalers buy direct from farmers (not via field brokers).
- o) Contrary to conventional wisdom, for both wheat and soy, the costs of transaction exceed by only a small amount the gross margin earned on the trade – belying the image of wheat traders earning exorbitant net margins.

Conclusions and Implications

a) Implications of Seed findings:

- a.1) Most striking is that state and coop stores sell only 19% of their wheat seed and 26% of their soy seed to small/marginal farmers – despite the latter forming more than half the farmers in the sample. This is contrary to the conventional view that state/coop stores are there to serve – and subsidize – the poor farmer. The obvious implication is that policymakers should work to make these stores more accessible to the poor. But there are two complications to be kept in mind and overcome.
- a.2) Contrary to conventional wisdom, the poor are deeply involved in seed markets – some 79% of the poor (small/marginal farmers) buy wheat seed, and 67% buy soy seed. Small/marginal farmers who buy seed rely 92% on the market; only 8% buy seeds from other farmers in their village. How well seed markets work is thus directly a poverty alleviation policy issue. Policies that affect how both traditional and modern private retailers market seed, have by far the most important effect on the poor's access to seed.
- a.3) Contrary to conventional wisdom, input retailers (here for seed, but we showed this for the other inputs, and for output) provide very little credit. Policymaker should perceive the market situation as fluid, changeable, not fixed and rigid from tied credit systems.
- a.4) The government can assist in creating more trust and transparency through enforcing brands and labels' integrity, and through product testing and inspection. Farmers and input shops expressed strong general dissatisfaction with the current quality – and integrity – of government inspection services in the study areas.

Addressing this problem will help the poor get better seed by clamping down on fraud and adulteration.

- a.5) The RBH appears to be an ally of those working to promote seed quality (although not yet cheapening of seeds). This quality promotion has an implication for more general debates in India about the value of modern retail in modernizing agriculture.

b) Implications of Fertilizer Findings

- b.1) Contrary to conventional wisdom, the fertilizer supply chain seems to work rather well in MP.
- b.2) The most important reason why farmers chose a specific retail outlet for fertilizer purchases is related to the close distance of the outlet or the timely availability. Modern retail is a preferred buyer in almost one-third of purchases because of the assured quality.
- b.3) Contrary to conventional wisdom, few farmers chose fertilizer retailers for quality reasons or for access to credit. Most of the fertilizer purchases are spot transactions: 86% of transactions are paid for immediately and in cash.
- b.4) All retail types – state/coop, modern retail, and traditional shops, sell a minor share of their fertilizer to small/marginal farmers: state/coop stores sell 28% of their urea to small/marginal farmers; ITC sells 18% of its urea to these; and traditional shops, 23% to the small/marginal. This is contrary to the conventional view that state/coop stores mainly are focused on serving – and subsidizing – the poor farmer. The obvious implication is that policymakers should work to make these stores more accessible to the poor.
- b.5) Small farmers have approximately twice the fertilizer use rate per ha as compared with large farmers. We

found that the small/marginal farmers also used much more seeds and pesticides than the medium/large farmers.

b.6) The RBH appears to be an ally of those working to fertilizer quality AND cheapening of fertilizer. These points have implications for more general debates in India about the value of modern retail in modernizing agriculture.

c) Implications of findings on Pesticides and Herbicides

c.1) The poor report problems getting quality chemicals, and issues of fraud and adulteration. The main recommendation they have via the FGDs and we observe from key informants and our data, is the need to have more effective testing and inspection.

c.2) Many respondents from input shops complained that there are many inspections, but that often the purpose of the visit often is "not for inspection."

c.3) Small farmers' application rates of pesticides are much higher than are those of large farmers – raising issues of potential toxicity, waste, and ineffectiveness.

d) Implications of findings on Credit

d.1) 30% of the farmers in the study areas reported using any credit (for any purpose) in the 12 months prior to the survey. Those who did not mainly said that this was because they did not feel need for credit.

d.2) Most of the credit (for any purpose, farming or non-farm or consumption) that is used is formalized credit through Kisan Credit Card (KCC). Unfortunately, we found a strong relationship between farm size and acquiring a KCC – 20% of the marginal farmers (<1 ha) hold a KCC, versus 81% for the large farms (10 hectares and above). While only 16% of the marginal farmers used credit, this is as high as 57% for the large farmers.

Thus, KCC has been a strong credit initiative, and strengthening it further is our main recommendation, as it far exceeds in importance other credit channels – but still can go much further in penetrating to the level of the poor farmers.

d.3) The nationalized banks were responsible for a nearly 90% of the KCC credit – and about three-quarters of all credit farmers took in 2009 in the sample in MP.

d.4) In the study areas, per the survey, although informal credit is widely available, it is very little used in quantitative terms.

e) Implications of the findings on Extension

e.1) There are seemingly no major difficulties with access to agricultural extension delivery services in MP, especially when compared to its neighboring state UP (see the companion report). Only 9% of the farmers indicated that when extension was needed, it was *not* available. (This was 16% in the Eastern zone which always scored lower on services access in the survey.) On the other hand, 88% of the farmers reported that agricultural extension was *always* or *usually* available. Non-use seems mostly driven by low farmer demand and less by delivery problems in the West and Central zones – but in the East zone we found it more driven by delivery and quality problems. This mirrors the relative paucity of services that we found in the east compared with the other two zones. 96% of farmers were found to be pleased with the quality of extension services that they received.

e.2) The public sector plays a big role in the provision of agricultural extension in MP. A third of extension farmers received was from state extension officers. A third was from other public extension (All India Radio and TV, and KVKs).

e.3) A quarter of extension was from private input manufacturers and/or sellers. About 9-10% of extension came from ITC in the study zones – roughly tracking its market share.

f) Implications of crop market findings

f.1) We found small/marginal farmers engaged heavily in product markets.

f.2) We found small farmers less diversified out of grains than are medium farmers. The implication is that horticulture programs are not necessarily "self-targeting" to the poor just because the latter have more labor and less capital.

- f.3) Policies and programs need to be differentiated over types of zones. Instead of homogeneous zones even in this plateau, we found much more developed and modernized west and center zones, versus a more traditional eastern zone.
- f.4) Instead of the conventional image of wholesalers "tying" down the farmers with credit, we found only 1-2% of the farmers got any credit from traders. The implication is that (even at the price of being in thrall) the small farmer no longer does or can depend on the trader for credit. This highlights the importance of programs like the kisaan credit card, noted above.
- f.5) Instead of farmers selling mainly to rural brokers in "long chains" who then sold to mandis, most farmers, even small farmers, sold to the mandis directly. The implication is that the conditions of exchange in the mandis directly affect small farmers; but it also means that small farmers are no longer "stuck" with selling to rural brokers, and are thus in a more competitive system.
- f.6) Despite the dominance in the rural population of small/marginal farmers, their share in total sales of wheat and soy is a small minority – medium and large farmers by far dominate the total volume of sales and thus the market. The main "commercial dialogue" is between the mandi and the medium/large farmers, for about three quarters of the market. The upshot of the above is that ITC, and the mandis, could easily ignore small/marginal farmers, and still maintain and maybe grow the great bulk of their business. **Neither modern retailers – nor mandis – "need" to adjust to the needs of small/medium farmers for they themselves to survive and even thrive. But of course the policymaker wants the small farmer well served. Hence, both government and donor/NGO programs need to take that into account in design of programs for small farmers: the latter need to be helped to adjust to changing markets, as those markets have little incentive to adjust to them (at least from the economic perspective).**
- f.7) The RBH is a small player even in its own catchment area in the Malwa Plateau, with market shares of 9% in wheat and 24% in soy. The farms supplying it tend

to be concentrated in the more developed west and center zones, and very concentrated among the large and medium farmers (with very few small/marginal farmers selling to ITC).

Part of the limited penetration of the RBH could be on the supply side, with regulations limiting private sector warehousing of grain. Part of the scant penetration could also be on the demand side (demand of farmers to use it as intermediary), as it does not pay more than the mandi, and its greater certainties (about price) are off-set by its greater uncertainties (about possibility of rejection based on quality).

Contrary to our expectation, the RBH is not at a disadvantage with traditional players because of credit, as the latter basically do not provide credit to farmers.

Moreover, it does not appear that the fact that ITC has agents or "sanchalaks" in the villages, or offers price information and some extension, provide it an advantage – as relatively few farmers avail of these.

At present, the RBH appears, on the output market side, to not directly present an advantage to market transformation apart from increasing the market for quality product.

However, from the indirect side, it provides the benefit of from increasing competition and options, and adding some transparency to the market system. The above two points suggest that it is in the interest of market development and small farmers market access to develop both the modern market option (such as the RBH) and wholesale markets, through improving infrastructure to reduce both their costs, and free competition between them.

g) Policy Constraints to the modernization of rural services from the viewpoint of the RBH company

g.1) They see the need to restrict usage of Essential Commodities Act to only very exceptional situations, and to not apply it in the case of routine annual supply variations.

g.2) They see the need for full implementation of the Model APMC Act, with the issuance of one national license to operate under APMC.

g.3) They see the need for making taxation uniform and limited to incidence at one point in the chain.

h) Implications of the Findings for Strategies to Optimize the Outreach to the Poor of Rural Business Hubs

h.1) For seed, the specific needs found, and discussions of core competences with ITC, point to several key innovations on seed: (1) There is an unmet need for supply of quality seed; RBHs are seen by farmers as providing higher quality seed. (2) ITC can further develop its existing commodity logistics efficiency to reduce seed prices, increase quality assurance, and increase proximity cum extension (through hub and spokes model). (3) Small farmers are mainly buying their seeds for "diversification crops" (horticulture, gram) now from small shops, with the attendant problems noted above.

h.2) For fertilizer, the state/coop stores have such a big advantage at present mainly because of their large advantage in proximity. ITC could have a more substantial role: it is selling fertilizer perceived as better quality, and shown empirically as better price, to farmers. As with seeds, it is possible for the innovation to involve bringing to bear commodity logistics prowess, using a hub and spoke model to decrease the distance/transaction costs, and use the sanchalak (local agent) to improve timeliness of fertilizer needs and needs for types.

h.3) For Pesticides and Herbicides, the findings point to an opportunity for ITC to meet needs in the market for higher quality and affordable chemical. There appears to be a segmented market – with demand by both small and large for commodity chemicals, and at

present more by the large for quality and niche chemicals. The above points to a Porter-like business strategy to expand more into this category as a vertical; again, an innovation where the hub and spoke model is used to cut logistics costs (thus the commodity side), have greater sensitivity and timeliness to local needs (for both segments), provide extension and demonstration to show the "second stage" of herbicides pays off in yields and time saving (by the pre-planting herbicides instead of post-application herbicides), and have stocking points in the villages for the beloved proximity (that our discussions pointed to as hard to disentangle from the idea of timeliness itself).

h.4) For credit, it seems valuable for ITC to pursue facilitation or intermediation service to help small and middle farmers access KCC and then to use it.

h.5) For extension, the main implication for rural business hubs is that farmers want in particular proximity and timeliness of extension. ITC uses this information to increase the provision of extension by its "hub and spoke model" in particular via its sanchalaks, and in melas and haats and other methods of reaching better the small farmer.

f.6) For crop procurement, small farmers noted that they valued proximity in a buyer; more development of "hub and spoke" model to reduce transaction costs for smaller farmers to sell to ITC would be valuable for both. Small farmers are constrained in selling small lot sizes; aggregating those lots via the hub and spoke system would increase farmers' access to selling to ITC.

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