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Agrarian Economy of Andhra Pradesh

Changing Structure, Performance in Crop Output and Agrarian Distress

The performance of agriculture has not been satisfactory since the early 1990s. There is a need to focus on root causes of farmers' suicides in the state. Indebtedness of farmers should be reduced by improving institutional credit and steps should be taken to improve viability of farming. Farming is unviable without substantial public investment in infrastructure supported by several social security measures.

Agriculture plays a pivotal role in the economy of Andhra Pradesh and the better performance of this sector is vital for inclusive growth. Although its contribution to gross state domestic product (GSDP) is around one-fourth, agriculture provides employment to nearly 60 per cent of the work force. Also, the forward and backward linkage effects of agricultural growth increase incomes in the non-agricultural sector. Raising some commercial crops creates significant potential for promoting exports of agricultural commodities and brings about faster development of agro-based industries. Thus, agriculture not only contributes to the overall growth of the economy but also provides employment and food security to the majority of the population.

Andhra Pradesh was among the very few states in the country which went in for the Green Revolution in rice cultivation in the 1970s. The share of agriculture in GSDP and employment are higher in A.P. as compared to all-India. The per capita value of GSDP from agriculture is relatively higher in the state when compared to all-India. Average per capita agricultural income in the state was Rs. 3618 while it was Rs. 3360 in all-India at constant (1993-94) prices in the triennium 2002-05. There have been significant changes in the structure and performance of the agrarian economy in the state. In recent years, the state has also been facing a crisis in agriculture with a high incidence of suicides by farmers. This chapter examines the changes in structure and performance of agriculture and the issues relating to farmers' suicides.

6.1 Changing Structure of the Agrarian Economy

We look at changing structure in terms of employment and land holdings. The share of agriculture in employment in the State declined from about 69 per cent in 1961 to about 59 percent by 2001. The diversification to the non-farm sector has been slow. Among the agricultural workforce, about 60 percent are registered as agricultural labour and the rest as cultivators. Though there are regional differences, they are not significant. The percentage of cultivators in the agricultural workforce was relatively much higher in north coastal Andhra followed by Telanagana and Rayalaseema, and was lowest in south coastal Andhra. There has been a consistent pattern across all the districts of workers shifting to agricultural labour. Interestingly, the rate of increase was relatively higher in south coastal Andhra.

It is well recognized that the growth of agriculture leads to an increase in the non-farm sector and also employment opportunities. The instance of south coastal Andhra indicates that this is true as the region has the highest share of workforce in non-agricultural activities compared to the other regions. But, between 1971 and 2001 employment in non-agriculture had declined in this region, while it had increased in the other regions in the same period.

6.1.1 Distribution of Land Holdings

The data on land holding structure from 1955-56 to 2005-06 show that operational holdings have become much less concentrated (Table 6.1). Whereas the absolute number and area covered by large and medium holdings has declined since the mid-1950s there has been a significant increase 'in the shares of marginal and small farmers in the number of holdings and area. The share of marginal farmers in the number of holdings increased from 46 per cent in 1970-71 to 61.6 per cent in 2005-06. In fact, the share of marginal and small farmers in the number of holdings was more than 80 per cent in 2005-06. Area under marginal and small farmers rose from less than 20 per cent in 1970-71 to around 50 per cent in 2005-06. Many of the operational holdings are being held under



Table 6.1: Changing Structure of the Agrarian Economy in Andhra Pradesh: The Percentage Distribution of Operational Holdings by Size Class, 1956-2006

Year	Share in Number of Holding					Share in Operated Area					Avg Size
	Marginal	Small	Semi- Medium	Medium	Large	Marginal	Small	Semi- Medium	Medium	Large	
1	2	3	4	5	6	7	8	9	10	11	12
1955-56	38.6	18.3	17.7	16.7	8.7	7.9	9.7	16.1	28.1	38.2	2.43
1970-71	46.0	18.5	17.4	12.7	4.3	8.0	11.3	19.2	30.8	30.7	2.51
1976-77	46.6	20.3	17.4	12.2	3.4	9.3	12.8	20.8	32.3	24.8	-
1980-81	49.3	20.9	16.0	9.1	2.1	13.1	16.2	23.3	28.7	18.7	1.94
1985-86	54.2	20.8	15.2	8.0	1.8	14.5	17.3	24.0	27.3	16.3	-
1990-91	56.0	21.2	14.5	6.9	1.3	16.4	19.6	25.2	26.1	12.8	1.50
2000-01	60.9	21.8	12.4	4.3	0.6	21.6	24.8	26.4	19.8	7.5	1.25
2005-06	61.6	21.9	12.0	4.0	0.5	22.7	25.8	26.5	19.0	6.1	1.20

Note : 1. *Marginal* – 0 to 1 hectare; *Small* – 1 to 2 hectare; *Semi-medium* – 2 to 4 hectare; *Medium* – 4 to 10 hectare; and *Large* – 10 and above hectare; 2. **Avg** - Average Size of the Holding is given in hectares.

Source : Directorate of Economics and Statistics (DES), Hyderabad.

tenancy contracts. The changing structure of the agrarian economy in terms of size class of landholding when the average size of holdings declined in A.P. from 2.5 hectares in the early 1970s to 1.20 hectares in 2005-06 also meant that the peasantry was increasingly being marginalised.

Within the state, the share of marginal and small holdings, in fact, is relatively higher in South Coastal Andhra when compared to the other regions. But because of the irrigation facilities, marginal farmers in South Coastal Andhra are relatively better off than in other regions.

6.2 Land Reforms in Andhra Pradesh

Agrarian relations and landholding structure play an important role in the performance of the agricultural sector. Land reforms¹ have been on the national agenda since Independence to improve the performance of agriculture as well as for rural re-construction². In addition, creating greater access to land for the landless rural poor is an important component of poverty alleviation programmes.

Land reforms, in spite of all the limitations in implementation, did play an important role in changing the agrarian structure in Andhra Pradesh. The early land reform measures in the state were a combination of two administrative histories, of the Andhra region and the Telangana region which had formerly been under the Nizam. Following the pattern at the all-India level, the land reforms in Andhra Pradesh had three components: abolition of intermediaries, tenancy reforms, ceiling legislation and the other government initiatives.

Legislative measures were also initiated following Article 46 of the Constitution that made it obligatory for

¹ Land reforms included abolition of Zamindari system and all intermediaries since the beginning of the fifties; the introduction of a family ceiling in the mid-fifties; reduction of the ceiling limit, consolidation of land holdings and monitoring the progress of the distribution of ceiling surplus land as part of the 20- Point Programme of the Central Government. Tenancy reforms were intended to abolish or regulate tenancy to ensure fixed tenures and a fair rent. The Constitution of India was amended 13 times for the incorporation of 277 land laws in the Ninth Schedule. The last such amendment was the 78th Amendment of the Constitution to incorporate 27 land laws in that Schedule.

² The major objectives of land reforms have been the re-ordering of agrarian relations in order to achieve an egalitarian social structure, elimination of exploitation in land relations, realising the goal of land to the tiller, enlarging the land base of the rural poor, increasing agricultural productivity and infusing an element of equality in local institutions.

the states to promote the interests of Scheduled Castes and Scheduled Tribes and to protect them from social injustice and all forms of exploitation. State governments have accepted the policy of prohibiting the transfer of land from tribals to non-tribals and the restoration of alienated tribal lands to tribals. In 1977, the government of Andhra Pradesh enacted the Assigned Land Prohibition Act which ruled that land that had been 'assigned' by the government to the landless and tribals could not be resold and used for purposes other than agriculture³. To improve women's access to land and landed property Andhra Pradesh along with Karnataka and Tamil Nadu amended the Hindu Succession Act, 1956, to legally protect the right of women to property including land.

The Madras Estates (Abolition and Conversion into Ryotwari) Act 1948 was the first legislation after Independence which removed intermediaries. It brought all land in Andhra area under ryotwari system. In the Telangana region the jagirdari tenurial system ended with the Abolition of Jagirdari Act of 1949 (GOI, 2004). With respect to tenancy, the Hyderabad Tenancy and Agricultural Lands Act was enacted in 1950 which gave protection to nearly six lakh tenants who held over 75 lakh acres of land, constituting 33 per cent of the total cultivated area. This was considered one of the progressive acts of legislation in the state. The AP (Andhra Area) Tenancy Act 1956 was passed to ensure that a tenant was not evicted from his/her holding except by going to court. This legislation has given a mixed result as it often led to concealed tenancy (Reddy, 2006).

Legislation on ceilings on agricultural holdings was enacted in two phases, 1955-72 and 1972 to the present. The Andhra Pradesh Land Reforms (Ceiling on Agriculture Holdings) Acts were passed in 1961 and 1973. As in most states, the first round of legislation in 1961 was a miserable failure but the second one in 1973 had some impact. Against an estimated surplus land of 20 lakh acres, only 7.9 Lakh acres were declared surplus, of which 6.47 Lakh acres were taken possession by the government and 5.82 lakh acres were distributed among 4.79 lakh

³ A spate of earlier legislation like the AP Land Reforms (Ceiling on agriculture holdings) Act of 1973 had not been properly implemented. Big landlords had not declared their excess land, and where they had, it was fallow land. Whatever be the intention of the government of the day, even the Assigned Land Act has been observed only in the breach. There are numerous instances of assigned land being purchased from the poor at cheap prices by the rich.

beneficiaries till August 2004 (GOAP, 2004). This amounted to about 4 per cent of the net sown area. Of the beneficiaries, 42 per cent were SCs who were assigned 39 per cent of the land, while STs constituted 14 per cent of the beneficiaries and received 20 per cent of the land. A major step in land distribution in the state was the assignment of government land to the landless poor, which accounted for 12.5 per cent of the net sown area. By the end of 2002, an area of 43.21 lakh acres of government land was assigned to 23.98 lakh beneficiaries of whom 24 per cent were SCs and 28 per cent were STs (GOAP, 2004).

Though the ceiling legislation was not effective in the redistribution of land, it did act as a constraint on the acquisition of more land by the rich. In addition, the political mobilization of rural masses inspired by the radical political parties and the Naxalite movement arrested the process of acquiring more land by the rich. The rich peasantry began to sell their land and shift to other vocations in non-agricultural activities in urban areas. As a result, on the one hand, the surplus land under land ceiling and government wasteland was distributed to SCs and other rural poor. On the other, land was acquired for cultivation by communities which had been involved in off-farm activities earlier. Subsequently the concentration of land in a few hands and large holdings declined. In the process, the power of the dominant cultivating castes in agrarian society has declined while backward communities have more control over land (Reddy, 2006).

While land-reform legislation remained active, land policies in more recent decades have focused less on land reform and more on land development and administration. Land policy in India has undergone broadly four phases since Independence. Land reforms were in the forefront in the first and longest phase (1950-72)⁴. During the second phase (1972-85) attention shifted to bringing uncultivated land under cultivation. In the third phase (1985-95) water and soil conservation was given more importance through Watershed Development, Drought-Prone Area Development (DPAP) and Desert-Area Development Programmes (DADP). A central government Wasteland Development Agency was established to focus

⁴ It included three major efforts: abolition of intermediaries, tenancy reform, and the redistribution of land taken over under land ceiling. The abolition of intermediaries was relatively successful, but tenancy reform and land ceilings met with less success.

on wasteland and degraded land. The fourth and current phase of policy (1995 onwards) centres on debates about the necessity to continue with land legislation and efforts to improve land revenue administration and, in particular, clarity in land records.

Land relations in Andhra Pradesh are extremely complicated which have led to serious problems for actual cultivators. Unregistered cultivators, tenants, and tribal cultivators all face difficulties in accessing institutional credit and other facilities available to farmers with land titles. Among others, the Farmers Welfare Commission (GOI, 2004) made the following three recommendations on land issues.

(a) There is a need to record and register actual cultivators including tenants and women cultivators, and provide passbooks to them, to ensure that they gain access to institutional credit and other inputs; (b) The land rights of tribals in the agency areas must be protected; and (c) Considerable scope exists for further land redistribution particularly when waste and cultivable lands are taken into account. In order to develop the lands, complementary inputs for cultivation (initial land development, input minikits, credit, etc.) should be provided to all assignees. The future assignments of land should be in the name of women.

6.3 Changes in Land and Water Resources

It is a matter of great concern that land and water resources available for agriculture in Andhra Pradesh have declined over a period especially during the 1990s. Area under cultivation (net area sown) declined from 110.42 lakh hectares at the beginning of the 1990s to 100.87

Table 6.2: Changes in Cropped and Irrigated Area in Andhra Pradesh

Sno.	Area	1957-58	1980-81	1990-91	2004-05
1	2	3	4	5	6
1	Net Area Sown	112.3	108.7	110.4	100.9
2	Gross Area Sown	122.5	125.6	127.9	121.5
3	<i>Cropping Intensity</i>	<i>1.09</i>	<i>1.16</i>	<i>1.16</i>	<i>1.20</i>
4	Net Area Irrigated	27.8	34.5	43.5	37.1
5	Gross Area Irrigated	33.2	44.3	54.2	47.7
6	<i>Irrigation Intensity</i>	<i>1.19</i>	<i>1.28</i>	<i>1.25</i>	<i>1.29</i>

Note : Figures presented are in lakh hectares.

Source : 1. DES, Hyderabad; 2. Subrahmanyam and Aparna (2007)

lakh hectares by the triennium ending 2004-05, indicating a decline of about 10 lakh hectares or 8.65 percent (Table 6.2). In fact, during the triennium ending 1957-58 net sown area had been about 112.3 lakh hectares. Despite the improvement in cropping intensity, there has been a significant fall in the gross cropped area (GCA) which declined by about 6.4 lakh hectares or 5.3 per cent of GCA during the same period. The GCA was about 122.5 lakh hectares in 1957-58 and increased to 127.9 by 1990-91, but declined to 121.5 by the triennium ending 2004-05. Multiple cropping could not lead to a proportionate increase in agricultural production because productivity is lower for crops grown after the first crop. In addition, there has been an increase in instability in the area under cultivation⁵.

The decline in net area sown is observed across almost all the districts in the state except two, Anantapur and Nellore where, in fact, it has increased (see Table 6.3). Four districts - Mahabunagar, Nalgonda, Chittoor and Karimnagar - accounted for about 54 per cent of the

decline in net sown area in the state. Another four districts - Nizamabad, Prakasam, Khammam and Rangareddy - contributed to almost one-fourth of the decline. Of these eight districts six are located in Telangana region.

There has also been a decline in irrigated area. The state had an irrigated area of about 27.8 lakh hectares in the mid-1950s which increased to 43.5 lakh hectares, an increase of about 56.5 per cent, by the end of the 1980s. During this period (mid-fifties to eighties), out of the total increase (15.7 lakh hectares) of irrigated land, about 6.7 lakh hectares was added in the first 23 years (i.e. late 1950s to late 1970s) and 9.0 lakh hectares in the next 10 years (in the 1980s). As a matter of fact, the addition in the 1980s was mostly due to expansion of area under groundwater which is highly vulnerable to fluctuations in rainfall.

During the 1990s, the irrigated area declined to 37.1 lakh hectares, which was almost equal to the level in 1980-81. Similarly, the gross irrigated area which had increased by 10.1 lakh hectares in the 1980s declined

Table 6.3: Contribution of Districts to the Total Cropped and Irrigated Area declined in Andhra Pradesh

Range	Net Sown Area		Net Irrigated Area	
	Districts	Contb	Districts	Contb.
1	2	3	4	5
Very High	Mahabunagar (17.5), Nalgonda, (13.4) Chittoor (12.3) Karimnagar (10.6)	53.8	West Godavari (13.1), Guntur (13.0), Krishna (11.5), Prakasam (10.1)	47.7
High	Nizamabad (7.5), Prakasam (6.4), Khammam (6.2), Rangareddy (4.8)	24.9	Nalgonda (8.8), Karimnagar (8.4), Anantapur (6.8), Visakhapatnam (5.8), Nizamabad (5.2)	35.0
Low	East Godavari (4.1), Adilabad (3.9), Srikakulam (3.5), Krishna (3.2), Visakhapatnam & Vizianagaram (2.4), Guntur (1.9), Kurnool (0.8), Warangal (0.7), West Godavari (0.6), Kadapa (0.4), Medak (0.1)	21.3	Khammam (4.3), Mahabunagar (4.0), Nellore (3.5), East Godavari (3.2), Vizianagaram (3.0), Chittoor (2.9), Medak (2.5), Srikakulam, (2.3), Rangareddy (1.3).	27.0
Increase	Anantapur (1.5), Nellore (1.1)	2.6	Adilabad (4.3), Warangal, (4.0), Kadapa (1.1), Kurnool (0.2)	9.6

Note : 1. Figures presented in parentheses are percentages of each district to the total area declined in the state and col. 3 and 5 are the percentage contribution of the group of district; 2. **Contb.** – Contribution of district to the total at the state level.

Source : 1. Subrahmanyam and Aparna (2007); 2. DES, Hyderabad.

⁵ Instability measured in terms of coefficient of variation was 2.9 per cent during 1955-80 and increased to 4.1 per cent during 1990-2004.

by 6.5 lakh hectares in the 1990s and after. Irrigated area, which was 33.2 lakh hectares in the late 1950s, increased to 54.2 lakh hectares in the late 1980s but declined significantly during and after the 1990s and had come down to 47.7 lakh hectares in 2004-05. The highest increase in irrigated area happened in the 1980s and the lowest in the 1990s. While the growth rate of gross irrigated area declined from its highest level of 1.81 in the 1980s to 0.31 percent in the 1990s, it became negative for net irrigated area from 2.0 to -0.49 per cent during the same period.

New irrigation potential had been created in the pre-HYV period and as result net irrigated area expanded at an annual rate of 2 per cent per annum. In the post-HYV period, gross irrigated area expanded because of the implementation of modernization schemes without much addition to the net irrigated area. In the 1980s, irrigated area expanded at a very high rate of 2 per cent but this was only due to the exploitation of groundwater. The 1990s and subsequent years were a period of disaster for the irrigation sector. The net and gross irrigated areas declined at 0.49 and 0.31 per cent per annum respectively.

The changes in irrigation from different sources since the mid-nineties indicate that irrigated area declined both under surface and groundwater sources. Under surface irrigation the area declined by about 4 and 3 lakh hectares under canal and tank irrigation respectively. There was a decline also in area under groundwater sources. Though there is no proper data to show the performance and functioning of wells, many micro level studies have shown that more and more wells were going dry, becoming non-functional. This happened both because of the unsustainable growth of groundwater exploitation and the failure of the monsoon. Despite the fact that cultivation practices in Andhra Pradesh continue to depend on irrigation, state governments have not increased public investment and neglected surface irrigation infrastructure. Consequently, there has been an increase in private investment in exploiting groundwater resources.

The frequent failure of the monsoon and the resulting deficit in normal rainfall and droughts create crises in the agrarian economy. There have been many such periods of drought in Andhra Pradesh. The average annual rainfall in the monsoon season was at an all time low in the

1990s at 586 mm as against 684 in the previous decade. Variations in rainfall across years also declined in the nineties, indicating that it was uniformly low in all the years. When compared with earlier periods, the state suffered most in the 1990s when the monsoon was poor in nine years. As a result the state experienced continuous and severe drought during this decade. Across regions within the state, Rayalaseema and South Telangana experienced the lowest rainfall and these two regions have a low irrigation ratio of 22 per cent when compared with other regions.

6.3.1 Predominance of groundwater in most of the districts

Despite differences in the extent of irrigation, the data for 2004-05 on the structure of irrigation indicate a clear regional pattern. Tanks and canals are the main sources in North Coastal Andhra, though canals are dominant in Srikakulam district. The four districts in the Krishna-Godavari zone are mainly served by canals with wells as a supplementary source. In West Godavari wells are more predominant, along with canals. In Prakasam and Nellore, the two districts in the South Coastal zone, wells and canals are the main sources. However, Nellore is a special case where all three sources are important. In Rayalaseema and Telangana, except in the districts of Chittoor, Mahabubnagar and Nalgonda, wells and canals are the main sources, whereas wells and tanks are predominant in all the remaining districts of Telangana region and in Chittoor. Thus, wells play a very important role in the agricultural economy of Andhra Pradesh and serve as the main source of irrigation in as many as 15 districts. Canals come second and are important in five districts while tanks are the dominant source only in two districts.



However, as a secondary source, tanks are important in ten districts, canals in eight and wells only in four districts. In a state with low rainfall of less than 100 cm per annum, surface irrigation should have more prominence than groundwater irrigation to facilitate recharge. The high growth of wells had led to the overexploitation of groundwater and drying up of wells. The extent of area under wells, canals and tanks is in the ratio of 3:2:1.

This lopsided development of groundwater is seen in all the districts in Rayalaseema and Telangana which led to high indebtedness because of risky investment in wells. The high and increasing ratio of groundwater to surface irrigation in these two regions indicates their dependence on the former. The ratio increased from 0.7 to 3.47 in Rayalaseema and 0.43 to 7.31 in South Telangana during 1974-75 to 2003-04. In other words, for each acre of irrigated land under canal or tank, the area irrigated with groundwater resources was 3.47 acres in south Telangana and 7.31 acres in Rayalaseema.

Period	Growth	t value
1	2	3
1955-56 to 1966-67	3.25	4.77
1966-67 to 1979-80	3.87	5.40
1980-81 to 1991-92	2.66	2.34
1991-92 to 2004-05	0.37	0.37
1955-56 to 2004-05	2.54	17.99

Note : 1. Figures presented are in Percent; 2. Exponential growth based on semi-logarithmic trend equations estimated for the Divisia index.

Source : Subrahmanyam and Aparna (2007)

6.4 Performance of Agriculture : Growth in Value of Output

The growth of GSDP/NSDP from agriculture is one of the measures of the performance of the sector. In Andhra Pradesh, the annual growth rate of agriculture increased from 2.3 per cent during 1980-81 to 1992-93 to 2.7 percent during 1993-94 to 2005-06, which was due mainly to the extraordinary performance of the livestock component during this period. The livestock sector⁶ achieved a high growth rate of 8.4 per cent per annum between 1993-94 and 2005-06 whereas the growth rate of value of output

⁶ Livestock includes dairying, poultry, small ruminants and piggery.

in the crop sector was very low at 0.59 per cent. Moreover the share of livestock in agriculture increased from 18.1 percent in 1993-94 to 34.7 percent in 2005-06. The share of agriculture in NSDP in terms of the crop sector, excluding all allied activities, declined sharply from 26.7 per cent in 1983 to 14.12 percent in 2005-06, relegating agriculture almost to insignificance. *Therefore, the growth of agriculture will not properly reflect the ongoing crisis referred to as agrarian distress in the crop sector.*

While examining the performance of the crop sector with respect to 19 major crops⁷, three distinct phases can be observed. The first phase covering 1955-56 to 1979-80 consisting of both the pre-HYV and the early HYV period is one of high and accelerated growth. From 3.25 per cent in the pre-HYV period the growth rate accelerated to 3.87 in the early HYV period (Table 6.4). The second phase covering the decade of 1980s witnessed a deceleration in agricultural growth from 3.87 to 2.66 per cent. In contrast to the experience of the moderate to high growth for a long period of about 35 years, there has been a steep decline after economic liberalization (since 1990), which is seen as the period of stagnant and unstable agriculture.

To understand in detail the performance of agriculture during the last fifteen years, it is observed that the deceleration in growth was mild till 2001-02. Between 1990-91 and 2001-02 the growth rate was 2.39 per cent per annum. But in the last three years the growth rate has fallen very sharply. The year-to-year movement of the value of agricultural output remained almost constant till the mid-nineties without much fluctuation and thereafter it grew at a high rate till 2000-01. In the next four years (2001-02 to 2004-05), or the post-reform period, the performance was very poor as compared to any pre-reform period.

Among individual crops, the performance of rice which accounts for a quarter of the gross cropped area had been poor during the nineties. The growth rate of rice production fell to 0.36 per cent in 1990s from a high growth rate of 2.7 to 3.9 per cent in the earlier periods. All the coarse cereals declined at a high rate both in the 1980s and 1990s except for maize which had a high growth during both the sub-periods. The growth rate of

⁷ Based on Divisia index

cereals was 1.94 per cent during the last fifty years but it declined to 1.08 per cent during the 1990s. The growth rate of pulses picked up after 1980-81 and maintained a high growth rate of more than 4 per cent. Groundnut which is the second major crop (rice being the first) had a very high growth rate of 7.29 per cent per annum during the 1980s but it did very badly during the 1990s when production declined at the rate of 5.64 per cent. The *poor performance of oilseeds is partly responsible for the deceleration of agricultural (crop sector) growth in the state during the post-reform period.*

Cotton is an important crop accounting for 8 per cent of the gross cropped area. Production of cotton grew very rapidly after the mid-sixties when the growth rate was as high as 10.33 per cent during the HYV period. But it slipped to 4.61 percent in the 1980s and further to 2.65 percent in the post-reform period. The long run growth rate of cotton production was 6.96 percent which was the highest among all the crops.

Since the production of a crop may decline because of shifts in cropping pattern, the growth rate of yields would be better indicator of performance for each crop. It is observed that the growth rate of rice yield in Andhra Pradesh had decelerated marginally in the nineties over the eighties. It was negative for groundnut while for cotton the growth in yield was poor. The growth rate of yields explains in part why there has been such a steep deceleration in the growth rate of aggregate output.

Major changes in the cropping pattern occurred during the 1980s. The share of cereals in gross cropped area declined, mainly because of the steep fall in the area under coarse cereals. Secondly, the area under oilseeds increased significantly from 14.7 per cent during the triennium ending 1982-83 to 24.1 per cent during the triennium ending 1992-93. In the post-reform period, the share of oilseeds declined and the share of pulses increased. It may be noted that these changes were due to changes in the relative prices of agricultural commodities.

6.4.1 Regional Variations

There are variations within the state in terms of the contributions of agriculture to the total value added and the growth of value added in agriculture, across regions/

districts. The share of agriculture (crop output and livestock) to total value added has declined across the districts but at different rates. It would seem that this is primarily due to the decline in the share of crop output as the share of livestock has, in fact, increased. In Hyderabad district, the contribution of crop output to the total value was almost nil or negligible. The other districts whose contribution has been minimal in the recent period (2003-04) are Rangareddy (4.3 percent), Visakhapatnam (5 percent) and Chittoor (9.5 percent). A few districts like Guntur (25.1 per cent), Kurnool (24.5), West Godavari (22.3), Warangal (21.9) and Adilabad (20.3 percent) showed a relatively higher contribution (more than 20 per cent) of the crop sector to the total value added.

In terms of growth during the last decade (from 1993-94 to 2003-04), the livestock sector shows higher growth when compared with the crop sector across districts. In crop output, while a few districts - Srikakulam, Nellore, Chittoor and Anantapur - showed negative growth, two districts, Kadapa (5.6 percent) followed by East Godavari (5.4), recorded the highest growth. All the Telangana districts had a reasonably high growth. Interestingly, the most backward districts like Mahabubnagar and Medak also showed high growth in crop output.

It was observed that higher agricultural output per worker ensures higher GDDP, but higher GDDP does not ensure higher agricultural output per worker. For instance, Visakhapatnam, Medak and Ranga Reddy have high per capita GDDP, but they occupy a low position with respect to agricultural output per worker. On the other hand, West Godavari, East Godavari, Guntur and Krishna have a high agricultural output per worker and their ranking in per capita GDDP is also high. The correlation between per capita GDDP and per worker agricultural output is only 0.26, which is not statistically significant.

6.5 Decline in Public Sector Investment and Failure of Support Services

6.5.1 Decelerated Capital Formation

Capital formation is important for the growth of any individual sector and the overall economy. The trend rate of growth in Gross Fixed Capital Formation (GFCF) in agriculture in Andhra Pradesh shows that the growth rate

in the state slipped from a high value of 6.9 per cent during the 1980s to 1.1 percent in the 1990s whereas at the national level it recovered from negative growth during the 1980s (Table 6.5). In A.P., the growth rates of both public and private investment have declined. The growth rate of public investment declined from 7.6 to 3.9 and that of private investment declined from 5.2 per cent in 1980s to (-) 1.7 per cent in 1990s.

The available data shows that the state experienced a decline in capital formation in agriculture in the post-reform period, even in absolute terms, basically on account of a decline in capital formation by the private sector, at a time when there was a significant increase in private sector capital formation in this sector for the country as a whole. This aspect needs further investigation.

6.5.2 Prices of Agricultural Commodities

When the prices received by the farmers for their crops are compared with the prices they pay for the consumer goods (i.e. Consumer Price Index for Agricultural Labour – CPIAL), it was observed that the farming community is facing an erosion of their real incomes due to the lower growth of prices of commodities they produce as compared to the prices of consumer goods.

State	Source	1980-81 to 1989-90	1990-91 to 1999-00
1	2	3	4
A P	Public	7.6**	3.9***
A P	Private	5.2*	-1.7***
A P	Overall	6.9**	1.1***
India	Overall	-1.0***	2.0*

Note : 1. Growth is exponential growth rate; 2. *** Significant at 1 percent level, ** significant at 5 percent level *Significant at 10 percent level,

Source : Subrahmanyam and Aparna (2007)

The aggregate price index grew at an annual rate of 4.83 per cent per annum between the periods 1991-92 to 2004-05. The prices of all the coarse cereals have grown at less than 4 per cent per annum. While the price of maize, which is an important crop in the drought prone areas of the state, grew at 3.99 per cent, the shortfall in the relative price was more than 12 per cent. The growth

rate in prices of pulses was higher than the average of all the commodities while the price of rice has grown at a rate lower than the average of all the commodities. The growth in prices of cotton, sesame and groundnut was observed to be relatively lower than that of other agricultural commodities.

The terms of trade have become favourable to agriculture because the protection given to domestic industry has been reduced and the minimum support prices (MSP) for rice and wheat have been increased. As MSP operations are limited to only a few commodities, the prices are not favourable to most of the other commodities. For instance, the high imports of edible oil led to a decline in the price of oil which affected the drought-prone areas in the state.

Trade liberalization with respect to agriculture has led to destabilization in some crops in A.P. The two major crops after rice viz., groundnut and cotton are known to have suffered in the state because of trade liberalization. The import duty on cotton has been reduced to almost zero, thus depressing cotton prices. Similarly, the import of palm oil has affected the profitability of groundnut in Andhra Pradesh

6.5.3 High Indebtedness and Exploitation by Informal Credit Agencies

Indebtedness is a major problem in the rural economy in Andhra Pradesh. The amount of loan outstanding per farmer is about Rs. 24000 which is twice the all-India figure. The position of the small farmer is the worst among all classes of farmers, and the outstanding loan per farmer is Rs. 33000 per farmer in the state as against Rs. 14000 at the national level. Since most of the loans are borrowed from private moneylenders and traders, the implicit rate of interest is very high.

Inadequate expansion of formal credit facilities and poor access to these has made the farmers, especially small and marginal ones, to resort to informal credit agencies. An NSSO survey reveals that about 68.6 per cent of the total loans taken by farmers in Andhra Pradesh are from the informal credit market. This is much higher than the corresponding figure at the national level as well as in other south Indian states.

6.5.4 Heavy investment in wells and a high proportion of failure

A very high rate of expansion of wells in the recent period intensified the crisis in the agricultural sector. According to a survey conducted in seven districts in the state covering 3861 cultivator households, farmers incurred heavy losses due to failure of wells. 26.0 per cent of the farmers have invested in borewells during the last five years. The proportion is highest in South Telangana, followed by Rayalaseema and South Coastal Andhra (Table 6.6). As expected, there is a positive association between farm

Region	Marginal	Small	Medium	Large	All
1	2	3	4	5	6
Srikakulam	1.7	2.9	1.0	7.0	2.7
East Godavari & Nellore	15.6	28.1	38.5	52.4	29.4
Kadapa & Anantapur	13.4	27.6	42.6	56.4	30.2
Nalgonda	32.9	43.4	63.4	73.7	49.2
Warangal & Adilabad	11.5	15.6	24.8	33.8	18.6
Overall	14.1	23.6	34.5	46.7	26.0
Investment (Rs.'000)	18.1	22.0	25.7	30.2	24.5
Investment Lost (%)	55.9	53.2	55.9	58.5	56.1

Source: Primary survey conducted by CESS during 2004

size and the proportion of farmers investing in borewells. While it was 14.1 per cent among marginal farmers, it was as high as 46.7 per cent among large farmers. The average investment per household was about Rs. 25000.

A high proportion of this investment (56.1 per cent) was lost due to failure of wells without much variation across farm size (Table 6.7). However, the loss increases with farm size in absolute terms as the amount invested has positive association with farm size because large farmers invest in more than one well. It is significant to note that the loss is highest in South Telangana (66.5 per cent) followed by Rayalaseema (54.9 per cent). These are the areas where rainfall is poor and surface irrigation is also low. Except in North Coastal Andhra, where investment in borewells is negligible, loss of investment is more than 45 per cent in all the other regions. A field survey conducted in four Telangana villages revealed that one-third of the farmers deepened their wells every five years, indicating that groundwater levels were falling. In the case of marginal and small farmers, expenditure on

Table 6.7: Percentage of Investment lost due to failure of Borewells across Regions in Andhra Pradesh

Region	Marginal	Small	Medium	Large	All
1	2	3	4	5	6
North Coastal Andhra	25.0	-	15.0	56.8	30.4
South Coastal Andhra	58.0	49.8	49.1	34.2	45.9
Rayalaseema	61.9	47.8	54.4	59.6	54.9
South Telangana	59.8	74.3	63.0	67.4	66.5
North Telangana	32.9	46.1	52.5	59.1	51.6
All Sample districts	55.9	53.2	55.9	58.5	56.1

Source : Primary survey conducted during 2004

wells is sometimes enough to push them into long-term debt trap (Vamsi, 2004).

6.5.5 Failure of Extension Services

The performance of the state in terms of agricultural extension services was found to be relatively poor when compared with other states. For instance, an agricultural extension officer in Andhra Pradesh has to cover more than 10 villages or 3700 farm families whereas in states like Maharashtra and West Bengal it was only 2 or 4 villages.

Agricultural extension services account for only 9 percent of the farmers' information on agricultural technology in the State. With the virtual breakdown of the extension machinery, small and marginal farmers have become increasingly dependent upon private agents for extension services. Input dealers (30 percent) and other progressive farmers (34 percent) constitute the major sources of information⁸. Such agents were subject to less regulation than before, leading to circumstances in which resource-poor farmers became victims of exploitation.

6.6 Agrarian Distress and Farmers' Suicides

The agrarian economy of Andhra Pradesh has been in distress since the 1990s. The state is one of those states with highest number of farmers' suicides in the country. The agrarian distress in the state⁹ coincided with the period in which reforms were initiated.

⁸ See (NSSO – Report 499 -2005)

⁹ The State of Andhra Pradesh has acquired a special place, in more than one sense, in implementing the economic reforms in all sectors, including in agriculture.

As noted above, there has been a steep deceleration in the growth rate of agricultural output since the 1990s as compared to the 1980s. The growth rate of investment in agriculture decelerated from 6 percent in the 1980s to just 1.5 percent per annum in the 1990s. There has been a systematic decline in the budgetary expenditure on agriculture and allied activities in the name of fiscal constraint. Research and extension have been neglected. Government investment in agricultural research and education in the state (at 0.26 percent of its agriculture GSDP during 1992-94) was lower than for the other three southern states and was just around half the all-India figure (0.49 percent for center and states together). Public expenditure on extension, which is borne by the state government, declined in absolute terms in the nineties. It was only 0.02 percent of the state's GSDP during 1992-94, as against the all-India average of 0.15 percent (Reddy, 2006).

The agricultural crisis and farmers' suicides were mainly due to inadequate agricultural services, including extension, reliable seed supply, quality pesticides, machinery, proper soil survey testing, soil conservation, market information and market intelligence. The failure of extension services, the mushrooming of spurious seed and pesticide companies, and the relegation of the Agricultural University and the Andhra Pradesh Seeds Corporation to an insignificant role in the research, development and propagation of seeds of non-food crops, are all the consequences of deliberate policy changes in the state. There was also an attempt to privatize extension services.

Irrigation, a critical infrastructure for agriculture in the state, had also suffered. A decline in public surface irrigation (canal and tanks) resulted in the emergence of private groundwater as the single largest source with all the attendant ecological problems. Lack of access to institutional credit is another problem for farmers, particularly small and marginal farmers. Farm gate prices of most agricultural commodities fall steeply at harvest time. It is known that many poor farmers sell their output at harvest time because of their poor retention capacity¹⁰. Because of these uncertain conditions, about 40 percent of the

¹⁰ This is yet another form of usury that benefits the trader-dealer who rolls in as a moneylender with a tie-up for buying the commodity at harvest time. Peasant farming is exposed to perpetuation of multiple modes of exploitation owing to uncertainty.

farmers across the country have stated that they would like to quit farming if there was a choice (NSSO Report 496, 2005).

Many public institutions that are critical for farmers seem to have disappeared during the reform period. Some important government corporations and cooperative institutions in the state were closed, allowed to run down, or simply handed over to the private sector. Institutions such as AP Irrigation Development Corporation, AP Agro-Industries Corporation, AP Seeds Development Corporation, cooperative sugar factories and co-operative spinning mills which had played an important role in helping farmers were closed down (Reddy, 2006). The reforms in agriculture resulted in an increase in electricity charges, growing dependence on high cost groundwater resources, increased irrigation charges and high degree of dependence on credit at high interest rates provided by the informal credit market. The recent NSS survey¹¹ shows that about 82 percent of farmer households are in debt, which is the highest incidence of indebtedness in the country. Further, institutional sources in the state account for only 30 percent of the loans, which is the lowest for the country.

In addition, farmers who have been opting for high value crops like cotton face serious problems of spurious and unregulated seed supply, undue reliance on disproportionate use of pesticides due to lack of proper extension information, and face high risks of losing the entire crop. The other high cost risk is the investment made in wells and tube-wells, which often fail because of overexploitation of groundwater or lack of recharge of groundwater due to prolonged drought conditions.



¹¹ See (NSSO 2005, Report 498)

Many micro studies have shown indebtedness as the proximate cause of farmers' suicides. Increasing cultivation of commercial crops accompanied by an unregulated input market and private investment in irrigation has led to a rise in the cost of cultivation. It is true that agricultural credit has increased in the last few years. However, this is not sufficient and farmers fall back on informal credit at high interest rates.

According to a source there were 16,770 farmers' suicides between 1997 and 2005 in the state¹². According to a judicial commission appointed by the State Government, between May 14, 2004 and November 10, 2005 alone 1068 farmers had committed suicide, and in addition there were 277 starvation deaths of weavers in the same period (Nagesh Kumar 2005). The Commission also brought out the fact which shocked the state that 26 debt-ridden farmers of Guntur district had sold their kidneys.

Most of the suicides are by male members in the age group of less than 40 years. By and large the incidence of suicides has been higher among small-marginal farmers moving from subsistence agriculture to the high value crops with a strong motivation to improve their social and economic status. With a few exceptions, the majority belong to Backward Communities or Scheduled Castes or Scheduled Tribes. Barring the ST households, most have had some schooling.

The agrarian crisis has not only continued but has spread to different regions and to a number of high value crops other than cotton¹³. Any commercial or high risk crop can put a farmer under stress and make him vulnerable to suicide. The trigger in these cases again is the failure of water resources particularly groundwater.

A number of studies in the state have analyzed the proximate causes for the suicides based on sample investigation of households of the victims. In 1998, a Peoples Tribunal (RSC, 1998) heard depositions from 60 households of victims drawn from across five districts in the state. An AWARE (1998) study covered a sample of 92 households of farmers who committed suicide, from across 10 districts. A Citizen's Report (CES, 1998) investigated 50 households of deceased farmers in Warangal district.

¹² Sainath, P (2007) "one farmer suicide every 30 minutes", *The Hindu*, November 14.

¹³ This is evident from yet another field study (Shashi Bhushan and Reddy 2004).

The major cause reported by most of the victims' households is accumulated debt for digging or deepening of wells and repeated crop losses or the failure of the bore-wells. Inadequate credit availability from institutional sources had forced them to resort to informal credit sources.

According to a case study, in one village in the district, thirty years ago there were only six tube wells and the water table was at a shallow level of six feet from the surface. But by 1998 there were 1800 borewells, half of which were dry, and the water table was at 240 feet. Dependence on groundwater and the related risks are prominent features of the emerging agrarian crisis. But there may not be any parallel than the worst scenario which prevails in Musapally village in Nalgonda district. For a village with 2000 acres under cultivation, there are more borewells than people, 6000 borewells dug at an estimated investment of Rs. 6.52 crores. About 85 per cent of these wells have failed (Sainath, 2004).

All this shows that state policy and actions which have no sensitivity to the regional specificities of agriculture are likely to put disproportionately high pressure on the livelihood of farmers in dryland areas where there is no canal irrigation but the entire burden of developing water resources through wells or bore-wells is on the shoulders of farmers. In addition, there has been rising pressure on farmers in terms of meeting their needs for basic social services like education and health which are increasingly privatized, and have become a significant component of household expenditure. A combination of these stress factors have been at the back of the crisis in the farming sector which has been manifested into widespread suicides, particularly since 1997.

Small-marginal farmers constitute almost 80 per cent of the farming communities in the country and many of them operate in dry and drought prone conditions and are the most vulnerable. It is the apathy of government that has been forcing these farmers to shoulder all the costs and risks of high investment, including land and water resource development with borrowed capital at usurious interest rates.

6.7 Conclusions and Policy Implications

This chapter has examined changes in agrarian structure, issues in land reforms, performance in agriculture and farmers' suicides.

It is well known that the agrarian structure in terms of operational holdings has undergone significant changes in the last 50 years. More than 80 per cent of the holdings belong to small and marginal farmers now. Land reforms through redistribution of land, tenancy reforms and recording of land titles etc. are relevant and important in A.P.

Significant changes have taken place in the cropping pattern. The share of rice, millets (other than maize) and groundnut has declined while the share of maize, pulses and cotton has increased. Because of the decline in gross cropped area and shifts in cropping pattern, production of oilseeds declined drastically. Yield also contributed to the decline in the production of oilseeds. Rice production has fluctuated because the decline in area has been compensated by an increase in yield. Prices have not been favourable to farmers since 1991-92. While CPIAL has grown at 5.4 per cent per annum, crop prices have grown at 4.83 per cent. Prices of crops like chillies, cotton, sunflower and gingelly have grown at a very low rate.

Regarding performance, the crop sector has grown at 2.54 per cent per annum in the state during the last fifty years. While the sector experienced accelerated growth till the end of the seventies, the growth rate started decelerating from the eighties onwards. The situation became worse after 1990-91 with instability and low growth. The livestock sector however has been dynamic and achieved a growth rate of about 8.0 per cent and improved its share in agricultural GDP to 35.0.

The major changes in the nineties relate to a decline in land and water resources available for agriculture. There are significant inter-district variations in agricultural performance. It should be noted that groundwater plays an important role in the agricultural economy of Andhra Pradesh and is the main source of irrigation in 15 out of 22 rural districts in the state.

Growth of investment in agriculture decelerated in the nineties in the state, while the nation recovered from low growth of investment during this period. There was a deceleration in public investment during this period and because public and private investment are complementary, private investment also declined. Among

the sectors, agriculture experienced the lowest growth of investment during the nineties.

What are the challenges for improving the growth rate in agriculture and equity in A.P.? The supply and demand side constraints have to be removed to raise overall growth in agriculture. Support systems and policy changes have to be tuned in such a way that they improve the productivity and incomes of the small and marginal farmers and focus more on dryland areas.

The well known challenges in agriculture are: public and private investment in agriculture, land issues including land reforms, research and extension, irrigation and water management, credit, marketing, domestic and trade liberalization, diversification while maintaining food security and institutional reforms. All these issues have to be addressed for improving agricultural growth and incomes of the farmers.

The Prime Minister of India Dr. Manmohan Singh mentioned four deficits regarding agriculture. These four deficits are: (a) public investment and credit deficit; (b) the infrastructure deficit; (c) the market economy deficit; (d) the knowledge deficit. The Farmers' Welfare Commission headed by Jayati Ghosh appointed by the Government of A.P. gave several recommendations to tackle the crisis in agriculture in the state (see Box 6.1).

Irrigation development and water management are crucial. The green revolution in the 1960s and 1970s had been greatly facilitated by the availability of good irrigation infrastructure. However, the existing systems have deteriorated over time and addition to capacity has been negligible due to the decline in public investment. According to the Planning Commission, nearly 35 per cent of the ultimate potential from major and medium irrigation projects in the state is yet to be exploited. In the case of minor irrigation, about 40 per cent of the ultimate potential remains unutilised.

Institutional reform is important, particularly in inputs, marketing and management of land and water resources which in fact is even more important than price and trade policy reforms. On land issues, the priority is to provide credit to tenants and women farmers. Appropriate institutions have to be developed for delivery of inputs, credit and

Box 6.1 Recommendations of Farmers' Welfare Commission on A.P. Agriculture

The Commission on Farmers' Welfare has deliberated on the problem of the agrarian crisis in A.P. and held discussions with a large number of farmers during its field visits and has also consulted experts in various relevant fields. While the issues are complex and require detailed investigation of each area, they generally reflect structural conditions and especially the collapse of public institutions that affect farmers and farming. The Commission feels that solutions to the current crisis require interventions in six important areas, which would do the following:

- Correct spatial inequalities in access to irrigation and work towards sustainable water management;
- Bring all cultivators, including tenant farmers, into the ambit of institutional credit;
- Shift policies to focus on dryland farming through technology, extension, price and other incentives;
- Encourage cheaper and more sustainable input use, with greater public provision and regulation of private input supply and more research and extension support;
- Protect farmers from high volatility in output prices;
- Emphasise rural economic diversification to more value-added activities and non-agricultural activities.

These goals form the basis of the recommendations made by the Commission. All of these issues have to be tackled at different levels and require intervention by various institutions over the short as well as medium term. The new role envisaged for the state government will require a substantial increase in public expenditure. Therefore the Commission expects that public expenditure on agriculture and allied activities should reach 5 per cent of GSDP in the next budget. It is clear that the effectiveness of these recommendations will depend essentially upon the political will to translate them into government policy and on the ground-level implementation. Detailed recommendations for each of the above goals are given in the Commission's report.

extension particularly for small and marginal farmers. There are different models of marketing: self-help groups, co-operative model similar to dairy, small producer co-operatives and contract farming. Given the price situation, farmers can be helped by providing marketing facilities at production points. Andhra Pradesh introduced a new model of marketing for maize based on the principles of decentralization and local participation during 2005.

It is known that there is very little scope for further expansion of net sown area and land scarcity will become an acute feature of the rural economy. The reasons for decline in land and water resources and increase in fallow land have to be identified at the local level and measures have to be taken to solve the problems. The productivity levels are low in well irrigation because of low availability of water. Water conservation measures are needed by way of improvement of tanks and rainwater harvesting to improve the recharge of groundwater. An integrated development of different sources of irrigation is needed to rectify the adverse effects of the lopsided development of groundwater exploitation. Water is a precious national asset and there are several concerns regarding water resources in the country. Therefore, a judicious use of land and water resources will have to be the central concern of agricultural growth policies.

Another important aspect is the high level of indebtedness. One of the major factors for high indebtedness is investment in wells and frequent failures. There is no insurance against this investment and most of this investment is financed by informal sources. The co-operative sector, which is active in other states, plays a negligible role in the state. It is desirable to regulate investment in groundwater and extend insurance coverage for it. The present government is rightly giving importance to irrigation but it has to take a holistic view of agriculture rather than concentrating only on irrigation. Short term and long term measures are required to come out of the agrarian crisis and prevent suicides by farmers.

To conclude, small-marginal farmers will be unviable without substantial public infrastructure support and comprehensive social security including health, education, employment and old age support. They are indeed risk taking small agricultural entrepreneurs. The state may have to own the responsibility for the social costs of investment in the development of land and water (including groundwater) resources, provision of adequate economic support by way of institutional credit, extension services, quality input supply and remunerative prices as well as social sector support of ensuring quality education and health facilities.

