

PN-AAN-655/62

ISN-31832

**Economics Program
Progress Report 16**

Market Channels for Selected Crops in Semi-Arid Tropical India

V.T. Raju and M. von Oppen



ICRISAT

International Crops Research Institute for the Semi-Arid Tropics

ICRISAT Patancheru P.O.

Andhra Pradesh 502 324, India

October 1980

MARKET CHANNELS FOR SELECTED CROPS IN SEMI-ARID TROPICAL INDIA

V.T. Raju & M. von Oppen*

1. INTRODUCTION

The technological breakthrough in Indian farming has provided the potential for increased production especially for wheat and paddy. With the establishment of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), whose main aim is to increase the production of important semi-arid tropical (SAT) crops (sorghum, pearl millet, pigeonpea, chickpea, and groundnut) through crop improvement and development of improved farming systems, possibilities for a breakthrough in improvement of these crops have increased. However, the scope for adoption of improved agricultural technologies which ICRISAT and national research institutions are developing depends also on the marketing infrastructure.

If market channels are efficient, they will induce farmers to become more commercialized. Access to efficient markets serves as an incentive for farmers to specialize in the production of certain crops which are comparatively most advantageous for the region, and a more efficient interregional trade within a country will accelerate aggregate production. In other words, efficiency in marketing of agricultural products implies an incentive for regional allocation of production systems according to the principle of comparative advantage; and the resulting regional specialization and interregional trade will bring

* Economist and Principal Economist, respectively, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru Post Office, Andhra Pradesh 502 324, India. The authors are grateful to J.G. Ryan, H.P. Binswanger, B. Harries, J.R. Behrman and J.B. Hardaker for their valuable comments and suggestions on earlier drafts of this paper and to S. Verma for editorial assistance.

about increases in aggregate production. There is increasing evidence that this is true and that the net benefits from removing trade restrictions may be considerable (von Oppen 1978a). Therefore, policies to improve the efficiency of agricultural marketing systems should be formulated and implemented or modified. For this, a knowledge of the operation and contribution to development of market channels is required. This study on market channels and comparative market efficiency for ICRISAT crops in SAT India is an attempt in this direction. The objective of this report is to describe the market channels of ICRISAT crops (sorghum, pearl millet, pigeonpea, chickpea and groundnut) in different regions of India and to compare and analyze typical features. While this report forms the main and full document of the research project conducted, some of the information in this report has been presented elsewhere (von Oppen et al. 1979, Raju and von Oppen 1980). The study on market efficiency for ICRISAT crops is reported separately (Raju and von Oppen 1980).

2. METHODOLOGY

Surveys were conducted in 29 regulated markets in seven SAT states of India. The markets, selected on the basis of not less than 25% arrivals of ICRISAT crops were (Table 1): Andhra Pradesh (3), Madhya Pradesh (4), Maharashtra (5), Rajasthan (4), Gujarat (3), Karnataka (3), and Uttar Pradesh (7).¹ The location of the selected markets and their size in terms of annual turnover of all notified farm commodities for 1974-75 are shown in Figure 1. Figure 2 shows the percent of the five ICRISAT crops to annual total turnover of each selected market in 1974-75.

1. Markets located in irrigated areas were excluded first, and from the remaining ones the selection was made randomly.

Table 1. List of selected markets

State	District	Selected market
Andhra Pradesh	Warangal Khammam Hyderabad	Warangal Khammam Tandur
Madhya Pradesh	Indore Ujjain Khandwa Sehore	Indore Ujjain Khandwa Nasrullaganj
Maharashtra	Poona Osmanabad Nasik Dhulia Buldhana	Poona Latur Malegaon Dondiacha Malkapur
Rajasthan	Ganganagar Sawai Madhopur Bharatpur Chittorgarh	Ganganagar Hindone Nadbai Begun
Gujarat	Mehsana Panchmahal Amreli	Patan Santrampur Damanagar
Karnataka	Dharwar Bijapur Chitradurg	Gadag Bagalkot Chitradurg
Uttar Pradesh	Hamirpur Jalaun Fatehpur Sultanpur Hardoi Badaun Agra	Panwari Orai Bendki Jafarganj Shahabad Ujhani Jarar

Figure 1. Location and size of selected Indian food grain markets. 1974-1975.

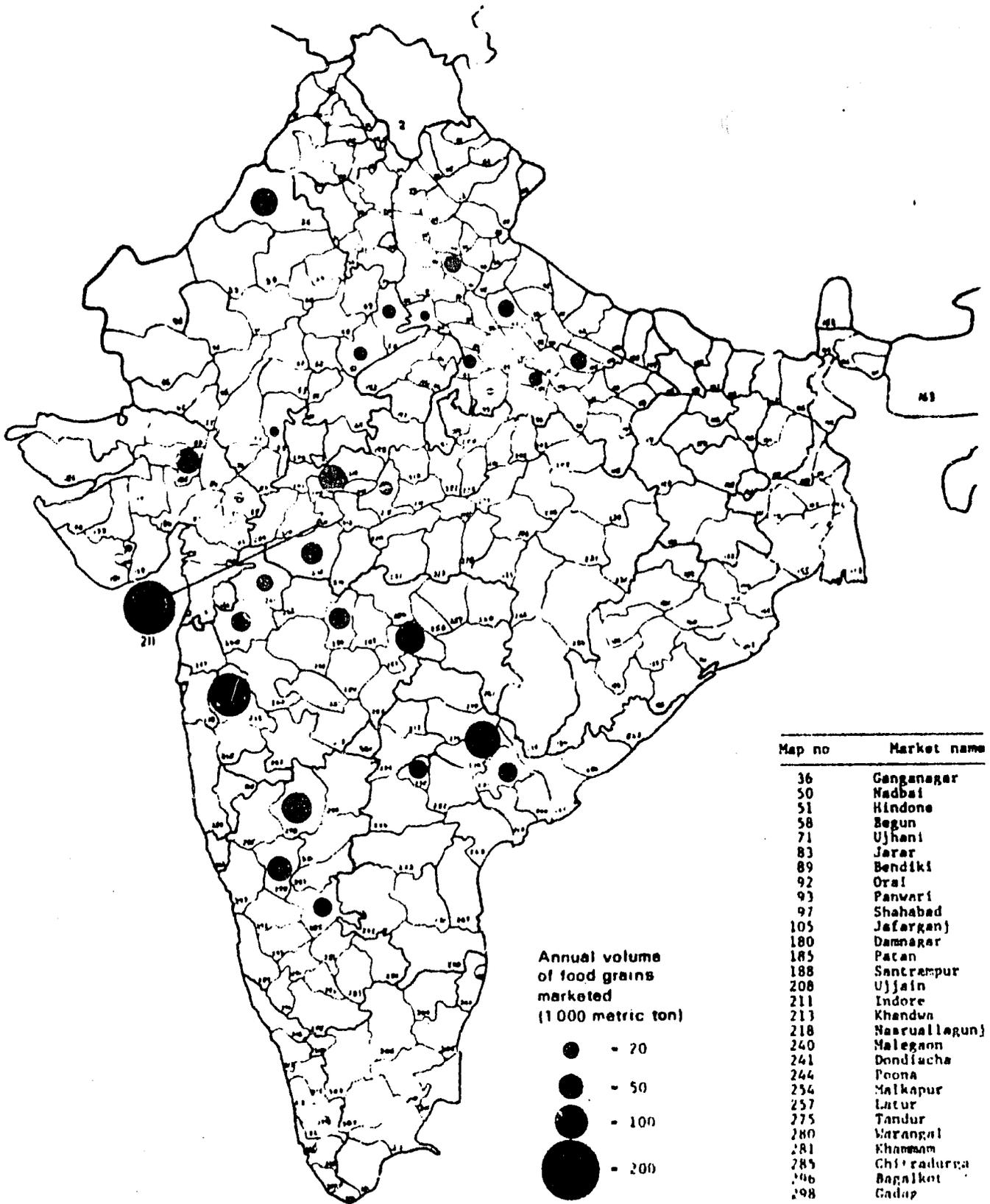
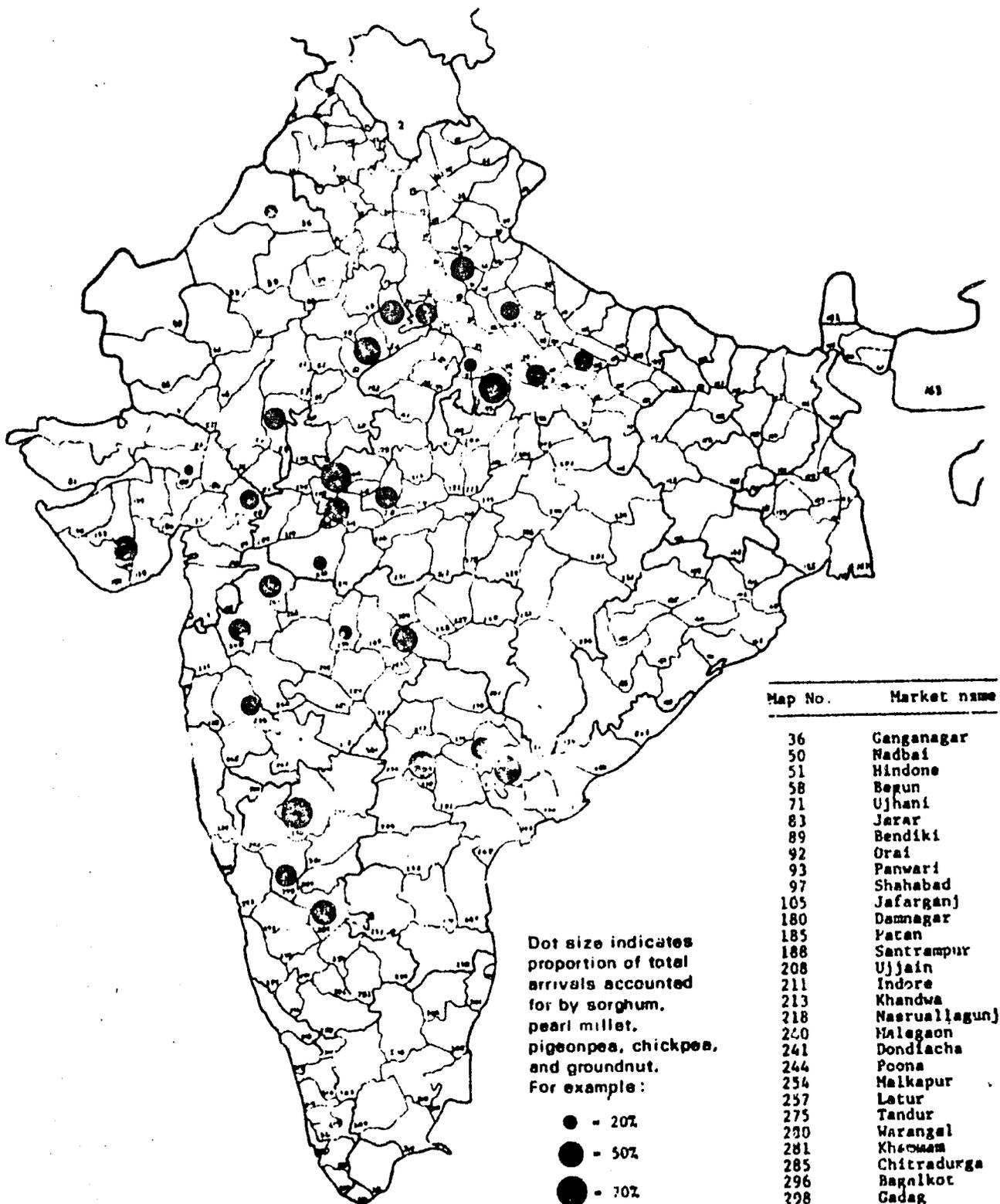


Figure 2. Location of selected Indian food grain markets and percentage of total arrivals accounted for by sorghum, pearl millet, pigeonpea, chickpea, and groundnut, 1974-1975.



The data were collected through questionnaires from market committees, traders, and farmers in each selected market and are briefly described below.

Market Committee:² Both primary and secondary data were collected from each market committee of all the selected markets. The main data collected were: annual total arrivals and valuation of all notified commodities³ from 1970-71 to 1974-75; monthly arrivals and valuation of all notified commodities from October, 1974 to September, 1975; weekly wholesale prices for ICRISAT crops from October, 1974 to September, 1975; number of market functionaries⁴ and their licence fee from 1970-71 to 1974-75; market fee⁵ paid by each trader/ commission agent in June and December, 1975; market charges,⁶ income and expenditure of the market committee from 1970-71 to 1974-75; area of market yard, notified area,⁷ notified market area;⁸ storage facilities and number of telephones, etc.

2. Every regulated market is governed by a market committee consisting of elected members from different constituencies. The number of members varies from state to state and/or committee to committee. Elected members elect a Chairman and a Vice-Chairman from among themselves. Each committee has a secretary.

3. Commodities for which the regulations are effective. The government publishes a notification declaring the intention of regulating the purchase and sale of such agricultural produce in such areas as may be specified in such notification.

4. Includes all licenced participants of the market such as traders, commission agents, processors, weighmen, hamalis, etc.

5. In some markets it is also known as market cess. It is to be paid by the traders (i.e. purchaser) on the value of the produce.

6. This includes all other charges in the market other than market fee like hamali, weighing, clearing etc. and mostly fixed in terms of quantity in quintal or per bag.

7. The area declared under a specific market by notification. It is normally expressed in terms of a list of talukas or villages. It comprises also subyards.

8. The area declared to be a market area under a specific market by notification generally comprises an area within a certain radius around the market yard. Subyards have their own market areas.

Traders: Traders⁹ were selected randomly and data were collected on estimated flows (both inflows and outflows) of ICRISAT crops, their directions, modes of transportation, and cost of transportation; variable costs per quintal on different items like cost of bag, stitching, heaping, cleaning, weighing, cartage, etc; monthly costs on telephones, electricity, rent/rental value of office, godown, etc.; number of employees and their salaries; fixed costs, turnover of ICRISAT crops, and total turnover, business problems, losses, risks, etc. The number of traders interviewed varied from market to market. The number of traders interviewed in Andhra Pradesh markets was 34, in Madhya Pradesh 14, in Maharashtra 20, in Rajasthan 21, in Gujarat 13, in Karnataka 12, and in Uttar Pradesh 26.

Farmers: Farmers who came to these markets to sell their products were selected randomly and interviewed. The number of farmers interviewed was: Andhra Pradesh, 51; Madhya Pradesh, 24; Maharashtra, 31; Rajasthan, 27; Gujarat, 15; Karnataka, 18; and Uttar Pradesh 38. The information collected from farmers was on distance of their home from the market; literacy level; family size; dietary habits; frequency of visits per year; mode of travel; costs of travel; preceding years' cropping pattern, pattern of disposal of farm-produced commodities, utilization of money from sales of produce; market information; opinion on the market committee, traders, payments, etc.

3. DISCUSSION

3.1 Description of Existing Market Channels:

9. Traders who were dealing mainly in one or more of ICRISAT crops were selected with the help of market secretary.

3.1.1 Administration of agricultural marketing and marketing acts in India

In India, decisions regarding the organization of agricultural marketing are made at the state level, keeping in view the recommendation of the Central Government. In Andhra Pradesh, Karnataka, and Uttar Pradesh, matters pertaining to agricultural marketing are handled by an independent department, but in Madhya Pradesh and Rajasthan these are handled by the Department of Agriculture. In Maharashtra and Gujarat agricultural marketing is placed under the cooperative department.

In 1928, the Royal Commission on Agriculture recommended the regulation of marketing of farm products in India. At that time only a few provinces and states adopted the recommendations -- Hyderabad State in 1930, the Central Provinces (now Madhya Pradesh in 1932), Madras State in 1933, and Bombay State in 1939. After independence, the existing market Acts were only slightly modified and states without marketing acts drew up new ones closely in line with the old recommendations of the Royal Commission on Agriculture. Most of the states passed their marketing acts during the 1960s, except Madhya Pradesh which enacted it only in 1972. A market act embodies various rules, regulations, and bye-laws that are to be enforced by a market committee in a market area. Market acts vary somewhat from state to state, however, they all aim to organize the sale and purchase of agricultural produce in such a way that a common place is established where buyers and sellers can directly meet and transact business. The produce bought to such a market is sold in open competition, correct weights are ensured, and fixed market charges are paid. An area is notified for the purpose of the Act and the products that are included are also notified for each market area. In principle, all sales

and purchases of notified agricultural products coming from the notified market area have to take place only within the notified market yard and not outside. However, nobody expects that products from a particular market are exclusively sold only at the respective market yard. Thus the market area exists for administrative purposes, e.g. the constituting of the market committee. However the stipulation that sales be conducted only within the notified market yard is generally followed quite strictly in most states. For enforcing discipline among the trading community and other functionaries, a licensing system has been introduced.

The government constitutes a market committee that manages and regulates each market by enforcing provisions of the Market Act and its rules and bye-laws. The market committee is a corporate body and has the representatives of producers, traders, cooperatives, local bodies etc. The Act has specific provisions to safeguard the interests of producer-sellers by giving them more than 50% representation on the market committee. The strength of the market committee varies from state to state. In Andhra Pradesh and Madhya Pradesh it varies from market to market also. In Andhra Pradesh the minimum number is 12 committee members and the maximum is 16. In Madhya Pradesh it is from 8 to 20 members. For other states the strength is fixed, that is, for Maharashtra 18, Rajasthan 15, Gujarat 17, and Karnataka 15 members.

In Uttar Pradesh, market committees have not yet been constituted through elections. In this state, sometimes the market committee members and its Chairman were nominated by the Government. Later the government dissolves these market committees. Now the markets are administered by

government employees, in most cases by the district magistrate or a sub-divisional magistrate as the case may be. In other states, the market committee is constituted by elected members representing farmers (producer-seller), traders, local institutions, and the government. These members elect from among themselves a Chairman and a Vice-Chairman. As more than 50% of market committee is represented by farmers, generally the chairman of the market committee is a farmer. In some Market Acts (Andhra Pradesh, Madhya Pradesh, and Karnataka), it is even stipulated that the chairman must be a farmer, whereas other acts leave the decision to the Market Committee. The vice-chairman of the committee can be elected from among other members. The term of the market committees varies from state to state. It is 3 years for Andhra Pradesh, Maharashtra, and Rajasthan; four years for Gujarat and Karnataka, and 5 years for Madhya Pradesh.

The secretary of a market committee is also the executive officer of the concerned market. All the employees of the market are directly responsible to him and he is responsible to the market committee. In this capacity, the market secretary plays a crucial role in the proper functioning of a market, and the degree to which he remains independent of the political forces behind the market committee measurably influences the performance of the market. In Andhra Pradesh, Rajasthan, Karnataka and Uttar Pradesh, the secretary is a government official on deputation. In these states the market committees do not have any power to appoint a particular person as secretary. The government appoints and transfers these secretaries from one market to another once in three years or so. In other states the secretary is appointed by the market committee. The tenure of the

secretary depends on his performance. In this case the secretary must oblige the market committee in all matters. In other words, he cannot easily take independent decisions or act independently. In all states the salaries of the secretary and his staff are paid by the market committee.

Only licensed traders are allowed to operate in the market. The market committee issues licences to eligible traders, weighmen, hamali (laborers), etc. Market fee, which is the main source of income to the market committee, is fixed by the State government. Regardless of who pays this fee (the seller or the buyer), it constitutes part of the margin between producer price and retail price. However, the Market Acts of all states, except Gujarat, emphasize that the fee is to be paid by the traders. In Gujarat the market fee is paid by the farmer. The fee is levied as a proportion of the value of the produce; this proportion varies from state to state. It is 0.5% in Andhra Pradesh and Madhya Pradesh; 1% in Rajasthan, Karnataka, and Uttar Pradesh; 0.3% in Maharashtra and 0.1% in Gujarat.

3.1.2 Methods of sales

In the markets surveyed, three basic systems of sale exist:

- (i) the open auction system (most commonly followed),
- (ii) the tender system (followed mostly in Karnataka), and
- (iii) the mutual agreement (followed in a few markets of Uttar Pradesh).

(i) Open auction system: Sellers (i.e., generally farmers or itinerant traders) bring their produce to a particular commission agent in the market-yard and keep it in front of or inside his shop; the commission agent does the auctioning. The produce is sold to the highest bidder. In some markets an auctioneer who belongs to the staff of the market committee conducts the

auctioning of the produce. This open auction system is expected to ensure fair dealings to all parties and to secure a premium for superior quality produce due to the open competition among traders. However, its drawback is that it is time-consuming for the traders, and after the bidding is speeded up by widening the increments between bids, e.g., in some markets for some products the bids may increase by 5 paise while in other markets or for other products the increments may be 50 paise, which allows price to be determined more rapidly but less accurately. Another way of speeding up the auctioning process is to lump up several lots of similar quality into one lot for the purpose of bidding but to pay the farmers according to their relative shares in such lumped lots. The timing and sequence of auctioning of different products differ from market to market. Generally, large markets start auctioning earlier than smaller ones. Traders in small markets wait for information from the big markets to guide them in their price formation.

(ii) Tender system: When the produce is brought for sale to the commission agent's shop, each individual producer's lot is assigned a lot number. The goods are exhibited for sale in an arranged manner. Each buyer writes on a "bid slip" (blank forms of which are supplied by the market committee) the price he is prepared to pay for the lots of his interest. The properly filled in bid slips including the name of the purchaser, date, and time are deposited in sealed boxes, located in a central place of the market. The bid slips are taken out from the box at a specified time and are arranged in serial order as per the time of deposit and then compared lot by lot and each lot is given to the highest bidder with the consent of the seller. If two

or more bidders offer the same highest price the one who deposited his offer first gets the lot. This system does save traders time but the competition is probably not as perfect as in the case of open auction, because it leaves more room for collusion. Therefore, a detailed comparative study of the two systems is needed.

(iii) Mutual agreement: Under this system, the individual buyers may come any time during the transaction hours and make their individual offers for the produce exhibited at the commission agents' shop. These offers may or may not be acceptable to the seller. His final decision is conveyed only towards the close of the day. In this system the scope for competition is limited.

Under all the above systems, commission agents are entitled to charge from the seller a percentage of the value of the product as commission for their services. The commission fee is set by the market committee and generally amounts to 2.5%. In Rajasthan it is paid by the purchaser.

3.1.3 Description of the selected markets

Details of market performance were collected for the 29 markets selected for this study. The number of markets to be surveyed in every SAT state was so determined as to represent the proportional production of five ICRI SAT crops for every state in the total production of these crops in all SAT states. Individual markets were selected randomly, which amounted to drawing a sample of around 2.5% of the total number of regulated markets in every state. Uttar Pradesh had the maximum number of markets surveyed (7 or 2.8% of its total number of 248 regulated markets). In Madhya Pradesh the total number of regulated markets is 243, but only about two-thirds of these are in SAT areas and four of these (about 2.5%) were surveyed. The

total number of regulated markets in Maharashtra is 218, and five of these (2.3%) were surveyed. The minimum number of markets surveyed was three per state and this amounted to 2.6% of 116 regulated markets in Andhra Pradesh, 2.8% of 106 in Karnataka, and 2.5% of 121 in Gujarat.

Some particulars of these selected markets are given in Table 2. These markets differ in age. The oldest, Ujjain in Madhya Pradesh, was regulated in 1930 and the youngest, Jafargunj in Uttar Pradesh was regulated in 1973. A state-wise comparison of the selected markets indicates that that Andhra Pradesh markets are the oldest, having been regulated in 1930s, while markets of Uttar Pradesh and Rajasthan were regulated only during the 1960s and 1970s. The remaining states' markets were regulated in the 1950s and 1960s.

Among the selected markets, Indore (Madhya Pradesh) was the biggest market in terms of total annual arrivals in 1974-75. It received 184 thousand tons of agricultural commodities; about 46% of arrivals were that of ICRISAT's mandate crops. The smallest market was Panwari (Uttar Pradesh) where arrivals totaled only 70 tons of all commodities out of which 74% were ICRISAT's mandate crops.

Among all markets only two small ones, namely Nasruallagunj (Madhya Pradesh) and Panwari (Uttar Pradesh) did not have any commission agents. The market committee functioned also as commission agent, but without charging any commission. This way they feel that farmers get more returns. However, in big markets it may not be always possible for market committee to function as commission agents. Patan (Gujarat) had the maximum number

Table 2. Particulars of the selected markets 1974-75

Market	Regulated in:	Total market turnover ('000 tons)	Share of ICRISAT crops (%)	No. of commission agents	No. of wholesale traders	No. of tele-phones	No. of market secretaries over last 10 years
Warangal	1933	116	38	120	392	500	8
Khammam	1937	35	61	130	139	250	6
Tandur	1949	21	65	85	85	130	10
Indore	1953	184	46	160	504	680	6
Ujjain	1930	62	72	63	171	210	1
Khandwa	1964	34	21	77	135	200	2
Nusrullaganj	1968	7	42	-	14	-	1
Poona	1959	136	34	159	443	650	1
Latur	1931	84	51	127	326	400	2
Malkapur	1917	38	17	24	47	70	2
Malegaon	1949	24	38	19	86	100	1
Dondiacha	1939	20	39	52	76	50	3
Ganganagar	1964	79	17	152	253	450	6
Nadbai	1965	14	53	53	69	100	6
Hindone	1965	14	63	88	118	85	8
Begun	1970	6	37	37	60	26	5
Patan	1951	52	7	176	337	300	5
Santrampur	1952	7	32	8	91	30	1
Damnagar	1954	0.1	49	9	20	10	-
Begalkot	1946	84	73	109	161	60	9
Gadag	1943	45	57	103	293	150	4
Chitradurga	1951	28	42	77	84	15	4
Shahabad	1972	33	33	22	82	15	4
Ujhani	1967	30	54	13	54	35	5
Jafarganj	1973	20	25	5	22	-	4
Orai	1967	16	21	102	82	5	5
Bendki	1968	13	36	10	53	20	7
Jarar	1969	8	29	26	32	16	2
Panwari	1971	0.07	74	-	5	-	4

: 15 :

continued...

Table 2 continued ...

Market	Method of sale	Starting time (hr)	Conducted by	Conducted on	Grading
Warangal	Open auction	0800	Commission agent	Commoditywise on open heaps	A
Khammam	Open auction	1000	Commission agent	Simultaneous and on sample	B
Tandur	Open auction	1000	Commission agent	Simultaneous and on open heaps	B+
Indore	Open auction	0830	Commission agent	Cartwise	B
Ujjain	Open auction	0800	Commission agent	Cartwise	B
Khandwa	Open auction	0800	Market committee	Open heaps	C+
Nasrullaganj	Open auction	1000	Market committee	Cartwise	D
Poona	Open auction	1030	Commission agent	Commoditywise on open heaps	C+
Latur	Open auction	1000	Commission agent	Commoditywise on open heaps	B
Malkapur	Open auction	1100	Commission agent	Commoditywise on open heaps	C
Malegaon	Open auction	1000	Commission agent	Commoditywise on open heaps	B
Dondiacha	Open auction	0900	Commission agent	Cartwise and commoditywise	B
Ganganagar	Open auction	0830	Commission agent	Simultaneous on open heaps	B
Nadbai	Open auction	1000	Market committee	Simultaneous on open heaps	B+
Hindone	Open auction	1000	Market committee	Simultaneous on open heaps	B+
Begun	Open auction	1100	Commission agent	Simultaneous on open heaps	B
Patan	Open auction	0830	Market committee	Commoditywise and simultaneous on open heaps	A+
Santrampur	Open auction	1000	Market committee	Simultaneous on open heaps	C
Damngar	Open auction	1000	Commission agent	Simultaneous on open heaps	D
Bagalkot	Open auction and tender	1030	Commission agent & M. committee	Tenders for groundnuts, others on samples simultaneously	C+
Gadag	Tender	0900	Market committee	Simultaneous	B
Chitradurga	Tender	1100	Market committee	Simultaneous	B+
Shahabad	Mutual agreement	1000	---	---	C+
Ujhani	Mutual agreement	1000	---	---	B
Jafarganj	Mutual agreement	1000	---	---	C
Orai	Open auction	0830	Market committee	Simultaneous on open heaps	B+
Bendki	Open auction	0900	Market committee	Simultaneous on open heaps	C+
Jarar	Open auction	0900	Market committee	Simultaneous on open heaps	C
Panwari	Open auction	0900	Market committee	Simultaneous on open heaps	D

(176) of commission agents. The maximum number of 504 wholesale traders was found in Indore market (Madhya Pradesh) and a minimum of 5 traders operated in Panwari market (Uttar Pradesh).

An important means of communication for traders is the telephone. The largest number of telephones (680) was found in Indore market while only three markets Nasruallagunj (Madhya Pradesh), and Jafargunj, Panwari (Uttar Pradesh) did not have telephones.

The crucial role that market secretaries play in a well performing market has been emphasized above. It is possible that a market secretary who holds office in the same market for a long time may gradually become ineffective. The simplest way, therefore, to quantify the impact of the market secretary was to enquire how frequently market secretaries had changed over a period of 10 years. In Tandur market (Andhra Pradesh), the market secretary changed 10 times since 1966. In other markets such as in Ujjain, Nasruallagunj, Poona, Malkapur, the same market secretaries held office since 1966 to the date of this study.

In all the selected markets of Andhra Pradesh, Madhya Pradesh, and Gujarat, market committees owned the marketyards. In Uttar Pradesh, except the recently established Orai market, market committees do not have their own yard and transactions take place on private lands, sometimes scattered throughout the town. In Maharashtra, except for Latur, market committees owned their marketyards. In Karnataka only Chitradurga had its own yard. In Rajasthan the markets surveyed were operating on private land but unlike Uttar Pradesh trading in scattered places was not allowed.

The three methods of sale described earlier were in practice in the

selected markets, but the most common method of sale was by open auction system (23 markets out of the 29 selected were following this method). Only three markets in Karnataka followed the tender system and only three markets in Uttar Pradesh followed the mutual agreement system of sale. The auction may commence between 0800 hr to 1100 hr and mostly large markets start auctioning earlier than small ones. Generally, the small markets are dependent on large markets for the price formation and hence they start late and large markets become price leaders. In most of the selected markets the commission agents conduct the auction, though in few markets it is done by the market committee itself. In most of the markets the auction is conducted at commission agents' shops (on rotation basis) on open heaps of different commodities. However, in some markets of Madhya Pradesh and Maharashtra the auction is conducted on produce loaded in bullock carts which are assembled at a central place.

From the point of view of the market facilities and the infrastructure available in the selected markets, Patan market of Gujarat stood first, followed by Warangal (Andhra Pradesh) and Orai (Uttar Pradesh). Panwari market of Uttar Pradesh stood last preceded by Damnagar (Gujarat) and Nasrullaganj (Madhya Pradesh). From the above it can be concluded that Patan (Gujarat) and Warangal (Andhra Pradesh) markets are functioning better compared to others. In Warangal the auction is done by commission agents whereas in Patan it is being done by market committee staff. Auctioning is most efficient in Patan as compared to other markets. In this market the auction is conducted commodity-wise but simultaneously. Different auctioneers start at different places for different commodities at the same time and follow a certain sequence every day. Participation of traders depends upon

their interest in a particular commodity. If a trader is interested in different commodities he can authorize one of his staff to participate in other commodity auctions.

As already stated, among the selected markets Patan has good market facilities and infrastructure as compared to others.

3.1.4 Incomes and expenditures of selected markets

Generally bigger markets get more income because of their larger turnover. The expenditure of a market is to be met out of its income. The expenditure includes salaries of the staff, developmental activities in the yard, office maintenance, etc. The government grades markets on the basis of their income. But the proper utilization of the income is ignored by most of the market committees as also by the government. Bigger markets whose income is more are also supposed to spend more. So, the ability to generate higher income and using it for developmental activities should be the criteria for judging a particular market, rather than considering the income alone.

Incomes and expenditures of selected markets are given in Table 3. In 1974-75, Ganganagar market of Rajasthan earned the maximum annual income and also spent more compared to other selected markets. The minimum income was received by Panwari market of Uttar Pradesh compared to other markets. But it has also spent most of the income. The Gadag market of Karnataka recorded maximum surplus and the minimum surplus was recorded by Panwari market. The ratio of total income to total expenditure, worked out for those years for which data were available, indicates that in none of the

Table 3. Incomes and expenditures (in '000 Rs) of selected markets from 1970-71 to 1974-75

Market	1970-71		1971-72		1972-73		1973-74		1974-75		Total* income	Total* expenditure	Total income/total expenditure
	In- come	Expen- diture											
Warangal	NA	NA	NA	NA	460	328	861	521	1371	552	2692	1401	1.92
Khammam	NA	NA	NA	NA	205	134	307	262	587	326	1099	722	1.52
Tandur	NA	NA	NA	NA	81	112	116	141	338	196	535	449	1.19
Poona	NA	NA	486	103	871	116	794	171	800	200	2951	487	6.06
Latur	NA	NA	NA	NA	NA	NA	NA	NA	587	265	587	265	2.21
Malkapur	NA	NA	NA	NA	NA	NA	NA	NA	239	144	239	144	1.66
Malegaon	NA	NA	NA	NA	NA	NA	NA	NA	233	182	233	182	1.28
Dondiacha	NA	NA	NA	NA	NA	NA	NA	NA	221	206	221	206	1.07
Ganganagar	314	95	415	94	431	408	1525	175	2346	1635	5031	2407	2.09
Nadbai	64	39	84	34	133	56	308	72	348	115	937	316	2.97
Hindone	78	71	110	92	110	108	205	98	460	107	953	476	2.02
Begun	1	1	31	24	34	27	65	20	149	47	280	119	2.35
Patan	192	149	200	171	240	219	349	250	380	308	1361	1097	1.24
Santrampur	33	26	27	25	33	26	51	32	61	43	205	152	1.35
Damnagar	11	7	13	10	14	11	21	16	19	15	78	59	1.32
Bagalkot	275	190	299	240	347	250	1022	416	1510	480	3453	1576	2.19
Gadag	373	212	359	319	437	368	1306	540	1902	683	4377	2122	2.06
Chitradurga	150	122	150	123	208	118	352	224	661	445	1521	1032	1.47
Shahabad	NA	NA	7	NA	100	24	341	58	355	106	803	188	4.27
Ujhani	153	61	162	69	203	98	440	87	455	165	1413	480	2.94
Jafarganj	NA	NA	NA	NA	14	NA	197	33	340	68	551	101	5.46
Orai	131	96	132	81	294	229	432	125	556	217	1545	748	2.06
Bendki	50	38	102	56	392	77	232	89	262	129	1038	389	2.67
Jarar	30	20	22	21	31	23	45	27	138	43	266	134	1.98
Panwari	NA	NA	14	4	22	21	19	22	18	16	73	63	1.16

*For those years for which data are available

NA = Not available

markets expenditure exceeded income. Comparison of individual markets showed that mostly the ratio was more with larger markets, for example, the ratio was the highest (6) for Poona market. It means Poona market had an income six times more than its expenditure. This indicates that Poona market is not spending its income for developmental activities. This is true to some extent because till recently Poona market was operating in the city, i.e., in the traders localities and it could not take up any developmental activities there. But a separate marketyard a little away from the city (traders localities) was under construction during the survey and it is possible that by now the trade may have shifted there. So, now the situation may be different. Similar was the case with Jafargunj market of Uttar Pradesh. The income of Shahabad market of Uttar Pradesh was four times its expenditure. This market was not spending its income on developmental activities of the marketyard, so the facilities were poor in this market. Similar was the case with Ujhani and Bendki markets of Uttar Pradesh whose income was three times their expenditure. For all other markets the income-expenditure ratio was not high: it varied from 1 to 2. It indicates that most of the market were spending relatively more, for instance, Dondiacha market of Maharashtra, Panwari market of Uttar Pradesh, Tandur market of Andhra Pradesh, Patan market of Gujarat, Malegaon market of Maharashtra were spending almost all of their income.

Among different states, markets of Gujarat were spending most of their their income compared to all other states. Their income-expenditure ratio varied from 1.2 to 1.3. Next to Gujarat, Andhra Pradesh markets spent more and their ratio varied from 1.2 to 2.0. Uttar Pradesh markets were spending less of their income followed by Rajasthan, Karnataka, and Maharashtra.

It is concluded from the above discussion on income and expenditure of the selected markets that most of the markets were not utilizing their income. Hence it is suggested that these markets should spend their income on developmental activities. The markets which do not have scope for further development in existing yards should utilize their surplus money in developing subyards.

3.1.5 Observations made in the selected markets (state-wise)

3.1.5.1 Andhra Pradesh: Regulation of agricultural markets in Andhra Pradesh has a long history. The markets regulated in the 1930s were: Warangal (1937) and Khammam (1937). Tandur market was regulated in 1949. Warangal is an independent market, whereas Khammam and Tandur are dependent for their price formation after Warangal and Hyderabad. All these three selected markets are primary and operate daily; they have good access to roads and railways. Warangal ranks first followed by Tandur and Khammam regarding market location, facilities, and functioning.

With regard to ICRISAT crops, Tandur market is very famous for its high quality pigeonpeas and of total arrivals to this market, 39% were pigeonpeas. Khammam is also well known for pigeonpeas which amount to about 25% of total arrivals to this market. Warangal is an important market for groundnuts (27% of total arrivals). Sorghum comes to all of these markets and represents 7% of total arrivals in Warangal, 13% in Khammam and 5% in Tandur. Arrivals of pearl millets and chickpeas in these markets are negligible. All the three market committees have their own yard. In Warangal and Tandur, traders' shops are situated around the market yard

whereas in Khammam the shops are situated at some distance from the yard and traders come to the marketyard every day for purchasing. In Warangal, auctioning starts at 8 a.m. and it is carried out commodity-wise on the basis of samples (to save time) for food grains and pulses; groundnuts, chillies, and maize are auctioned as open heaps. Auctions on a sample basis takes place in front of the market committee office which is centrally located. Auction of heaps are carried out in the yard. In Khammam and Tandur auction starts at 10 a.m. over open heaps. In Khammam, before start of the auction, adjacent heaps belonging to the same commission agent are graded and lumped together by market committee staff. The commission agent and the farmer select one heap -- generally of the best quality -- for representative auctioning, and jointly assign price differences to other heaps according to the difference in qualities. In other words, the price difference between the selected heap and other heaps are assigned by mutual agreement between the concerned producer seller and the commission agent. Then the auction is performed over the selected heap, with the buyer bidding at once for the entire bunch of heaps with their different qualities. This way auctioning could be carried out speedily and under the given conditions this procedure maximized the number of transactions per unit of time. However, this approach involves an element of mutual agreement (over price differences) and it is not as competitive as would be the auctioning of every lot separately. In Tandur, unlike in the other two markets, the bidding took place at the commission agents' shops on a rotation basis, i.e., the auction started everyday at a different shop so that everyone had an equal chance of being at the start or the end of the auction which

may or may not be favorable when news about price developments elsewhere may shift levels during the course of the day.

About 80 to 90% of the produce arrived by bullock carts in these markets and the remaining 10 to 20% by tractors, trucks, and bicycles. A major portion of sorghum and pigeonpea from these markets was being shipped to consumption centers relatively far away. Groundnuts were mostly processed locally and the oil exported to other places. There were no restrictions on the movement of commodities.

3.1.5.2 Madhya Pradesh: All the five ICRISAT crops were marketed in Madhya Pradesh markets; they accounted for 21 to 72% of the total arrivals in different markets. Except Indore, all other markets are primary markets and operate daily. Indore is a regular secondary market and products from different primary markets arrive at this market. All the market committees have their own yards. A large proportion of the produce from Indore, Khandwa, and Ujjain markets goes to far away places whereas all of the produce of Nasruallagunj market remains in Madhya Pradesh. Markets of Khandwa and Nasruallagunj have farm service centers through which the farmers can purchase different farm inputs on a "no-profit-no-loss basis". This facility does not exist in any of the other markets. In Indore market, only those farmers who were successful in crop competitions (highest yield) were taken as members of the market committee. About 80 to 95% of the produce arrived by bullock carts and the remaining by tractors and trucks, except in Indore where the reverse was true.

The traders in Madhya Pradesh markets complained about the levy on wheat, which existed at the time of the survey. Any wholesale trader

dealing in wheat had to pay 20 quintals of wheat as levy per year to the government. The export of sorghum and chickpea was restricted to within this state and was linked with an additional levy of wheat. If a trader wanted to export sorghum and chickpea he was required to deliver to the government 20 quintals of wheat to export 100 quintals of sorghum or chickpea. There was no restriction on the movements of groundnut and groundnut oil. But the movement of groundnut cake out of Madhya Pradesh was restricted. There is a great demand for groundnut cake outside India and traders of other states (mainly Gujarat) export groundnut cake to other countries. Thus, traders of other states (mainly Gujarat) were purchasing groundnuts from Madhya Pradesh traders and after processing they exported groundnut cake. This was a disincentive for traders dealing in groundnut in Madhya Pradesh. Hence the government should lift restrictions on movement of groundnut cake from Madhya Pradesh to other states.

All markets except Nasruallagunj were found to be well connected by rail and roads. Among the selected markets of Madhya Pradesh, Ujjain ranks first, followed by Indore, Khandwa, and Nasruallagunj regarding market location, facilities, and functioning, etc.

3.1.5.3 Maharashtra: All the selected markets in Maharashtra were found to be well connected by road and rail except for Malegaon which is not connected by rail. All markets except Latur had their own market yards. In all the markets of Maharashtra, traders were located in the town and not at the yard, and came to the yard for transactions. All markets except Poona were primary markets where 75 to 95% of the arrivals were brought in

by bullock carts and the remaining by tractors and trucks. In Poona market about 5% of the produce arrived by bullock carts, 50% by trucks, 5% by tractors, and 40% by rail. Among the markets in Maharashtra, Latur market had the highest proportion of ICRISAT crops; more than 50% of arrivals to this market were of the five ICRISAT crops.

At the time of the survey there was a restriction on the movement of sorghum out of Maharashtra markets. This restriction on sorghum trade affected traders dealing with this crop, because they could not sell sorghum to traders outside the state and hence they were doing less business on that. Monopoly procurement of cotton is also common in this state. Now food grains are not covered under monopoly procurement. But for sometime in the past (1970-72) the sorghum was under monopoly procurement. This also adversely affects the trade and leads to smuggling, especially in border areas.

In all markets, the market committees appointed the secretary. If the secretary wanted to continue in a particular market, he must work as per the wishes of chairman and members of the market committee. He could not use his powers and talent against the will of the market committee even to improve the conditions of marketing. In Maharashtra, among the selected markets, Malegaon ranks first followed by Dondiacha, Latur, Poona, and Malkapur as regards location, facilities, working conditions, etc.

In Maharashtra markets, market committees deducted 40% of the sales proceeds of each farmers towards dues of cooperative societies without ensuring whether the farmer owed money to cooperative societies or not. If the farmer did not have any dues to the cooperative society he was supposed to obtain a certificate to that effect from the society and carry

it along with him and produce it before the marketing committee. In some markets like Malegaon and Dondiacha, the government has started a scheme of forced selling of post office small saving certificates to farmers out of their sale proceeds. Though the intention of the government is to strengthen the cooperative movement, there are many formalities and farmers, who are mostly uneducated, resent these interferences. It was reported that when this system was introduced in Malegaon, a number of farmers stopped coming to this market altogether and some went to other nearby markets where this scheme was not in operation or to unregulated markets. If such programs are to gain acceptance with farmers, they should be educated about the schemes in a simple manner. It is not known how many farmers do not attend markets at all for fear of interference and are thereby forced to organize their farm enterprise without making use of their comparative advantage but just to satisfy home consumption requirements. The costs of such strategies in terms of depressing aggregate productivity are considerable (see von Oppen 1978b) and this may well explain part of the slow growth of agriculture in this state.

3.1.5.4 Rajasthan: Among the four markets selected in Rajasthan, Nadbai and Hindone are strong representatives for ICRISAT crops, while Ganganagar and Begun are less so. None of these market committees had their own yards. However, all were in the process of establishing their own yards. Even though on private land, the transactions took place well within the notified marketyard area. The existing yard of Hindone was compact and well laid out. In all markets except Begun, traders and commission agents' shops were located adjacent to the trade area. All of these markets are primary markets and are

well connected by both road and rail except for Begun which is not connected by rail. About 75% of the produce was brought to these markets by bullock carts, 15% by donkeys, camels, camel carts, and the remaining 10% by trucks and tractors. Among selected markets of Rajasthan, Hindone ranks first followed by Nadbai, Ganganagar, and Begun in terms of facilities, location, functioning, etc.

In Rajasthan at the time of survey, there was no restriction on the movement of commodities except for wheat. The levy on wheat was lifted in 1974-75, but export of wheat from Rajasthan was not allowed. Such a restriction badly affects the trade. Although in short run this strategy increases the quantities procured by the government in the long run this may reduce the area under wheat, leading to a decline in its total production.

3.1.5.5 Gujarat: Among the three selected markets of Gujarat, Patan market was the representative for ICRISAT crops. Though all these markets are primary markets, only Patan market operated daily. The other two are seasonal markets. These markets have their own yard, but only at Patan traders shops are located in the yard. Except Santrampur, the other two are connected by both road and rail. In Patan market, different auctioneers are appointed for different commodities and the auction for these takes place simultaneously, but every day starting from different points. In Patan market, about 40% of produce came by bullock carts, 40% by camel carts, 10% by camels, and 10% by tractors and trucks. In Darnagar, all produce came by bullock carts. In Santrampur, about 10% of the produce arrived by bullock and camel carts and the remaining 90% was brought on camel backs. Among the selected markets of Gujarat, Patan ranks first followed by Santrampur and Darnagar with regard to location, facilities, working conditions, etc.

In Gujarat as against other states, the market fee is collected from farmers but not from traders. The market fee is only 0.10% in this state which is the lowest of all states in India. Whoever pays the market fee, finally it is reflected in the price offered by the trader to the farmer. Some farmers who knew that the market fee in their neighboring states is paid by the traders felt that they were charged extra. On the other hand, even though the traders knew that the market fee is finally reflected in the price they offer to farmers, they prefer this procedure because they are free from the burden of submitting the market-fee receipts, maintaining records, etc. There were indications that the market committees wanted to increase the market fee. But that may create problems. At present, though some farmers feel that the market fee is an extra charge, the amount is small. Once the fee is increased, the farmers may resist paying it.

In Gujarat, one wholesaler cannot sell sorghum, pearl millets, and wheat to another wholesaler. He can only sell to the retailer who in turn sells to the consumer. This restriction adversely affects the trade on these crops. Mostly wholesalers are involved in interstate trade and once this type of restriction is imposed, they do not trade in those crops, which finally may affect production. There were also restrictions on the movement of paddy and groundnut oil out of Gujarat. As discussed earlier, this may also adversely affect the production of these crops.

3.1.5.6 Karnataka: Among the selected markets of Karnataka, Bagalkot was the most representative market for ICRISAT crops in comparison to Gadag and Chitradurga. In Bagalkot market, of total arrivals, 73% were ICRISAT crops.

All these are primary markets and are well connected by roads and rail. Except for Chitradurga, other market committees do not have their own market yards. In Gadag and Chitradurga, the tender system is used for all crops. In Bagalkot the tender system is used only for groundnuts and other crops are sold by open auction. In Gadag market, about 20 to 30% arrival was by bullock carts and the remaining 70 to 80% by tractors and trucks. In Bagalkot and Chitradurga markets half of the arrivals were by bullock carts and the remaining half by tractors and trucks. In terms of location, facilities, working, etc. Chitradurga market ranks first followed by Gadag and Bagalkot in Karnataka.

Commercial grading is done for groundnuts by graders who are market committee staff in these markets. The idea is to help both farmers and traders to obtain a higher price for better quality, but it was observed during the survey that traders did not follow the grading done by the graders. Traders used their own quality judgments. It was observed that some of the lots assigned higher grades by the graders were offered lower prices by the traders and some lots assigned lower grades were offered higher prices.

For the same commodity in the same market, different prices are quoted because of the quality difference. Before auctioning, tendering or bargaining, traders see the produce and grade them with their observations and experience and offer prices accordingly. Similarly, farmers also grade their products in their own way. But both farmers and traders may not follow scientific method of grading. Theoretically, grading helps both farmers and traders in obtaining a better price for better quality. The Government of India thought that due to lack of scientific grading, farmers did not get

appropriate prices for their products and traders exploited them. So to help the farmers the Government has established a grading unit, under which persons are trained for grading farm commodities and are designated as graders. These graders are posted in some market committees and are asked to do the grading. They grade certain commercial crops like groundnut in Karnataka. The graders work under the supervision of the market secretary. These graders with their formal training, grade the commodities before auction/tender starts. They go to each lot and after examining the lot and with their theoretical specifications they assign grades like 'A', 'B', 'C' and so on. As per this "commercial grading", lot with grade A is supposed to get higher price than lots with B and C grades. But after grading is over traders examine the lots and grade them in their own way and offer prices accordingly. It was clear from the observations made in this survey that grades given by formal graders and traders are not similar. Traders did not care for the grades allotted by the graders. Generally traders judged the quality better than formal graders, as they have been actively involved in their business for a long time.¹⁰ So the grading proposed by the Government, though theoretically sound, does not help the farmers practically.

3.1.5.7 Uttar Pradesh: Among the selected markets (all primary) of Uttar Pradesh, Panwari market traded ICRISAT crops to the extent of 75%. About 80% of the arrivals came to these markets by bullock carts. Of the remaining, 10% came by camels and horses, 5% by trucks and tractors and 5% by headloads

10. Analysis of market prices as a function of quality characteristics shows: e.g. for sorghum and pearl millet that apart from visible characteristics such as seed color and seed size also "hidden" characteristics such as swelling capacity, dry volume of grain and protein content are consistently related to price. This indicates the high degree of sophistication in the traditional market.

and cycles. Markets of Shahabad, Ujhani, Orai, and Jarar operate everyday whereas the others operate twice a week, i.e., Jafargunj (Sunday and Wednesday), Bendki (Tuesday and Friday) and Panwari (Monday and Thursday). Except for the market committee of Orai, the others do not have their own yards. Trade in these markets takes place on private yards and at the premises of traders' houses. Orai has its own marketyard. Recently the Uttar Pradesh Government started constructing new marketyards and Orai market was one that had been completed and had started trading in this newly constructed yard. At Jafargunj the market yard was on the way to completion. The Orai market had been functioning since 1968 but it started operating in the new yard from 1976 onwards. Ujhani market yard, though private, is systematic and well laid out for trading purpose. All these markets are connected by road, only Ujhani and Orai have access to rail.

Markets in Uttar Pradesh have less infrastructural facilities than other states. It appears that the government does not interfere much through its special schemes. Even though a Market Act has been passed, it is not implemented except in Orai market. Lack of infrastructure facilities in markets may adversely affect the trade of farm products. Hence it is suggested that the Government should continue its special schemes more actively in providing infrastructural facilities like roads, market yards, auction platforms, traders' shops, etc.

In most of the markets surveyed the sale was by open auction in which traders competed much among themselves. Markets in Andhra Pradesh have a long history regarding market regulation while in Uttar Pradesh market

regulation is recent. Markets selected in Uttar Pradesh are comparatively smaller than those in other states and those selected in Maharashtra are generally the largest. Regarding the proportion of arrivals of ICRISAT crops to total arrivals in the markets surveyed in different states, those in Karnataka had the highest (57%), followed by Andhra Pradesh (55%), Madhya Pradesh (45%), Rajasthan (42%), Uttar Pradesh (39%), and Maharashtra (36%). In Gujarat markets the arrivals of ICRISAT crops were the lowest (31%). As far as infrastructural facilities are concerned, selected markets in Andhra Pradesh, Gujarat, Maharashtra, Rajasthan and Madhya Pradesh had good facilities. Finally, it is concluded that based on their location, functioning, facilities, etc. the markets of Andhra Pradesh seemed to rate the highest, followed by those in Rajasthan, Gujarat, Maharashtra, Karnataka, Madhya Pradesh, and Uttar Pradesh.

3.1.6 Growth of regulated markets in selected states of India

The total number of regulated markets in selected states of India is given in Table 4. It is clear from the table that the number of regulated markets has considerably increased over the past decade in all states; most dramatically in Uttar Pradesh where prior to 1968-69 there were hardly any regulated markets. As the regulation of markets in Maharashtra started long ago there were more in 1967-68 compared to other states. However, the growth of regulated markets was greater in Andhra Pradesh compared to other states.

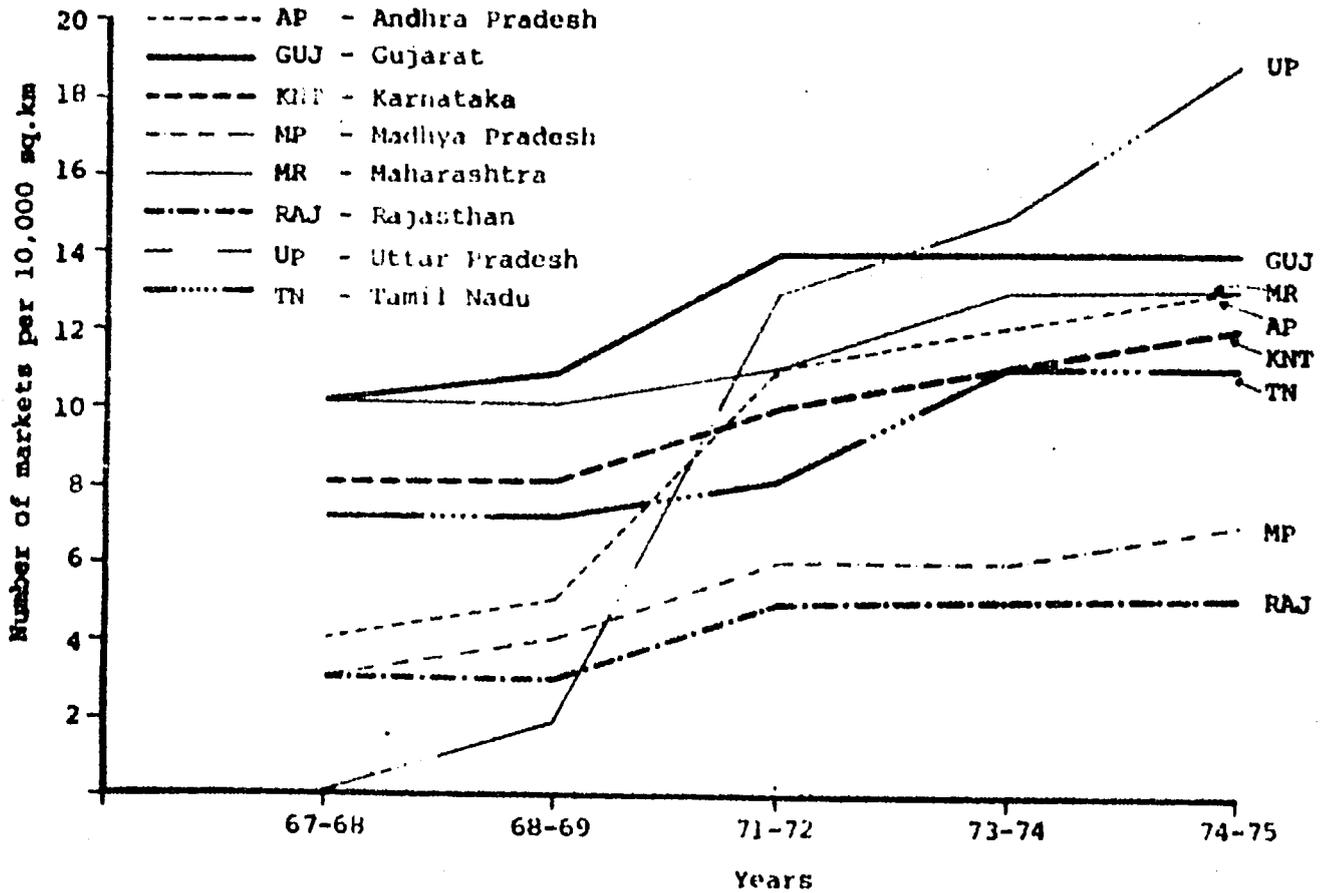
For comparison across states market densities were computed in number per geographical area (Fig 3). In 1974-75 density of markets varied between 19 per 10 000 sq km in Uttar Pradesh and 5 per 10 000 sq km in Rajasthan.

Table 4. Number of regulated markets in selected states of India

Year	Andhra Pradesh	Gujarat	Karnataka	Madhya Pradesh	Maharashtra	Rajasthan	Tamil Nadu	Uttar Pradesh
1967-68	123	177	153	141	301	88	88	7
1968-69	131	203	155	164	301	88	93	46
1971-72	296	264	198	264	343	162	106	395
1973-74	341	264	213	279	401	172	142	437
1974-75	361	265	222	288	410	179	148	573

Source: Indian Agriculture in Brief, Directorates of Economics and Statistics, New Delhi. Various issues.

Figure 3. Market densities in selected SAT states of India.



Over the years the densities increased in Uttar Pradesh compared to other states (Fig 3). But the markets of Uttar Pradesh were not functioning well. The official figure on the total number of markets in 1974-75 was 573, but it is doubtful whether all these 573 markets are functioning.

Regarding other states, market densities were higher for Gujarat, Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu. Market densities were low for Rajasthan and Madhya Pradesh. In Rajasthan and Madhya Pradesh, the growth of markets was stagnant from 1971-72. In the case of Gujarat, though the density was high compared to other states, the growth was stagnant from 1971-72. The growth steadily increased in case of Andhra Pradesh, Tamil Nadu, Maharashtra and Karnataka. It is seen from Fig 3 that on an average the density of regulated markets in most states in SAT India is around 12 to 14 markets per 10 000 sq km. Exceptions are the states of Rajasthan and Madhya Pradesh where because of lower density of population and agricultural production, also the densities in regulated markets per geographical area are only about half that of other states.

At a density of 13 markets per 10 000 sq km the average geographical area per market is around 770 km, implying a radius of about 16 km; and a density of 6 markets per 10 000 sq km implies a radius per average market area of about 23 km. These distances while actually varying considerably because of variation in actual distribution of marketyards, indicate that on average most farmers in SAT India are now probably having access to a regulated market within the distance of one day's travel by bullock cart, i.e. two days there and back.

3.2 Flows of ICRISAT Crops

3.2.1 Flows through different channels

Every crop produced by farmers finally reaches consumers whether they are rural or urban residents. But before reaching, the commodities generally pass through different channels. Some commodities may also change their form while passing through these channels. Sometimes some products may go directly from producer to consumer without passing through different channels. On the basis of discussions with market secretaries and using information collected from traders and farmers in the selected markets surveyed in different states, estimates of quantities passing through different channels were made for each crop separately and are presented in Figures 4 to 8. While estimating these quantities only markets specializing in that particular commodity were considered and averaged. For example, for sorghum (Fig 4), markets of Maharashtra and Andhra Pradesh were mainly considered, for pearl millets (Fig 5), those in Gujarat and Rajasthan, for pigeonpea (Fig 6) and chickpea (Fig 7) those of Madhya Pradesh, Uttar Pradesh and Rajasthan and for groundnut (Fig 8) those of Andhra Pradesh and Karnataka were considered. Pigeonpea, chickpea and groundnut generally move from primary wholesale markets to mills for processing. Since processing of these products was not considered in this survey, the channels through which the processed products move were not estimated.

The estimates of quantities flowing through different channels indicate that among ICRISAT crops, sorghum and pearl millet were produced mainly for home consumption, labor payment in kind and for seed purposes. In the case of pigeonpea and chickpea, farmers retained 55 to 65% of their

Figure 4. Estimates of flows of sorghum through different channels, 1974-75.

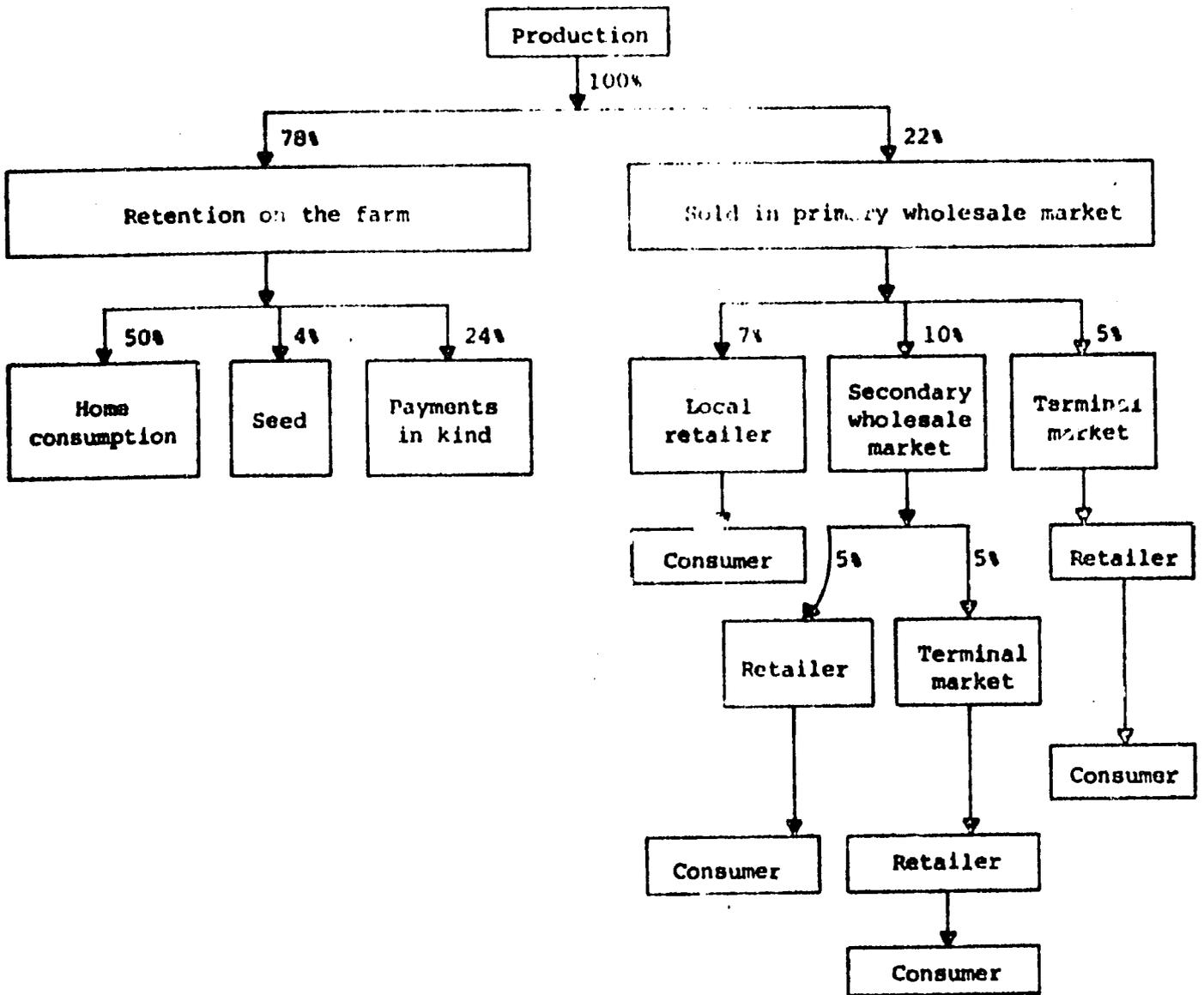
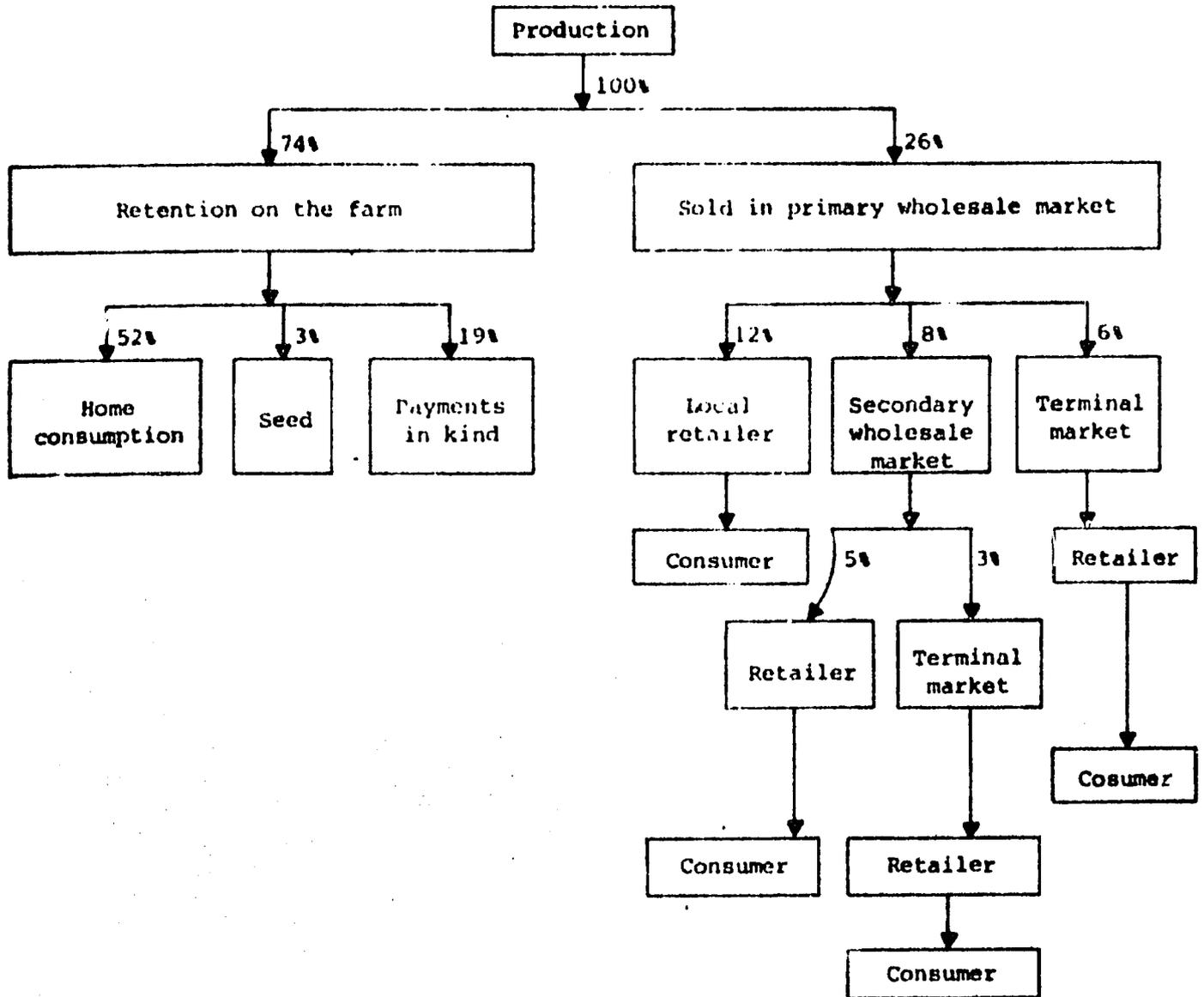


Figure 5. Estimates of flows of pearl millet through different channels, 1974-75.



Best Available Document

Figure 6. Estimates of flows of pigeonpea through different channels, 1974-75.

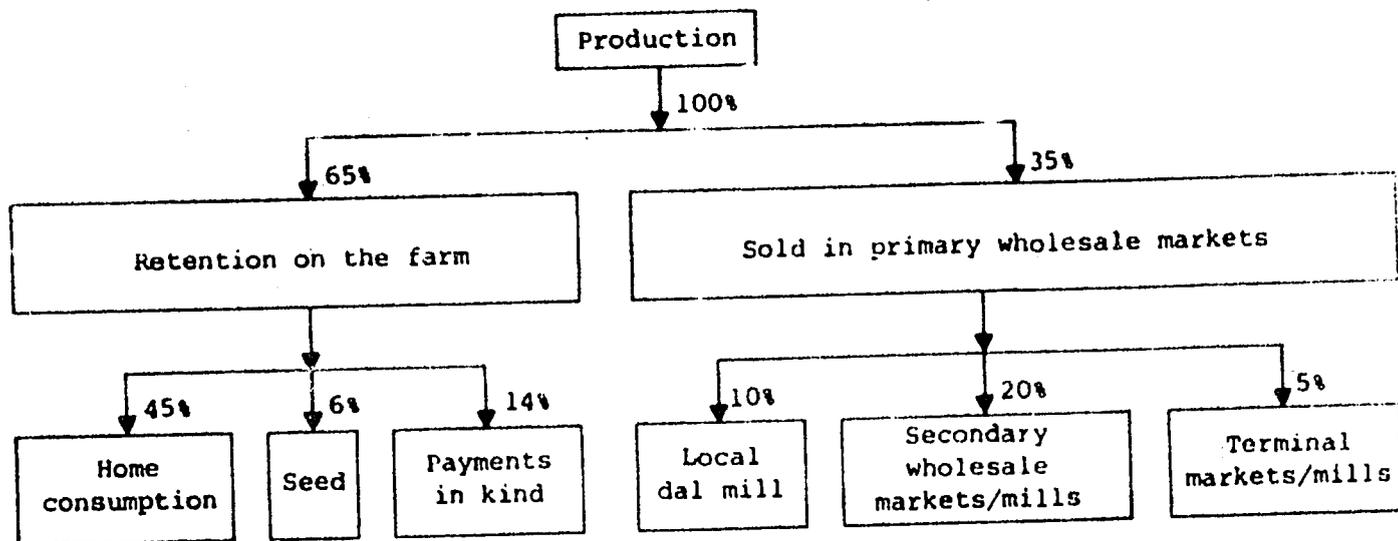


Figure 7. Estimates of flows of chickpea through different channels, 1974-75.

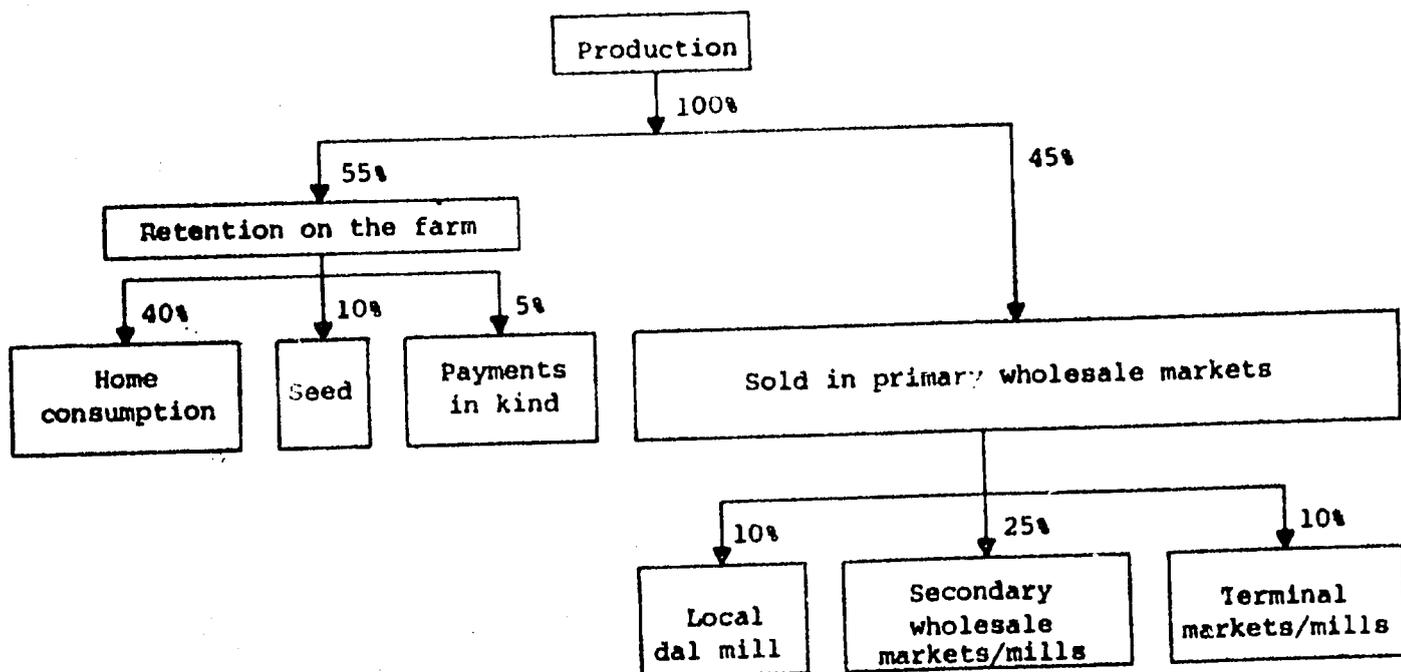
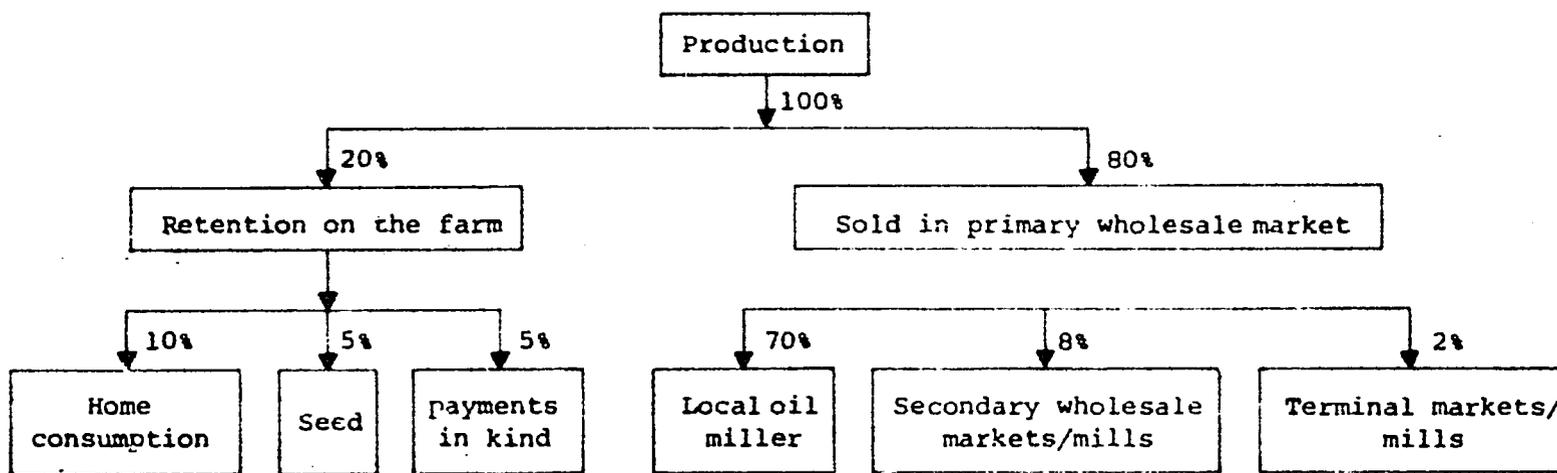


Figure 8. Estimates of flows of groundnut through different channels, 1974-75.



production on their farms. As compared to sorghum and pearl millet farmers sold more pigeonpea and chickpea. In case of groundnut farmers sold most of their produce (80%) because groundnuts require much processing which cannot easily be done in their homes. So farmers generally sell groundnut and purchase groundnut oil. Though pigeonpea and chickpea also need processing before consumption, farmers retained more pigeonpea and chickpea compared to groundnut because they can be processed in their homes, or in village mills.

As sorghum and pearl millet are grown mostly in SAT areas, people in these areas have a habit of consuming sorghum and pearl millet. They do not prefer to eat much rice or wheat even if it is available. Similarly, in other areas like coastal Andhra Pradesh, West Bengal, Kerala, etc. farmers mainly grow rice and this dominates their diets. So in SAT areas farmers grow sorghum and pearl millet mostly for home consumption and marketing of these crops is a secondary activity. But once they obtain higher yields of these crops, they may prefer to market more. Therefore, once the breeders develop high-yielding varieties of these crops, it can be expected that farmers would take more interest in marketing activities, and if the market conditions and facilities are good then farmers will allocate more area for these crops and the production of these can be expected to increase.

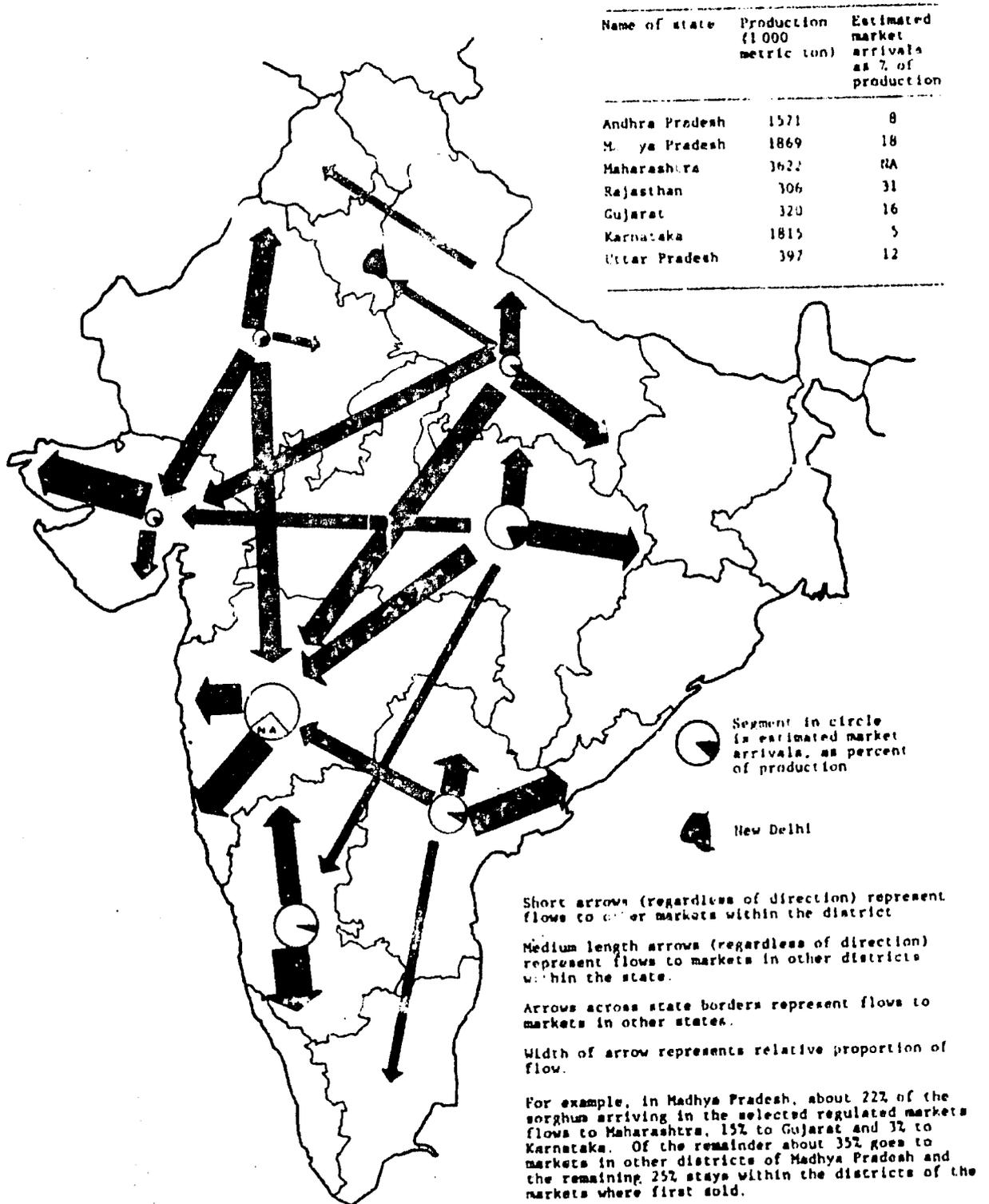
3.2.2 Outflows from the selected markets

Outflows of ICRISAT crops from each selected market were based on estimates given by traders in the surveyed markets. These estimates showed consistency and are shown in Figures 9 to 13. In these figures, flows were classified into three types. The first type are flows from selected markets to other

markets but within the district of the selected markets. This is depicted with the help of short arrows -- with directions being random. The second type are flows to markets of other districts but within the state and these flows are depicted by medium length arrows -- with directions being random. The third type are flows to markets of other states and these are shown as arrows across state borders in actual direction. The width of all these arrows represents relative proportion of flows. The descriptions of these flows are given below for the different crops.

3.2.2.1 Sorghum: These estimates of flows of sorghum (Fig 9) from selected markets of different states indicate that a large proportion of sorghum is traded within the state and even within the same districts where markets are located. Nevertheless, in some states, the remaining trade often involved long distance, inter-state transport of significant quantities of this commodity. For example from Rajasthan 60% of arrivals went to Maharashtra, and Gujarat; 45% of Uttar Pradesh arrivals to Maharashtra, Gujarat and the Punjab; 40% of Madhya Pradesh arrivals to Maharashtra, Gujarat, and Karnataka, 25% arrivals of Andhra Pradesh to Maharashtra and Tamil Nadu. Maharashtra, Gujarat, and Karnataka consume much of their sorghum and they do not export it to other states. Instead, they import considerable quantities from other states. Sorghum does not flow to the eastern region for want of consumer demand in those areas. Obviously, interregional trade in sorghum is concentrated within the SAT areas of India where sorghum is traditionally grown and consumed. In fact, Maharashtra, the major sorghum-producing state of India (production 4 million tons in 1974-75) turns out to be also the major importing state.

Figure 9. Production of sorghum, market arrivals as percent of production, and total flows (as percent of market arrivals) from selected food grain markets in selected states of India, 1974-75.



3.2.2.2 Pearl Millet: Similar to sorghum, the estimates of flows of pearl millets (Fig 10) from selected markets of different states indicate that a large proportion of pearl millets is traded within the same districts where the markets are located and other districts of the state. However, the trade of some markets often involves long distance and inter-state transport of pearl millet. For instance, 80% of Andhra Pradesh pearl millet arrivals move to the states of Maharashtra, Karnataka, and Tamil Nadu, 70% of the pearl millet production in Rajasthan to Maharashtra and Gujarat; 50% of Madhya Pradesh pearl millets to Gujarat; and 50% of Uttar Pradesh pearl millets to Maharashtra, Gujarat, Rajasthan, Tamil Nadu, and Delhi. Gujarat and Maharashtra consume relatively more pearl millets compared to other states and do not export it. On the other hand, pearl millets from other states flow mostly into these two states. Similar to sorghum, pearl millets do not flow to the eastern region for want of consumer demand in those areas. It is also clear, that interregional trade of pearl millets is also concentrated within the SAT areas of India, where pearl millet is traditionally grown and consumed. Gujarat and Maharashtra are major pearl millet producing states, each producing 0.6 million tonnes in a year (1974-75) and they also turn out to be the major importing states for pearl millets.

3.2.2.3 Pigeonpea: Unlike sorghum and pearl millet, the estimates of flows of pigeonpea (Fig 11) from selected regulated markets of different states indicate that a large proportion of pigeonpea is involved in long distance, inter-state movement. For example, from Rajasthan 90% and Maharashtra 70%

Figure 10. Production of pearl millet and total flows, as percent of market arrivals, from selected food grain markets in selected states of India, 1974-1975.

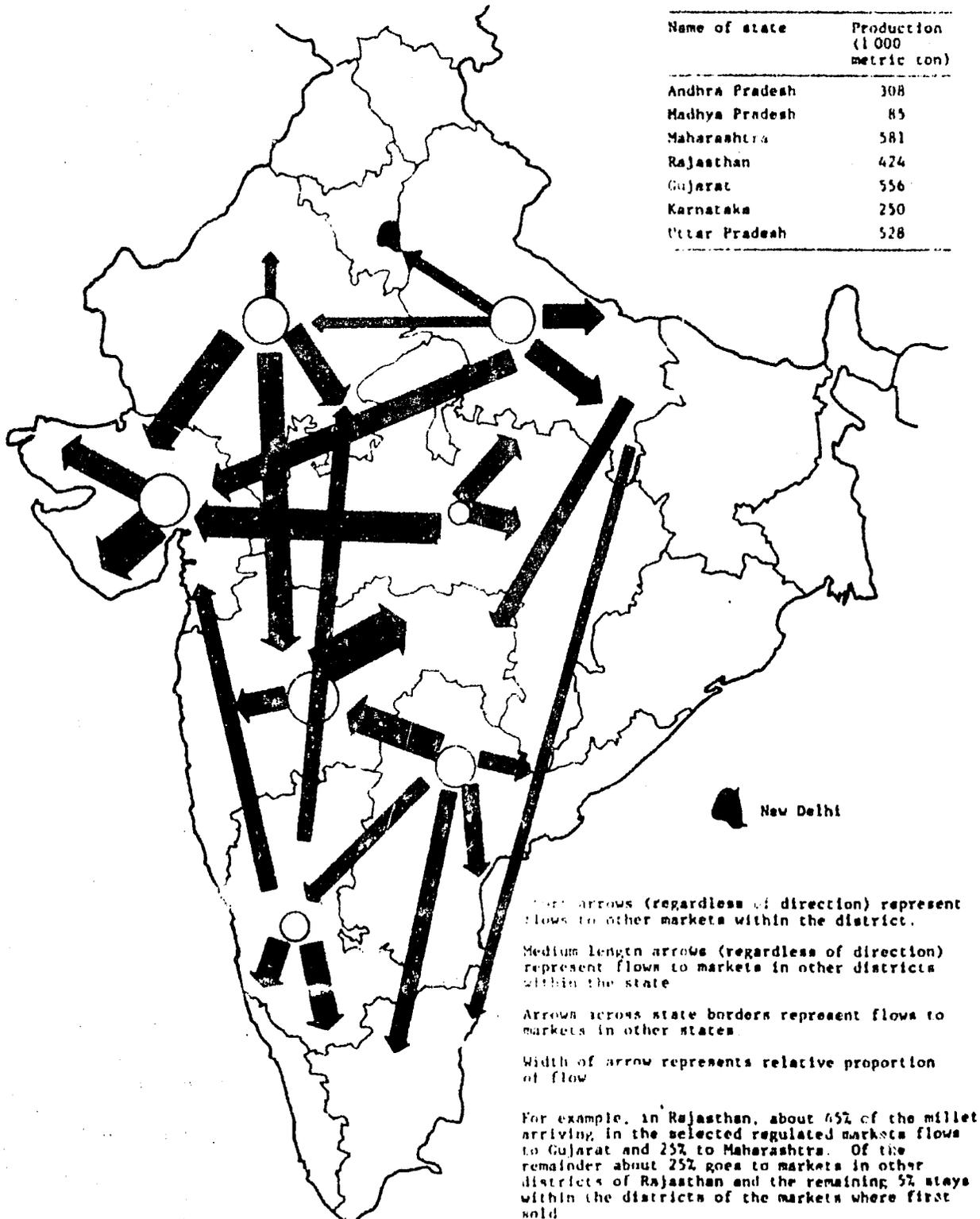
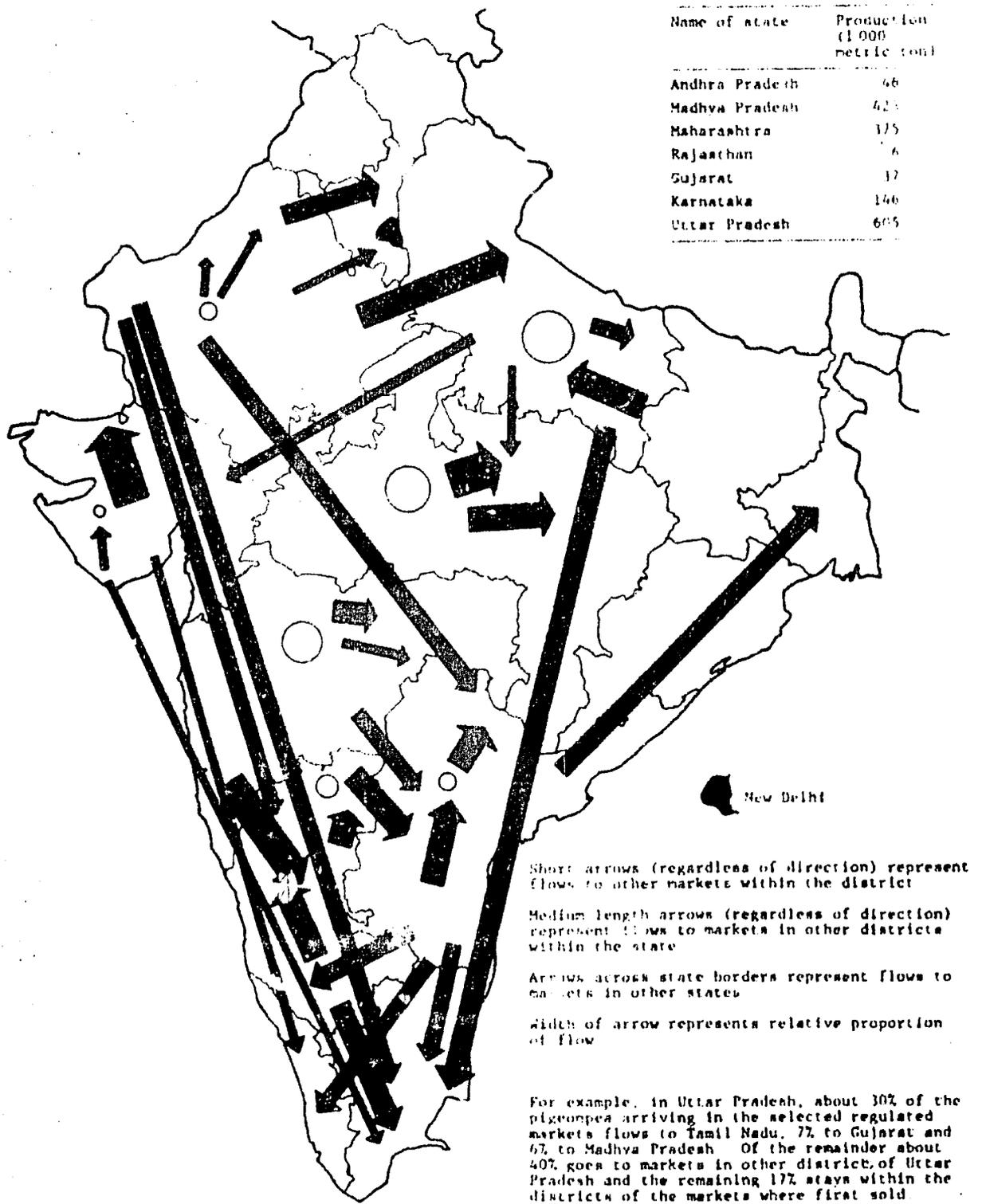


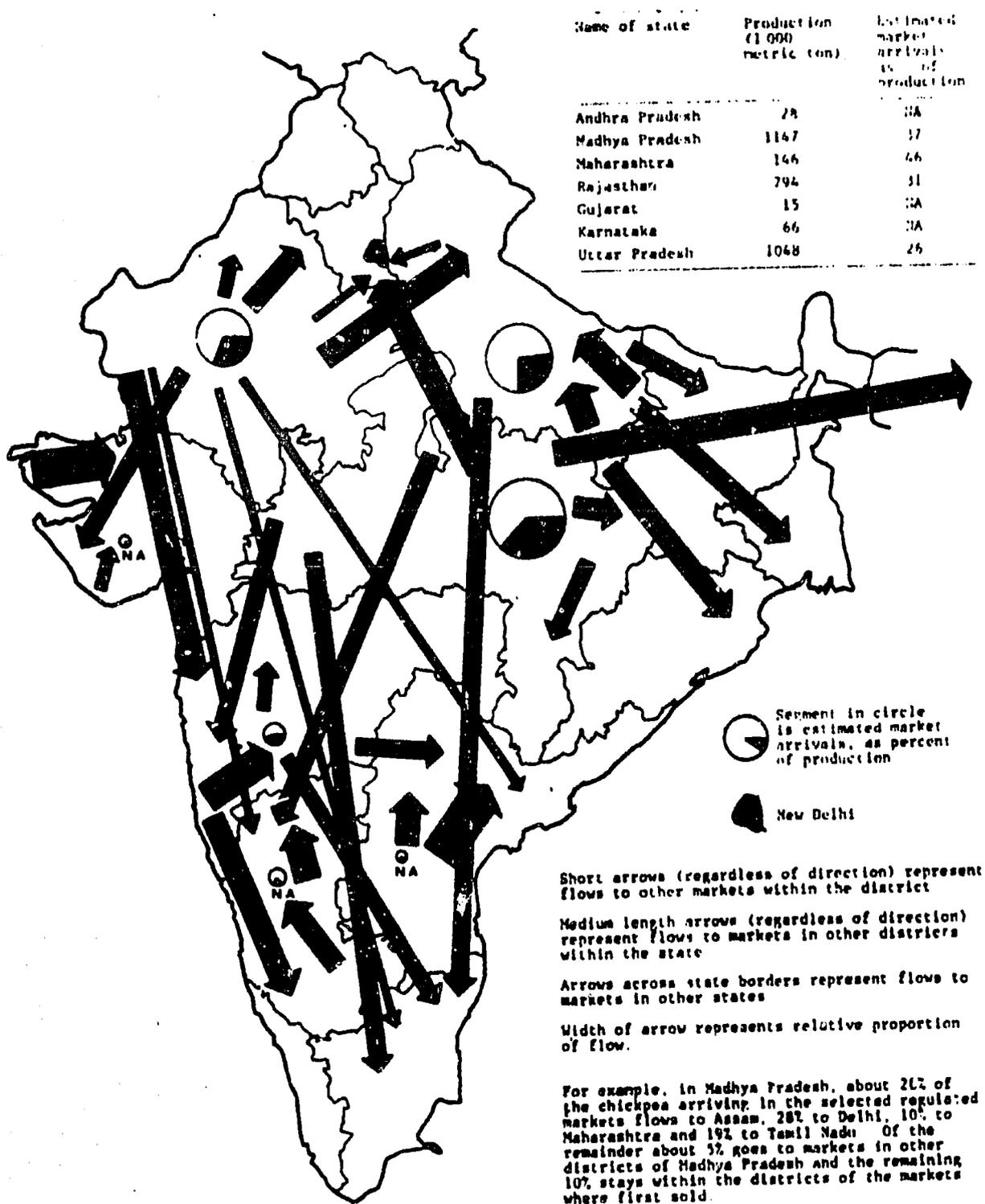
Figure 11. Production of pigeonpea and total flows, as percent of market arrivals, from selected food grain markets in selected states of India, 1974-75.



pigeonpea travel mainly to southern states. In Madhya Pradesh, all arrivals are confined to that state which indicates that processing of pigeonpea is mostly carried out in that state. That is why pigeonpea does not move outside, but the processed dhal is transported to far off places. Indore is one of the biggest centers for pulse processing. In Andhra Pradesh and Maharashtra there is also a lot of pulse processing and that is why over 50% of arrivals are confined to local processing. Unlike sorghum and pearl millet, pigeonpea moves to the eastern region (West Bengal) and extreme south (Kerala). So interregional trade of pigeonpea is concentrated not only in SAT areas but also non-SAT areas. Among the states, Uttar Pradesh produces comparatively more pigeonpea (0.6 million tons in 1974-75), followed by Madhya Pradesh and Maharashtra (0.4 million tons each).

3.2.2.4 Chickpea: The estimates of flows of chickpea (Fig 12) in selected regulated markets of different states indicate that, in some states like Andhra Pradesh, Karnataka, and Gujarat, all arrivals are traded within the state and the trade of other states like Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh involves long distance inter-state movement. For example, from Madhya Pradesh 85% of arrivals flow long distances to places like Assam. Similarly, from Rajasthan (81%) and Uttar Pradesh (58%) market arrivals move to places like Bihar, West Bengal, Orissa as well as southern states. Hence, like pigeonpea, interregional trade of chickpea is involved both in the SAT and non-SAT areas of India. Madhya Pradesh and Uttar Pradesh are also the major chickpea producers (1 million tonnes) followed by Rajasthan producing 0.8 million tons per year in 1974-75. In states where there is no inter-state movement, production is also small. For example, Andhra Pradesh

Figure 12. Production of chickpea, market arrivals as percent of production, and total flows (as percent of market arrivals) from selected food grain markets in selected states of India, 1974-1975.

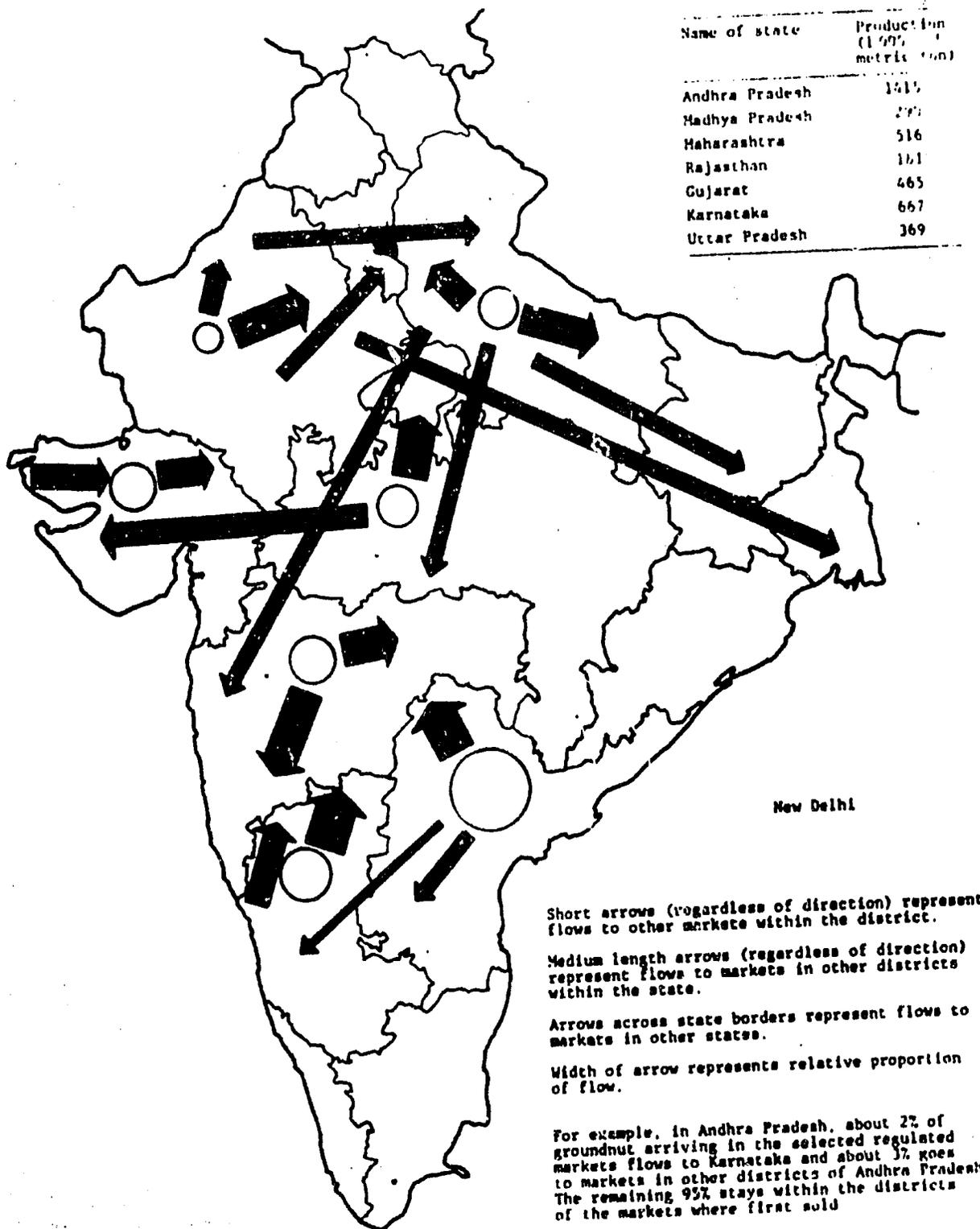


(0.03 million tonnes), Gujarat (0.02 million tonnes) and Karnataka (0.7 million tonnes). Their consumption is relatively more than their production which is the reason why they are importing from other states.

3.2.2.5 Groundnut: The estimates of flows of groundnut (Fig 13) in selected regulated markets of different states indicate that in some states like Maharashtra, Gujarat, and Karnataka groundnut does not involve inter-state movement. In other states a larger proportion of groundnut is traded within the state, for example, Andhra Pradesh (98%), Madhya Pradesh (75%), and Uttar Pradesh (66%). As compared to sorghum, pearl millet, pigeonpea, and chickpea, inter-state flows of groundnut is limited. This does not mean that groundnut is mostly home consumed. Unlike sorghum and pearl millet, groundnut requires a lot of processing before it is consumed. So the estimates of flow of groundnut indicate that groundnut is mostly processed locally and the final product, that is, groundnut oil, may be involved in long distance inter-state movement including both SAT and non-SAT areas. Among selected states, Andhra Pradesh is a major groundnut producing state and produced about 1.4 million tons of groundnut in 1974-75 followed by Karnataka (0.7 million tonnes).

From the estimates of outflows of ICRISAT crops from the selected markets described above, it is concluded that sorghum and pearl millets are not involved much in long distance trade because these are mostly consumed wherever they are produced. These two crops are mostly produced and consumed within SAT areas and whatever trade is there that is flowing into the major producing states. In the case of pigeonpea and chickpea, there is long distance movement involved, including non-SAT areas. Consumption of these crops is confined to both SAT and non-SAT areas though production is mostly

Figure 13. Production of groundnut and total flows, as percent of market arrivals, from selected food grain markets in selected states of India, 1974-75.



confined to SAT areas. Flows of groundnut are limited as compared to other ICRISAT crops. It was evident that groundnut processing is mostly localized and only the groundnut oil involves long distance movements covering both SAT and non-SAT areas.

3.3 Size and Distance of Markets Attended by Farmers of Different Size Groups

As already mentioned in the methodology, data were collected from randomly selected farmers who happened to have come to sell their produce in the selected markets surveyed. The information collected from these farmers was averaged state-wise for reporting. In each state the farmers were classified into three categories, that is, small (up to 5 acres), medium (5 to 10 acres) and large (above 10 acres). This classification was done after calculating cumulative percentages of total number of operational holdings under different sizes given in the Agricultural Census, 1970-71 of selected states and the cumulative percentages were divided into three equal parts, first part representing small, second medium, and third large.

The number of farmers classified under size groups are given in Table 5. In all states more large farmers participated in marketing as compared to small and medium farmer. In the markets of Rajasthan, Uttar Pradesh, Madhya Pradesh, and Gujarat, about half of the farmers were large farmers. In Andhra Pradesh markets however, the number of large farmers were not that high as compared to other states and all three categories of farmers were participating almost equally.

Generally farmers prefer to go to nearby markets to sell their produce. This is more so in case of small farmers as compared to large farmers.

Table 5. Number of selected farmers interviewed classified under different categories in each state

State	Number of farmers						Total	
	Small		Medium		Large		No.	(%)
	No.	(%)	No.	(%)	No.	(%)		
Andhra Pradesh	17	33	16	32	18	35	51	100
Madhya Pradesh	6	25	7	29	11	46	24	100
Maharashtra	9	30	10	31	12	39	31	100
Rajasthan	6	22	8	30	13	48	27	100
Gujarat	4	27	4	27	7	46	15	100
Karnataka	5	28	6	33	7	39	18	100
Uttar Pradesh	8	21	12	32	18	47	38	100
Total	55	27	63	31	86	42	204	100

Our study supports this because about half of the farmers came from a distance of less than 8 km to these markets (Table 6). However, about 30% of farmers came to these markets from long distance (from more than 25 km) but they were mostly large farmers and some medium farmers. There are two reasons for small farmers confining themselves to nearby markets while large farmers preferring distant markets also. First, the quantity of different commodities brought for sale and second, the problem of transportation of the produce. Small farmers generally offer less quantity for markets whereas large farmers sell more. Similarly, small farmers have used their own bullock carts if they have any or hired for taking their produce to the markets whereas large farmers have their own transport facility, like bullock carts, tractors, etc. Therefore, small farmers do not wish to go to far off markets with their small quantity and so confine themselves to nearest markets even though prices may be lower compared to the other markets. Large farmers can take advantage of selling their produce if the prices are higher in distant markets than in nearest markets. These trends were evident in this study because more than half the small farmers sold less than 5 quintals of produce whereas 30% of large farmers sold more than 16 quintals of produce in one day (Table 6). Similarly, more than half of the small farmers used bullock carts to bring the produce to the markets and some used camel carts, camels, horses, donkeys and some even walked and carried produce on their heads, whereas 64% of large farmers used bullock carts, and 23% brought their produce by tractors (Table 6).

To find out the extent of participation of different size-group of farmers and the quantity sold by them in different size group of markets,

Table 6. Distribution of farmers according to the distance they covered, quantity of all commodities brought for sale and mode of transport to the selected markets

Particulars	Small		Medium		Large	
	No.	(%)	No.	(%)	No.	(%)
A. <u>Distance in kilometers</u>						
< 8	26	48	22	35	25	30
9 - 16	15	27	18	28	21	24
17 - 24	10	18	13	21	15	17
25 - 32	4	7	8	13	14	16
> 33	0	0	2	3	11	13
Total	55	100	63	100	86	100
B. <u>Quantity in quintals</u>						
< 5	28	51	20	32	18	21
6 - 10	22	40	24	38	23	27
11 - 15	5	9	13	21	20	23
16 - 20	0	0	6	9	15	17
21 - 25	0	0	0	0	6	7
> 26	0	0	0	0	4	5
Total	55	100	63	100	86	100
C. <u>Mode of transport</u>						
Bullock carts	28	51	46	73	55	64
Camel carts	5	9	12	19	11	13
Camels	4	7	0	0	0	0
Donkeys	2	4	0	0	0	0
Horses	3	5	0	0	0	0
Walk	5	9	0	0	0	0
Cycle	2	4	0	0	0	0
Bus	6	11	5	8	0	0
Tractor	0	0	0	0	20	23
Total	55	100	63	100	86	100

the selected markets were classified into five sizes based on their turnover (Table 7), and the results are given in Table 8. It is evident from Table 9 that majority of the small farmers go to smaller markets and large farmers to bigger markets. About 44% of the small farmers selected went to smaller markets and only 32% of small farmers went to larger markets. Sixty seven percent of large farmers went to large markets. A similar situation was observed in different market sizes also. For instance, about 37% of farmers participating in smaller markets were small farmers and 25% were large farmers. But in larger markets, only 19% of the farmers attending were small farmers, whereas 54% were large farmers. Not only the number of farmers but also the quantities of produce sold by them reflects this (Table 8). Small farmers sold about 47% of their market surplus in smaller markets and 31% in larger markets, whereas large farmers sold about 68% of their market surplus in larger markets and only 16% in smaller markets. Out of the commodities that arrived into smaller markets, 32% belonged to small farmers and 28% to large farmers. But in larger markets 65% arrivals belonged to large farmers and only 10% belonged to small farmers.

From the above discussion it is concluded that large farmers participated more in marketing activities compared to small farmers. Small farmers generally confined themselves to nearby markets, whereas large farmers preferred to go even long distance markets. Most of the small farmers went to smaller markets and large farmers went to larger markets. Similarly, from among different sizes of markets, small markets attracted small farmers mostly and larger markets attracted large farmers. The same was true of the

Table 7. Classification of selected markets based on annual turnover in 1974-75

Market size	Turnover ('000 tons)	Number
Very small	< 10	6
Small	11 - 20	6
Medium	21 - 30	4
Large	31 - 40	4
Very large	> 41	9
Total		29

Table 8. Number of farmers and quantity of produce sold by farm size and market size^a

Farm size ^b Market size ^c	Small		Medium		Large		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Very small	13 (46)	24	12 (43)	19	3 (11)	4	28 (100)	14
Small	11 (28)	20	13 (33)	21	15 (39)	17	39 (100)	19
Medium	13 (37)	24	12 (34)	19	10 (29)	12	35 (100)	17
Large	9 (26)	16	11 (31)	17	15 (43)	17	35 (100)	17
Very large	9 (13)	16	15 (23)	24	43 (64)	50	67 (100)	33
Total	55 (27)	100	63 (31)	100	86 (42)	100	204 (100)	100
	Qtl.	(%)	Qtl.	(%)	Qtl.	(%)	Qtl.	(%)
Very small	95 (45)	29	90 (43)	16	26 (12)	2	211 (100)	11
Small	60 (19)	18	110 (36)	20	140 (45)	14	310 (100)	16
Medium	70 (19)	22	130 (36)	23	160 (45)	16	360 (100)	19
Large	55 (14)	17	115 (30)	20	220 (56)	21	390 (100)	20
Very large	45 (7)	14	120 (19)	21	480 (74)	47	645 (100)	34
Total	325 (17)	100	565 (29)	100	1026 (54)	100	1916 (100)	100

- a. Figures in parentheses are percentages of each farm size group in the total.
b. Small farmer -- up to 5 acres; large farmer -- 10 acres and above
c. See Table 7.

quantities sold by different size groups of farmers in different sizes of markets.

Hence it is suggested that in order to help small farmers a greater number of small markets at short distances should be established instead of fewer larger markets.

4. SUMMARY

From this study of market channels in SAT India, the following conclusions and policy implications result:

- 1) The administration of agricultural marketing and the enforcement of Markets Acts in most of the regulated markets in India is working well. In some states, agricultural marketing is an independent department whereas in others it is attached to other departments. Market Acts which consist of various rules, regulations, bye-laws, etc. have been passed by all states and were satisfactorily implemented in many regulated markets except in Uttar Pradesh.
- 2) The regulated markets have market committees that enforce the provisions of the Market Act. Some market committees have more than one regulated market in different places. Markets located in other places but working under the same market committee are known as submarket yards.
- 3) Most of the members of the market committee are nonofficials elected from different constituencies, i.e. traders, farmers, local bodies, etc. The number of members in the market committee vary from state to state and from market to market within a state. Since specific provision has been made in

all the Acts to protect the interests of farmers by giving them more than 50% representation in the market committee, the chairman of the market committee, in most of the markets is a farmer.

4) Each market committee has one secretary who is the executive authority to enforce the rules and regulations of the Market Act in the concerned market. In some states (Andhra Pradesh, Rajasthan, Karnataka, and Uttar Pradesh) the secretary is a government employee on deputation. In these states the government employs the secretary and not the market committee and the government transfers the secretary from one market to another. Hence the market secretary can work independently and enforce rules and regulations strictly. In other states the secretary is appointed by the market committee according to its own choice and the government is not involved. As the market secretary plays an important role in the functioning of a market and the degree to which he remains independent of the political forces behind the market committee, the appointment of the secretary should preferably be done by the government, and the same person should not be allowed to stay in office of the same market committee for a long time.¹¹

5) Sufficient staff should be employed depending on the size of the market, and it is desirable to recognize all the employees of the market committee as government staff and to transfer them periodically. This will help to do away with narrow loyalties which these committee members tend to have when they are selected by the committee. The market committees should arrange a schedule to have their staff trained at training centers.

11. This is being shown in Raju and von Oppen (1980).

6) In the markets surveyed, three systems of sales were found, they are: open auction system, tender system, and mutual agreement. Among these, the open auction system was found to be better and more useful to the farmers as compared to other systems. In the open auction there is more competition among traders compared to other systems and hence this system is preferable for all markets. But open auction takes more time than other methods, hence simultaneous auctioning by different auctioneers based on a group of commodities may be preferable.

7) Markets in Uttar Pradesh have the poorest infrastructural facilities. This affects the trade of farm products. However, the Government of Uttar Pradesh has recognized the importance of efficient marketing for agricultural development and an ambitious program to regularize markets and provide infrastructure is underway.

8) In some states, there were restrictions on the movement of foodgrains. These restrictions adversely affect trade in these grains as traders are reporting. The overall negative effect of such trade restrictions on aggregate production has been shown elsewhere (von Oppen 1978b).

9) Based on subjective ranking of selected markets, Patan market in Gujarat ranked first, in terms of functioning, infrastructural facilities, etc. It may be useful for market committee members and secretaries of other markets to be shown such markets so that they can learn how to effect improvements in their own markets.

10) In some markets, grading of farm products is practiced by graders appointed by the government. But the impact of grading was not effective as traders judged the commodities differently according to their long experience in trading. As the produce is open for auctioning, quality differentials are

efficiently defined by the traders and farmers themselves without the need for graders' assistance.

11) Most of the markets receive good income, but spend less (see footnote on p.31). Hence it is suggested that the markets should spend their income properly on development activities and on infrastructural facilities to improve the market. Wherever there is scope for other activities, they should use their funds for establishing submarket yards.

12) In most states the present density of regulated marketyards and subyards is about 12 to 14 markets per 10 000 km², implying on an average a radius of about 16 km per market yard. Further increase in regulated market densities may be advisable provided rules and regulations are in fact enforced.

13) The estimates of quantities flowing through different channels indicate that among ICRISAT crops, sorghum and pearl millet are produced mainly for home consumption, kind payments and for seed purposes. In case of pigeonpea and chickpea, farmers retained 55 to 65% of their production on their farms and marketed the remaining production whereas in the case of groundnut, farmers marketed most of their production (80%).

14) Sorghum and pearl millet were not involved much in long distance inter-state trade. The reasons could be: low productivity of these crops, consumption of these crops in the producing areas, lack of consumer demand in other areas, and restrictions on the movement of these grains.

15) Pigeonpea and chickpea were involved in long distance inter-state trade covering all parts of the country. So interregional trade of pigeonpea and chickpea were concentrated not only in SAT areas but also in non-SAT areas.

16) Groundnut was not involved in long distance inter-state trade because it needs a lot of processing before it is consumed. Hence most of the groundnut was processed locally and the oil may be involved in long distance inter-state movement including both SAT and non-SAT areas.

17) In all markets relatively large farmers participated more in marketing than small farmers.

18) Small farmers, wherever they sell, proceed to nearby markets as compared to large farmers. The reasons could be the small quantity of the produce available for sale and the mode of transport. As small farmers can sell smaller quantities they prefer to go to nearby markets either by walking, by bus or by bullock cart if they have one and also depending on the quantity of the produce. Hence market access was limited in case of small farmers compared to large farmers.

19) Mostly small farmers went to smaller markets to sell their commodities and large farmers went to larger markets. Similarly most of the market arrivals to big markets came from large farmers.

REFERENCES

- von Oppen, M. 1978a. The effects of inter-regional trade and market infrastructure on aggregate productivity of agriculture. ICRISAT Economics Program report, Patancheru, A.P., India.
- von Oppen, M. 1978b. Agricultural marketing and aggregate productivity : a dimension to be added to agricultural market research. ICRISAT Economics Program discussion paper 3, Patancheru, A.P., India.
- von Oppen, M., Raju, V.T. and Bapna, S.L. 1979. Foodgrain marketing and agricultural development in India. Pages 173-192 in Proceedings, International Workshop on Socioeconomic Constraints to Development of Semi-Arid Tropical Agriculture. ICRISAT, 19-23 Feb 1979, Hyderabad, India. Available from ICRISAT, Patancheru, A.P. 502 324, India.
- Raju, V.T. and von Oppen, M. 1980. Marketing efficiency for selected crops in semi-arid tropical India. ICRISAT Economics Program report, Patancheru, A.P., India. Forthcoming.

VTR:fvO:sh
22 Dec 1980