Why have some Indian states lagged behind the others in improving agriculture sector performance?

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While India has sustained annual GDP growth rate of over 6 percent over the last more than two decades, the distribution of this growth across various regions of the country has been highly uneven with significant year-to-year variations.

Improving agricultural performance is critical to sustaining future economic growth and continued poverty reduction. As the country moves forward towards identifying newer ways of improving farm competitiveness, it is important to recognize that agriculture in India is extremely heterogeneous and the trajectory for agricultural development will be significantly influenced by area specific (i) natural endowments, (ii) access to markets, and (iii) overall policy and institutional environment. In the light of that motivation, this paper examines the differences in above sets of variables across four different categories of states ranked by per capita income and attempts to outline the strategic options to address these constraints. The paper argues that the challenge of accelerating agricultural growth in these poor states can not be met without public investment in irrigation, research and extensions, enhanced credit flow and improved delivery systems for improved seeds. It is further argued that while paying careful attention to public investment in agriculture, it must also be understood that the problems of agriculture will not be solved only through on-farm investment. Non-farm activity is essential for farmer prosperity. Non-farm activities tend to have the greater proportional impact on the income of poorest members of the village. But, this requires adequate social and physical infrastructure to ensure that the rural non-farm sector has the capacity to adjust and modernize in response to conditions brought about by increasing competition, and changing demands from consumers. Broadly, therefore, agricultural growth strategy has to work towards (i) establishing a healthy investment climate to encourage entrepreneurial action in commodities and value chains, (ii) support human resource development through improved quality and access to social services, and (iii) strengthen agricultural technology support services.

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Why have some Indian states lagged behind the others in improving agriculture sector performance?

Indian economy has sustained annual GDP growth rate of over 6 percent over the last more than two decades, with growth further accelerating to over 8 percent during the last three years. This makes India one of the fastest growing economies in the world with a sound medium term outlook on overall economic growth. The distribution of this growth across various regions of the country has, however, been highly uneven. A number of poor states such as Bihar, Orissa, Chhattisgarh, Jharkhand, Uttar Pradesh (UP) and Madhya Pradesh (MP) have posted below average growth performance (Table 1). As a result, regional disparities are on the rise. Given that nearly 60 percent of the projected 620 million addition to the Indian population between now and 2051 is expected to be in Bihar, MP, Rajasthan and UP, such rise in regional disparities is a matter of serious concern. Second, not only the growth in many of the poor states has been low, it is also highly unstable with significant year-to-year variations. For example, between 1993 and 2003 the variability of agricultural performance in Rajasthan, Bihar, MP and Orissa was significantly higher than average variability in growth at all India level (Figure 1).

Improving agricultural performance is critical to sustaining future economic growth and continued poverty reduction. While some of the poor states, especially Jharkhand and Rajasthan have shown encouraging signs of growth in agricultural income, overall growth performance in agriculture remains highly unstable although the sources of such instability vary with area specific characteristics and endowments. For example, in states like Rajasthan or Gujarat high variability arises because of frequent droughts, in Bihar and Uttar Pradesh, the primary source of variability are floods which frequently ravage large parts of eastern India. The rapid spread of HYVs and fertilizer use on rainfed lands has also contributed to the instability as output from these lands is substantial in favorable years, but falls off significantly in unfavorable ones.

Table 1: Growth in GDP and Agricultural Incomes Across Indian States: 1995-2005

State	State GDP growth (at constant prices)			Agri-income growth (at constant prices)		
	1995-2000	2000-2005	1995-2005	1994-1999	1999-2004	1994-2004
	Low income states					
Bihar	2.70%	4.99%	3.84%	2.79 %	0.86 %	1.82 %
Chattisgarh	3.18%	6.63%	4.70%	-3.28 %	3.81 %	0.20 %
Jharkhand	5.03%	4.43%	4.73%	2.85 %	6.93 %	4.87 %
MP	6.93%	2.01%	4.44%	2.02 %	1.84 %	1.93 %
Orissa	4.08%	5.86%	4.97%	0.73 %	0.26 %	0.50 %
Rajasthan	6.49%	4.79%	5.63%	8.83 %	-0.33 %	4.15 %
UP	4.46%	3.81%	4.13%	1.74 %	1.85 %	1.80 %
	North Eastern Special Category States					
Arunachal	3.73%	4.68%	4.20%	-0.72 %	2.28 %	0.77 %
Assam	1.94%	5.23%	3.57%	0.29 %	1.35 %	0.82 %
Manipur	7.13%	4.19%	5.65%	1.00 %	4.43 %	2.70 %
Meghalaya	7.57%	6.23%	6.90%	6.06 %	5.61 %	5.83 %
Nagaland	3.53%	17.00%	8.39%	8.43 %	NA	NA
Tripura	9.26%	9.43%	9.34%	3.86 %		3.74 %
	Middle Income States					
AP	5.43%	6.52%	5.98%	2.76 %	2.11 %	2.43 %
HP	6.67%	6.41%	6.54%	1.68 %	4.20 %	2.93 %
Karnataka	8.03%	6.07%	7.05%	2.95 %	-2.9 %	0.40 %
Kerala	5.13%	6.84%	5.98%	2.02 %	-4.12 %	-1.10 %
Sikkim	6.68%	7.36%	7.02%	-3.15 %	7.83 %	2.19 %
WB	7.17%	7.01%	7.09%	4.29 %	2.94 %	3.61 %
	High Income States					
Goa	9.81%	4.93%	8.19%	2.10 %	4.67 %	3.38 %
Gujarat	5.91%	6.71%	6.31%	10.79 %		
Haryana	5.68%	6.85%	6.27%	1.42 %	3.18 %	2.29 %
Maharashtra	7.00%	5.02%	6.01%	1.73 %	-0.37 %	0.67 %
Punjab	5.14%	3.94%	4.54%	1.36 %	2.80 %	2.08 %
Tamil Nadu	5.48%	4.07%	4.77%	2.76 %	-6.03 %	-1.73 %

The Government of India, being acutely aware of these trends, is renewing efforts to improve farm productivity and competitiveness, foster diversification and promote greater value addition to promote growth and employment and raise rural incomes. As the government moves forward in formulating an agricultural strategy for accelerating agricultural growth it is important to recognize that agriculture in India is extremely heterogeneous and the trajectory for achieving high agricultural growth will be significantly influenced by area specific (i) natural and infrastructural endowments, (ii) access to markets, and (iii) overall policy and institutional environment. It is therefore

critical to examine these aspects in the context of specific states or group of states. In the light of that motivation, this paper examines the differences in above sets of variables across four different categories of states ranked by per capita income and attempts to outline the strategic options for the government to address these constraints. Broadly, the paper looks at trends in agriculture production, productivity, and profitability, natural endowments, access to markets, and policy and institutional environments across four sets of states as shown in Table 2 . In addition, the paper also considers separately the "backward" districts of India[2]. Studying these lagging districts is important for two reasons. First, because 86 of the 131 "backward" districts of India (as defined by GoI) are located in the poor states, these districts bring out the issue of spatial inequality within these states. Second, the 47 lagging districts, which are located in some of the richest states of India, such as Maharashtra or in a middle income state such as West Bengal, are alike the poor districts in lagging states such as Madhya Pradesh and raise further issues of effectiveness of public policy within comparable production environment.

Table 2: Main State Groups Ranked by Per Capita Income Groups and Development Indicators

LIS: Low Income States	NESCS: North Eastern Special Category States	MIS: Middle Income States	HIS: Higher Income States
Bihar Chattisgarh Jharkhand Madhya Pradesh Orissa Rajasthan Uttar Pradesh	Arunachal Pradesh Assam Manipur Mizoram Meghalaya Nagaland Tripura	Andhra Pradesh Himachal Pradesh Karnataka Kerala Sikkim West Bengal	Goa Gujarat Haryana Maharashtra Punjab Tamil Nadu

State Groups	Income per Capita (Rs, current price), average of 2000/01-02/03	Relative per capita Income compared to HIS (=100, current price)	Income per Capita (Rs, 93-94 price), average of 2000/01-02/03	Population 2001 (million)	Share of Population in India (%)
LIS	11057.3	42.3	7398.9	464.1	44.8
NESCS	14046.0	53.7	7986.6	37.7	3.6
MIS	20271.1	77.5	12157.4	249.9	24.1
HIS	26165.8	100.0	17256.0	258.4	24.9
India	17770.1	67.9	11376.2	1036.6	100.0

[2] Different sources have used different criteria identify various districts as 'backward' or 'non-backward' (see Annex 1 for further details). This paper uses the classification given by the Sarma Committee in 1997 which identified 100 most backward districts of India.

The organization of this paper is as follows. The next section presents key statistics across states and districts on incidence of poverty, trends in poverty reduction, profile of land holdings, trends in agricultural production and yields, and use of modern inputs—irrigation, fertilizers, seeds, credit, etc. Section 2 then turns towards identifying the key factors inhibiting agricultural growth and potential areas of intervention. Based on this analysis, the final section outlines some general principles for accelerating agricultural growth in lagging regions.

1. Poverty incidence and trends in agricultural performance

Seven poor states—Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh, account for over 40 percent of India's population and nearly 50 percent of India's poor. Out of these, five states—Chhattisgarh, UP, Orissa, Bihar and MP, posted an average annual growth rate of less than 2 percent for agriculture over the last decade. While the slow agricultural growth has more or less been a nationwide phenomenon, the slow growth in these states creates a strong growth drag given the predominance of agriculture in state income and employment, very poor labor productivity in the sector (Table A1 and Figure 2) and their declining share in manufacturing output. Poor agricultural incomes and growth are also reflected in high poverty incidence (Figure 3) and slower decline in poverty with the share of these states in poverty increasing over time (Figure 4).

Raising rural incomes requires raising agricultural productivity and strong connectivity to market centres. Comparison of yields across states shows that the poor states generally have lower yields of cereal crops although some of the traditional poor states such as Bihar, UP and Rajasthan have been closing the gap overtime (Table A2). Indeed some of the high income states, especially Maharashtra and Tamil Nadu, have consistently recorded poor yields over the last 4-5 years. There is also significant variation in yields within states with backward districts recording significantly lower yields, especially in water intensive crops (Table A3). Average yield of pulses, on the other hand, is higher than national average in Bihar, Jharkhand, UP, and MP. Average food grain yields in Chhattisgarh, Orissa, and Rajasthan continue to fall below the national average. Also, yields for *Kharif* crops are generally lower than *Rabi* crops. This may again, at least partly, be due to inadequate availability of water during *Kharif* season.

An examination of cropping patterns within and across states throws up some interesting patterns. Overall poor states are more dependent on production of foodgrains, more specifically cereals. For example, during *Kharif* season, cereals occupied more than 93 percent of gross cropped area in Bihar, Jharkhand, Orissa, and Chhattisgarh. Similarly Bihar, Jharkhand, UP and Chhattisgarh allocated over 95 percent of gross cropped area to cereal production (Tables A4-A7). Wherever there is some diversification into other crops (such as UP, MP and Rajasthan in *Kharif* and Orissa, MP and Chhattisgarh in *Rabi*), this move out is limited to pulses, or at best oilseeds[3]. This appears to be more in response to production conditions (poor irrigation availability) rather than better market opportunities. Indeed, overall return from production of pulses is poor when compared to cereals (Table A8-A10). Also, yields of pulses have stagnated and have shown some sign of improvement since mid 80s but overall growth in yield of pulses has been fairly low (Figure 5) and irrigation coverage for pulses continues to be poor (Figure 6). Indeed areas with relatively better irrigation have avoided production of pulses due to their poor yields.

Poor yields are reflected in overall net returns from farming. Among low income states, Orissa and Chhattisgarh report low gross and net returns both on per hectare and per farm basis. Other low income states such as Bihar and UP compare favorably to a number of middle & high income states on the basis of per hectare returns but not on per farm basis due to small farm size (Table 3; Figure 7). Further, better access to irrigation allows middle and high income states to raise cropping intensity and further raise net returns to farming (Table A11). As a result overall agricultural incomes are higher in MIS and HIS compared to LIS. This points towards the need for a more realistic land policy; to allow consolidation and providing land access to more productive farmers. More on this issue in the section on land policy.

[3] A study by Joshi and others (2003) reported that Southern and Western regions had registered maximum crop diversification (as measured by Simpson Index) and southern region also posted faster agricultural growth rates than the national average. While Northern region continues to specialize in food grains, as of now at least this has not acted as a major drag on farmer income due to relatively high wheat and rice productivity in Punjab, Haryana and Western Uttar Pradesh supported by past public investments and continuing price support for these crops. Eastern region (specially Bihar, Orissa, Jharkhand, Chhattisgarh, eastern Uttar Pradesh), on the other hand, has suffered on account of poor diversification.

Table 3 : Average operational land holding size (hectares)

States	Backward districts		Non-backward districts	
	Irrigated	Total	Irrigated	Total
Bihar	0.55 (47.0)	1.17	0.64 (50.8)	1.26
Chhattisgarh	0.90 (37.8)	2.38	1.27 (45.8)	2.77
Orissa	0.67 (43.5)	1.54	0.44 (30.8)	1.43
Jharkhand	0.22 (17.5)	1.26	0.26 (23.4)	1.11
Uttar Pradesh	0.77 (61.1)	1.66	0.78 (50.0)	1.56
Madhya Pradesh	1.45 (36.2)	4.01	1.81 (47.0)	3.85
Rajasthan	0.48 (23.6)	2.03	1.64 (45.6)	3.60
West Bengal	0.42 (39.3)	1.07	0.49 (54.4)	0.90
Maharashtra	1.06 (28.7)	3.70	1.14 (40.3)	2.83

Source: NSSO 59th round

At least part of the disparity in agricultural productivity can also be explained by examining use of modern inputs across states. Fertilizer consumption across low income states (except UP) is lower than national average with some states such as Orissa and MP registering a significant gap (Figure 8). Same is also true of use of improved seeds with a very small proportion of the farmers in Orissa, Chhattisgarh, Jharkhand and Bihar reporting use of improved seeds for farming (Table A12 and A13). Most farms continue to rely on farm produced seeds from previous years resulting in low crop yields.

Input use, is dependent on connectivity to markets and availability of complementary factors—specially water. On both these counts most of these states have poor indicators. The strategy of achieving food self-sufficiency in the past comprised heavily regulated input and output markets and large input subsidies to lower the cost of agricultural production. While the extent to which these interventions contributed towards enhanced productivity in the past can be debated, it is now sufficiently clear that these subsidies (and the manner in which these were administered) have created serious distortions in the sector and may have contributed significantly towards differential performance. Favored treatment of some states in central sector grants and investment projects has placed some states in better position to benefit from market based opportunities. Correction of this endowment distortions in terms of rural infrastructure--especially irrigation (which in turn also implies power) and roads, must form the core of future strategy if these lagging states have to catch up with the rest of the country.

2. Factors inhibiting agricultural growth

a. Irrigation

If there is one key element of agricultural transformation, it is irrigation. Rainfed agriculture binds farmers in the vicious circle of low yields, poor quality products, low prices, low income and high risk. If there is assured irrigation, farmers can grow high value crops (even if high risk) and earn a sizeable surplus.

Irrigation coverage in a number of lagging states, specially Jharkhand, Chhattisgarh, and Orissa and a number of Northeastern states is poor (Figure 9). Further, while the coverage is uniformly poor in Low Income States, there is significant variation in coverage across 'backward' and 'non-backward' districts in middle and high income states of West Bengal and Maharashtra (Figure 10).

In Uttar Pradesh and Bihar, while the share of Gross Irrigated Area to Gross Cropped has grown to reasonable levels, a large part of irrigation is obtained through ground water (electric/diesel pump-sets/tube-wells) using private tube-wells and pump-sets. This has been due to subsidized supply of electricity and diesel at high and unsustainable fiscal costs.

Irrigation potential created and utilized is above 50 percent in the high income states (HIS). Among low income states (LIS), barring a few states like UP and Rajasthan, it is below 50 percent. There is not much variation across different categories of states in the utilization of created potential, but there is substantial variation within the low income states group. For example

- Rajasthan has created more than 98 percent of the ultimate potential and utilizes close to 94 percent of this created potential. Thus Rajasthan seems little to gain from investing further in irrigation facilities in Rajasthan.
- Uttar Pradesh is high on the potential created but lags on the utilization of this created potential for irrigation. The Unirrigated area in UP is about 89 percent of the unutilized potential. Significant gains are possible in UP by enhancing the utilization of created potential.

- MP and Orissa have both lagged in the creation of ultimate potential for irrigation.
- Bihar stands out as the state where there is significant potential that is yet to be created and even the utilization rate of the created potential is relatively low. Irrigation seems to hold maximum promise in such a state. MP also lacks utilization of created potential.
- Utilization rate of the created potential is lower in Maharashtra than even most of the LIS. There is a strong case for investment in irrigation in Maharashtra.

Chand (2005) makes interesting analysis for growth prospects and explores the factors for future growth at the state level. Key findings from his analysis are given below

- Irrigation is important for Punjab, Tamil Nadu, Rajasthan, Karnataka, UP and HP while fertilizers are important for Tamil Nadu, West Bengal, HP , J& K, Rajasthan, AP and Kerala.
- Irrigation holds high promise for Bihar and Orissa (both these states have low levels of Irrigation development and are plagued by power supply problems).
- Bihar, Orissa, HP, WB and Maharashtra have maximum potential for generating high agricultural growth. While irrigation and TFP seems to work for Bihar, Orissa can benefit from crop diversification and Irrigation. Rajasthan has to rely on increasing fertilizer use to increase crop output and UP needs a mix of fertilizer and Irrigation, much in the green revolution fashion.

Thus, irrigation holds significant potential for the low income states. Among HIS however only Maharashtra seems to offer some potential vis-à-vis irrigation.

Surface versus ground water

Almost 60 per cent of the pumpset irrigation is confined to just five states: Andhra Pradesh, Karnataka, Tamil Nadu and Kerala in the south and Maharashtra in the west. Average area irrigated per pumpset in this region is less than one hectare. Punjab and Haryana with approximately 5.5 per cent of net sown area in the country account for over 9 per cent of the pumpsets. These areas also have extensive canal network. Madhya Pradesh (including Chhattisgarh) gets reasonably good rainfall but farmers continue to

rely on extensive groundwater irrigation through pumpsets due to poor surface irrigation networks.

Eastern India presents a completely different picture, with heavy rainfall, major rivers and frequent floods. Hardly 11 per cent of the groundwater irrigated area of the country is located in the region serviced by approximately 3.5 per cent of the pumpsets. Of late, pumpset density, especially of diesel pumpsets is increasing in the region catering to a rapidly growing water market for irrigation but access to groundwater still continues to be low[4].

Water Policy

Poor growth in canal irrigation combined with high growth in tube wells and electric pumps has stirred a serious debate regarding power subsidy and the environmental implications of groundwater overexploitation. Maximum numbers of over-exploited and dark talukas are located in the High Income States, and power subsidies to agriculture have risen to unsustainable levels.

Withdrawal of subsidies raises serious emotional temperatures. In many states farmers are reluctant to pay for energy not because they do not recognize the value of water, or that they do not perceive long term implications of groundwater overexploitation, but because they do not trust the government. They also point towards the disparity between canal and pumpset farmers as in case of canal irrigation, government covers all the capital costs and charges only a nominal price for water supplied whereas the pumpset farmer bears heavy cost of capital expenditure and has to pay power charges which are several times the water cess collected from the canal irrigated farmer. Some observers have also argued that water buyer's cost of irrigation is more sensitive to the price structure of energy than pump owners and therefore even if power subsidy benefits pump-owners (who are often

[4] There are reasons to believe that data on the number of pump sets and bore-wells, and consequently the data on groundwater irrigation, may be inflated due to large number of state owned tube wells and high subsidy component for pumpset installation. For example, one study referred in Pant (2005), reported that in some areas of eastern UP as many as one third of the beneficiaries of free borewells scheme could not be traced. Same study also describes another incident of 11 out of 13 free borings being ritualized in one day. The study notes "As per our records all the 11 new beneficiaries had purchased pumps but none possessed the same. Most of them had been given their share of money for putting their thumb impressions on the officially required papers. Each one of 11 beneficiaries had received about Rs.3000 which was 30 percent of Rs.9000 pump loan sanctioned to them".

large and medium farmers) more, its absence hurts poor sub-marginal and marginal water buyers the most.

The question of power supply to farmers is therefore quite complex and involves questions of parity, development of surface irrigation, quality power supply, sustainability of groundwater levels, and so on. The states, specially the low income states—Bihar, UP, MP, and Orissa—where the potential from irrigation is high will therefore have to learn from the past mistakes and put in place a comprehensive irrigation policy that includes both demand and supply side measures to enhance water use efficiency. A number of measures have been suggested in the literature[5]. Some of these are summarized below

- Separation of agricultural/rural feeders from the rest for better monitoring of agriculture supplies and targeting subsidies.
- Improving availability of surface irrigation by revitalising traditional harvesting systems such as tanks, early completion of ongoing projects of surface irrigation, new investments in surface irrigation project, and reducing/ceasing diversion of surface water to meet urban needs at the cost of rural areas.
- Augmenting and regulating groundwater through construction of water harvesting structures, bunding, digging farm ponds, etc.
- Energy audit and metering: Whether power is supplied to agriculture free or not, it is essential to know how much power is being consumed by the agriculture sector. Un-metered agriculture consumption has often been the easy explanation to pass off pilferage as agricultural consumption. User committees could be formed at the transformer level, rewarding consumers for saving power and penalizing excess usage.
- Checking pilferage by forming transformer level consumer associations, fixing meters at the transformer level, fixing tariffs at affordable and stable rates and evolving a culture of accountability at all levels. The situation requires proactive measures by farmers and village level institutions/organizations.

[5] See, for example, Narendranath and Reddy, 2005; Pant, 2005.

But, first and foremost, the governments will need to demonstrate credibility, commitment, and transparency. This requires participatory processes requiring much groundwork. National Water Policy has recognized the importance of Participatory Irrigation Management by forming Water User Associations in irrigation management but the progress on that front, specially in poor states of eastern India has been poor (Figure 11)[6]. It remains however of critical importance for these states to pro-actively involve people (and representative peoples' organizations) in evolving consensus towards models of more rationalized water use.

b. Agricultural Marketing

The second most critical determinant of agricultural development is better access to markets. This requires improvements in physical infrastructure such as roads (both highways and secondary feeder roads), organized marketplaces with transparent information systems, and sufficient warehousing and cold-storage capacity to minimize crop losses. In the past, traders were prohibited from procuring farm produce directly from farmers. It was essential to bring the farm produce to regulated market places notified by the government. This was done to avoid distress sale and to minimize exploitative business practices by the traders.

There is now widespread recognition that these restrictions have not helped farmers obtain a fair price for their produce. A number of state governments have already amended or are in the process of amending the APMC act so to widen the choices of farmers[7]. But, the progress across states has varied widely. Unfortunately, the poor states have lagged behind in reforming the legislation governing the distribution, processing and marketing of agricultural produce (Table 4 and Box 1)

[6] Interestingly, Bihar was among the first few states to accept the concept of WUAs and pilot the same in one of the distributaries. Encouraged by the success of early pilot it extended the scheme to 11 more schemes. A subsequent survey of 9 of those schemes found significant positive impact on water availability and crop yields. Still, however, overall progress on formation of WUAs and transfer of management rights to users has been poor (World Bank, 2006b).
[7] See Annex 2 for a short description of the amendment of the APMC Act in selected states.

Table 4: Progress of reforms in Agricultural Markets (APMC Act)

Stage of Reforms	Name of States/Union Territories
Sates/UTs where there is no APMC Act and hence not requiring reforms	Kerala, Manipur, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu and Lakshdweep
Sates/UTs where APMC Act already provides for the reforms	Tamil Nadu
Sates/UTs where APMC Act has been amended	Madhya Pradesh, Himachal Pradesh, Punjab, Sikkim and Nagaland, Andra Pradesh
Sates/Uts where reforms to APMC Act has been done partially	Maharashtra, Rajasthan, Haryana, Karnataka, Gujarat and NCT of Delhi
Sates/UTs where administrative action is initiated for the reforms	Orissa, Assam, Mizoram, Arunachal Pradesh, Tripura, Chattisgarh,Meghalaya, J&K, Uttaranchal, Goa, West Bengal, Uttar Pradesh, Pondicherry and Chandigarh
Sates/UTs where there is no progress	Bihar and Jharkhand

Box 1: Licensing Laws in Uttar Pradesh

The UP Scheduled Commodity Dealers (Licensing and Restriction) Order, 1989, requires a dealer to obtain a license if s/he carries on the business of sale/purchase of certain scheduled commodities in specified quantities (for example 10 quintals or more of foodgrains of any kind). It also restricts forward trading in such commodities .

The UP. Flour Mills Licensing Order, 1966, requires the owners or persons-in-charge of a flour mill, if operated by electricity or mineral oil, to obtain a license from the District Magistrate. The power of entry, search, and seizure has been given to Food Officers.

UP Rice and Paddy (Levy and Regulation or Trade) Order, 1985. As per this order, every licensed miller shall sell and deliver to the government, at the notified price, sixty percent of each variety of rice (relaxed to 40 percent in the Varanasi and Gorakhpur zones). The movement of rice or sale of rice can be done only after obtaining a release certificate from the government.

U.P. Regulation of Rice Hullers Order, 1975. Under the order, a permit or license has to be obtained under the Rice-Milling Industry (Regulation) Act, 1958, for running a rice milling operation. Additally, the miller has to comply with the provisions of the UP Rice and Paddy (Levy) Order, 1985.

Source: World Bank 1999d.

Marketing infrastructure

Although the low income states account for about 48 percent of net sown area, 43 percent of foodgrains, 34 percent of fruits and 45 percent of vegetables production (Table A14), they account for about 35 percent of wholesale markets. Thus the density of wholesale markets is significantly higher in HIS. Further, among the regulated markets, the share of principal markets is higher in the high income states, except Maharashtra, than the low income states[8]. North Eastern states have one of the poorest coverage in terms of

[8] Rajasthan is the only low income state which has higher number of wholesale markets than rural primaries.

wholesale and primary markets. This combined with the connectivity and topographical difficulties results in very poor access to markets in the region.

More than the number of markets, however, what matters is physical infrastructure for connecting villages to markets and the quality of infrastructure available at designated marketplaces (mandis). A recent World Bank study on horticultural competitiveness noted that quality of infrastructure available at *mandis* and farmer satisfaction with the infrastructure available at *mandis* was extremely poor in the eastern states of Bihar, Orissa, Jharkhand, and West Bengal (Figure 12)[9]. Less than half the villages in poor states of Bihar, Orissa, MP, Jharkhand and Chhattisgarh were connected by roads compared to more than 90 percent in Punjab, Gujarat and Haryana (Figure 13). Similarly, a very small proportion of villages had access to electricity (Figure 14) and even among those that had access, a much smaller percent of households had taken electricity connection perhaps due to poor and unreliable power supply (Figure 15).

Similar is the case with availability of cold storage. As a proportion of total production of fruits and vegetables—crops, with relatively higher marketed surplus—the cold storage capacity is very low and a large proportion of cold storage infrastructure is not in working condition due to poor power supply and poor maintenance of equipment. In case of Bihar, for example, it has been reported that as many as 40 percent of existing cold storage infrastructure is not in working condition resulting in substantial wastage of fruits and vegetables production (World Bank, 2006; Figure 16).

Distribution of total warehousing storage capacity is also disproportionate. As a proportion of total warehousing capacity with the CWC/ SWC nearly 45 percent capacity is with the HIS although they produce less than 30 percent of foodgrains. On the other hand, low income states, which produce about 44 percent of the foodgrains have only 32 percent of the warehouse capacity. Even the middle income states which produce close to 25 percent of foodgrains have only 17 percent capacity. Thus, HIS have clearly done better in creating this infrastructure. Punjab and Haryana share almost one third of the country's warehouse capacity. Also the contribution of SWC in this is much higher than

[9] While *Mandi* markets are mandated sale outlets for fruits and vegetables, in reality a very small proportion of fruits and vegetables production in poor states actually goes through regulated markets due to poor transportation and cold storage network and non-practice of open auction system at a large number of *mandis*.

for any other states. It seems the role of SWC has been instrumental in achieving this progress in Punjab and Haryana whereas the CWC played a larger role in low and middle income states (Table A16-A17).

In the creation of rural godown infrastructure as well, the higher income states have outperformed the rest. Further, the emphasis in HIS has been on creation of new structures, whereas low and middle income states have stressed more on renovation of existing small structures. Punjab, AP, MP, Maharashtra and UP are the leading states in this regard (Table A18).

Even for grading and certification for export the HIS are more active than the LIS. Most of the export grading activity is centralized (presence of high capacity in Delhi). This points towards the need to create high level grading and certification facilities in the low income states and to devise a way to decentralize the grading for exports.

c. Land Policy

Marginalization of agricultural land holdings in poor areas affects overall gross returns from farming even though per unit returns may compare with middle income states. At the same time, many of the poor states continue to have restrictive land legislation stifling the emergence of efficient land rental markets (Table 5). These legislations were put in place to protect the access of small and marginal farmers to their land but have frequently had the opposite effect. Recent evidence made available by Deininger, Jin and Nagarjan (2006) and Mearns (1999) confirms that suppression of land markets may have hurt both efficiency and equity of agricultural production in India. Indeed land rental markets have been suggested to have significant potential to improve productivity as well as equity by allowing landless and land-poor households to access land and improve their livelihoods. While specific guidance on “how” to reform land legislation in specific states is beyond the scope of this paper, liberalization of land rental markets (with appropriate ceilings on area leased-in by single operator) can provide an important avenue for generating agricultural growth in poor regions.

Table 5: Features of tenancy laws across states of India

State	Features
Low Income States	
Bihar	Leasing out prohibited except for persons with disability (widows, minors, marginal holders, and/or members of armed forces).
MP	Abolished past leases but not the future leases.
UP	Lease prohibited. Exemptions available for widows, unmarried women, members of armed forces, students and physically disabled.
Rajasthan	Landowners can lease out for a non-renewable period of five years.
Orissa	All future leases prohibited. Past leases continue after surrendering half the leased land to landlord.
Middle Income States	
Andhra Pradesh	Leasing permitted subject to regulations. In Telangana leasing out by large land holders prohibited.
Tamil Nadu	Leasing permitted subject to regulations and written agreements.
West Bengal	Fixed-rent leasing prohibited but sharecropping allowed. Law discourages tenancy by empowering tenants with protected rights on leased land.
High Income States	
Punjab & Haryana	No restrictions
Gujarat	Leasing prohibited. Leasing is a punishable offence.
Maharashtra	No ban on tenancy but tenant acquires the right to purchase land within one year of tenancy.

Source: Deshpande (2003) and Hanstad, Nielsen and Brown (2004)

d. Rural Finance

Recent research has shown that there is strong correlation between inclusive financial systems and overall growth and poverty reduction. Access to finance can be an important means of empowering the poor by providing them the opportunities to overcome the social, cultural and economic barriers that bind them into poverty.

India has a long history of directing credit towards agriculture sector. However, the policy instruments used for that purpose—interest rate controls, high targets for priority sector lending, ban on private sector banking, etc. resulted in a unhealthy banking system with very poor quality services without contributing towards the stated social and economic goals. Government of India has already taken significant steps towards liberalization of banking sector, and that has contributed tremendously towards building a vibrant banking sector, but flow of credit towards lagging states continues to be poor (Figures 17-18). Enhancing the access to credit of poor farm and non-farm rural households must therefore become national priority. Promotion of micro-financing institutions and formation of self-help groups has helped enhance access to finance for poor households in many states and

can be a viable means of enhancing access to rural credit in lagging states as well although that would also require strong and supportive institutional banking sector.

3. Challenges and the way forward

The challenges in these poor states are fairly well known and one can not hope to meet these challenges without public investment in irrigation, research and extensions, enhanced credit flow and improved delivery systems for improved seeds. Public investment in rural infrastructure and irrigation must be the locomotive for agriculture. While paying careful attention to public investment in agriculture, it must also be understood that with demographic pressures and fragmentation of land holdings, problems of agriculture will not be solved only through on-farm investment. Non-farm activity is essential for farmer prosperity — the important thing is the link between farm and non-farm activities including livestock, poultry, aquaculture and rural manufacturing. Using 30 year panel of households from a national sample in rural India, Foster and Rosenweig (2004) provide evidence that rural industry tends to have the greater proportional impact on the income of poorest members of the village and has substantial impact on poverty reduction, especially in areas with little scope of enhancement in agricultural productivity. But, this requires adequate social and physical infrastructure to ensure the conditions for broad-based growth and good investment opportunities and to ensure that the rural non-farm sector has the capacity to adjust and modernize in response to conditions brought about by increasing competition, and changing demands from consumers.

Broadly, therefore, agricultural growth strategy has to work towards (i) establishing a healthy investment climate to encourage entrepreneurial action in commodities and value chains, (ii) support human resource development through improved quality and access to social services, particularly for the poor and socially disadvantaged, and (iii) strengthen agricultural technology support services. This requires large public investments in irrigation and other physical infrastructure and more efficient public investment, in particular for power (for irrigation) roads, and agricultural research and extension. Steps also need to be taken to deregulate in favor of the poor, improve access to credit and financial services, and undertake appropriate modifications in land rental policy.

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ANNEXURES

Table A1: Agriculture labor productivity and contribution of agriculture to state income and employment

State	Share of Agriculture in SGDP (percent)		Share of employment in agriculture		NSDP per capita at current prices (Rupees) 2003-04	Agriculture GDP per worker
	1993-94	2002-03	1992	200		
	Low Income States					
Bihar	45.3	44.2	52.3	50.2	5780	9359
Jharkhand	19.5	19.3	na	44.7	7732	7574
UP	37.9	27.8	50.1	43.9	10637	16282
Orissa	34.2	17.5	48.2	43.2	13026	9981
MP	37.1	20.1	50.7	49.1	14011	9782
Chattisgarh	27.8	11.5	na	na	14863	5259
Rajasthan	32.1	16.5	49.1	43.5	15486	13313
	Middle Income States					
HP	24.8	15.0	na	na	25059	15991
AP	30.1	18.3	65.6	43.2	21372	14018
Sikkim	32.6	18.9	na	Na	22062	18525
Karnataka	32.9	20.4	48.8	45.5	21696	15079
WB	27.8	19.3	37.2	33.9	20896	25794
Kerala	24.8	12.2	40.7	34.8	24492	22443
	High Income States					
Maharashtra	17.9	12.2	46.2	43.8	29204	14485
Gujarat	19.6	10.9	44.4	41.7	26979	14175
Tamil Nadu	22.4	11.6	42.3	35.3	23358	11295
Haryana	41.8	26.6	41.7	38.4	29504	39704
Punjab	45.8	34.5	42.8	41.9	28607	51164

Table A2: Agricultural yields across states: Early 2000

(Kg/hectare)

State	Average yield (average 2002-03 to 2005-06)											Average yield of Sugarcane (2001)
	Foodgrains			Cereals			Pulses			Oilseeds		
	Rabi	Kharif	Total	Rabi	Kharif	Total	Rabi	Kharif	Total	Rabi	Kharif	
	Low Income States											
Bihar	1682	1254	1589	1814	1154	1489	757	895	770	846	843	42424
Jharkhand	1362	1253	1245	1641	1369	1307	662	615	638	264	343	38132
UP	2344	1651	2122	2629	1823	2247	958	629	850	929	428	54756
Orissa	1457	1090	1193	2123	1426	1293	405	1011	386	807	333	57375
MP	1245	896	1119	1708	1075	1341	768	459	724	795	779	38592
Chattisgarh	605	1017	994	920	1252	1104	546	336	493	313	309	2528
Rajasthan	2163	643	1066	2762	859	1258	742	760	381	1070	1055	41578
	Middle Income States											
HP	1532	1815	1745	1691	1991	1738	960	277	414	558	527	..
AP	1974	1934	1977	3269	2556	2663	673	405	601	1082	534	81521
Sikkim	1179	1425	1340	1387	1437	1418	945	282	927	675	818	..
Karnataka	768	1283	1102	1229	2014	1602	400	309	372	520	537	102727
West Bengal	2667	2318	2429	2846	2364	2486	788	636	746	914	830	67852
Kerala	2292	2093	2092	2493	2135	2177	822	800	1050	..	626	80552
	High Income States											
Maharashtra	610	994	871	677	1266	993	530	551	532	565	1050	84407
Gujarat	2068	1183	1405	2534	1422	1624	722	611	719	1178	1378	71439
Tamil Nadu	1112	1839	1825	1921	2066	2012	378	1028	394	2376	1123	107285
Haryana	3818	2062	3113	3681	2233	3180	817	582	716	1344	452	57083
Punjab	4190	3611	3967	4197	3766	3966	886	365	770	1197	477	76931
	North Eastern Special Category States											
Assam	1491	1418	1438	1717	1425	1464	545	715	558	513	545	36854
Manipur	NA	2330	2268	NA	2412	2379	NA	NA	471	378	542	..
Mizoram	1462	1888	1877	2152	1547	1894	1122	741	1173	760	700	64000
Nagaland	1292	1602	1429	1733	1658	1660	798	1070	895	893	1370	54778
Tripura	2247	2179	2241	2347	2180	2251	611	373	627	806	598	54100
All India	2000	1441	1676	2407	1683	1902	713	454	588	948	856	69636

Source: Indiastat.com.

Table A3: Variation in agricultural yields within selected states

(Qtls/hectare)

State	Average yield (average 2002-03)							
	Wheat (Rabi)		Paddy (Kharif)		Maize (Kharif)		Potato	
	NB	B	NB	B	NB	B	NB	B
	Low Income States							
Bihar	28.0	25.0	43.0	33.7	18.6	29.9	243.0	..
Jharkhand	28.8	28.2	38.6	31.4	29.7	21.3	77.0	61.0
UP	43.8	26.3	33.0	25.5	15.4	11.0	151.0	122.0
Orissa	..	..	19.8	16.3	20.3	17.6	..	..
MP	20.7	15.1	18.0	10.3	10.6	16.2	353.0	..
Chattisgarh	16.4	11.1	20.0	17.0	5.7	7.0	..	..
Rajasthan	30.3	24.3	..	..	9.0	11.0	..	..
	Middle Income States							
AP	..	..	..	..	..	..	..	..
West Bengal	27.0	27.0	45.6	42.3	..	..	106.0	..
	High Income States							
Maharashtra	19.9	15.0	24.3	10.7	15.3	29.2	149.0	..
Haryana	40.3	44.5	..	..			..	..
All India	35.5	23.8	34.0	29.0	14.6	18.1	125.0	101.0

NB: Non-backward districts; B: Backward districts.

Source: NSSO 59th round.

Table A4: Cropping pattern: Kharif

(percent)

State	Proportion of area under									Other crops
	Foodgrains			Fruits and vegetables						
	Cereals	Pulses	Total	Fruits	Vegetables	Total	Oilseeds	Sugar crops	Fibre crops	
	Low Income States									
Bihar	94.2	0.22	94.42	0.26	0.83	1.09	0.66	1.06	2.27	0.50
Jharkhand	93.1	1.97	95.07	0.002	4.70	4.702	0.09	0.00	0.00	0.14
UP	66.3	10.4	76.7	0.91	5.09	6	1.51	14.5	0.00	1.29
Orissa	97.1	1.61	98.71	0.14	0.42	0.56	0.35	0.05	0.00	0.33
MP	43.5	11.22	54.72	0.30	0.27	0.57	38.8	0.40	4.09	1.42
Chattisgarh	94.3	2.98	97.28	0.01	0.40	0.41	1.71	0.61	0.00	0.00
Rajasthan	58.1	12.9	71	0.01	0.61	0.62	6.19	0.00	3.42	18.8
	Middle Income States									
HP	69.60	3.15	72.75	11.7	8.64	20.34	0.80	0.07	0.01	6.03
AP	49.67	8.61	58.28	2.54	1.38	3.92	21.9	1.51	9.43	4.96
Sikkim	60.93	5.44	66.37	0.41	10.3	10.71	0.44	0.00	000	22.5
Karnataka	53.53	14.3	67.83	1.50	2.69	4.19	16.8	3.40	2.57	5.21
West Bengal	84.5	0.21	84.71	0.78	2.23	3.01	0.76	0.11	10.3	1.11
Kerala	13.90	0.13	14.03	6.89	5.93	12.82	31.3	0.00	0.36	41.5
	High Income States									
Maharashtra	31.4	11.7	43.1	1.11	1.03	2.14	0.21	3.89	42.5	8.16
Gujarat	37.1	7.07	44.17	0.46	0.76	1.22	30.7	1.10	17.7	5.11
Tamil Nadu	57.0	3.63	60.63	2.99	4.05	7.04	17.0	5.73	1.21	8.39
Haryana	63.7	3.32	67.02	0.28	1.37	1.65	0.19	3.92	12.6	14.6
Punjab	70.5	1.31	71.81	0.00	1.78	1.78	0.40	3.03	9.63	13.4
	North Eastern Special Category States									
Assam	92.0	0.74	92.74	0.33	3.03	3.36	0.73	0.11	0.91	2.15
Manipur	91.1	0.30	91.40	0.23	6.84	7.07	0.91	0.21	0.00	0.41
Mizoram	77.0	1.27	78.27	1.60	12.1	13.7	0.78	1.12	0.00	6.13
Nagaland	92.5	0.06	92.56	0.59	4.34	4.93	0.03	0.00	0.00	2.48
Tripura	93.0	0.03	93.03	2.19	1.72	3.91	0.04	0.06	0.51	2.45
All India	58.7	8.12	66.82	0.92	1.49	2.41	11.3	3.15	10.7	5.62

Source: NSSO 59th round.

Table A5: Cropping pattern: Rabi

(percent)

State	Proportion of area under									Other crops
	Foodgrains			Fruits and vegetables						
	Cereals	Pulses	Total	Fruits	Vegetables	Total	Oilseeds	Sugar crops	Fibre crops	
	Low Income States									
Bihar	80.9	14.2	95.10	0.45	1.97	2.42	1.70	0.10	0.00	0.68
Jharkhand	93.1	1.97	95.07	0.00	3.55	3.55	0.55	0.00	0.00	0.83
UP	96.6	1.40	98.00	0.14	0.43	0.57	0.37	0.70	0.02	0.34
Orissa	35.7	50.0	85.70	1.45	6.63	8.08	4.98	0.63	0.00	0.61
MP	54.5	39.4	93.90	0.40	0.50	0.90	4.24	0.10	0.39	0.47
Chattisgarh	26.2	66.9	93.10	0.01	1.10	1.11	5.35	0.26	0.00	0.18
Rajasthan	51.5	7.35	58.85	0.15	0.50	0.65	34.1	0.00	0.01	6.39
	Middle Income States									
HP	81.97	1.13	83.10	4.97	7.60	12.57	1.53	0.05	0.00	2.75
AP	46.47	21.6	68.07	4.80	1.83	6.63	17.3	0.81	2.31	4.88
Sikkim	33.34	0.29	33.63	0.11	43.9	44.01	6.86	0.00	0.00	15.5
Karnataka	52.91	9.26	62.17	4.44	3.52	7.96	15.3	3.12	2.64	8.81
West Bengal	59.8	3.25	63.05	0.80	20.0	20.80	11.4	0.04	2.67	2.04
Kerala	13.62	0.20	13.82	6.72	5.31	12.03	32.7	0.00	0.37	41.08
	High Income States									
Maharashtra	67.56	15.2	82.76	2.13	3.51	5.64	5.04	3.93	0.04	2.59
Gujarat	45.24	4.40	49.64	1.67	3.63	5.30	9.28	3.10	20.3	12.38
Tamil Nadu	45.65	7.03	52.68	5.15	3.69	8.84	24.7	4.64	0.93	8.21
Haryana	69.00	5.21	74.21	0.00	0.35	0.35	19.7	0.24	0.00	5.5
Punjab	85.10	0.25	85.35	0.09	0.76	0.85	0.31	0.22	0.08	13.19
	North Eastern Special Category States									
Assam	65.8	3.7	69.50	0.85	20.1	20.95	4.54	0.02	0.63	4.36
Manipur	62.7	1.35	64.05	1.10	28.9	30	5.10	0.35	0.00	0.5
Mizoram	45.2	0.42	45.62	0.77	23.9	24.67	2.09	0.10	0.02	27.5
Nagaland	77.2	0.07	77.27	1.45	6.62	8.07	4.98	0.00	0.00	9.68
Tripura	66.2	0.02	66.22	5.90	21.2	27.1	2.07	0.00	0.00	4.61
All India	87.0	5.29	92.29	0.52	1.35	1.87	3.00	0.80	0.42	1.62

Source: NSSO 59th round.

Table A6: Cropping Pattern : Kharif

State	Percent area under									
	Cereals		Pulses		Fruits		Vegetables		Oilseeds	
	NB	B	NB	B	NB	B	NB	B	NB	B
	Low Income States									
Bihar	98.5	92.9	0.36	0.18	0.04	0.32	0.63	0.90	0.004	0.86
Jharkhand	95.8	92.2	0.31	2.50	0.00	0.00	3.87	4.95	0.00	0.12
UP	66.3	66.3	6.55	20.7	0.46	0.56	1.55	1.29	2.08	2.05
Orissa	9.30	97.0	1.53	2.04	0.03	0.70	0.43	0.39	0.40	0.08
MP	45.2	41.1	9.80	13.2	0.00	0.70	0.18	0.38	39.03	38.57
Chattisgarh	94.7	2.57	2.57	4.91	0.02	0.00	0.35	0.58	1.63	2.10
Rajasthan	57.4	83.8	13.0	8.90	0.01	0.00	0.62	0.02	6.34	0.78
	Middle Income States									
West Bengal	85.2	81.3	0.16	0.45	0.64	1.45	2.24	2.16	0.80	0.53
Karnataka	53.7	47.9	13.7	43.0	1.53	0.00	2.73	0.66	17.19	0.00
	High Income States									
Maharashtra	48.5	19.3	11.69	11.79	2.12	0.40	2.10	0.28	11.10	4.27
Haryana	62.5	78.3	3.59	0.00	0.30	0.00	1.50	0.00	0.20	0.00

NB: Non-backward districts; B: Backward districts.

Source: NSSO 59th round.

Table A7: Cropping Pattern : Rabi

State	Percent area under									
	Cereals		Pulses		Fruits		Vegetables		Oilseeds	
	NB	B	NB	B	NB	B	NB	B	NB	B
	Low Income States									
Bihar	79.5	81.3	16.6	13.5	0.17	0.58	1.60	2.07	1.25	1.83
Jharkhand	59.9	59.6	8.38	2.55	0.00	0.00	31.7	36.7	0.00	0.71
UP	97.6	69.2	0.76	19.9	0.12	0.57	0.38	1.97	0.26	3.51
Orissa	29.9	78.4	55.7	8.42	1.55	0.67	5.98	11.30	6.65	0.00
MP	54.7	54.3	33.1	44.0	0.35	0.41	1.03	0.07	8.75	0.90
Chattisgarh	24.5	33.9	71.9	46.3	0.01	0.00	0.73	2.67	2.86	15.87
Rajasthan	51.0	88.9	7.30	11.0	0.15	0.00	0.49	0.00	34.5	0.00
	Middle Income States									
West Bengal	60.8	55.6	3.3	3.05	0.71	1.22	19.00	24.2	11.5	11.2
Karnataka	52.4	76.5	9.4	0.23	4.5	0.00	3.57	0.75	15.6	0.00
	High Income States									
Maharashtra	65.0	71.5	14.7	16.1	3.21	0.43	4.67	1.69	3.68	7.16
Haryana	67.5	87.9	5.61	0.00	0.00	0.00	0.36	0.00	21.2	0.00

NB: Non-backward districts; B: Backward districts.

Source: NSSO 59th round.

Table A8 :Returns from Farming activity

States/UTs	Non-Backward districts				Backward districts			
	Total Receipts	Total Expenditures	Net Receipts	Net Receipts per hectare	Total Receipts	Total Expenditures	Net Receipts	Net Receipts per hectare
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low Income States								
Bihar	*48107.0*	*20040.0*	*28067.0*	9405.0	34130.0	13420.0	*20746.0*	9695.0
Chhattisgarh	*35639.0*	*15495.0*	*20227.0*	*5501.0*	27064.0	*7222.0*	*19448.0*	*5553.0*
MP	*58444.0*	*19506.0*	*38973.0*	*7563.0*	*64163.0*	*28810.0*	*35353.0*	*4527.0*
Orissa	*18895.0*	*9468.0*	*9487.0*	*5874.0*	*25733.0*	*12521.0*	*13426.0*	*6267.0*
Rajasthan	*61666.0*	*30111.0*	*31555.0*	*6477.0*	*18137.0*	*4794.0*	*13342.0*	*9007.0*
UP	*48453.0*	*22641.0*	*25851.0*	*8774.0*	*34720.0*	*15943.0*	*18790.0*	*6775.0*
Jharkhand	*29931.0*	*6816.0*	*23122.0*	*16088.0*	*29748.0*	*7405.*	*22371.0*	*12686.0*
North Eastern Special Category States								
Assam	*48474.0*	*7750.0*	*40940.0*	*17834.0*	..	..	..	..
Meghalaya	*87158.0*	*15779.0*	*71463.0*	*24176.0*	..	..	..	..
Nagaland	*49235.0*	*5590.0*	*44417.0*	32760.0	..	..	..	..
Middle Income States								
AP	*64338.0*	*37590.0*	*27111.0*	6584.0	..	..	..	..
HP	25952.0	9301.0	16748.0	*8750.0*	..	..	..	..
Karnataka	*62646.0*	*26827.0*	*36170.0*	*7376.0*	*75604.0*	*17816.0*	*57788.0*	*8250.0*
Kerala	*44416.0*	*16952.0*	*28922.0*	*19123.0*	..	..	..	..
WB	*38795.0*	*21466.0*	*17324.0*	*10186.0*	*46254.0*	*17084.0*	*29185.0*	*6077.0*
High Income States								
Punjab	237165.0	94317.0	142846.0	18431.0	..	..	..	..
Maharashtra	58580.0	28234.0	30496.0	7817.0	66963.0	29014.0	38000.0	5888.0
Tamil Nadu			25927.0	8569.0	..	..	..	..
Gujarat	77618.0	37473.0	40265.0	7732.0	..	..	..	..
Haryana	115755.0	53175.0	62580.0	10576.0	194260.0	97413.0	96847.0	16266.0

Source: NSSO 59th round

Table A9: Net Returns Per Hectare from Cereals (July-Dec 2002)

(Rupees)

	Returns	Expenditure	Net Returns
Bihar	16471.0	7266.0	9205.0
Jharkhand	17797.0	5127.0	12670.0
UP	19425.0	8858.0	10567.0
Orissa	21970.0	10459.0	11511.0
MP	11476.0	4445.0	7030.0
Chattisgarh	11587.0	4133.0	7454.0
Rajasthan	26317.0	11331.0	14968.0
HP	9726.0	4198.0	5524.0
AP	22295.0	11225.0	11070.0
Karnataka	8524.0	4168.0	4356.0
West Bengal	24351.0	13665.0	10687.0
Kerala	25116.5	13141.0	11975.0
Maharashtra	11565.0	5710.0	5855.0
Gujarat	18340.0	10069.0	8271.0
Tamil Nadu	13685.0	7520.0	6165.0
Haryana	28300.0	10950.0	17350.0
Punjab	29744.0	12099.0	17645.0
Assam	20252.0	3242.0	17009.0
Manipur	12472.0	4754.0	7718.0
Mizoram	14276.0	1146.0	13129.0
Nagaland	14795.0	3395.0	11400.0
Tripura	21496.2	7182.0	14314.0

Source: NSSO 59th round.

Table A10: Net Returns Per Hectare from Vegetables (July-Dec 2002)

(Rupees)

	Returns	Expenditure	Net Returns
Bihar	30922.0	13000.0	17921.0
Jharkhand	25978.0	8291.0	17687.0
UP	41513.0	24211.0	17301.0
Orissa	23896.0	11136.0	12759.0
MP	24058.0	5338.0	18720.0
Rajasthan	29310.0	11879.0	17431.0
AP	43175.0	19899.0	23276.0
Karnataka	27906.0	11333.0	16583.0
West Bengal	38172.0	11435.0	26737.0
Kerala	19252.0	8950.0	10301.0
Maharashtra	41969.0	22246.0	19723.0
Gujarat	28667.0	19383.0	9284.0
Tamil Nadu	32524.0	16329.0	16195.0
Punjab	45268.0	27690.0	17578.0
Assam	33695.0	8503.0	25192.0
Manipur	10490.0	5217.0	5273.0
Mizoram	24953.0	12241.0	12412.0
Nagaland	34953.0	9639.0	25314.0
Tripura	34653.0	12241.0	22412.0

Source: NSSO 59th round.

Table A11: Gross Cropped Area Per Household: 2002

(Hectare)

	January to August	September to December	Total area under crops during the entire year (Hectares per household)
	Low Income States		
Bihar	1.22	1.20	2.42
Jharkhand	1.27	0.56	1.83
UP	1.32	1.45	2.87
Orissa	1.54	0.73	2.37
MP	2.81	2.96	5.77
Chattisgarh	2.47	1.55	4.02
Rajasthan	3.14	2.48	5.62
	Middle Income States		
HP	0.94	0.76	1.70
AP	2.33	1.87	4.20
Karnataka	2.73	2.41	5.14
West Bengal	1.01	0.78	1.79
Kerala	0.79	0.79	1.58
	High Income States		
Maharashtra	3.00	2.05	5.05
Gujarat	3.02	2.28	5.30
Tamil Nadu	1.61	1.60	3.21
Haryana	2.91	3.07	5.98
Punjab	3.67	3.25	6.92
	North Eastern Special Category States		
Assam	1.66	0.90	2.56
Manipur	1.12	0.32	1.44
Mizoram	2.30	2.26	4.56
Nagaland	1.07	0.67	1.74
Tripura	0.87	0.51	1.38

Source: NSSO 59th round.

Table A12: Use of Modern Farming Inputs

States	Percent households using				
	Fertilizers	Improved seeds	Manure	Pesticides	Vet services
	Low Income States				
Bihar	90.7	35.1	33.6	42.0	20.3
Jharkhand	80.8	22.5	71.1	47.2	9.5
UP	80.3	49.3	50.1	40.1	26.4
Orissa	76.2	19.2	65.5	41.2	30.8
MP	61.3	30.2	42.7	29.7	19.9
Chattisgarh	69.4	11.6	52.1	38.0	19.8
Rajasthan	59.9	53.9	57.5	17.9	21.7
	Middle Income States				
HP	81.4	54.9	80.8	29.0	43.0
AP	83.5	69.7	72..2	73.1	42.8
Karnataka	85.6	64.5	79.7	55.6	38.9
West Bengal	92.4	68.6	61.6	83.8	36.1
Kerala	61.7	16.2	72.0	36.6	24.5
	High Income States				
Maharashtra	88.9	70.3	66.5	55.9	41.2
Gujarat	80.9	62.3	71.9	48.8	45.4
Tamil Nadu	76.7	60.9	66.4	69.1	48.1
Haryana	57.1	50.5	38.1	38.6	43.7
Punjab	65.2	53.5	43.0	62.3	69.0
	North Eastern Special Category States				
Assam	65.0	35.7	65.7	53.9	23.5
Manipur	55.1	48.6	34.5	47.7	7.3
Mizoram	30.6	3.9	30.6	4.5	10.4
Nagaland	25.3	23.4	81.8	34.6	33.6
Tripura	81.3	53.5	28.7	73.1	41.7
All India	77.8	48.0	58.5	48.0	31.5

Source: NSSO 59th round.

Table A13: Use of Modern Farming Inputs by categories of districts

States	Percent households using									
	Fertilizers		Improved seeds		Manure		Pesticides		Vet services	
	Bwrd	Nbwrd	Bwrd	Nbwrd	Bwrd	Nbwrd	Bwrd	Nbwrd	Bwrd	Nbwrd
	Low Income States									
Bihar	90.2	92.8	35.3	34.0	32.9	36.8	40.3	49.0	19.5	23.5
Jharkhand	81.2	79.6	21.9	24.4	70.1	73.9	50.8	36.8	8.9	11.1
UP	71.6	83.8	36.4	54.5	44.8	52.2	34.8	42.3	21.9	28.1
Orissa	68.7	77.4	30.4	17.4	66.4	65.3	32.3	42.7	30.5	30.8
MP	49.5	70.3	18.4	39.2	35.9	47.9	20.2	36.7	23.8	16.9
Chattisgarh	70.3	69.2	9.2	12.1	37.3	55.2	24.7	40.6	11.2	21.5
Rajasthan	80.5	58.3	39.3	55.0	59.8	57.3	10.7	18.5	17.2	22.1
	Middle Income States									
HP	100	79.7	78.1	52.7	46.0	84.0	6.1	31.0	81.0	39.5
Karnataka	61.6	86.0	55.6	64.6	81.2	79.7	61.0	55.5	9.70	39.3
West Bengal	85.0	93.7	70.6	68.3	84.5	57.7	69.6	86.2	34.3	36.4
	High Income States									
Maharashtra	93.3	86.9	93.0	60.7	66.5	66.5	76.2	47.2	43.5	40.3
Haryana	76.8	55.9	72.5	49.1	46.6	37.5	72.7	36.4	59.1	42.8

Bwrd: Backward districts as per GOI classification. Nbwrd: Non-backward districts.
Source: NSSO 59th round.

Table A14: State-wise Number of Wholesale, Primary and Regulated Markets in India: 2005*

States/ UTs	Number of Markets			Regulated Markets		
	Wholesale	Rural Primary	Total	Principal	Sub-market Yards	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low Income States						
Bihar	325 (*5.1*)	1469 (*6.8*)	1794 (*6.4*)	95 (*17.1*)	415 (*10.0*)	510 (*6.8*)
Jharkhand	118 (*1.9*)	NA (-)	118 (*0.4*)	27 (*1.1*)	276 (*5.4*)	303 (*4.0*)
Madhya Pradesh	485 (*7.6*)	1321 (*6.1*)	1806 (*6.4*)	233 (*9.6*)	255 (*5.0*)	488 (*6.5*)
Chattisgarh	0 (*0*)	1679 (*7.7*)	1679 (*6.0*)	73 (*3.0*)	106 (*2.1*)	179 (*2.4*)
Orissa	398 (*6.3*)	1150 (*5.3*)	1548 (*5.5*)	45 (*1.9*)	269 (*5.2*)	314 (*4.2*)
Rajasthan	413 (*6.5*)	558 (*2.6*)	971 (*3.5*)	123 (*5.1*)	293 (*5.7*)	416 (*5.5*)
Uttar Pradesh	584 (*9.2*)	3322 (*15.3*)	3906 (*12.1*)	244 (*10.1*)	340 (*6.6*)	584 (*7.7*)
Total	2323 (*36.5*)	9499 (*43.7*)	11822 (*42.1*)	840 (*34.6*)	1954 (*38.1*)	2794 (*37.0*)
North Eastern Special Category States						
Total	408 (*6.4*)	1474 (*6.8*)	1882 (*6.7*)	48 (*2.0*)	232 (*4.5*)	280 (*3.7*)
Middle Income States						
Andhra Pradesh	299 (*4.7*)	290 (*1.3*)	589 (*2.1*)	299 (*12.3*)	590 (*11.5*)	889 (*11.8*)
Himachal Pradesh	38 (*0.6*)	30 (*0.1*)	68 (*0.2*)	10 (*0.4*)	28 (*0.5*)	38 (*0.5*)
Karnataka	492 (*7.7*)	941 (*4.3*)	1433 (*5.1*)	145 (*6.0*)	347 (*6.8*)	492 (*6.5*)
Kerala	351 (*5.5*)	2000 (*9.2*)	2351 (*8.4*)	NA	NA	NA
Sikkim	7 (*0.1*)	30 (*0.1*)	37 (*0.1*)	1 (*0.0*)	NA	1 (*0.0*)
West Bengal	214 (*3.4*)	2925 (*13.5*)	3139 (*11.8*)	43 (*1.8*)	641 (*12.5*)	684 (*9.1*)
Total	1401 (*22.0*)	6216 (*28.6*)	7617 (*27.1*)	498 (*20.5*)	1606 (*31.3*)	2104 (*27.9*)
High Income States						
Tamil Nadu	300 (*4.7*)	677 (*3.1*)	977 (*3.5*)	274 (*11.3*)	14 (*0.3*)	288 (*3.8*)
Goa	11 (*0.2*)	8 (*0.0*)	19 (*0.1*)	1 (*0.0*)	7 (*0.1*)	8 (*0.1*)
Gujarat	201 (*3.2*)	137 (*0.6*)	338 (*1.2*)	190 (*7.8*)	215 (*4.2*)	405 (*5.4*)
Maharashtra	873 (*13.7*)	3500 (*16.1*)	4373 (*15.6*)	287 (*11.8*)	584 (*11.4*)	871 (*11.5*)
Punjab	437 (*6.9*)	- (-)	437 (*1.6*)	145 (*6.0*)	292 (*5.7*)	437 (*5.8*)
Haryana	284 (*4.7*)	157 (*0.7*)	441 (*1.6*)	106 (*4.4*)	178 (*3.5*)	284 (*3.8*)
Total	2106 (*33.1*)	4479 (*20.6*)	6585 (*23.4*)	1003 (*41.3*)	1290 (*25.2*)	2293 (*30.4*)
India	6359	21731	28090	2428	5129	7557

Source: http://www.indiastat.com
Figures correspond to the year 2005.
*Figures in parentheses are all India percentages

Table A15: State/Sector-wise Distribution of Cold Storages in India: 2005

State/ UTs	Private Sector		Cooperative Sector		Public Sector		Total	
	Number	Capacity ('000 tonnes)	Number	Capacity ('000 tonnes)	Number	Capacity ('000 tonnes)	Number	Capacity ('000 tonnes)
(1)	**(2)***	**(3)***	**(4)***	**(5)***	**(6)***	**(7)***	**(8) #**	**(9) #**
Low Income States								
Bihar	220(*92.4*)	833 (*91.4*)	18 (*7.6*)	77 (*8.5*)	0 (*0.0*)	0 (*0.0*)	238 (*5.0*)	910 (*4.6*)
Jharkhand	17 (*68.0*)	53 (*65.4*)	8 (*32.0*)	27 (*33.3*)	0 (*0.0*)	0 (*0.0*)	25 (*0.5*)	80 (*0.4*)
Madhya Pradesh	150(*86.2*)	650 (*86.6*)	19 (*10.9*)	99 (*13.2*)	5 (*2.9*)	2 (*0.27*)	174 (*3.6*)	751 (*3.8*)
Chhattisgarh	50 (*96.2*)	258 (*99.2*)	1 (*1.9*)	1 (*0.4*)	1 (*1.9*)	1 (*0.4*)	52 (*1.1*)	260 (*1.3*)
Orissa	80 (*77.0*)	223 (*81.4*)	24 (*23.1*)	51 (*18.6*)	0 (*0.0*)	0 (*0.0*)	104 (*2.2*)	274 (1.4)
Rajasthan	83 (*89.3*)	269 (*98.5*)	9 (*9.7*)	4 (*1.5*)	1 (*1.1*)	1 (*0.4*)	93 (*2.0*)	273 (*1.4*)
UP & Uttranchal	1320(*93.6*)	7969(*96.5*)	87 (*6.2*)	281 (*3.4*)	3 (*0.2*)	8 (*0.1*)	1410 (*29.5*)	8259(42.1)
Total	1920(*91.6*)	10256(*94.9*)	166 (*7.9*)	540 (*5.0*)	10 (*0.5*)	12 (*0.1*)	2096 (*43.9*)	10808*(55.1)*
North Eastern Special Category States								
Arunachal Pradesh	1 (*100.0*)	5 (*100.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	1 (*0.0*)	5 (*0.0*)
Manipur	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)
Assam	18 (*75.0*)	68 (*90.8*)	2 (*8.3*)	6 (*7.9*)	4 (*16.7*)	1.1 (*1.32*)	24 (*0.5*)	76 (*0.4*)
Meghalaya	1 (*33.3*)	1(*33.3*)	0 (*0.0*)	0 (*0.0*)	2 (*66.7*)	2 (*66.6*)	3 (*0.1*)	3.2 (*0.0*)
Mizoram	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)
Nagaland	1 (*50.0*)	5 (*83..3*)	1 (*50.0*)	1 (*16.7*)	0 (*0.0*)	0 (*0.0*)	2 (*0.0*)	6.2 (*0.0*)
Tripura	2 (*25.0*)	8 (*44.4*)	1 (*12.5*)	5 (*27.8*)	5 (*62.5*)	6 (*33.3*)	8 (*0.2*)	18 (*0.1*)
Total	23 (*60.5*)	88 (*81.5*)	4.00 (*10.5*)	12 (*11.1*)	11(*29.*)	8.8 (*8.3*)	38 (*0.8*)	109 (*0.6*)
Middle Income States								
Andhra Pradesh	245(*92.1*)	703 (*98.5*)	13 (*4.9*)	9.3 *1.3*)	8 (*3.0*)	1.2 (*0.1*)	266 (*5.6*)	713 (*3.6*)
HP	8 (*47.1*)	11 (*61.1*)	2 (*11.8*)	0.8 (*5.6*)	7 (*41.2*)	6.2 (*33.3*)	17 (*0.4*)	18 (*0.1*)
Karnataka	86 (*70.0*)	129 (*86.0*)	24(*19.51*)	16.8 (*11.3*)	13(*10.6*	3.3 (*2.0*)	123 (*2.6*)	149 (*0.8*)
Kerala	152(*90.5*)	37 (*92.5*)	6 (*3.6*)	1.1 (*2.5*)	10 (*6.0*)	1.6 (*5.0*)	168 (*3.5*)	39 (*0.2*)
Sikkim	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)
West Bengal	317(*82.1*)	4105(*93.6*)	69 (*17.9*)	298 (*6.8*)	0)*0.0*)	0 (*0.0*)	386 (*8.1*)	4402 (*22.4*)
Total	**808(*84.2*)**	**4986(*93.6*)**	**114(*11.9*)**	**325 (*6.1*)**	**38 (*4.0*)**	**12 (*0.2*)**	**960 (*20.1*)**	**5324 (*27.1*)**
High Income States								
Maharashtra	347(*80.9*)	431 (*94.1*)	53 (*12.4*)	19 (*4.4*)	29 (*6.8*)	7 (*1.7*)	429 (*9.0*)	459 (*2.3*)
Gujarat	338(*92.4*)	917 (*96.6*)	20 (*5.5*)	24 (*2.5*)	8 (*2.2*)	7 (*0.8*)	366 (*7.7*)	948 (*4.8*)
Goa	24(*100.0*)	5.9 (*100.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	0 (*0.0*)	24 (*0.5*)	5 (*0.0*)
Haryana	227(*95.8*)	365 (*96.1*)	4 (*179*)	3 (*0.8*)	6 (*2.5*)	11 (*2.9*)	237 (*5.0*)	380 (*1.9*)
Punjab	364(*95.3*)	1192(*96.8*)	18 (*4.7*)	39 (3.2)	0 (*0.0*)	0 (*0.0*)	382 (*8.0*)	1231 (*6.3*)
Tamil Nadu	107(*86.3*)	165(*92.70*)	13 (*10.5*)	7 (*4.5*)	4 (*3.2*)	5 (*2.8*)	124 (*2.6*)	178 (*0.9*)
Total	**1407(*90.1*)**	**3078(*96.04*)**	**108 (*6.9*)**	**940 (*2.9*)**	**47 (*3.0*)**	**32 (*1.0*)**	**1562 (*32.7*)**	**3204 (*16.3*)**
India (@)	**4255(*89.0*)**	**18563(*94.6*)**	**399 (*8.4*)**	**980 (*5.0*)**	**125(*2.6***	**81 (*0.4*)**	**4779**	**19626**

Source: Http://www.indistat.com

*Figures in parentheses of columns (2) through (7) are percentages to state totals of numbers and capacity of cold storage. Figures correspond to the year 2005.

Figures in parentheses of columns (8) and (9) are percentages to all India totals of numbers and capacity of cold storage.

@ Figures in parentheses of the row are percentages to all India totals.

Table A16: State-wise Storage Capacity of Central Warehousing Corporation (CWC) and State Warehousing Corporation (SWCs) in India: 2006

(Capacity in Lakh Metric Tonnes)

State	CWC	SWC	Total
(1)	(2)*	(3)*	(4)#
Low Income States			
Bihar	1.02 (*29.65*)	2.42 (*70.35*)	3.44 (*0.04*)
Chattisgarh	2.09 (*23.6*)	6.76 (*76.4*)	8.85 (*2.97*)
Jharkhand	0.35 (*100.00*)	-	0.35 (*0.12*)
Madhya Pradesh	6.26 (*35.42*)	11.41 (*64.58*)	17.67 (*5.94*)
Orissa	1.9 (*31.82*)	4.07 (*68.18*)	5.97 (*2.01*)
Rajasthan	7.03 (*37.65*)	11.64 (*62.35*)	18.67 (*6.28*)
Uttar Pradesh	11.19 (*27.80*)	29.06 (*62.20*)	40.25 (*13.53*)
Total	**29.84 (*31.34*)**	**65.36 (*68.66*)**	**95.20 (*32.01*)**
North Eastern Special Category States			
Assam	0.66 (*20.95*)	2.49 (*79.05*)	3.15 (*1.06*)
Meghalaya	-	0.11 (*100.00*)	0.11 (*0.04*)
Nagaland	0.13 (*100.00*)	-	0.13 (*0.04*)
Tripura	0.24 (*100.00*)	-	0.24 (*0.08*)
Total	**1.03 (*28.37*)**	**2.60 (*61.63*)**	**3.63 (*1.22*)**
Middle Income States			
Andhra Pradesh	14.02 (*38.32*)	22.56 (*61.68*)	36.58 (*12.30*)
Himachal Pradesh	0.07 (*100.00*)	-	0.07 (*0.02*)
Karnataka	4.19 (*31.64*)	9.05 (*68.36*)	13.24 (*4.45*)
Kerala	1.23 (*39.18*)	1.91 (*60.82*)	3.14 (*0.35*)
Sikkim	-	-	--
West Bengal	7.19 (*76.90*)	2.16 (*23.10*)	9.35 (*3.14*)
Total	**26.70 (*50.98*)**	**35.68 (*49.02*)**	**52.38 (*17.61*)**
High Income States			
Goa	0.48 (*100.00*)	-	0.48 (*0.16*)
Gujarat	5.97 (*73.70*)	2.13 (*26.30*)	8.10 (*2.72*)
Haryana	4.95 (*25.84*)	14.21 (*74.16*)	19.16 (*6.44*)
Maharashtra	15.22 (*55.68*)	12.11 (*44.32*)	27.33 (*9.19*)
Punjab	6.89 (*10.50*)	58.71 (*89.50*)	65.60 (*22.05*)
Tamil Nadu	6.77 (*52.00*)	6.25 (*48.00*)	13.02 (*4.38*)
Total	**40.28 (*30.13*)**	**93.41 (*69.87*)**	**133.69 (*44.95*)**
India	**100.38 (*33.75*)**	**197.05 (*66.25*)**	**297.43**

Source: http://www.indiastat.com
Figures correspond to the year 2005.
* Figures in parentheses of columns (2) and (3) are percentages of state totals
# Figures in parentheses of columns (4) are percentages of all India totals

Table A17: Selected State-wise Number of Rural Godown Sanctioned, Capacity and Subsidy Released by National Bank for Agricultural and Rural Development (NABARD) and National Cooperative Development Corporation (NCDC) in India (01.04.2003 to 31.03.2006)

States/UTs	1.4.2003 to 31.3.2004			1.4.2004 to 31.3.2005			1.4.2005 to 31.3.2006		
	No. of Projects	Capacity in '000 T	Subsidy Released (Rs.Lakh)	No. of Projects	Capacity in '000 T	Subsidy Released (Rs.Lakh)	No. of Projects	Capacity in Tonnes	Subsidy Released (Rs.Lakh)
(1)	(2)*	(3)*	(4)*	(5)*	(6)*	(7)*	(8)*	(9)*	(10)*
Low Income States									
Bihar	12 (*0.5*)	2.1 (*0.1*)	2.11(*0.0*)				1 (*0.0*)	10.0(*0.4*)	90(*1.3*)
Chhattisgarh	3 (*0.1*)	147.7(*3.7*)	609.0(*6.7*)	94 (*2.0*)	230.8(*6.4*)	493.5(*6.1*)	14 (*0.7*)	47.4(*2.1*)	269(*4.0*)
MP	288(*11.0*)	471.8(*11.7*)	631.7(*7.0*)	381(*8.2*)	734.7(*20.4*)	1780.7 (*22.1*)	164(*8.0*)	347.2(*15.2*)	1488(*22.2*)
Orissa	41 (*1.6*)	55.6 (*1.4*)	78.33 (*0.9*)	20 (*0.4*)	22.9 (*0.6*)	305.6 (*3.8*)	53 (*2.6*)	55.4 (*2.4*)	141 (*2.1*)
Rajasthan	7 (*0.3*)	15.4 (*0.4*)	28.9 (*0.3*)	14 (*0.3*)	36.2 (*1.0*)	92.7 (*1.1*)	127 (*6.2*)	122.9(*5.4*)	84 (*1.3*)
UP	604 (*23.0*)	1160.8 (*28.9*)	400.7 (*4.4*)	27 (*0.6*)	88.6 (*2.5*)	606.3 (*7.5*)	44 (*2.2*)	249.5(*10.9*)	577 (*8.6*)
Total	955.0(*36.4*)	1853.2 (*46.1*)	1750.7 (*19.3*)	536.0 (*11.6*)	1113.2(*30.8*)	3278.9 (*40.7*)	403.0(*19.7*)	832.4(*36.4*)	2649.9 (*39.4*)
North Eastern Speical Category States									
Assam	20 (*0.8*)	34.8 (*0.9*)	44.8 (*0.5*)	31 (*0.7*)	28.2 (*0.8*)	136.9(*1.7*)	20 (*1.0*)	22.1 (*1.0*)	103.38 (*1.5*)
Meghalaya	1 (*0.0*)	8.0 (*0.2*)	19.9 (*0.2*)	7 (*0.2*)	0.7 (*0.0*)	2.5 (*0.0*)	1 (*0.0*)	1.6 (0.1)	9.65 (*0.1*)
Nagaland	1 (*0.0*)	4.0 (*0.1*)	3.5 (*0.0*)						
Total	22.00(*0.8*)	46.8 (*1.2*)	68.26(*0.8*)	38.0(*0.8*)	29.0 (*0.8*)	139.4(*1.7*)	21.00(*1.0*)	23.7 (*1.0*)	113.03 (*1.7*)
Middle Income States									
AP	194 (*7.4*)	820.5 (*20.4*)	2780.2 (*30.6*)						
HP				1 (*0.0*)	0.6 (*0.0*)	20 (*0.2*)	0 (*0.0*)	0 (*0.0*)	3.99 (*0.1*)
Karnataka	300 (*11.4*)	298.9(*7.4*)	817.2(*9.0*)	194(*4.2*)	149.2(*4.1*)	450.9(*5.6*)	190(*9.3*)	186.7(*8.2*)	791.05(*11.8*)
Kerala	10 (*0.4*)	3.6 (*0.1*)	3.6 (*0.0*)	8 (*0.2*)	2.9 (*0.1*)	13.3 (*0.2*)	12 (*0.6*)	9.7 (*0.4*)	47.15 (*0.7*)
WB	500 (*19.0*)	131.4(*3.3*)	304.1(*3.4*)	49 (*1.1*)	43.7 (*1.2*)	78.3 (*1.0*)	503(*24.6*)	175.2(*7.7*)	431.13 (*6.4*)
Total	1004.0(*38.2*)	1254.3(*31.2*)	3905.2(*43.0*)	252.0 (*5.4*)	196.4(*5.4*)	562.5(*7.0*)	705.0(*34.5*)	369.1(*16.2*)	1273.32(*19.0*)
High Income States									
Punjab	20 (*0.8*)	15.3 (*0.4*)	1681.1(*18.5*)	2784(*60.1*)	964.6(*26.7*)	168.3(*2.1*)	185 (*9.1*)	440.3(*19.3*)	502 (*7.5*)
Maharashtra	466 (*17.8*)	689.9(*17.1*)	1145(*12.6*)	396 (*8.5*)	521.3(*14.4*)	648.8(*8.0*)	396 (*19.4*)	367.2(*16.1*)	1445.1(*21.5*)
Tamil Nadu	9 (*0.3*)	23.6 (*0.6*)	39.3 (*0.4*)	14 (*0.3*)	63.8 (*1.8*)	99.6 (*1.2*)	22 (*1.1*)	91.6 (*4.0*)	170.68 (*2.5*)
Gujarat	92 (*3.5*)	42.5 (*1.1*)	230.9 (*2.5*)	339 (*7.3*)	160.3(*4.4*)	340.9(*4.2*)	295 (*14.4*)	90.9 (4.0)	236.02 (*3.5*)
Haryana	21 (*0.8*)	39.4 (*1.0*)	246.9 (*2.7*)	139 (*3.0*)	258.5(*7.2*)	1530.7 (*19.0*)	17 (*0.8*)	70.2 (*3.1*)	217.99 (*3.2*)
Total	608(*23.2*)	811.0 (*20.2*)	3343.1 (*36.8*)	3672.0(*79.3*)	1968.5(*54.5*)	2788.3 (*34.6*)	915.0(*44.8*)	1060.3(*46.4*)	2571.82 (*38.3*)
India	2625	4023.1	9075.1	4632	3608.9	8065.4	2042	2285.4	6717.47

*****Source: http://www.indiastat.com
Figures correspond to the year 2005. * Figures in parentheses of columns are percentages of all India totals

Table A18: State-wise Physical Progress of Rural Godown Scheme in India: 2006

State / UT	Total new construction		Sanctioned by NCDC (Renovation)		Total	
	No. of Projects	CapacityIn '000 Tonnes	No. of Projects	Capacity in '000 Tonnes	No. of Projects	Capacity in '000 Tonnes
(1)	(2)*	(3)*	(4)*	(5)*	(6)#	(7)#
Low Income States						
Bihar	159 (*98.8*)	27.1 (*98.2*)	2 (*1.2*)	0.5 (*1.8*)	161 (*1.5*)	27.7 (*0.2*)
Chhattisgarh	220 (*10.0*)	812.8 (*100.0*)	0 (*0.0*)	0 (*0.0*)	220 (*2.0*)	812.8 (*5.1*)
MP	916 (*88.4*)	1532.9 (*95.5*)	120 (*11.6*)	72.6 (*4.5*)	1036 (*9.4*)	1605.6 (*10.0*)
Orissa	136 (*100.0*)	319.3 (*100.0*)	0 (*0.0*)	0 (*0.0*)	136 (*1.2*)	319.3 (*2.0*)
Rajasthan	128 (*45.1*)	142.9 (*92.2*)	156 (*54.9*)	12.1 (*7.8*)	284 (*2.6*)	155.0 (*0.4*)
Uttar Pradesh	182 (*20.8*)	933.5 (*49.4*)	693 (*79.2*)	955.4 (*50.6*)	875 (*7.9*)	1889.0 (*11.8*)
Total	**1741.0(*64.2*)**	**3768.6 (*78.4*)**	**971.0 (35.8)**	**1040.7 (*21.6*)**	**2712.0(*24.6*)**	**4809.3 (*30.0*)**
North Eastern Special Category States						
Assam	71 (*100.0*)	93.5 (*100.0*)	0 (*0.0*)	0 (*0.0*)	71 (*0.6*)	93.5 (*0.6*)
Meghalaya	36 (*92.3*)	13.1 (*97.8*)	3 (*7.7*)	0.3 (*2.2*)	39 (*0.3*)	13.3 (*0.1*)
Nagaland	1 (*100.0*)	4 (*100.0*)	0 (*0.0*)	0 (*0.0*)	1 (*0.0*)	4 (*0..0*)
Total	**108.00(*97.3*)**	**110.6 (*99.7*)**	**3.00 (*2.7*)**	**0.3 (*0.3*)**	**111.0 (*1.0*)**	**110.9 (*0.7*)**
Middle Income States						
Andhra Pradesh	602(*92.2*)	2386.8 (*99.8*)	51 (*7.8*)	4.7 (*0.2*)	653 (*5.9*)	2391.5 (*14.9*)
Himachal Pradesh	31 (*100.0*)	3.6 (*100.0*)	0 (*0.0*)	0 (*0.0*)	31 (*0.3*)	3.6 (*0.0*)
Karnataka	913 (*99.9*)	739.3 (*99.9*)	1 (*0.1*)	0.1 (*0.0*)	914 (*8.3*)	739.4 (*4.6*)
Kerala	35 (*81.4*)	13.9 (*89.9*)	8 (*18.6*)	1.6 (*10.2*)	43 (*0.4*)	15.4 (*0.1*)
West Bengal	1139 (*98.7*)	359.2 (*99.6*)	15 (*1.3*)	1.5 (*0.4*)	1154 (*10.5*)	360.7 (*2.3*)
Total	**2720.0(*97.3*)**	**3502.7 (*99.8*)**	**75.0 (2.7)**	**7.9 (*0.2*)**	**2795.0 (*25.3*)**	**3510.6 (*21.9*)**
High Income States						
Gujarat	532 (*96.5*)	296.6 (*93.9*)	19 (*3.4*)	19 (*6.0*)	551(*5.0*)	315.6 (2.0)
Haryana	241 (*70.1*)	1259.3 (*84.51*)	103 (*29.9*)	230.8 (*15.5*)	344 (*3.1*)	1490.1 (*9.3*)
Maharashtra	1083 (*89.4*)	1374.1 (*84.0*)	129 (*10.6*)	261.3 (*16.0*)	1212 (*11.0*)	1635.3 (*10.2*)
Punjab	2987 (*93.3*)	3166.9 (*80.4*)	213 (*6.7*)	771.9 (*19.6*)	3200 (*29.0*)	3938.8 (*24.6*)
Tamil Nadu	51 (*96.2*)	125.2 (*99.5*)	2 (*3.8*)	0.6 (0.5)	53 (*0.5*)	125.8 (*0.8*)
Total	**4894.0(*91.3*)**	**6222.0 (*82.9*)**	**466.0 (8.7)**	**1283.7 (*17.1*)**	**5360.0 (48.6)**	**7505.6 (46.9)**
J & K	2 (*100.0*)	2.1 (*100.0*)	0 (*0.0*)	0 (*0.0*)	2 (*0.0*)	2.0 (*0.0*)
Uttranchal	41 (*100.0*)	57.4 (*100.0*)	0 (*0.0*)	0 (*0.0*)	41 (*0.4*)	57.4 (0.4)
UTs	2 (*100.0*)	1.4 (*100.0*)	0 (*0.0*)	0 (*0.0*)	2 (*0..0*)	1.4 (*0.0*)
NAFED	2 (*100.0*)	20 (*100.0*)	0 (*0.0*)	0 (*0.0*)	2 (*0.0*)	20 (*0.1*)
India	**9510 (*86.2*)**	**13684.7 (*85.4*)**	**1515 (13.7)**	**2332.6 (*14.6*)**	**11025(100.0)**	**16017.3(*100.0*)**

Source: http://www.indiastat.com
Figures correspond to the year 2006.
* Figures in parentheses of columns are percentages of state totals
\# Figures in parentheses of columns are percentages of all India totals

Annex 1. A Brief Note on the classification of districts as 'Backward'

There have been several attempts in the past to examine disparities at the district level and to identify 'backward' or 'poorest' districts. One of the most elaborate exercises of this type was the work of the SARMA committee in 1997 which identified hundred most backward districts in India (Ministry of Rural Areas and Employment) using a composite method with different weights on parameters such as :

- Incidence of poverty
- Education
- Health
- Water supply
- Transport and communications, and
- Degree of industrialization

This became the base for anchoring the PACS programme for the rural areas.

Recently there have been two more attempts to identify the most backward districts. One of these has been published by Bibek Debroy and Laveesh Bhandari in their report on district level deprivation in the new millennium. They identified 69 districts based on six indicators derived from the UN millennium development goals. These are

- Poverty
- Hunger
- Infant mortality
- Immunization, and
- Literacy and elementary school enrolment.

Districts that appeared on four of these factors in the bottom quarter were identified as backward to draw the list of 69 'most backward districts'.

Another list was put together by the planning commission for the Rashtriya Sam Vikas Yojana (RSVY). This has two lists – one consists of 32 districts affected by left-wing extremism (to be covered under RSVY) and the other larger list of 100 'most backward districts' based on an index of backwardness comprising three parameters with equal weights as follows

- Value of output per agricultural worker
- Agricultural wage rate
- Percentage of SC/ST population of the districts

Based on an assessment of sampling scheme and the indicators used to identify backwardness, the list prepared by Sarma Committee was found to be most suitable for the analysis presented in this Paper.

Annex 2. A Brief Note on the amendment of the APMC Act in selected states

The Agricultural Produce Market Committee (APMC) Acts are state Acts that regulate sale and purchase of all agricultural products. The Acts were developed to provide a transparent and fair platform for sale of farm produce so as to minimize exploitative business practices by traders. The Act prescribed that all farm produce will be sold only through auctions held under the auspices of their nearest local Market Committee. However, overtime these restrictions became detrimental to farmer interests as the transparency in dealings declined. The Act also imposed significant restrictions that affected flow of farm-products so as to constrain the adjustment toward a modern marketing system.

Being acutely aware of the limitations of APMC Act, the Ministry of Agriculture, GoI, developed a Model amended APMC Act that removed certain rigidities of the original APMC act and introduced the concepts of parallel private markets, contract farming and new roles for cooperatives. Some of the features of the model Act include

1. Allows establishment of private yards, allowing direct purchase of agricultural produce from producers in one or more market areas and establishing markets that would allow a farmer to sell directly to the end consumer.
2. Allows for establishment and running of a National Integrated Produce Market ("Terminal Market") to market fruits, vegetables and flowers owned and managed by National Dairy Development Board (NDDB) along the lines of a pilot project in Bangalore.
3. Allows setting up of special markets and provide the infrastructure and services required for special commodities.
4. Allows for contract farming under written agreement, recorded with the Market Committee, between a Sponsor and an individual producer or a producers' association. All disputes arising from the contract farming agreement are to be referred to a prescribed authority for resolution within 30 days. There is also provision for appeal.
5. Enables e-trading, defined as trading in which billing, booking, contracting, negotiating information exchange, record keeping and other connected activities are done electronically.
6. Allows for produce to be sold in the market yards/ sub market yards, and also in private yards and other places to a license holder, without necessarily carrying the goods to the market yards. It also makes it essential for a buyer to pay the seller on the same day or pay a penalty of 1% per day for the next 5 days. Non-payment after 5 days would lead to cancellation of the license/ registration of the party and he/she would not be permitted to operate under the Act for a period of one year.
7. The market committees to fix their market fee between 1% and 2% of the price which can be charged once within the state against the earlier provision covering the market area. When the produce is transacted outside the yard limits, the fee must be deposited within 14 days or before the produce leaves the state,
8. Requires market fees to be paid by the buyer and are not to be deducted from the price payable to the seller.

Figures

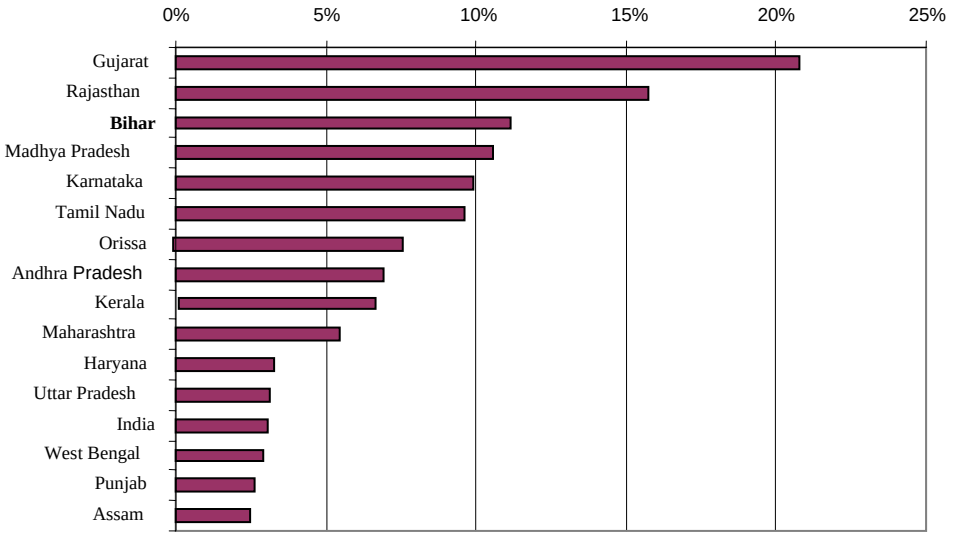


Figure 1: Coefficient of Variation of Agricultural Growth across States

Figure 2 : Agricultural productivity and employment

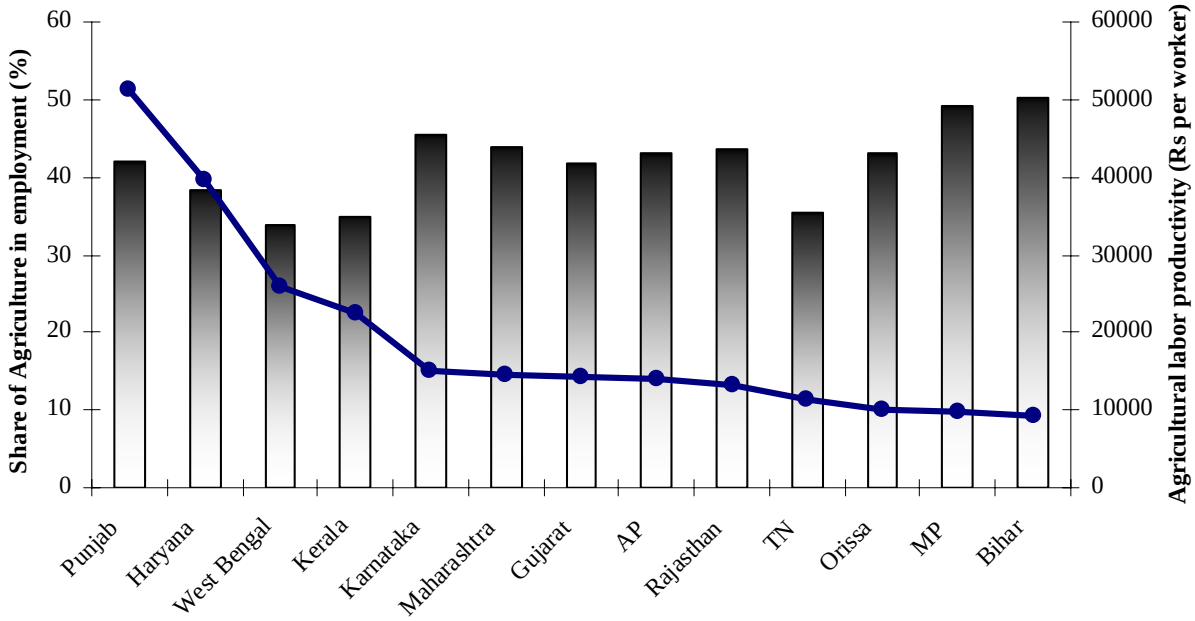
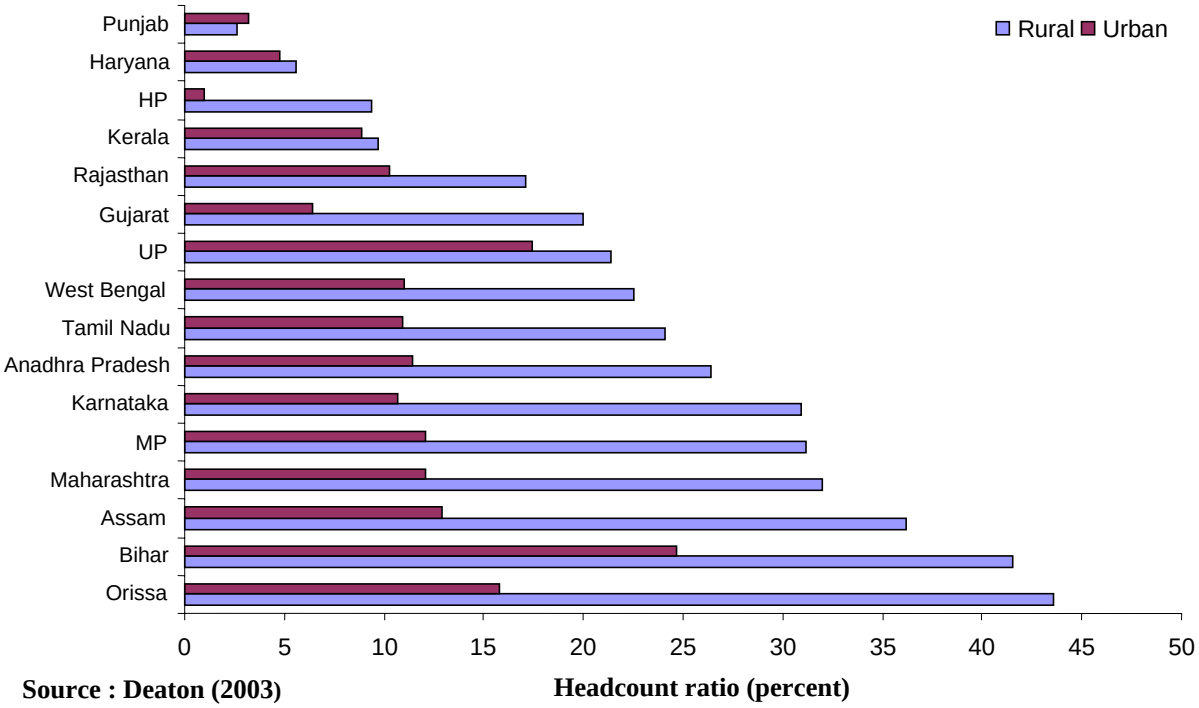


Figure 3: Poverty Incidence Across Indian States: 1999-2000



Source : Deaton (2003)

Figure 4: Share of lagging states in total number of absolute poor

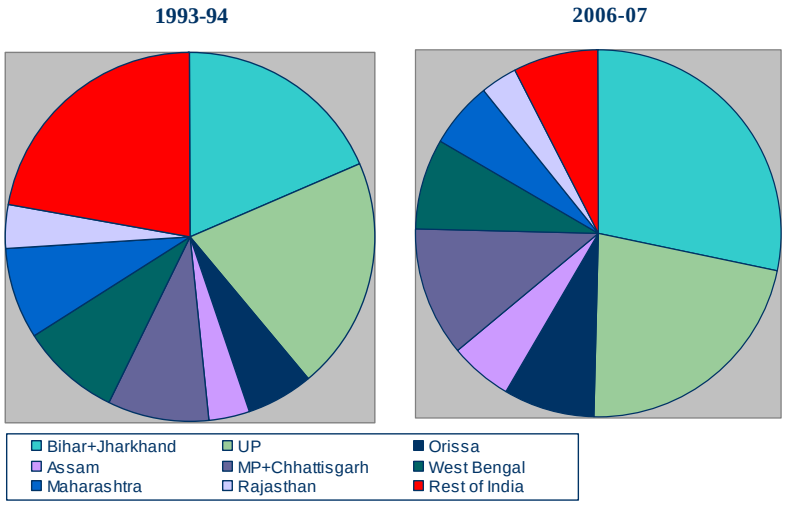


Figure 6: Trend in Average Yield of Pulses in India

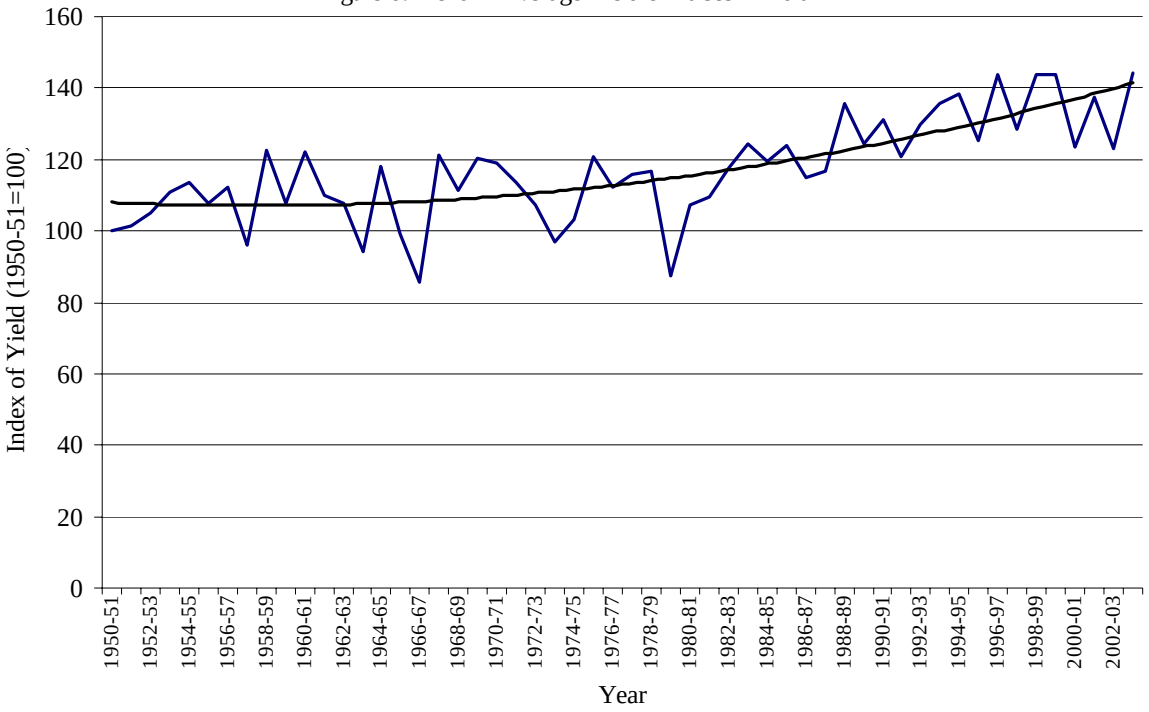


Figure 7: Irrigtion coverage under pulses in India

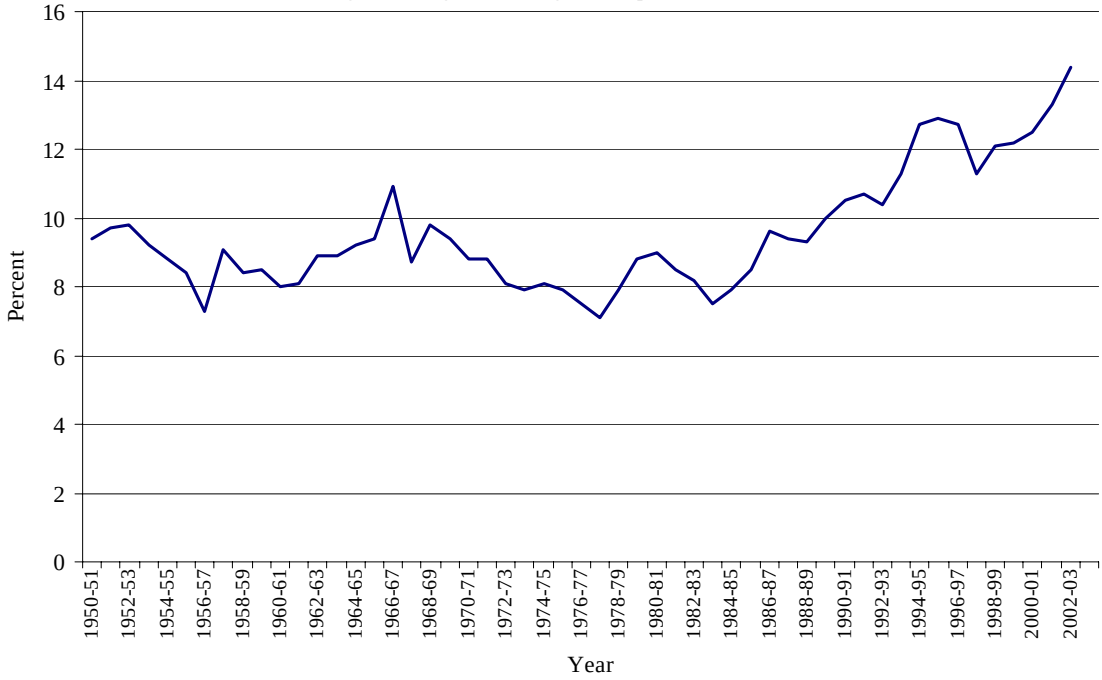


Figure 7 Average land holding size

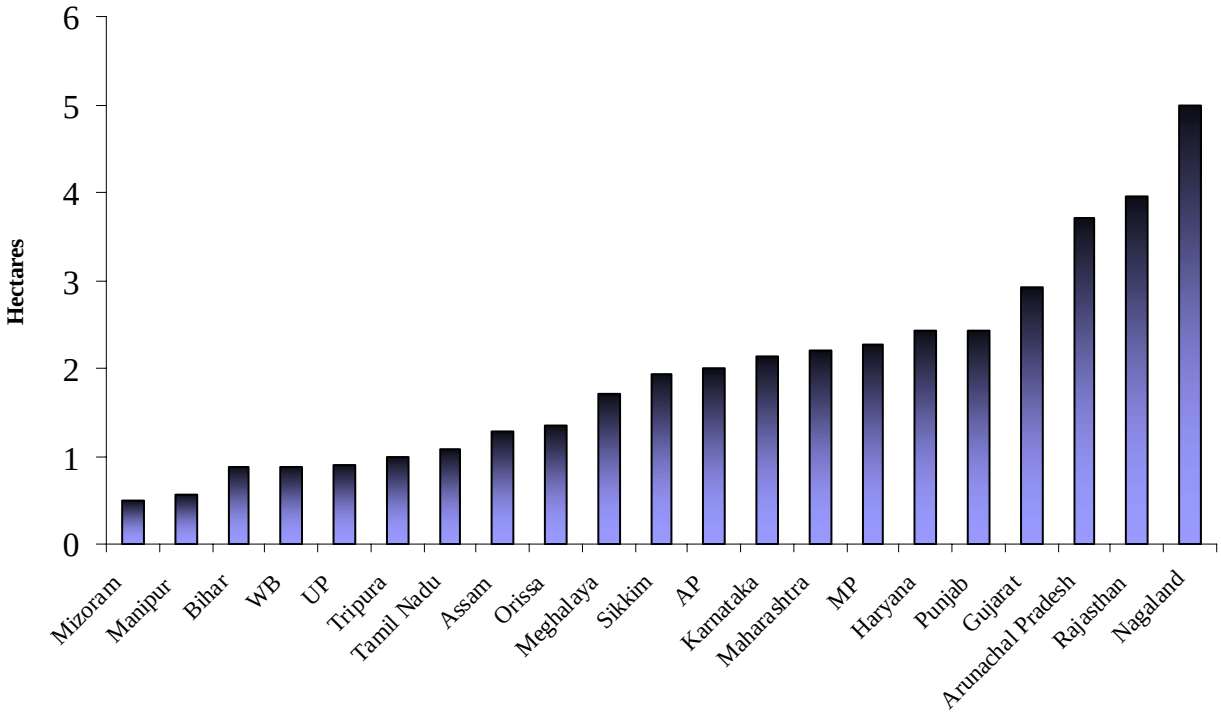


Figure 8 : N+P+K Consumption per hectare of Gross Cropped Area: 2002

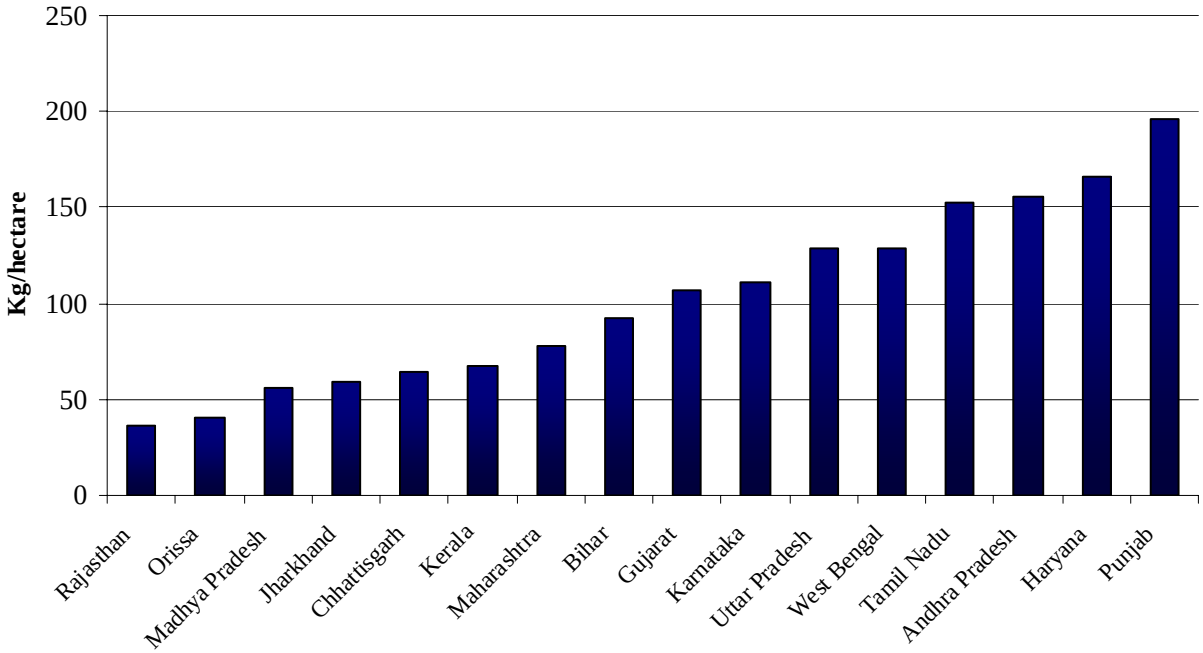


Figure 9: Net Irrigated Area as percent of Net Sown Area: 2005

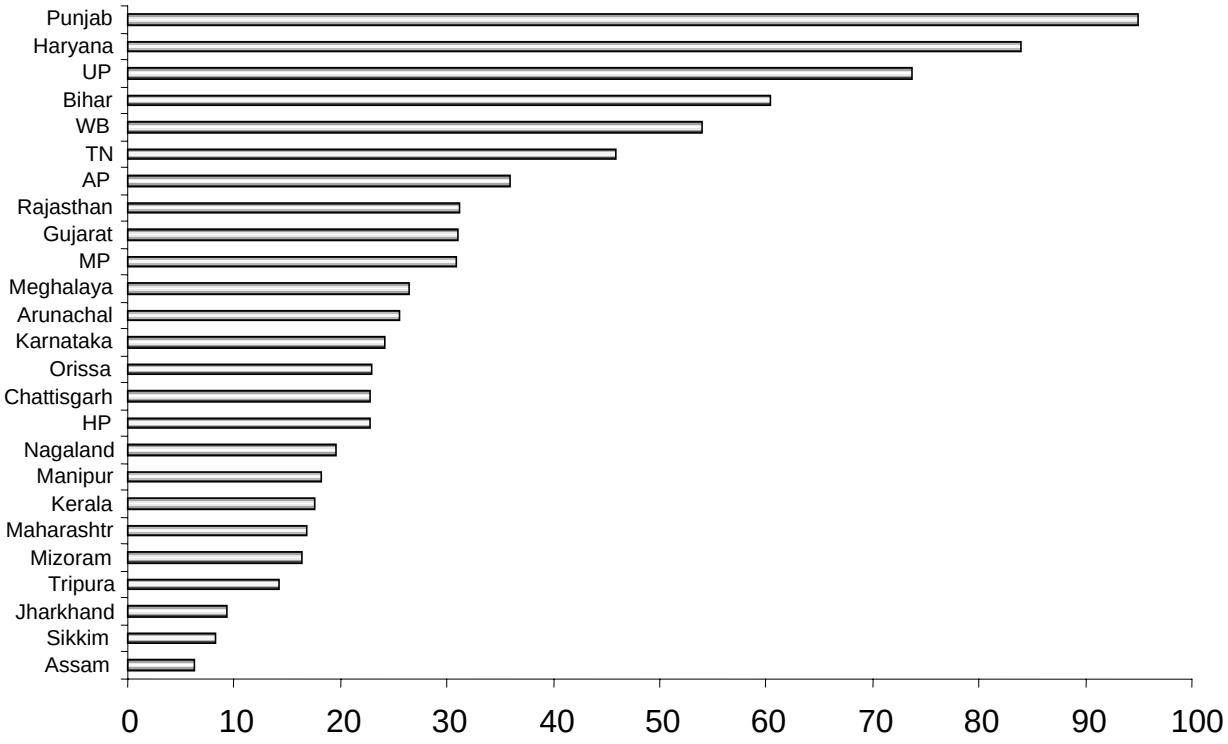


Figure 10: Gross Irrigated Area as percent of Gross Cropped Area

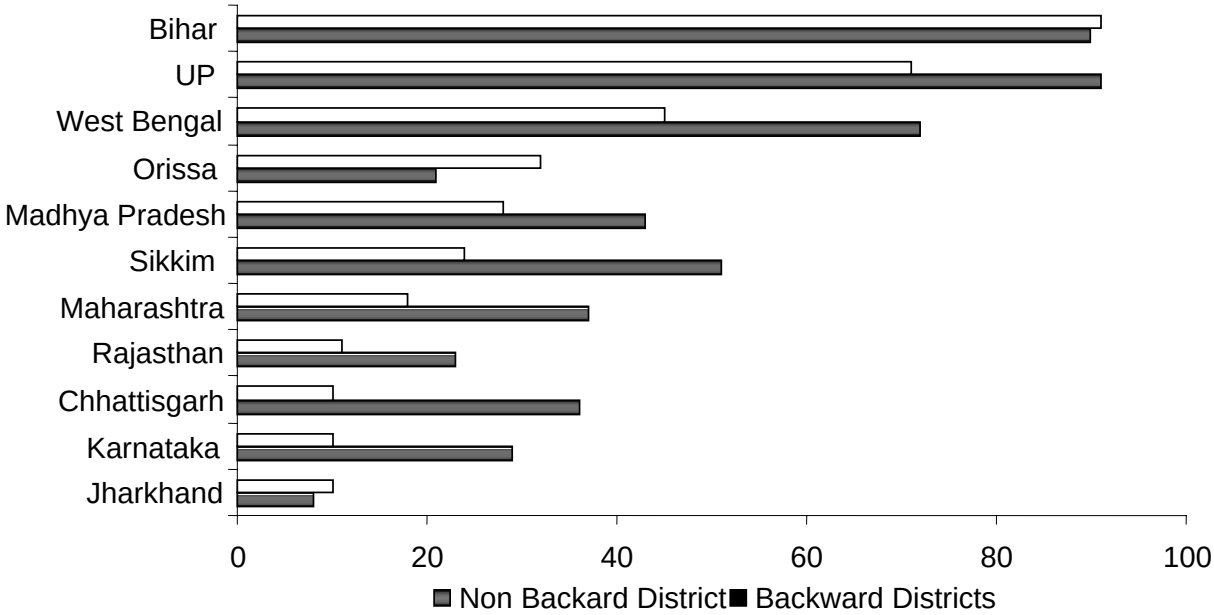


Figure 11: Number of WUAs formed and area covered by them

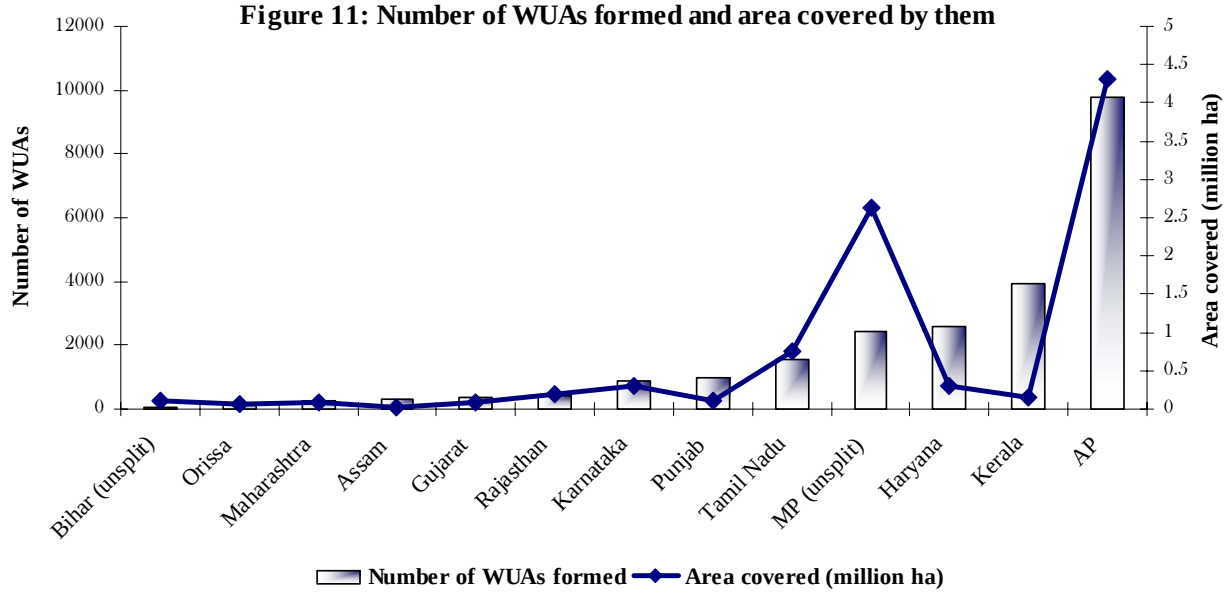


Figure 12: Infrastructure of Mandis in selected States

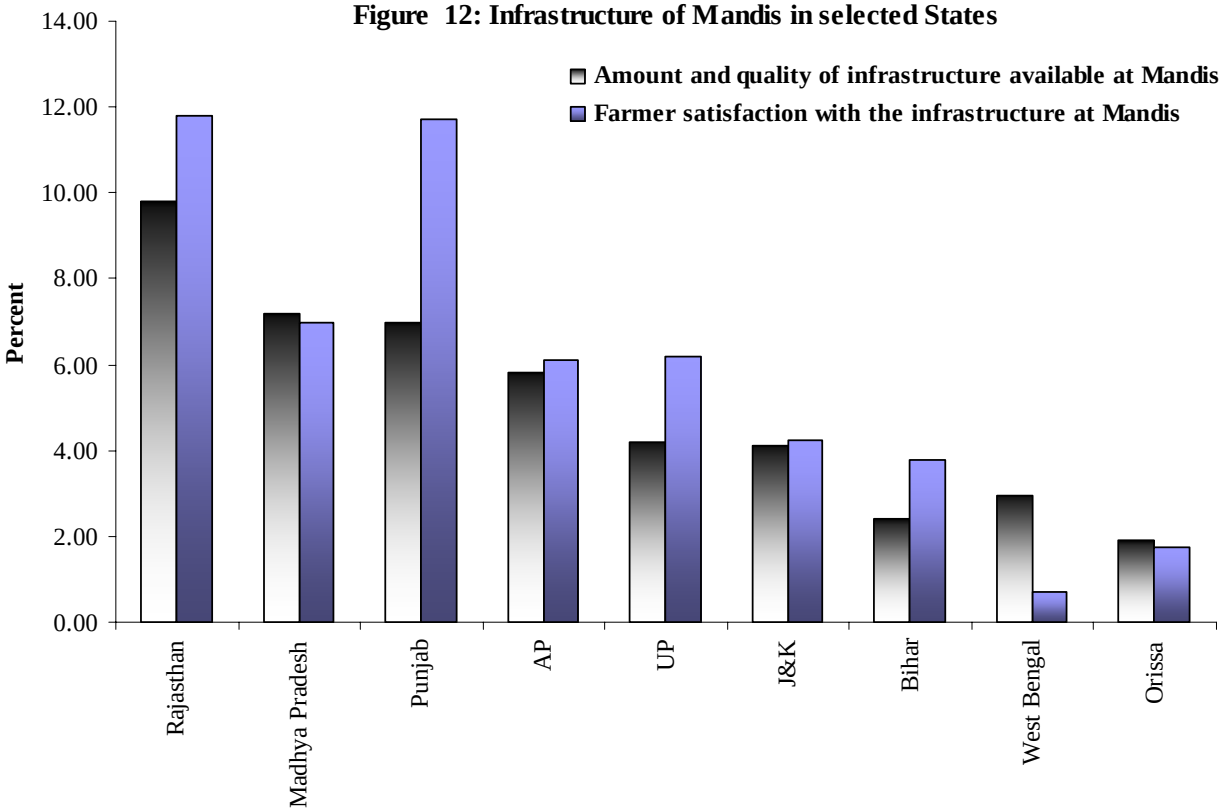


Figure 13: Village Connectivity (% of total villages connected by road, 2001)

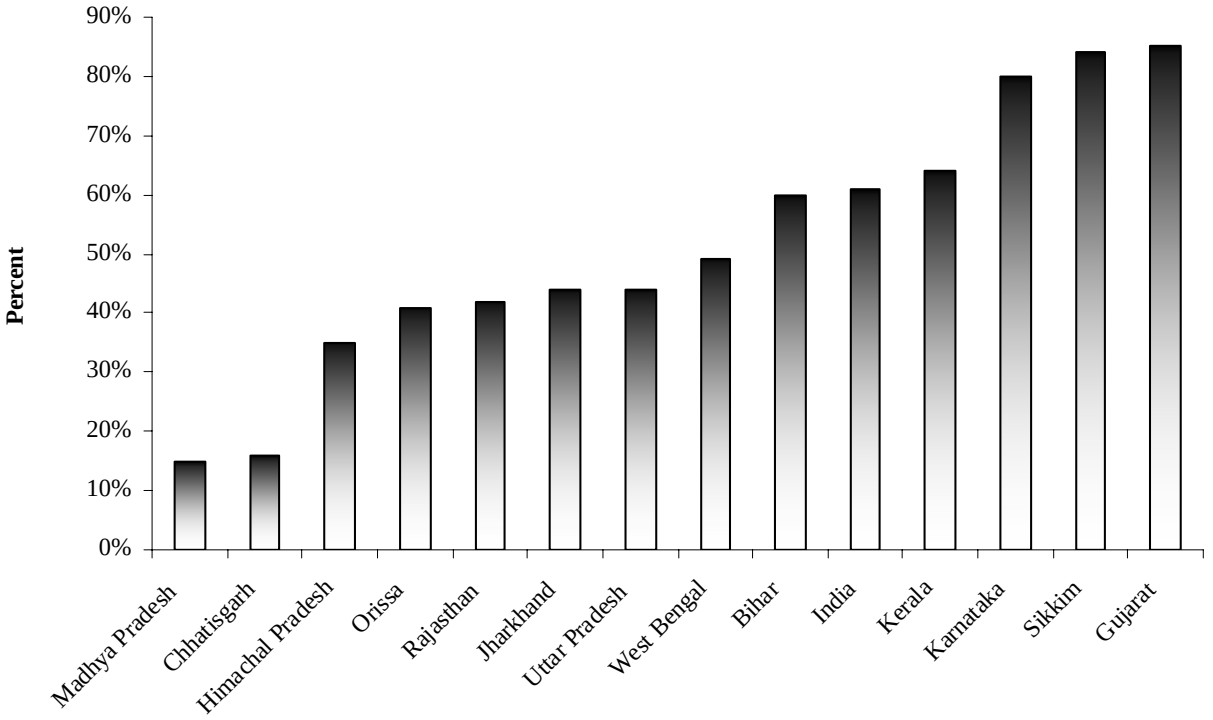


Figure 14: Villages electrified as percent of total villages

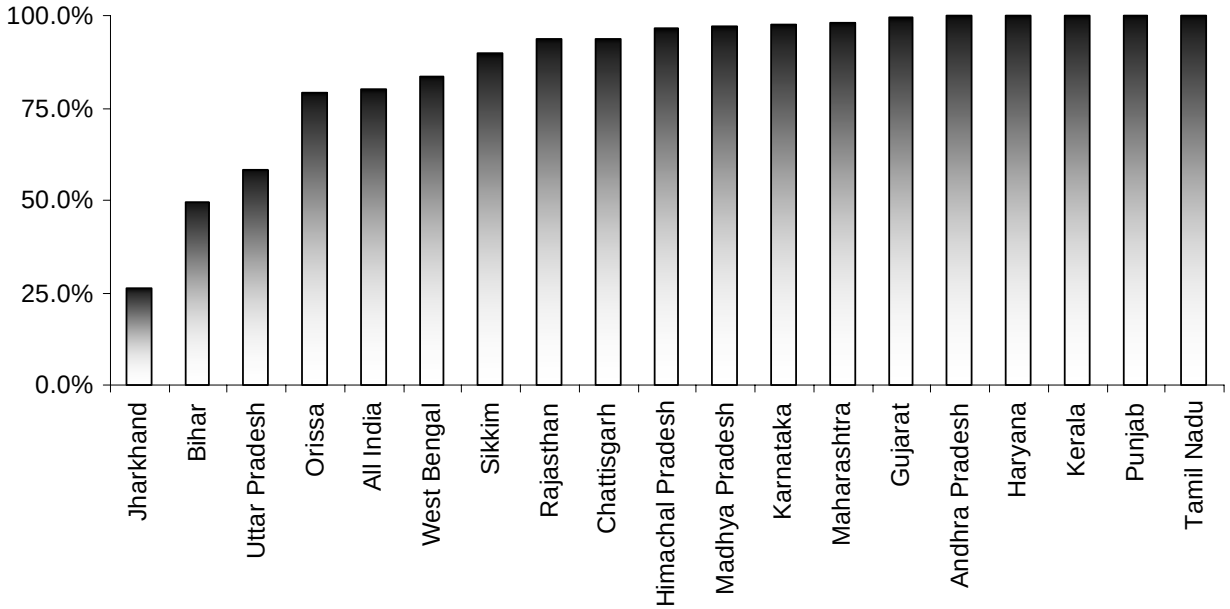


Figure 15: Percent of households with electricity connection

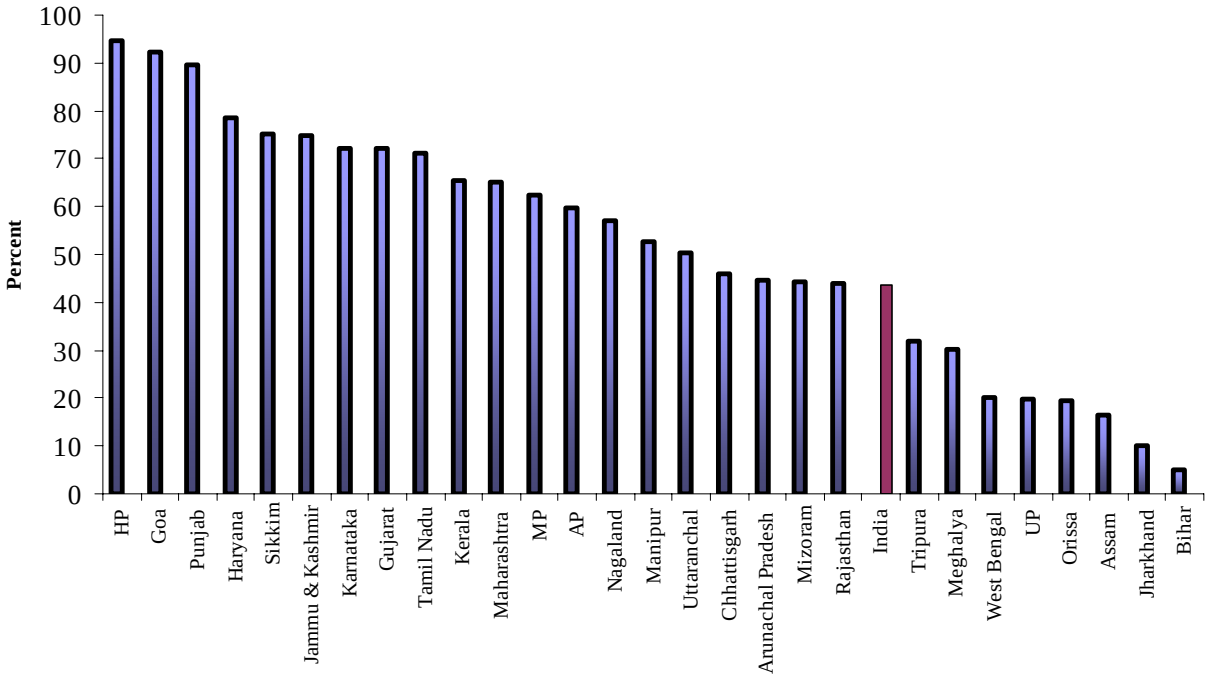
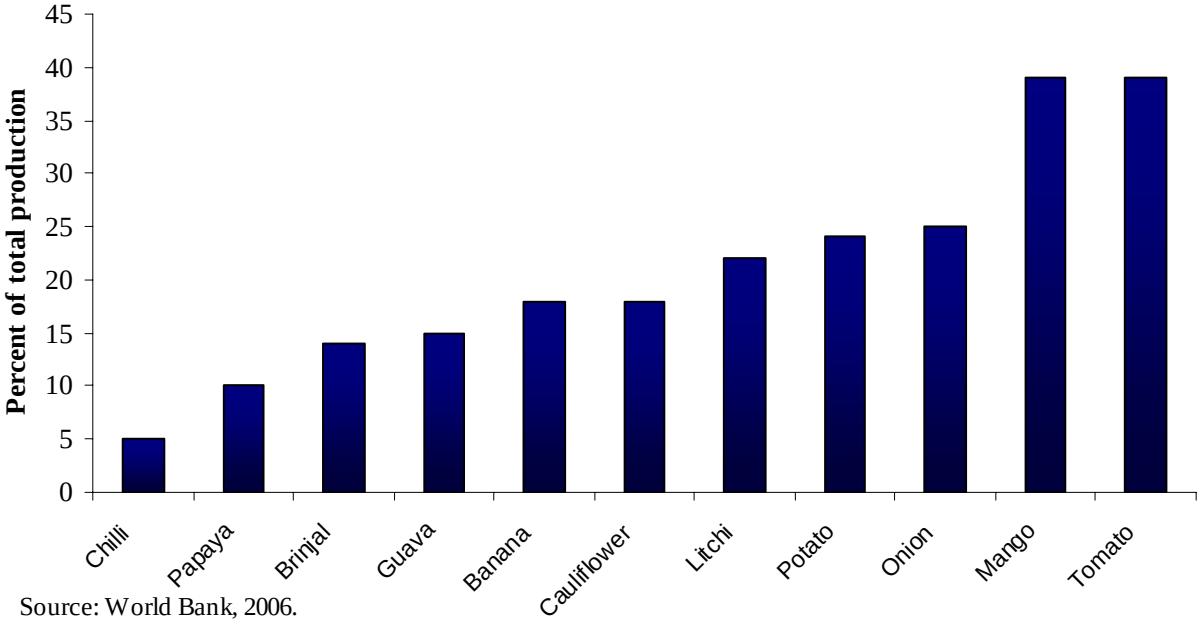


Figure 16 : Estimated wastage of selected fruits and vegetables in six main districts of Bihar



Source: World Bank, 2006.

Figure 17: Institutional Credit Per Unit of Gross Cropped Area

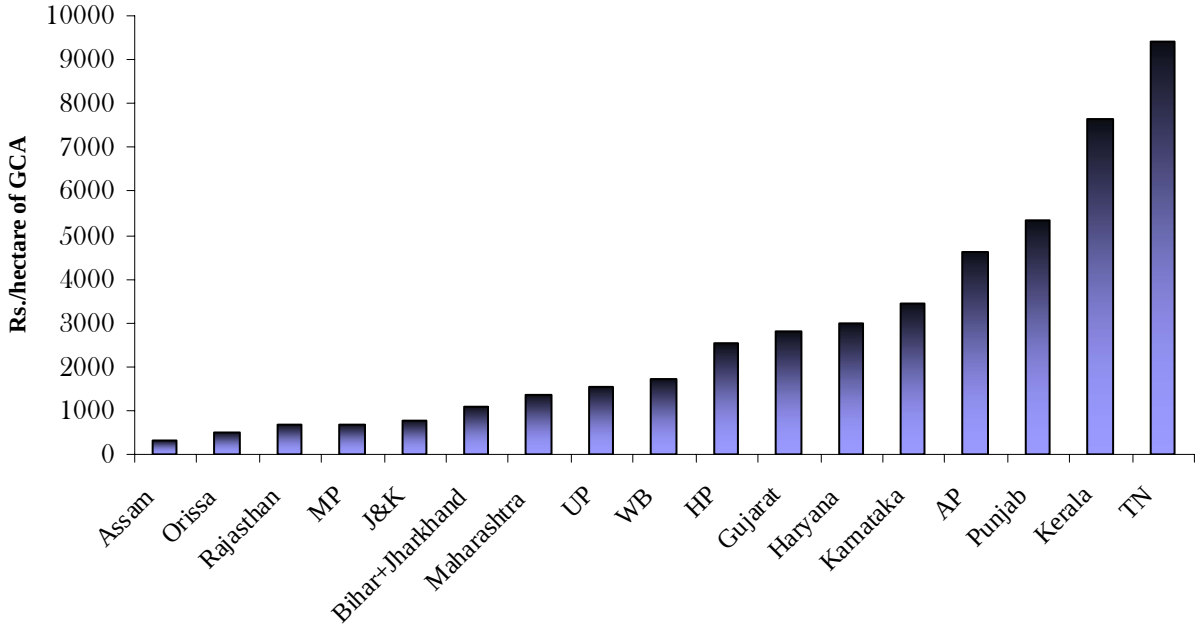


Figure 18: SCB's total indirect credit