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**PRICING OF PADDY:
A CASE STUDY OF ANDHRA PRADESH**



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Executive Summary

The farmers in the State of Andhra Pradesh are facing a situation where the viability of paddy farming has been eroded. This has been due to a steep rise in the cost of cultivation not matched by a commensurate increase in the paddy prices. The predicament faced by the farmers was rendered more acute during the year of bumper harvest of 2010-11 when the market prices of paddy ruled at a level below the minimum support price (MSP). This situation could be attributed to various structural and institutional factors prevalent in the State. This Study is an attempt to analyse these factors and to make some policy suggestions. The summary of the Study is as following.

The foodgrain production in Andhra Pradesh has increased significantly in the past two decades. Rice production in the State has witnessed a growth of 3.2 per cent in the past two decades wherein the output has increased from 8 million tonnes in 1991-92 to 14.5 million tonnes in 2010-11. Notwithstanding this sharp increase, the high dependence on rainfall of well and minor irrigation renders considerable volatility in production. Of the past six years, the State has experienced favourable monsoon in five years resulting in an increased surplus in production as also an increase in the net contribution to the central pool.

The rice markets are segmented in the State. The domestic consumption in the State is met mostly by the superfine varieties grown during the kharif season. The common varieties grown during the rabi season have no local market and thus they constitute the surplus. The State procurement machinery is critical for this surplus.

The challenge faced by the paddy farmers in the State of Andhra Pradesh has three dimensions. First, there has been a rise in the cost of cultivation particularly in the last three years. Second, the market prices have hovered at a level below the MSP. And third, even the MSP has not been sufficient to cover the cost of cultivation which has witnessed a sharp escalation in recent years.

The cost escalation has been primarily due to the increase in wage and input costs. In the last three years, wages have risen largely due to the increased bargaining power of labourers after the implementation of Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). Moreover, there has been an increased demand for labour in non-agricultural sectors as well, both contributing to a general rise in wage rates. Further, the deregulation of fertiliser prices has also contributed to the rise in cost of cultivation in agriculture. In addition, there are certain factors which are unique to the State which have also contributed to high costs. These are the high rental costs in coastal districts and high fixed costs of borewell irrigation in the Telangana region.

The data on costs provided by the Commission for Agricultural Costs and Prices (CACP) do not adequately capture these costs due to certain methodological reasons. Consequently, there could be instances when the cost projections made by the CACP are below the actual costs of production. Moreover, this problem is further compounded in a scenario which prevailed in the State during 2010-11 when the market prices were below the MSP and the actual procurement by the millers was also at prices which were lower than the MSP.

The present situation has risen largely due to the existing structure of procurement in the State which has an overwhelming procurement of rice through the millers and only an insignificant amount of paddy is procured from the farmers.

The incentive structure in paddy production in the State has certain distortions owing to the presence of some structural factors. The agrarian structure is dominated by small and marginal farmers and the markets have a situation of information asymmetry. Thus the distributional gains envisaged through the MSP do not reach the actual producers.

There is, thus a need for reorienting intervention by the State through its procurement operations. Presently, there are some infrastructure bottlenecks hampering the official procurement operations, particularly in storage space and transport facilities. The model of village-level procurement by SHG-women by the State Government is an interesting innovation. There is a need to create access to institutional credit to tenant farmers. There is a need to take a comprehensive view in order to suggest short term and long term policy decisions that strengthen food security in the State as well as benefits the farming community.

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Pricing of Paddy: A Case Study of Andhra Pradesh

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Introduction

Andhra Pradesh is one of the largest producers of rice in the country and has played a key role in helping the nation achieve self-sufficiency in foodgrains. In spite of a remarkable growth story, paddy farmers in Andhra Pradesh are facing a situation where the viability of paddy farming has been eroded. On the one hand, the cost of cultivation has risen in the recent times and on the other market price of rice has ruled at a level below the cost of cultivation as well as the minimum support price (MSP). Procurement operations by the State have also not provided much succour to the farmers as majority of them did not receive MSP for their produce. In the year of bumper harvest of 2010-11, the gap between the cost of cultivation and the market prices widened further. The unviability of paddy cultivation in the State is a peculiar phenomenon as the market and institutional support which is supposed to exist for paddy much more than any other crop, except may be for wheat, is not to the desired extent. This situation owes its origin to a number of structural factors and in order to understand the present predicament, there is a need to analyse the problems in the production and the institutional structure.

This study is an endeavour towards meeting such a task. A brief profile of Andhra Pradesh and its agricultural sector is provided in Section I in order to bring out the criticality of this sector in ensuring sustainable and inclusive growth in the State economy. The change in the cropping pattern over the last few decades and the importance of rice as a crop in the State is also highlighted in this section. Section II covers the important trends in production of rice in the State since the 1970s. Demand and supply situation pertaining to rice is set out in Section III. This analysis has been attempted with the objective of ascertaining whether the supply glut during the year 2010-11 is a temporary phenomenon or is permanent in nature and whether permitting export of rice is a viable solution at the current juncture. Section IV analyses the prices, costs and returns to paddy farming in the State of Andhra Pradesh. The analysis is based mainly on primary data which was collected from a survey conducted as part of this study. Section V deals with the procurement operations in the State of Andhra Pradesh. The problems faced by the paddy farmers in the State during the year 2010-11 is discussed in detail in Section VI followed by the supply chain and logistics issues in Section VII. Summary and concluding observations are set out in Section VIII. Section IX lists out certain policy suggestions based on the findings of the Study.

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Section I

1.1 Andhra Pradesh and Its Agriculture: A Brief Profile

The State of Andhra Pradesh is geographically the fourth largest State and fifth most populated State in India. The State Domestic Product (SDP) of Andhra Pradesh recorded a growth of 7.9 per cent in the first four years of the 11th Plan period (2007-11) as compared with the nation's GDP growth rate of 8.2 per cent. During the year 2010-11, the agricultural sector in the State contributed 25 per cent to its SDP, while industry and service sectors accounted for 50.6 per cent and 24 per cent, respectively. In spite of producing only 1/4th of SDP, the agricultural sector remains the backbone of the State economy as it is the source of livelihoods to major proportion of the State's population. The State has a work participation rate (defined as workers per 100 population) of 38.1 per cent compared to the national average of 25.6 per cent. The State has a total workforce of 34.9 million, of which 29 million are main workers and 5.9 million are marginal workers. The agricultural and allied sector in the State directly supports 67 per cent (17.2 million main plus 4.5 million marginal workers) of its total workforce. Out of the agricultural workers, 43 per cent are cultivators and 57 per cent are agricultural labourers. The State under its land use had a net sown area of 37.2 per cent; among the rest 11.5 per cent was under current fallows, 9.2 per cent was under cultivable waste, 7.6 per cent was uncultivable waste, 22.6 per cent was under forests and 9.4 per cent was under non-agricultural use during 2008-09. The relatively large percentage of land under current fallows results in volatility in agricultural output as it fluctuates depending on the behavior of rainfall in the State. Gross Cropped Area (GCA) forms around 47 per cent of the total land, with 9.15 per cent area sown more than once. The total Net Sown Area (NSA) ranges between 11.3-12.8 million hectares, depending on the rainfall. Similarly, the GCA ranges from 12.8-13.8 million hectares.

1.2 Changing Agrarian Structure

An important change that has occurred in the structure of operational landholdings in the last sixty years (during 1950-2010) is that the share of small and marginal farmers has grown from 56 to 84 per cent and the share of the area under them has increased from 18 to 49 per cent. The share of medium farmers has gone down from 33 to 16 per cent. However, the area of their landholding has increased marginally from 44 to 45 per cent. The share of big farmers has shrunk to less than 1 per cent with landholding of around 6 per cent (Table 1.1). The underlying fact about the structure is that it is overwhelmingly dominated by a class of 'small/marginal-producer-farmers' – a section most vulnerable to the vagaries of markets, institutions and environment. Further, there is growing tenancy in canal irrigated areas, as a section of medium farmers who played a crucial role during the green revolution has left agriculture by leasing out their lands [Parthasarathy (2002)]. They are leasing their land to landless labourers and marginal farmers. Tenancy usually takes place through oral agreements and thus this section of tenants does not have any rights under the existing laws. These tenants, unrecognisable under law due to oral tenancy, are another major vulnerable

group, who lack access to institutional support. While there is no official data on the extent of tenancy, several primary studies have indicated that 70-80 per cent of cultivators in coastal Andhra are tenant farmers accounting for more than 50 per cent of land under them [Vijay (2006) and Ramachandran *et al* (2009)].

Table 1.1: Class-wise Relative Shares of Operational Holdings in Andhra Pradesh
(per cent)

	1956-57		1980-81		2005-06	
	Holdings	Area	Holdings	Area	Holdings	Area
Marginal Farmers (0-1 ha)	38	8	51	13	62	23
Small Farmers (1-2 ha)	18	10	22	17	22	26
Medium Farmers (2-10 ha)	33	44	25	50	16	45
Large Farmers (>10 ha)	9	38	2	20	<1	6

Source: Various NSS rounds.

1.3 Changes in the Cropping Pattern

Agriculture in the State has witnessed significant changes in cropping pattern during the last four decades. These changes are marked by changes in the area under different crops as well as in agricultural seasons. First, there has been a significant shift in area under food crops to non-food crops; area under food crops declined from 70.4 per cent during 1970-73 to 53.6 per cent during 2009-11 – a fall of around 17 per cent [Table 1.2].

Table1.2: Changes in Cropping Pattern

(Million Hectares)

	1970-73	1987-90	2004-07	2009-11
Rice	3.1 (24.76)	3.9 (30.65)	3.6 (28.54)	4.3 (31.15)
Maize	0.2 (2.12)	0.3 (2.33)	0.7 (5.53)	0.8 (6.16)
Other coarse Grains	4.1 (32.73)	2.1 (16.47)	0.6 (5.05)	0.3 (2.21)
Total Cereals	7.6 (59.61)	6.3 (49.46)	5.6 (39.13)	5.6 (40.57)
Pulses	1.3 (10.79)	1.5 (11.85)	1.8 (14.39)	1.7 (12.3)
Total Foodgrains	8.9 (70.42)	7.8 (61.31)	6.9 (53.52)	7.4 (53.6)
Cotton	0.3 (2.47)	0.6 (4.8)	1.0 (8.23)	1.1 (8.2)
Oilseeds	2.2 (17.51)	3.8 (24.74)	2.6 (20.91)	2.7 (19.5)
Total Non- Foodgrains	3.7 (29.57)	4.9 (38.69)	5.9 (46.94)	4.7 (34.05)
Gross Cropped Area	12.7 (100.00)	12.8 (100.00)	12.8 (100.00)	13.8 (100.00)

Source: Department of Economics and Statistics, Government of Andhra Pradesh.

While food crops in general lost area to non-food crops; within food crops the area under rice increased from 24.8 per cent to 31.2 per cent. The area under coarse cereals declined during the same period. However, due to the increase in productivity, the foodgrain output has not been adversely affected; instead it experienced a long term rate of growth of 2.1 per cent. There is only a marginal addition to the area under pulses. The area withdrawn from under coarse cereals, mainly from jowar, has gone to rice, maize, cotton, oilseeds and other miscellaneous crops¹. Rice is now the dominant cereal in the State and this is best illustrated by the fact that it accounted for nearly 95 per cent of the total area under non-maize cereals by 2009-10. Though this shift has enabled a faster growth of foodgrain output given the higher productivity of rice, on the flip side the State has lost the diversity in production and consumption in this virtual mono-cropping.

The long term compound growth rate of production of foodgrains between 1973 and 2011 is 2.1 per cent, which is below the national average of 2.7 per cent. The last four decades can be divided into four sub-periods: the Green Revolution period during 1973-83; the post-green revolution period between 1983-91, early reforms period of 1991-2001; and the latest-reforms decade (2001-11) to understand the temporal dimension of growth in the production of foodgrains. In these sub-periods, the compound growth rate of foodgrain output was placed at 2.86 per cent, 0.53 per cent, 3.55 per cent and 3.08 per cent, respectively. In the two sub-periods in post-reform decades, foodgrains recorded impressive rates of growth of above 3 per cent.

The regional pattern of the growth suggests that coastal Andhra and Telangana experienced a higher growth in foodgrain output. Rice cultivation in Rayalaseema remained stagnant. In terms of production, Coastal Andhra registered high growth during the green revolution period whereas Telangana witnessed higher growth during the last two decades. [Table 1.3].

An analysis of the sources of this growth reveals that during 1973-83 and 1983-91, the area under food grains declined. There was a shift in area under foodgrains to non-foodgrains. However, during the last one decade, *i.e.*, 2001-11, there has been an increase in area under foodgrains. The major driving force behind the output growth has been yield during the first three decades, *i.e.*, 1973-2001. In the last one decade, it decelerated marginally. Notably, in Telangana the yield has shown remarkable increase. This is largely due to rapid expansion of High Yielding Varieties (HYV) area under borewells.

¹ The major non-foodgrain crops are cotton, oilseeds, chilies, turmeric, onions and vegetables.

Table 1.3: CAGRs of Area, Production and Yield of Food Grains in Andhra Pradesh
(per cent)

	Coastal Andhra	Rayala Seema	Telangana	Andhra Pradesh
AREA				
1973-74 to 1982-83	0.14	-2.68	-0.76	-0.77
1983-84 to 1990-91	-0.44	-7.18	-2.86	-2.43
1991-92 to 2000-01	0.39	0.23	0.35	0.36
2001-02 to 2010-11	0.38	1.53	1.12	1.13
1973-74 to 2010-11	0.07	-1.95	-0.88	-0.67
PRODUCTION				
1973-74 to 1982-83	3.78	-1.12	3.22	2.86
1983-84 to 1990-91	0.33	-4.15	2.29	0.53
1991-92 to 2000-01	3.22	1.18	4.58	3.55
2001-02 to 2010-11	3.99	3.50	5.87	3.08
1973-74 to 2010-11	2.81	0.52	2.68	2.11
YIELD				
1973-74 to 1982-83	3.63	1.60	4.01	3.66
1983-84 to 1990-91	0.77	3.26	5.30	3.04
1991-92 to 2000-01	2.83	0.95	4.21	3.19
2001-02 to 2010-11	3.59	1.94	4.84	1.93
1973-74 to 2010-11	2.74	2.52	3.59	2.73

Source: Estimated from Department of Economics and Statistics data.

1.4 Technology and Change in Cropping Pattern

The choice of cropping pattern is dictated by the technology, irrigation and market support that are available to the farmer. In the State, the seed-fertiliser-water packaged technology along with the presence of market support for rice led to its rapid growth. Thereby, the area under HYV technology (under rice) has grown from 5.4 per cent in 1970-71 to 39.0 per cent of total area by 2010-11. Along with the HYV seeds, the use of chemical fertilisers also increased from 29.3 million tonnes in 1970-71 to 255.3 million tonnes in 2005-06. The fertiliser consumption in the State has reached levels almost equal to those of Punjab and Haryana, and consumption is 100 per cent more than its neighboring States like Tamil Nadu and Karnataka.

1.5 Growth and Nature of Irrigation

Agriculture in the State is supported by three major sources of irrigation, namely canals (major irrigation), tanks (minor irrigation) and borewells & other wells (ground water irrigation). An analysis of the data on source wise irrigation in 2008-09 reveals that 65 per cent of the irrigation comes from tanks and wells, while 36 per cent of irrigation is provided by canals (Table 1.4).

Thus the major source of irrigation in the State is highly dependent on rainfall. Second, the addition to surface irrigation through canals has been modest in the last thirty years. Third, there has been a decline in the tank irrigation and a steep rise in well irrigation

particularly after the 1980s with the arrival of submersible pump sets and completion of rural electrification in the State [Chart 1.1].

Table 1.4: Net Area Irrigated Region-wise and source –wise

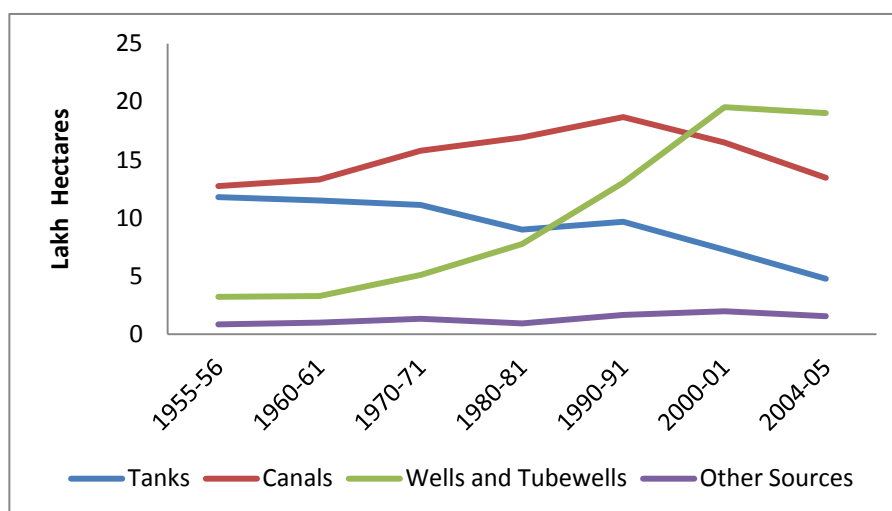
(‘000 ha)

	Canals			Tanks		Wells	
	1956-57	2008-09	Increase	1956-57	2008-09	1956-57	2008-09
Coastal Andhra	1075 (66.2)	1256 (57.1)	181	465 (28.6)	364 (16.5)	84 (5.1)	578 (26.2)
Rayala Seema	83 (22.1)	160 (25.0)	77	184 (49.0)	45 (7.0)	108 (28.8)	434 (67.9)
Telangana	116 (14.9)	274 (15.0)	158	531 (68.4)	274 (13.1)	129 (16.6)	1311 (71.8)
Total	1274	1690 (35.9)	416	1180	683 (14.5)	321	2323 (49.5)

Source: Department of Economics and Statistics – Government of Andhra Pradesh,

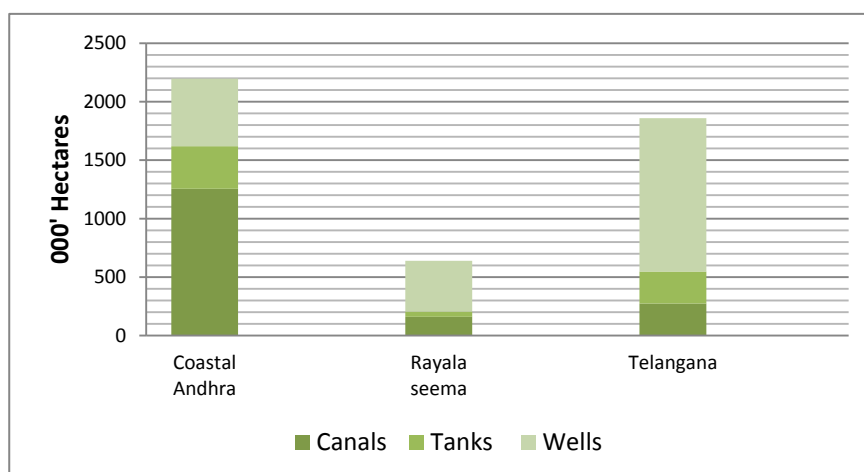
Note: Figures in parentheses are in per cent.

Chart. 1.1: Source-wise Irrigation in Andhra Pradesh



The regional distribution of the irrigation shows that Coastal Andhra has 57.1 per cent under canals and 43 per cent under wells and tanks. In Telangana, 15 per cent is under canals and 85 per cent is under wells and tanks. And in Rayalaseema, 25 per cent is under canals and 75 per cent is under wells and tanks. Therefore, the assured canal area is concentrated in the coastal districts while more rainfall dependent minor and ground water irrigation lies in Telangana and Rayalaseema [Chart 1.2].

Chart 1.2: Regional Distribution of Irrigation Sources



1.6 Agricultural Credit and Insurance

Two notable features of institutional support to agriculture that emerged in the recent period are: first, there has been a spurt in agricultural credit in the State which increased from Rs.19,444 crore during 2006-07 to Rs.37,575 crore during 2009-10. Both term loans as well as crop loans have increased proportionately. The scheduled commercial banks are the major vehicles of credit disbursement compared to regional rural banks or co-operative societies. The disbursement to priority sector has also increased. The loan waiver given to farmers during 2005-06 has cleared a large degree of farmers' debt accrued during the early years of the decade. Recent evidence, however, suggests that indebtedness once again seems to be on the rise. The second feature is that there has been an increase in crop insurance issued. A total sum of Rs. 837 crore was released in 2008-09 as against a premium of Rs. 201 crore. The crop insurance is about 1/4th of the cost of cultivation that fetches about Rs.1700 per acre for paddy (*Socio-Economic Survey 2010-11*, Planning Department, Government of Andhra Pradesh).

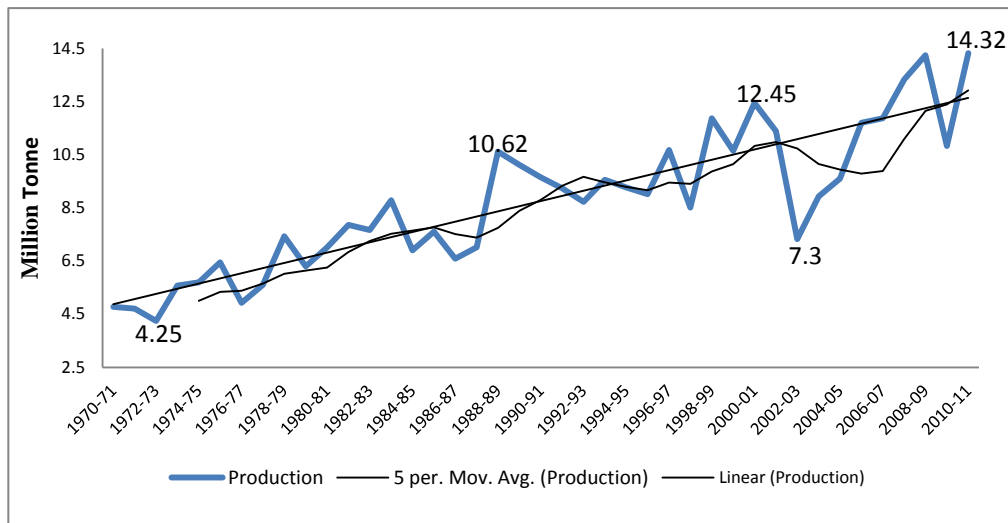
Section II

Rice Production in Andhra Pradesh: Growth and Distribution

As indicated earlier in the Study, there has been a substantial increase in the rice production in the State. It has grown from a level of 4.8 million tonnes in 1970-71 to 14.4 million tonnes in 2010-11, which marks an increase of three hundred per cent (Chart 2.1). This continuous increase has been largely made possible by shift in area under coarse grains to rice. There are three broad phases in which rice cultivation has expanded in the State. First increase was witnessed during the Green Revolution period during 1971-81 when the high yielding varieties were first introduced in the Godavari-Krishna Delta areas. The second phase of this rise was during 1982-92, which was primarily due to the expansion of canal irrigation in the State. The third phase is between the years 1993-94 and 2010-11 where the

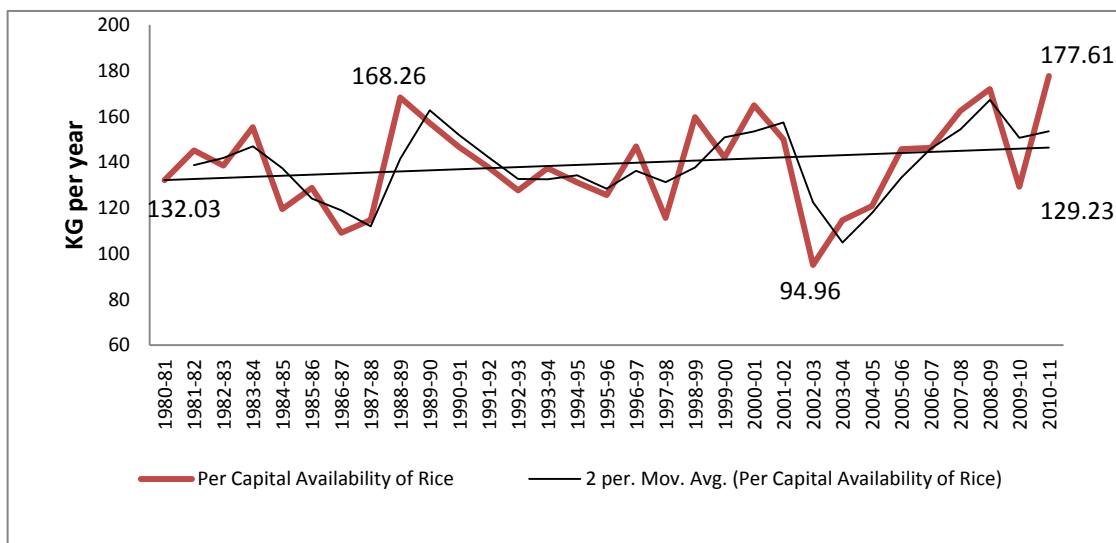
increase in area was overwhelmingly contributed by the expansion in bore well irrigation. The growth in area and production is occasionally disturbed by spells of poor monsoon. All along there was a marginal deficit of production over consumption in the State even until the late 1990s [Ravi and Indrakanth (2003) and Sambi Reddy (2003)]. However, growing demand and overall stability in production and returns encouraged paddy cultivation to expand in several non-traditional areas as well. This growth not only met the PDS requirements of the State, but also led to an increased contribution to the central pool from 1993-94 onwards. The net contribution to the central pool increased from 1.8 million tonnes in 1993-94 to 5.6 million tonnes in 2010-11.

Chart 2.1: Growth of Rice Production in Andhra Pradesh



Another remarkable aspect about the growth is that the scale of production increased along with an increase in the per capita terms. The per capita production has increased from 132.0 kg/year in 1981-82 to 177.6 kg/year in 2010-11 [Chart 2.2]. The long term trend line of per capita production shows a positive slope.

Chart 2.2: Per Capita Output of Rice in the Andhra Pradesh



However, the increase has not been secular in the long run and has witnessed fluctuations in the last one decade. Production declined during the period 2002-05 due to successive monsoon failures and amounted to as low as 7.3 million tonnes in 2002-03. The average production for the decade during 2001-11 is found to be 11.5 million tonnes, which has greatly improved because of the successive increases in production since 2005-06. However, production is observed to be highly responsive to deviations in rainfall from the normal. Production has a 72 per cent correlation with rainfall index in the State. As observed earlier, about 65 per cent of area irrigated is under wells and tanks and thus rainfall is a major determinant of the level of production². The deviations in the rainfall can cause fluctuations in acreage as well as in yield. The State has around 10 per cent of cultivated land under current fallows and this is determined by the rainfall. In the last one decade, there were four major droughts (with more than 19 per cent deficit rainfall) and during drought years, production plunged below the average level [Chart 2.1]. However, in the last five years monsoon has been favourable, barring 2009-10, leading to higher acreage and production.

The long term compound growth rates of area, production and yields are set out in Table 2.1. The long term compound growth rate of rice production during 1970-2011 is 2.7 per cent. After the peak growth rates of 3.6 per cent during the initial green revolution period in 1973-83, growth rate decelerated during 1983-91. It has once again accelerated to 3.36 per cent and 3.12 per cent, during 1991-2001 and 2001-11, respectively. The growth in the decade of nineties is largely helped by the growth in yield which grew at 2.5 per cent, but stagnated during 2001-11. During 2001-11 it is the increase in area under rice that contributed to the growth in output. There are two factors that determine fluctuations in area. The first one is through changes in area under the current fallows due to changes in rainfall, and the second one is the relative price.

During the period 1973-2011, the growth rate of productivity of rice in the State was placed at 1.9 per cent. The peak rate of growth in productivity was registered during the 'Green Revolution' period during 1973-83. It fell during 1983-91 and rose again during 1991-2001, before decelerating in the subsequent decade. Coastal Andhra's productivity gains were the highest during the Green Revolution decade and Telangana region's productivity picked up in the subsequent three decades. As observed earlier, it is the productivity of *rabi* that has particularly improved than that of *kharif* crop (Table 2.1 & 2.2).

² It is also important to consider weighted rainfall index.

Table 2.1: Compound Growth Rates of Area, Production and Yield of Rice in Andhra Pradesh

(per cent)

Year	Coastal Andhra	Rayala Seema	Telangana	Andhra Pradesh
Area				
1973-74 to 1982-83	1.51	-3.13	0.81	0.82
1983-84 to 1990-91	-0.60	-3.70	0.60	-0.45
1991-92 to 2000-01	0.48	-0.42	1.69	0.83
2001-02 to 2010-11	1.35	-1.62	3.73	2.03
1973-74 to 2010-11	0.66	-0.99	1.34	0.83
Production				
1973-74 to 1982-83	4.90	-2.29	3.06	3.60
1983-84 to 1990-91	0.33	-0.60	3.73	1.35
1991-92 to 2000-01	3.15	0.95	4.28	3.36
2001-02 to 2010-11	2.09	-0.55	5.99	3.12
1973-74 to 2010-11	2.74	0.38	3.28	2.71
Yield				
1973-74 to 1982-83	3.34	0.86	2.23	2.76
1983-84 to 1990-91	0.94	3.22	3.11	1.80
1991-92 to 2000-01	2.66	1.37	2.54	2.50
2001-02 to 2010-11	0.73	1.09	2.18	1.07
1973-74 to 2010-11	2.06	1.39	1.91	1.87

Source: Estimated

The regional distribution of rice production also underwent some change over the period. The share of coastal districts, namely, East Godavari, West Godavari, Krishna, Guntur and Nellore, in rice production has contracted in the last four decades during 1971-2009. Telangana region has increased its share and Rayalaseema's share has come down during the same period. Telangana's growth doubled in districts of Karimnagar, Nalgonda, Nizamabad, Mahabubnagar, Warangal and Medak in the 1990s, notably after the arrival of underground submersible pump sets. In all the regions there has been a progressive increase in absolute levels from decade to decade [Table 2.3].

Table 2.2: Area, Production and Yield of Rice in Andhra Pradesh

Years	Area (million ha)			Production (million tonnes)			Yield (qt per ha)		per cent Rainfall Deviation (mm)
	<i>Kharif</i>	<i>Rabi</i>	<i>Total</i>	<i>kharif</i>	<i>Rabi</i>	<i>Total</i>	<i>Kharif</i>	<i>Rabi</i>	
2000-01	3.0	1.29	4.24	8.23	4.24	12.45	27.41	34.01	+0.96
2001-02	2.4	1.39	3.82	6.50	4.89	11.39	26.79	34.96	-6.12
2002-03	2.1	1.77	3.82	5.05	2.23	7.27	23.97	31.89	-38.38
2003-04	2.1	1.87	3.97	5.84	3.11	8.95	27.72	35.94	-22.79
2004-05	2.2	1.87	3.08	6.39	3.28	9.60	28.86	36.83	-33.97
2005-06	2.5	1.45	3.98	6.37	5.37	11.7	25.24	36.59	+8.60
2006-07	2.5	1.37	3.97	6.94	4.31	11.87	26.31	36.81	-7.84
2007-08	2.5	1.41	3.98	8.19	5.13	13.32	31.78	36.50	-1.827
2008-09	2.8	1.58	4.39	8.38	5.86	14.24	29.89	37.00	-12.90
2009-10	2.0	1.38	3.44	5.95	4.88	10.88	28.87	35.43	-30.21
2010-11	2.9	1.76	4.68	7.50	6.79	14.32	25.58	42.67	+22.90

*Source: Statistical Abstract, Department of Economics and Statistics, Government of Andhra Pradesh.
Note: Normal rainfall is about 930 mm.

Table 2.3: Rice Production in Principal Rice-growing Districts in Andhra Pradesh
(million tonnes)

District	1955-56	1971-72	1980-81	1990-91	2000-01	2006-07	2007-08	2008-09
East Godavari	0.4	0.54	0.83	0.75	1.36	1.39	1.51	1.51
West Godavari	0.4	0.67	1.06	1.06	1.65	1.55	1.63	1.60
Krishna	0.4	0.57	0.77	0.99	1.27	0.87	1.29	1.42
Guntur	0.2	0.51	0.74	0.97	1.03	0.88	1.06	1.14
Nellore	0.2	0.26	0.34	0.58	0.53	0.85	0.85	0.9.9
Coastal Andhra	2.16 (67.0)	3.26 (68.0)	4.54	5.53	7.15 (57.0)	6.95	8.02	8.06 (56.0)
Kurnool	0.04	0.15	0.15	0.19	0.34	0.30	0.38	0.3.7
Royalaseema	0.32	0.60 (12.0)	0.5	0.72	0.88	0.65	0.85	0.81 (5.6)
Mahabubnagar	0.07	0.09	0.22	0.26	0.431	0.26	0.42	0.42
Medak	0.07	0.06	0.17	0.28	0.336	0.27	0.28	0.35
Nizamabad	0.10	0.10	0.29	0.39	0.498	0.53	0.45	0.68
Karimnagar	0.06	0.09	0.33	0.64	0.885	1.07	0.98	1.17
Warangal	0.06	0.09	0.25	0.45	0.650	0.58	0.56	0.69
Khammam	0.03	0.04	0.15	0.37	0.504	0.44	0.54	0.59
Nalgonda	0.07	0.27	0.36	0.72	0.796	0.80	0.99	1.15
Telangana	0.05 (17.4)	0.85 (18.5)	1.95	3.39	4.45 (35.5)	4.25	4.44	5.36 (37.4)
Andhra Pradesh	3.05	4.76	7.09	9.63	12.45	11.87	13.35	14.29

Source: Department of Economics and Statistics, Government of Andhra Pradesh.

Section III

Demand-Supply Situation of Rice in Andhra Pradesh

This brings us to the other question about how adequate is this production from the point of view of food security and food self-sufficiency in the State? Has the growth in the recent times given rise to a consistent surplus? These are pertinent questions given that Andhra Pradesh has become a major rice consuming State. The change in favour of rice from coarse cereals in consumption dominantly occurred since the introduction of two-rupee-a-kilo rice subsidy scheme by the State government in 1983-84 [Ravi and Indrakanth (2003)]. The hegemony of rice in consumption pattern is also partly responsible for the shift in demand singularly towards rice. Thereby, rice consumption and production have moved in tandem. In the eighties, rice production in the State was just enough to meet the domestic consumption and contribution to central pool was marginal. For a long time, Andhra Pradesh was not considered a rice surplus State. The public distribution system also expanded both in urban as well as rural areas. Of late, there is a popular view that output is far in excess over its local consumption as is reflected in the stagnation of market prices since 2006-07. In order to

examine this view in the medium as well as long run, a simple exercise of consumption estimation has been conducted in this study by taking the per capita monthly consumption of rice in the State for rural and urban area from various NSS rounds since 1993-94. Taking the average consumption figures, the total rice demand is estimated and figures are presented in Table 3.1.³

According to the estimates [Table 3.1], the total demand for rice in the State has increased from 9.3 million tonnes in 1993-94 to 10.7 million tonnes in 2010-11. The consumption in rural areas has increased from 7.1 to 7.4 million tonnes and consumption in urban areas increased from 2.2 to 3.3 million tonnes during the same period. The consumption over the period has a slow but steady growth. In the last 18 years, the supply has fallen short of domestic demand during 5 years. For almost 10 years, supply has been sufficient to meet the level of demand or has been marginally higher. For 8 years, supply of rice has outstripped the demand by more than 10 per cent. Significantly, during all the drought years supply has fallen short of demand. Some surplus production existed during normal and excess rainfall years (with +19 per cent deviation). Since 2005-06, the surplus production has steadily grown from 1.4 to 3.6 million tonnes in 2010-11. However, during the drought year of 2009-10, supply was just sufficient to meet the demand [Chart 3.1]. Hence, the picture that emerges is that, if there is normal season-weighted rainfall, there is a surplus. According to our projections, the overall consumption in the coming five years may increase only up to 11.2 million tonnes by 2016-17. Besides this, in the wake of the new Food Security Act 2011 coming into implementation, according to the estimates of Department of Civil Supplies, Government of Andhra Pradesh, there may be a need to procure another 0.45 million tonnes of rice in the State. The overall requirement in the State will go up to 11.65 million tonnes, which is still below the average production of the last one decade⁴.

³ The time series data on consumption was generated using the data from the various NSS rounds since 1993-94. Some interpolations were done for certain years using the income elasticities of consumption. Monthly Per Capita Consumer Expenditure and Average Monthly Rice Consumption are taken from various rounds of NSSO. Expenditure (as a proxy for income) elasticity of consumption, between every quinquennial round, is calculated as the ratio of the percentage change in quantity of rice demand to the percentage change in total monthly per capita expenditure. The monthly per capita rice consumption is applied to population to obtain total demand for rice. The demand projection for the rice is obtained through: $D_t = [D_0(1 + ye)^t] \times 12 \times N_t$, where, D_t is demand of rice in year t , D_0 is per capita demand of the commodities in the base year; y is growth in monthly per capita expenditure; e is the expenditure elasticity of demand for rice, N_t is the projected population in year t . The population is taken from Census of India,

The estimations had following steps.

First, expenditure elasticity is estimated (considering average expenditure elasticity). Second, considering two scenarios assuming the MPCE growth rates to be 9 per cent, the per capita rice demand was arrived at (i.e. growth of projected MPCE multiplied by expenditure elasticity) by applying the growth of rice.

⁴ These estimates are based on NSS rounds up to 2004-05. When the latest 66th Round NSS data of 2009-10 is considered, the per capita average consumption of rice has fallen drastically to 10.54 kg/month for rural and 8.98 kg/month for urban. According to the projections based on 66th Round of NSS, the demand has been lower by 7 million tonnes. When the requirements of new Food Security Bill are considered, it may still be around 10.52 million tonnes. Projections for the next five years in such case are not likely to be above 10.54 million tonnes. This is because of negative elasticity of consumption for income due to drop in per capital rice consumption (Table 3.1). Even after considering the substitution and income effects, the additional demand is not likely to be more than one million tonne.

Chart 3.1: Demand-Supply of Rice in Andhra Pradesh

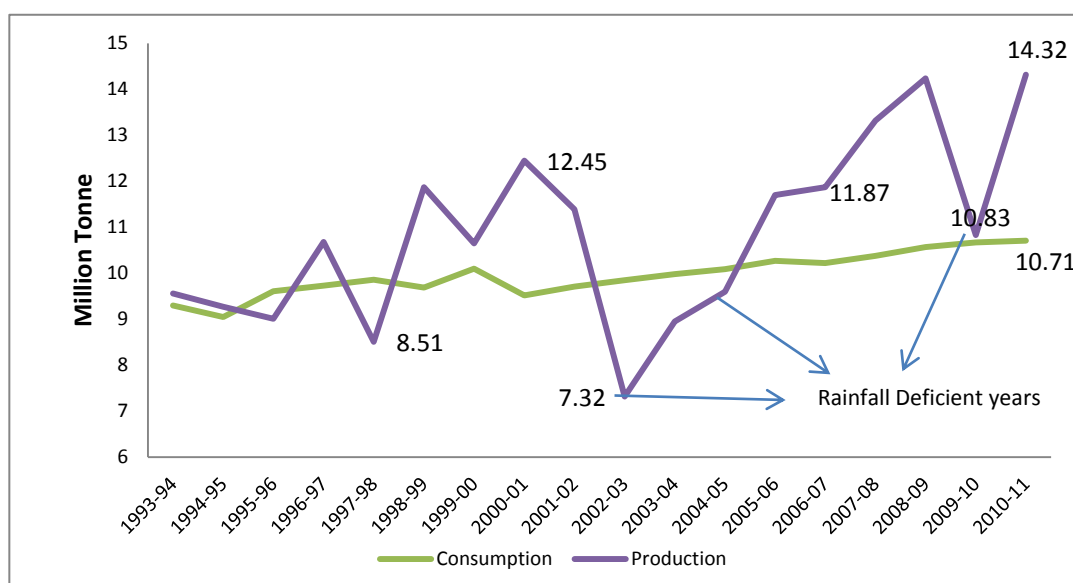


Table 3.1: Estimated Trends in Demand and Supply of Rice in Andhra Pradesh

(million tonnes)

Years	Total Rice Consumption			Production	Excess Supply	Annual Rainfall (mm)	% dev of rainfall
	Rural	Urban	Total				
1993-94	7.11	2.19	9.30	9.56	0.25	753	-19.03
1994-95	6.75	2.30	9.05	9.27	0.21	819	-11.93
1995-96	7.21	2.39	9.61	9.01	-0.59	930	+0.0
1996-97	7.24	2.48	9.73	10.68	0.94	744	-20.00
1997-98	7.31	2.55	9.86	8.51	-1.57	753	-19.03
1998-99	7.35	2.61	9.69	11.87	1.90	1053	+13.22
1999-00	7.43	2.67	10.1	10.65	0.54	770	-17.20
2000-01	6.90	2.66	9.52	12.45	2.88	939	+0.96
2001-02	7.09	2.61	9.71	11.39	1.67	873	-6.12
2002-03	7.14	2.70	9.85	7.32	-2.53	573	-38.38
2003-04	7.17	2.80	9.98	8.95	-1.02	718	-22.79
2004-05	7.18	2.90	10.09	9.60	-0.49	614	-33.97
2005-06	7.43	2.84	10.27	11.70	1.42	1010	+8.60
2006-07	7.30	2.91	10.22	11.87	1.65	857	-7.84
2007-08	7.34	3.03	10.38	13.32	2.93	913	-1.827
2008-09	7.41	3.16	10.57	14.24	3.66	810	-12.90
2009-10	7.44	3.22	10.67	10.83	0.15	649	-30.21
2010-11	7.42	3.28	10.71	14.32	3.61	1143	+22.90
	Projected Demand			Under new Food Security Bill	Alternative Projection*		
2011-12	7.42	3.28	10.71	11.54	10.49		
2012-13	7.45	3.34	10.79	11.23	10.49		
2013-14	7.47	3.40	10.88	11.31	10.52		
2014-15	7.50	3.47	10.97	11.85	10.51		
2015-16	7.53	3.53	11.06	11.57	10.53		
2016-17	7.56	3.60	11.16	11.68	10.54		

*alternative projections are estimated using 66th Round of NSS for 2009-10.

According to the Engel's law, as per capita income increases, the proportion of expenditure on food declines. Further, when per capita income increases, the expenditure on cereals decreases as people are likely to shift to protein and fat-based diets. There is some evidence for such decline in cereal demand in the State too. The real per capita monthly consumer expenditure from 1993-94 up to 2010-11 has increased threefold in case of rural and fivefold among urban population. The average per capita monthly rice consumption in rural areas has declined from 11.5 to 11.2 kg and from 10.1 to 9.3 kg in urban areas during the same period (Table 3.2).

Table 3.2: Monthly Per Capita Rice Consumption in Andhra Pradesh

Year	Per Capita Monthly Rice Consumption (Kg.)		Monthly Per Capita Consumption Expenditure (Rs.)	
	Rural	Urban	Rural	Urban
1993-94	11.50	10.10	288.7	408.6
1994-95	10.89	10.06	293.91	516.93
1995-96	11.63	9.93	324.84	552.59
1999-00	11.71	9.91	453.61	773.52
2000-01	10.86	9.64	490.15	928.43
2001-02	11.17	9.24	537.8	858.74
2004-05	11.06	9.55	585.55	1018.55
2005-06	11.38	9.13	704.17	1303.95
2006-07	11.14	9.14	727.14	1360.68
2007-08	11.16	9.31	816.17	1549.55
2008-09	11.17	9.28	889.63	1689.01
2009-10*	11.19	9.26	969.69	1841.02
2010-11*	11.21	9.25	1056.96	2006.71
<i>Estimated*</i>				
2011-12*	11.216	9.22	1152.09	2187.32
2012-13*	11.243	9.20	1255.78	2384.17
2013-14*	11.259	9.18	1368.80	2598.75
2014-15*	11.276	9.16	1491.99	2832.64
2015-16*	11.293	9.14	1626.27	3087.58
2016-17*	11.309	9.12	1772.63	3365.46

*Estimated using 2007-08 NSS round

If the latest 66th Round NSS data of 2009-10 is considered, the average per capita consumption of rice has fallen to 11.2 kg/month for rural and 9.2 kg/month for urban. Therefore, even accounting for cereal dominated dietary patterns, the future demand for rice in the next five years, going by the expenditure elasticity of food, is not going to be more than 11.64 million tonnes. This is a conservative estimate, the actual demand could be even less. If projections are made using the 66th round of NSSO, it drops by another 5 million tonnes. Even after considering substitution and income effect and after providing an additional 3 kg per head under new Food Security Bill, the additional demand is not likely to go up by more than one million tonne in the State.

Another dimension of domestic demand in the State is the variety-wise segmentation. There is an increasing preference for consuming fine and superfine varieties of rice produced only during *kharif* season, even among the sections with relatively low income. The domestic demand for the superfine varieties in the State is to a tune of about 5 million tonnes, which constitutes 75 per cent of total production in *kharif* season. Clearly, there is not much of surplus in superfine and fine rice in the State. However, part of the *Kharif* and whole of *rabi* produce of common (inferior) varieties has no local market. All the common variety rice is surrendered for procurement. Such rice, when given through PDS, particularly to the non-poor, finds its way to secondary markets. Major portion of the common rice is made into parboiled rice, which is procured by FCI for Kerala and South Tamil Nadu's consumption. It has no local market in the State. The surplus production is in the common variety and not in the superfine and fine variety.

Overall, in the recent period, there is seemingly a surplus production of rice in the State subject to the performance of the monsoon. However, there is a need to take the overall need in the country before one declares this as a genuine surplus over the country's overall requirement. Moreover in the State also, surplus of rice is in the case of common varieties and not fine and super fine varieties.

Section IV

4.1 Farm Harvest Prices and Minimum Support Prices

It is well known that since the launching of the Green Revolution, providing a stable market environment through remunerative price has been central to incentivise the foodgrain production in the country. It is this stable market environment and remunerative prices that encouraged the growth of foodgrain production in the country. MSP has become the major instrument to keep the market prices from plunging below the cost of production. However, there have been concerns about the MSP announced by the Central Government, that the all-India average cost of production has often not covered the costs in several States with higher than average cost of production. Second, given the long time-lag in processing the cost of cultivation data by the CACP, the annual projections have been based on data which at times are dated, a practice that is viewed as creating discrepancies between the actual and projected costs.

Coming to the case of Andhra Pradesh, the paddy prices in the last two decades have moved in tandem with the MSP, barring the last two years. The farm harvest prices have mostly remained marginally above MSP for most of the years. Since 1998-99, the farm harvest prices of rice have remained marginally above the MSP for both Grade-A and common varieties [Charts 4.1a and 4.1b].

However, during 2010-11, the farm harvest prices of both the varieties have fallen below the MSP. In fact, a closer look suggests that as far as prices of common variety are concerned, not only have they remained below the MSP since 2008-09 by Rs.50-60, in 2010-11 they have fallen short by nearly Rs.200 [Table 4.1]. The actual prices that farmers received have remained even lower during the year.

Chart 4.1a: Market Price and MSP (Grade-A)

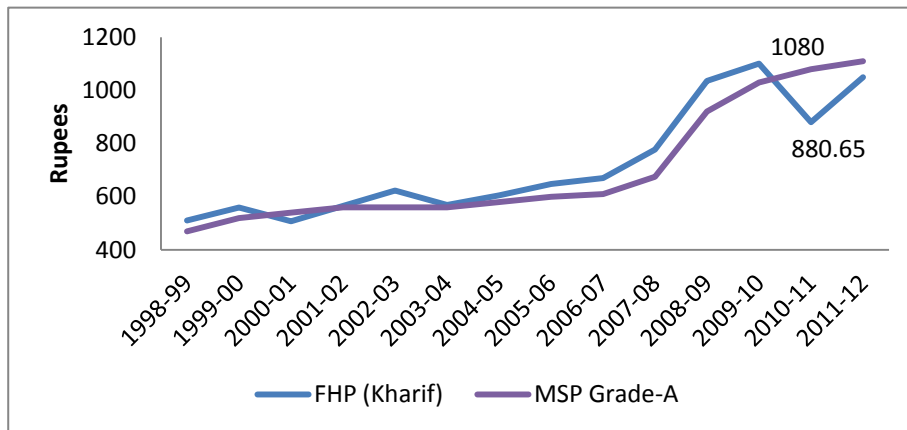


Chart 4.1b: Market Price and MSP (Common)

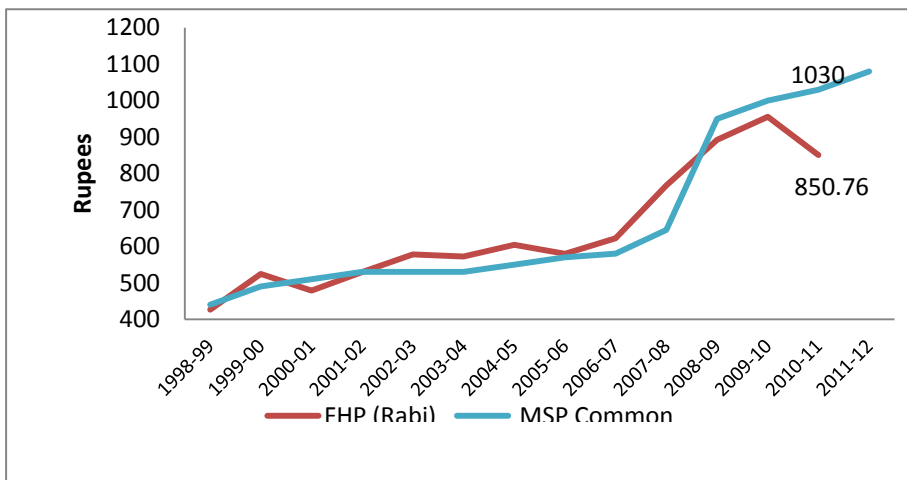


Table 4.1: Farm Harvest Prices and Minimum Support Prices of Paddy in Andhra Pradesh
(Rs.)

Year	Farm Harvest Price			Minimum Support Price	
	<i>Kharif</i>	<i>Rabi</i>	Average	Grade-A	Common
1998-99	510.53	426.17	486.35	470	440
1999-00	559.42	524.44	538.66	520	490
2000-01	507.93	478.58	499.61	540	510
2001-02	565.77	529.40	550.16	560	530
2002-03	623.29	578.08	609.27	560	530
2003-04	569.37	572.27	570.38	560	530
2004-05	605.49	604.07	605.02	580	550
2005-06	648.21	579.59	616.95	600	570
2006-07	670.19	622.22	650.30	610	580
2007-08	777.76	767.17	773.66	675	645
2008-09	1035.75	892.28	963.56	921	950
2009-10	1100.67	955.76	1072.66	1030	1000
2010-11	880.65	850.76	865.70	1080	1030
2011-12	1050			1110	1080

Source: Department of Economics and Statistics, Government of Andhra Pradesh.

Moreover, it is not only the prices of common varieties of paddy that have fallen below MSP, but even those of fine and super fine varieties have fallen to the level of MSP (Grade-A) and even below. This has happened for the first time. The Food Corporation of India considers only the length of grain as the basic criterion for grading. Even some varieties which have good demand in the market due to their cooking quality do not come under Grade-A. Some superfine varieties are considered as Grade-A⁵. The surplus production in superfine rice during 2010-11 has pushed their prices below the MSP. However, its cost of production is higher than common variety because it is of longer duration and is a low yielding crop. The underlying fact is that the market prices of all varieties were below the MSP during the bumper harvest of 2010-11; market prices of common varieties have been consistently below the MSP since 2008-09. These are indicative of two major issues: first, procurement mechanism in the State has not been able to assure the MSP to the farmers and; second, there must be a finer gradation system to be adopted by the procurement agencies so that the superfine rice receives its due protection from the vagaries of the markets. Before we examine the returns to farming due to this situation, it is in order to examine as to how far minimum support prices have covered the actual costs of production.

4.2.1 Cost of Cultivation: The Sample Study for Andhra Pradesh

There are three major issues in the State in relation to returns to paddy farming. First, there is an increasing concern that the minimum support prices have not adequately covered the cost of production for the past three years. Second, even the under-priced MSP is actually not received by the farmers. Third, farm harvest prices of paddy have remained less than

⁵ Earlier FCI used to categorise rice into three types such as common, fine and superfine. Of late, fine and superfine are merged and are called Grade-A. For eg., Swarna variety is considered as Grade-A. But in the market it is considered lower than the superfine BPTs.

MSP due to ineffective presence of procurement agencies in the market. We shall examine these three issues in the section.

As stated earlier, it is difficult to make a realistic estimate of the cost of cultivation based on secondary data. The official data on cost of cultivation is arrived at based on an elaborate methodology but it has certain limitations. The differences in the costs between States are not adequately captured in the construction of the national average. Second, there is a view that CACP data underestimates the actual costs⁶. Even the available data with CACP is collected from a thin sample. In the State also, the differences within the regions of the State may not be effectively measured.

In order to get a realistic picture on cost of cultivation, the present study has collected primary data on cost of cultivation, prices, yield, acreage, varieties grown and marketing for the year 2010-11 in the State through structured questionnaires. The study covered 192 households in 13 villages from eight districts, namely East Godavari, Krishna, Karimnagar, Nizamabad, Warangal, Medak, Nalgonda and Mahaboobnagar. The sample households and the villages are based on random selection. The districts selected are all primary rice growing ones spanning in three agro-climatic regions namely, K-G Delta, North Telangana and South Telangana. East Godavari and Krishna in the sample are completely under canal irrigation, while other districts have both canal and well irrigation.

The class distribution of 192 sample households constituted 39, 118 and 35 marginal, small and medium operational households [Table 4.2.1], forming 20.3 per cent, 61.5 per cent and 18.7 per cent, respectively, in the total sample. The land held by these three classes is 15 per cent, 49 per cent and 36 per cent, respectively. Among these 69.3 per cent of the farmers are owner-cultivators, 15.6 per cent are owner-tenants⁷, and 15.0 per cent are tenants (which includes 1.5 per cent sharecroppers) (Table 4.2.2). Owner cultivation is found to be prominent in Telangana, while tenancy is dominantly observed in coastal districts. In East Godavari and Krishna, tenancy is between 60-80 per cent. The pattern observed in the sample is in tune with the average distribution of operational households in the State as observed earlier. The growing tenancy in the State has been noted by several other researchers [Ramachandran et al (2009), Vijay (2003)].

⁶ The CACP methodology may underestimate the actual costs on several counts. First, it does not consider actual wages, instead it adjusts base year labour costs using labor cost index estimated by the Labour Bureau, which may be lower than the actual wages prevailing in the market. Second, it takes official rent according to the tenancy legislations. Third, it assumes bank interest rates of priority sector, where as majority of farmers take credit from the informal sources of finance which charge a much higher rate of interest.

⁷ Owner-tenant is one who owns some land and also leases-in some land.

Table 4.2.1: Class-wise Distribution of Sample Households

District	Marginal Farmers <1 Ha	Small Farmers 1-2 Ha	Medium Farmers 2-5 Ha	Large Farmers > 5 Ha	Total
East Godavari	9	16	6	0	31
Krishna	3	7	3	0	13
Karimnagar	13	24	5	0	42
Mahabubnagar	3	19	4	0	26
Medak	4	13	3	0	20
Nalgonda	3	25	11	0	39
Nizamabad	1	5	2	0	8
Warangal	3	9	1	0	13
Total	39 (20.3)	118 (61.5)	35 (18.2)	0	192 (100.0)

Source: Field Study

Table 4.2.2: Types of Cultivators among Sample Households

District	Own-cultivators	Owner-tenant	Tenants	Share-croppers	Total
East Godavari	4	10	17	0	31
Krishna	5	3	5	0	13
Karimnagar	31	11	0	0	42
Mahabubnagar	21	0	4	1	26
Medak	15	5	0	0	20
Nalgonda	38	0	0	1	39
Nizamabad	7	1	0	0	8
Warangal	12	0	0	1	13
Total	133 (69.3)	30 (15.6)	26 (13.5)	3 (1.5)	192 (100.0)

Source: Field Study

4.2.2 Estimated Cost of Cultivation

The cost of cultivation scheme developed by the Commission for Agricultural Costs and Prices defines five cost concepts, namely, (i) Cost A1 (all fixed and variable paid out costs excluding rent), (ii) Cost A2 (Cost A1+ rent), (iii) Cost A2+ (Family Labour (FL)), (iv) Cost B1 (Cost A1 + Interest on value of owned fixed assets excluding land), (v) Cost B2 (Cost A2 + imputed rent on own land), (vi) Cost C1 (Cost B1+ imputed family labour); (vii) Cost C2 (Cost B2 + imputed family labour) ; (viii) Cost C2* (Cost C2 using Minimum Wages if they are higher than market wages); (ix) Cost C3 (cost C2*+10 per cent managerial input over C2*). Cost A2 + FL includes rent as well as family labour and is relevant cost for tenant farmer, Cost B1 and B2 are relevant for small and marginal farmers, and cost C1 and C3 are relevant costs for supervisory landlord farmer. The respective cost of cultivation is converted into cost of production per quintal by applying the yield. The estimated cost of cultivation per acre and per hectare is given Table 4.2.3 and Table 4.2.4. There are no notable class differences between farmers in the cost of cultivation, while there are significant differences between regions. Therefore, a region-wise analysis is presented in the tables.

**Table 4.2.3: Cost of Cultivation per Acre in Andhra Pradesh
in Rabi 2010-11 in Sample Households**

(in Rupees)

District	East Godavari	Krishna	Karim nagar	Mahabub Nagar	Medak	Nalgonda	Nizama-bad	Warangal	Avg Cost
Cost A1	21643	24623	20196	20909	18162	19725.62	19507	22437	20380
Cost A2	30084	25914	23184	23009	20112	22225	22007	24437	23872
A2+FL	35413	32051	28105	27294	25844	25531	24091	30278	28576
Cost B1	21645	20490	20248	20979	18231	19788	19563	22515	20432
Cost B2	38085	31126	25736	25079	22181	24788	24563	26515	27259
Cost C1	26973	26627	25169	25264	23963	23094	21647	28356	25137
Cost C2	43414	37264	30657	29364	27913	28094	26647	32356	31964
Cost C3	47755	40990	33723	32301	30704	30904	29312	35592	35160
Yield	26	21	27	17	27	25	28	27	

Source: Field study; Cost A1: All paid-out costs except rent; Cost A2= Cost A1+Rent on leased-in land; Cost A2+FL = Cost A2+ Family Labour; Cost B1 = cost A1+ interest on fixed cost; Cost B2 = Cost A2+Imputed Rent on Own land; cost C1= cost B1+imputed family labour, Cost C2=Cost B2+family labour, Cost C3 = Cost C2 + 10 per cent managerial input.(Cost C2* is also defined to consider minimum wages in case they are higher than actual labour.) [source: *Cost of Cultivation Manual*, published by CACP, 2005]

From Table 4.2.3, when paid-out costs (Cost A1) are considered, we observe that they range between Rs.18,162-24,623 per acre. The average paid out cost is Rs. 20,380 per acre. Barring Mahabubnagar, differences between the regions are not very large in terms of paid-out costs (Cost A1). This is primarily because the wage and input costs (which together constitute 50 per cent) are more or less similar. The Cost A1 per acre ranged between Rs.24,623 in Krishna district and Rs.18,162 in Medak. The cost of cultivation in delta region is Rs.21,623 in East Godavari and Rs.24,623 in Krishna.

But there are significant differences in Cost A2 between regions. The Cost A2 on average is 30 per cent higher in coastal districts compared to Telangana districts. Consequently, these differences remain the same in Cost A2 + FL, Cost B2, Cost C2 and the overall cost C3. They are all higher in coastal districts. There are two reasons for this: first rental costs are quite high in coastal regions. Second, their labour component is relatively still high. In Telangana region, the farmers are saving labour costs by hiring harvesters. The cost C3 (total cost) is 20-25 per cent higher in coastal districts as compared to the Telangana region. This is more evident when the break-up of cost of cultivation across regions is considered.

On average, hired labour costs constitute about 27.4 per cent, material inputs cost 21.5 per cent, machine labour costs 16.33 per cent, rental costs amount to around 13.95 per cent, interests and marketing costs are about 7.1 per cent and miscellaneous costs are 4.3 per cent for the State [Table 4.2.4]. As labour costs constitute more than one fourth of the costs, when wage rates have gone up substantially in the last three years, the overall cost has substantially increased. The important differences between delta regions and the other regions is that in the former, rental cost is about 30 per cent and labour cost too is about the same. The rents are maximum in Godavari districts followed by Krishna district, where these are 30 bags (75 kg)

and 20 bags per annum, respectively. The rents have gone up with large number of landless and marginal farmers competing for a fixed amount of land available for lease. When wage rates were low at Rs.150 and Rs.40 for male and female workers, respectively, paddy farming used to leave some surplus to tenant farmer, but once the wage rates have gone up to Rs. 300 and Rs.125 for the same categories since 2007-08, the steep costs have overtaken the revenues.

Table 4.2.4: Break-up of Cost of Cultivation across the Districts in 2010-11

(in per cent)

District	Hired labour	Material Cost	Machine labour	Rent	Interest	Fixed Cost	Misc	Marketing & Transport
East Godavari	33.68	20.77	8.89	28.06	5.94	0.08	2.61	0.00
Krishna	33.29	22.61	10.76	21.04	6.52	2.17	3.03	0.58
Karimnagar	20.54	23.43	20.59	12.89	7.19	4.45	4.92	5.88
Mahabubnagar	36.68	17.93	12.21	9.13	7.50	6.10	3.87	6.57
Medak	19.63	29.71	18.93	9.70	7.46	6.87	4.60	3.19
Nalgonda	30.53	18.71	15.93	11.25	7.33	5.68	5.71	4.90
Nizamabad	21.02	19.69	18.80	11.36	7.32	5.08	4.42	8.11
Warangal	23.97	18.96	24.55	8.18	7.58	6.34	5.52	4.89
Average	27.42	21.48	16.33	13.95	7.11	4.60	4.33	4.27

Source: Field study

In Telangana districts, the fixed costs, marketing and transport costs and machine costs together constitute around 65 per cent. In Telangana region farmers have responded to wage rise by shifting to harvesters. Though gross worth Rs.1500 is lost in using harvester, they save a cost of around Rs.5000 per acre. Harvesters are also available in the region which can harvest maize as well as paddy. The rest of the costs comprise of labour and material input costs. The interest costs are the same across the districts. There is a thin margin left to meet the different paid-out costs. In the absence of rental costs and with the prevailing prices, paddy cultivators in Telangana are just around the break-even point. The increase in wage costs and fertiliser costs have reduced the margin in this region as well.

The differences between our estimates and CACP figures are presented in Table 4.2.5. There is a wide divergence between CACP figures and our estimates. This is primarily because CACP in making projections for 2010-11 used the data of 2006-07, which may not be very relevant. Second, the projections by CACP are made based on labour cost index and input cost index which may not adequately capture the actual costs incurred in the State. Third, CACP methodology may have underestimated the marketing costs, transport costs, interest costs, rental costs, family labour, attached labour and machine labour prevalent in the State.

Table 4.2.5: Comparative Estimates of Cost of Cultivation of Paddy for Rabi 2010-11

(Rs/ha)

District	CACP^ Projection	Estimated*	Agri Dept# Estimate	NABARD# Estimate
Cost A1	25782	50340	42844	44201
Cost A2	26546	58964	53128	54621
A2+FL	30557	70583	NA	NA
Cost B1	27740	50469	59982	66302
Cost B2	43279	67331	65982	72302
Cost C1	31413	62088	62482	67802
Cost C2	47485	78951	68482	73802
Cost C3	47746	86846	68482	73802

Source: *Field Study, # Mohan Kanda Committee Report, ^Report of CACP 2009-10. The differences between our estimations and those of Agricultural Department are owing to reasons that the latter's figures on fertiliser, pesticide use, lower labour costs of application of fertilisers, rentals on sprayers, mats, interest on working capital, transport and marketing costs are lower than the data on costs collected through field study.

The State Government of Andhra Pradesh is also preparing its own estimates on cost of cultivation [Table 4.2.6]. However, these estimates do not consider transport costs, marketing costs, labour costs in applying fertiliser and pesticides and the interest costs⁸. For this reason, there is 20 per cent variation between our estimates and the figures provided by the State Government. During the field study, farmers recalled in their narratives that until the year 2006-07, the prices they received were remunerative. However, in their perception, the steep escalation of costs occurred with the implementation of MGNREGA. Along with that, the PDS scheme with two-rupee price may have also resulted in greater bargaining power of labour. Telangana farmers have responded to this increase in labour costs with increased mechanisation however coastal districts farmers continue to incur high labour costs in the absence of such substitution.

Table 4.2.6: Estimated Cost of Production of Paddy in Andhra Pradesh for 2010-11

(Rs/Qtl)

District	East Godavari	Krishna	Karim Nagar	Mahabub nagar	Medak	Nalgonda	Nizama bad	Warangal	Average
Cost A1	832.46	974.39	748.02	1229.98	672.69	789.02	696.71	831.03	846.79
Cost A2	1157.10	1234.01	858.69	1353.51	744.91	889.02	786.00	905.11	991.04
A2+FL	1362.04	1526.25	1040.96	1605.57	957.19	1021.26	860.42	1121.44	1186.89
Cost B1	832.50	975.73	749.93	1234.11	675.25	791.55	698.71	833.90	848.96
Cost B2	1464.84	1482.24	953.19	1475.29	821.55	991.55	877.28	982.05	1131.00
Cost C1	1037.44	1267.98	932.20	1486.17	887.52	923.79	773.13	1050.24	1044.81
Cost C2	1669.78	1774.48	1135.46	1727.35	1033.82	1123.79	951.70	1198.39	1326.85
Cost C3	1836.76	1951.93	1249.01	1900.08	1137.20	1236.16	1046.87	1318.23	1459.53

Source: *Field Study

The cost of cultivation when, expressed as cost per quintal is referred to as cost of production and is useful to compare with the prices and assess the returns. According to the

⁸ There are no village level markets yards so it is important to consider transportation costs. Farmers need to hire transport and they often cover a distance of 10-15 km which costs Rs.1500 for every 20 quintals.

estimates, the costs A1, B1 and C1 – all relevant costs for owner cultivators stood at Rs.847, Rs.849 and Rs.1045 per quintal. The MSP for the year at Rs.1030 covered the paid-out costs of owner-cultivators. However it does not cover their family labour. The costs A2, A2+FL, B2 and C2 stood at Rs. 991, Rs.1187, Rs.1131, and Rs.1327, respectively. We can see that except Cost A2, the MSP did not cover any of the costs which are relevant for tenant farmers. Inclusion of cost of family labour further widens this gap between the cost and MSP.

Among the districts, Mahabubnagar has high cost of production because of the low productivity in the region. The overall cost C3 is highest in East Godavari and Krishna at Rs. 1837, and Rs. 1952, respectively. These are almost Rs.600 more than the costs in other districts, (except Mahabubnagar). In other Telangana districts, the overall cost C3 ranges between Rs.1137-1318. This huge difference in cost of production between the two broad regions is accounted for by the high rental costs and labour costs in coastal districts. Cost of production in Mahabubnagar is high because of lower yields on the one hand and higher labour costs on the other.

The average cost of production between the two broad regions, namely, coastal Andhra and Telangana is presented in the Table 4.2.7. The received prices in coastal Andhra covered only paid out costs of Cost A1, which is the paid-out cost of owner-cultivator and that of tenant. It has also not covered the full cost of both categories. In Telangana, the received price has covered both the paid-out costs of owner-cultivator as well as the tenant. But there too, it has not covered the full cost (Cost C1 and Cost C2). Similarly, the MSP has covered only paid out cost of owner-cultivator in Andhra and both types of farmers in Telangana. However, it too did not cover the full cost in either of the regions. This substantial difference in cost of production between the two broad regions is accounted for by high rental costs and labour costs in coastal districts.

Table 4.2.7: Cost of Production in Andhra and Telangana Regions

Regions	Cost A1	Cost A2	Cost C1	Cost C2	Cost C3	Received Price	MSP
Coastal Andhra	889	1187	1129	1711	1882	911.	1080
Telangana	804	903	976	1168	1285	944	1080
Average	855	1074	1068	1494	1644	902	1080

Source: Estimated

4.2.3 Negative Returns

The (estimated) returns on paddy farming for the two regions, namely, Coastal Andhra and Telangana, present an interesting picture [Table 4.2.8]. The returns over Cost A1 are positive in both regions, though prices barely covered the paid-out costs for owner-cultivator in Andhra with a return of 2.4 per cent, however in Telangana the cultivator received a 12 per cent return. Owner-cultivator class dominates in Telangana region and has been able to break-even. However, as regards the return on full cost, namely Cost C1, C2 and C3, the returns are negative in both the regions. Compared to Telangana, the situation in

Coastal Andhra appears to be alarming with a loss of 109 per cent over Cost C3, 90 per cent over Cost C2 and 24.5 per cent over Cost C1. Cost A2, C2 and C3 include rental component and thus the losses in Coastal Andhra region over these are much higher, because of high rents.

Table 4.2.8: Returns to Paddy Production in Andhra Pradesh in 2010-11

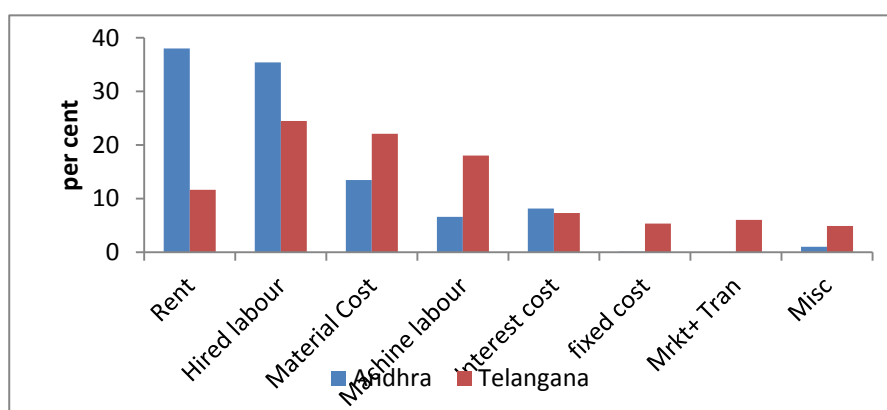
Regions	Returns over				
	CostA1	Cost A2	Cost C1	Cost C2	Cost C3
<i>(Rs. Per quintal)</i>					
Andhra	21	-276	-218	-800	-971
Telangana	139	40	-32	-224	-341
Average	46	-172	-166	-592	-742
<i>In Percentage Terms</i>					
Andhra	2.44	-31.1	-24.5	-90.0	-109
Telangana	12.0	0.87	-7.36	-29.0	-42.1
Average	6.27	-18.3	-17.7	-65.6	-82.4

Source: Estimated

These substantial differences in the returns between the two regions are evident when we look at the composition of cost of cultivation. The rent-labour-input costs in Andhra region together constitute a lion's share of 79 per cent of the total cost in the former. In Telangana, the labour-machine-input-fixed costs constitute 64 per cent. The labour use is reduced in the former by the use of harvesters. The application of fertilisers is higher in Telangana, which possibly explains the marginally higher productivity observed in our sample.

Now coming to analytical aspect of cost conservation, in Coastal Andhra the rental and labour component being exceptionally higher is entirely because of agrarian structure dominated by tenancy relations. The tenants pay high rents and avoid use of machinery to save the grass and use of green gram as the second crop which is planted even before the harvesting of the first crop. Thus this structure does not have scope to mechanise and optimise the costs. Thus what seems to have happened in the coastal Andhra regions is that while rental costs have gone up due to active lease market, the rise in labour costs since 2007-08 has also been steep. In our sample villages, it is reported that the wages for male workers have reached Rs.300 from Rs.150 and wages for female workers have doubled from Rs.75 to Rs.150. Evidence from secondary sources also corroborates this rise in nominal wages which was observed from the field study. In the light of high rents, the high labour costs have rendered tenant cultivation unviable (Chart 4.2).

Chart 4.2: Break-up of Cost of Cultivation in Coastal Andhra and Telangana



4.2.4. The Increase in Wage Costs

Evidence available from the field survey indicates the substantial increase in the nominal wages as the major reason behind cost escalation in the recent period. In addition, there is some evidence from the State level data on nominal wages, published by the Directorate of Economics and Statistics which supports our findings. According to this data, the nominal wages in the State have risen at an annual compound growth rate of 12.6 per cent for male workers and 13.3 per cent for female workers during the period 2000-10. The growth of nominal wages is particularly steep during 2007-10. In these three years, the cumulative growth of nominal wages for male workers has been 91.3 per cent while it has been 102 per cent for female labourers (Table 4.2.9 and Chart 4.3). Even in real terms, the wages have risen for male and female labourers by 52 and 59 per cent, respectively, during the period⁹. While it is tempting to attribute the sharp rise in rural wages to the implementation of Mahatma Gandhi Rural Employment Guarantee Act since 2007-08 in the State, this explanation falls outside the purview of this study¹⁰. This piece of evidence, however, corroborates our field level observations that wages have gone up substantially since 2007-08. When such price shocks occur in the labour market, which cannot be met from productivity gains which happen in small increments in the long run the viability and profitability is negatively impacted.

⁹ Real wages are computed as nominal wages deflated by Consumer Price Index for Agricultural labourers.

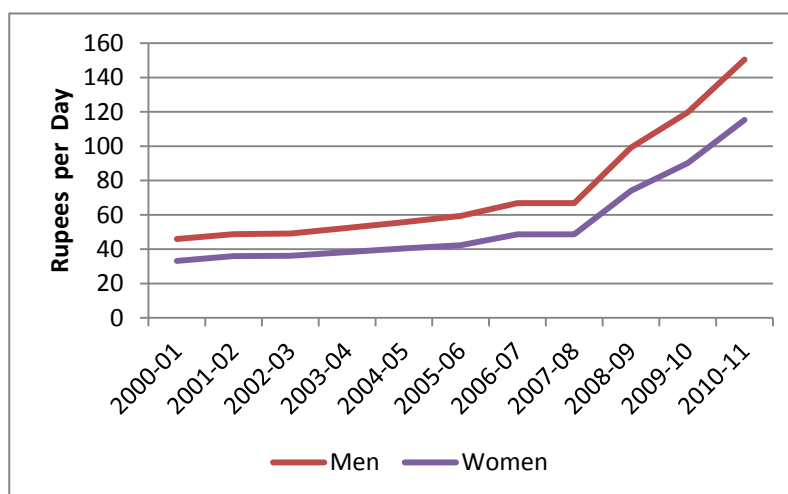
¹⁰ There could be several explanations for the rise in rural wages such as growing education, increased rural-urban migration, resonance effect of rise in urban wages in construction industry, and ageing of traditional rural agricultural labour.

Table 4.2.9: Average Nominal Rural (Daily) Wage in Andhra Pradesh

Years	Male (Rs)	% change	Female (Rs)	% change
2000-01	45.93		33.2	
2001-02	48.77	6.18	35.91	8.16
2002-03	49.14	0.75	36.1	0.52
2003-04	52.41	6.6	38.3	6.03
2004-05	55.75	6.3	40.4	5.53
2005-06	59.35	6.4	42.25	4.57
2006-07	66.79	12.5	48.63	15.1
2007-08	66.79	0.0	48.63	0.0
2008-09	99.21	48.5	74.73	52.23
2009-10	119.64	20.6	90.11	21.7
2010-11	150.43	25.7	115.3	27.9

Source: Department of Economics and Statistics, Government of Andhra Pradesh

Chart 4.3: Average Nominal Wages in A.P



Source: Department of Economics and Statistics, Govt. of Andhra Pradesh

4.3 'Crop Holiday' in the Coastal Region

A grimmer situation is unfolding in the coastal districts. In East Godavari and Krishna districts, the rental costs constitute 40 to 35 per cent of the total cost. These are far in excess over the legal maximum of 16 per cent. The second biggest cost is the labour cost which is up to 35 and 36 per cent. The reason for the high rents is that an increasing number of landowners who have left agriculture are holding the land for speculative purposes. The high proportion of landless agricultural labourers and marginal farmers in the region compete to lease-in the land among themselves resulting in a sharp increase in the rents in the region¹¹. The labour costs are about 35 - 36 per cent presently, which have also gone up from the earlier 10 to 35 per cent and this has wiped out the 20-25 per cent surplus that the tenant used to earn. This is one of the major reasons why farmers in East Godavari went on to declare

¹¹ Tenant farmers get consumption and production loans from the commission agents with which they tend to increase their standard of living. Such credit is not available for agricultural labour.

‘crop holiday’ as a protest [Appendix]. The paddy cultivation in the region does not seem to be sustainable in the existing structure of costs.

In fact most of the landowners in this region have diversified into non-agricultural activities. Many have become the commission agents, fertiliser dealers, money lenders, millers, etc. Marginal and (some) small farmers have remained in agriculture due to lack of alternate employment opportunities. It is this remaining class of agricultural labour and marginal farmers which forms the tenant-peasant class. The *rentier*-middlemen class is able to extract a steady surplus from the agricultural labour population¹². This broad class formation, evident in Coastal Andhra from East Godavari to Nellore districts characterises the political economy of agrarian relations [these trends are observed by Ramachandran *et al* (2009)]. The labour class has been able to increase their share due to MGNREGS and PDS but tenant farmers have been adversely affected by the increase in labour costs combined with high rents.

On the contrary, in Telangana in the absence of substantial canal irrigation and extensive dependence on groundwater, farming in general does not leave much room for tenant cultivation. Hence, the owner-cultivation remains the dominant formation. The instability of irrigation, the dependence on erratic rainfall, maintenance of motors in the face of erratic power supply, and labour problem have reduced the surplus of big farmers. The labour constraints severely limit the viability of supervisory-farming, even in the classes of middle and big farmers. It is the small and marginal farmers using family labour who are able to save the paid-out costs, and carry out subsistence-farming.

If one seeks to find a solution without altering the present agrarian structure and distribution, revising the MSP may appear as a logical solution. However, this is a short-term solution as revision in MSP will cause a matching rise in retail prices triggering a wage spiral which will in turn affect the labour cost and the overall costs incurred by the farmers. Therefore, there must be some cost reducing mechanism that needs to be explored. For instance, mechanisation, as the way Telangana farmers have adopted, can reduce the labour costs by around 10 per cent. The institutional credit access to the tenant farmer can reduce the cost by 5 per cent. Rationalisation of rents can also save up to 15 per cent.

Section V

Procurement and Policy

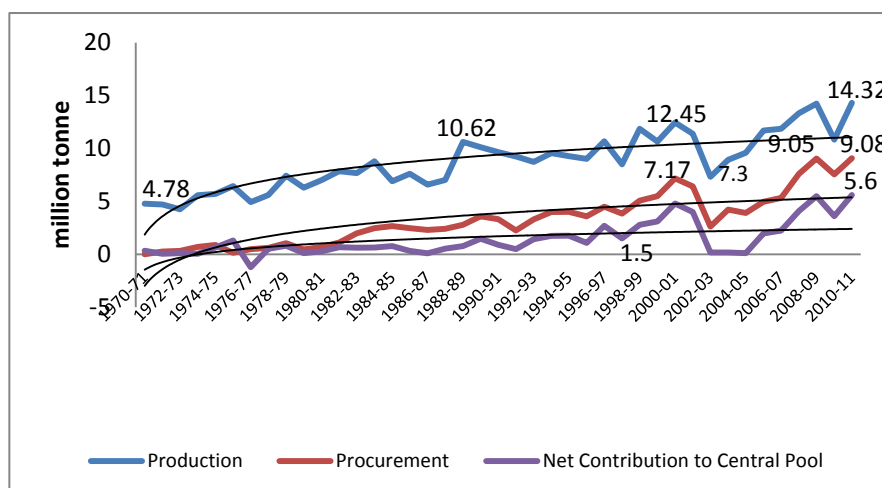
As indicated earlier, rice production in the State was barely sufficient to meet the demand and thus the State had a marginal contribution to the central pool. The market prices always tended to be above the MSP, because of the strong local market. Hence, the case of direct procurement of paddy to support the market price did not arise in the past. Food

¹² This is also noted by several other scholars like Parthasarathy (1983, 2002), Vamsi et al (2011).

Corporation of India, however, had to procure rice for central pool as well as to meet the requirements of the PDS. The only way was to impose a levy on millers, who were more inclined to sell in the local market or outside the State. Initially, the compliance with levy was not forthcoming because the levy price was far below the market price. In 1983, when the PDS in the State was revamped and expanded to include all poor households by the State Government in the 2-rupee per kg rice scheme under PDS, the State instituted a mechanism wherein the millers were required to deliver 50 per cent for State procurement and the rest could be sold in the open market. The State issued levy order under Essential Commodities Act (ESMA) and obtained its procurement¹³. The reasonable price for the farmers and assured market for the millers created some stability which in turn encouraged the production of rice in the State [Sambi Reddy (2003)].

From the early nineties onwards, as production of rice expanded, millers emerged as the dominant intermediary who acquired most of the produce in the market as paddy and sold it as milled raw rice. They sold most of *rabi* varieties as boiled and raw rice to FCI. As a result, the net contribution to the central pool began to grow. In the nineties, when production was growing at 3.2 per cent, procurement grew at 8.0 per cent per annum. During 2001-11, procurement increased at 3.9 per cent while production grew at 3.1 per cent. Leaving the years 2002-05, when the successive droughts have severely affected the rice output in the State, the procurement in the State continued to increase in the past two decades to reach the record levels of 90.6 million tonnes in 2008-09 and 90.8 million tonnes in 2010-11 (Chart 5.1). This is roughly one fourth of the rice procurement for the central pool in the country. While the increased contribution to central pool is welcome from the point of view of national food security, the policy of procuring rice from the millers and negligible amount of paddy from the farmers resulted in a situation where the farmers did not receive the MSP, especially in case of the *rabi* crop.

Chart .5.1. Production, Procurement and PDS in Andhra Pradesh



¹³ Levy order is issued by the State Governments under Essential Security and Maintenance of Commodities Act though with the prior concurrence of the Central Government.

The combined procurement of paddy by the Andhra Pradesh Civil Supplies Corporation (APCSC) and Food Corporation of India (FCI) has remained between 0.3-0.5 million tonne during the period 2001-01 to 2009-10. This is 2-3 per cent of paddy output in the State, while around 97 per cent of paddy was purchased by the millers [Table 5.1] However, FCI's purchase of rice from millers varied depending upon the overall level of production, between 38-75 per cent. Though the levy is fixed at 75 per cent, the extent of stocks surrendered by the millers to FCI depended on the extent of output. During bumper years, mills sold more rice to FCI and during poor harvest years they sold it in the market.

Ironically, this mechanism does not seem to have served the interests of the farmers as much as it has served the millers. Under the existing rules of rice procurement, millers are supposed to pay MSP to the farmers, and are required to submit the proof of this payment to FCI. However, it is not difficult for the millers to produce such certification from the revenue department. Millers avoid making the payment of MSP to the farmers quite often by citing several reasons, such as grain having higher moisture level, discolouration, and other quality issues. Traditional practices of quality testing by grinding in palms and visual inspection makes room for arbitrary assessment. Farmer is often not in a position to bargain or take back the produce. Except large farmers who are generally aware about the millers' malpractices, most of the small and marginal farmers sell their produce to the millers. These problems can be overcome to some extent if paddy procurement takes place at the village level.

Table 5.1: Production, Procurement of Paddy and Rice in the State

Years	Production (Mil tonnes) (a)	Purchase of Paddy by state and millers from farmers (million tonnes)			Public Procurement of paddy from farmers (%) (e)	Miller Procurement of paddy from farmers (%) (f)	FCI's Rice procurement from Millers (%) (g)
		FCI (b)	APSCSC (c)	Private Trader (d)			
2000-01	18.7	0.05	0.36	18.2	2.23	97.76	61.57
2001-02	17.1	0.07	0.22	16.7	1.76	98.22	60.11
2002-03	11.0	0.004	0.06	10.9	0.09	99.90	37.58
2003-04	13.6	0.09	0.25	13.2	2.56	97.42	49.97
2004-05	14.5	0.006	0.01	14.4	0.12	99.87	42.32
2005-06	17.7	0.19	0.26	17.2	2.58	97.41	45.16
2006-07	17.8	0.108	0.60	17.0	4.01	95.98	48.97
2007-08	20.1	0.15	0.49	19.5	2.77	97.22	60.87
2008-09	21.5	0.19	0.96	20.4	5.39	94.60	69.37
2009-10	16.3	0.14	0.30	15.8	2.77	97.22	74.71
2010-11	22.5	0.34	1.96	19.4	14.23	85.76	73.13

Source: APSCSC and FCI; column (a) is estimated from rice figures by applying the ratio of 1.515 (one quintal paddy yields approximately 66 kg rice); (d) is derived by taking it as $[(0.3 \times a) - (b+c)]$ assuming approximately 30 per cent self consumption plus zero inventories with the farmer; column (f) is obtained from ratio of FCI rice procurement and rice stock with millers converted from (d) by applying 0.64 conversion ratio.

A comparison between the procurement structure in different States between paddy and rice reveals the difference in procurement operations in the State of Andhra Pradesh and other major rice producing States [Table 5.2 & 5.3]. For example, in the years 2008-09

Table 5.2: Paddy and Rice Procurement across States

(lakh tonnes)

States	Paddy Procurement						Levy Rice Procurement					
	2008-09			2009-10			2008-09			2009-10		
	FCI	CSC	Total	FCI	CSC	Total	FCI	CSC	Total	FCI	CSC	Total
Andhra Pradesh	1.94	9.66	11.6	1.48	3.04	4.52	84.12	6.47	90.58	73.51	2.04	75.55
Tamil Nadu	-	17.93	17.93	-	18.53	18.53	-	12.07	12.07	-	12.4	12.4
Chhattisgarh	8.52	22.07	30.59	2.0	40.28	44.28	13.69	14.79	28.48	5.24	28.33	33.57
West Bengal	0.15	12.34	12.49	-	8.32	8.32	4.39	13.05	17.43	2.58	9.88	12.4
Orissa	0.91	39.37	40.28	1.79	34.19	35.99	1.64	26.38	28.01	2.05	22.91	24.96
Haryana	0.10	18.12	18.22	0.43	25.93	26.36	2.11	12.14	14.25	0.81	17.37	18.18
Punjab	2.05	118.8	120.8	6.7	131.3	138	5.96	79.59	85.54	4.74	88.01	92.75

Source: Food Corporation of India

and 2009-10, in States like Punjab, Chhattisgarh, Tamil Nadu and Orissa and Haryana – all prominent rice growing States, the procurement directly from the farmers is far more compared to levy procurement from millers. Particularly, during the bumper harvest year of 2010-11, State agencies procured major share directly from the farmers. This significantly eliminates the role of the millers and ensures MSP to the farmers. While the historical evolution of procurement in each State may be different, the important point is that a stronger presence of State weakens the role of the middlemen. Therefore, in Andhra Pradesh, there is a need for bringing about a reorientation in the procurement policy.

Table 5.3: Paddy and Rice Procurement across States

(million tonnes)

States	2010-11		
	FCI's Levy Rice	Custom Milled Rice (from Procurement)	Total
Andhra Pradesh	7.9 (8.23)	1.6 (17.7)	9.6 (100)
Tamil Nadu	0.11 (7.1)	14.31 (92.9)	1.54 (100)
Chhattisgarh	3.13 (49.3)	0.34 (51.7)	6.54 (100)
West Bengal	1.16 (81.5)	0.25 (19.5)	1.41 (100)
Orissa	0.17 (3.0)	2.39 (97.0)	2.45 (100)
Haryana	0.03 (1.8)	1.65 (98.2)	1.68 (100)
Punjab	0.008 (4.6)	8.19 (95.23)	8.62 (100)

Source: Food Corporation of India

Note: Percentages in parenthesis.

The general practice in the coastal districts is that due to strong interlinked transactions, farmers sell the output to millers through commission agents. Agents lift the output at the farm gate. Millers procure the grain through proxy agents. The absence of an alternative agency at the village level makes the agent as a monopsonist. Big farmers finance the cultivation from their own capital and hoard the grain for an opportune time to sell. However, the small and marginal farmers, particularly the tenants cannot wait for long and dispose their produce for any price that the agent is ready to offer. There is no practice of taking the produce to the mandies. For this reason, the procurement operations by the government agencies is almost absent in the coastal districts. Market yards are active in Telangana and farmers transport the produce to the yard and the official procurement agencies are relatively more active. Even there, Andhra Pradesh State Civil Supplies Corporation (APSCSC) has only procurement centers at mandal and district levels. The farmers in remote villages generally sell it to the local traders.

Section VI

6.1. Problem of Bumper Crop and Low Prices in 2010-11

The year 2010-11 was an exceptional year which witnessed rainfall of 22 per cent above normal. Though, cyclone Lila damaged the standing crop in November in some areas in Delta districts, it immensely helped the *rabi* crop. Not only the *kharif* outturn delivered well at 7.5 million tonnes, the *rabi* that produced 6.8 million tonnes was an exceptionally high level of output. The *rabi* output was higher than the previous record of 5.9 million tonnes in 2008-09. All rice growing districts recorded higher production than their previous records. West Godavari, for example, produced 2.24 million tonnes of paddy, Karimnagar 2.04 million tonnes, pushing East Godavari district to third place. The total production of paddy in the State was placed at 21.5 million tonnes. The high production levels in the past six years were helped by favourable monsoons, the latest being the peak. The ban on exports of superfine variety rice for the past three years reportedly led to accumulation of stocks with the millers. The bumper *rabi* crop in 2010-11 resulted in a situation of plenty.

The APSCSC, which is the main procurement agency for paddy, prepares the *kharif* and *rabi* plans of procurement based on the advance estimates of production given by the Directorate of Economics and Statistics¹⁴. There are certain problems in the data collection. The village level revenue staff often under-reports the area sown and sometimes there is under estimation of yield by the agricultural department. As a result, the projected output is often underestimated (the error could be up to 10 per cent, Centre for Economic and Social Studies, 1997). Due to this, the market arrivals during the year 2010-11 exceeded the anticipated quantity. Due to the glut in the market, millers did not lift the paddy. Consequently, the Government made arrangements to receive the huge inflows of grain in the *mandies* for which initially the requisite infrastructural and institutional support was inadequate. Lack of godown storage, gunny bags and transport shortage further hampered the procurement operations. The government finally procured 2.5 million tonnes¹⁵.

6.2 The IKP Innovation

One innovation that the Government introduced during 2010-11 was to procure paddy with the help of SHG groups. The SHG groups had earlier procured maize for Andhra Pradesh State Cooperative Marketing Federation. There are more than 3000 women groups at village level. In several villages these women are given training in handling income earning

¹⁴ The prevailing practice is that millers are expected to lift the major share and procurement agencies lift paddy only if the market price comes below the MSP. Being a grain deficit State for a long time, the procurement target has traditionally been fixed at a low level, and the millers usually lift most of the output.

¹⁵ The Government had appointed a Committee headed by former Chief Secretary, Mr. Mohan Kanda, to study the problems faced by farmers in 'Crop Holiday' affected mandals of East Godavari district [Appendix]. One of main recommendations is the need for increased procurement of paddy from the farmers. Government announced that it has accepted to raise its procurement target to 5.0 million tonnes.

activities, including the agricultural procurement. These SHGs are governed under a governmental program called Indira Kranthi Padhakam (IKP). Relying on their expertise, when the government assigned the paddy procurement during 2010-11, these SHGs have proved to be an instant success. They procured 1.69 million tonnes (which is 90 per cent of APSCSC's procurement). This could enable the Government to make a procurement which was higher as compared to the previous years.

There are certain important lessons to be learnt from the developments in 2010-11. In the past, it was generally held that procurement from farmers was not needed because market prices tended to be higher than MSP. However, during 2010-11, it was recognised that this is only partially true. In fact, markets have always been uneven. In many remote villages, commission agents paid less than MSP. The absence of the State machinery to procure paddy, particularly in the coastal districts strengthened the interlocked markets of credit, input and output. Farmers had little bargaining power in such interlocked transactions. In Telangana districts, the active procurement by the State could break the interlocked markets to some extent.

6.3. Levy Policy and the Role of the Millers

In any system of market exchange, there must be an optimal distribution of incentives between units engaged in production and units engaged in exchange in order to provide enabling conditions for the growth in output. In paddy markets in the State, millers earned disproportionate profits in levy as well as through open market sales. Under levy, the millers usually managed to pay less to the farmer by citing quality issues. To illustrate, during 2010-11, if miller paid the MSP to the farmer, which is Rs.1030, costs of one quintal rice to the miller is Rs.1537. FCI paid miller a levy price of Rs.1750, which is inclusive of cess, cost of gunny bag, transport and hamali and milling charges. In principle this leaves the miller with Rs.200 as the residual profit per quintal. In practice, millers make a further margin by paying less to the farmers. Thus the millers made profits whereas farmers incurred a loss of Rs.430!

In case of superfine BPT variety rice, during 2010-11, the market price of paddy fell to Rs.1050 per quintal¹⁶, which costs the miller Rs.1567 per quintal. After incurring the incidentals, milling charges and sales tax, miller incurred a cost of Rs.1850 and sold it in the wholesale market between Rs.2300-2500. This fetched a profit of Rs.450 to Rs.550. The retail margins were around 2 per cent, hence retail prices were between Rs.2400-Rs.2550.

Earlier the State procured rice from millers by imposing levy, as the millers did not prefer to sell paddy to the FCI because market price used to be higher than the levy price paid by FCI. As the production improved in the last twenty years, market price has relatively stagnated and the levy price is revised up to match the market price. The FCI procurement has now emerged as the major market for the millers and the new rice levy of 75 per cent with 25 per cent being parboiled provided a lucrative, stable and captive market.

¹⁶ The market price for superfine varieties normally was Rs.1200-1400 per quintal till 2008-09.

Section VII

Supply Chain and Logistical Issues

An effective grain procurement mechanism presupposes supporting infrastructure, particularly warehousing, transport, weighing, testing equipment and man-power. The supply chain management engages with cost-effective methods of storage and disposal. In the State of Andhra Pradesh, these issues did not receive due attention in the recent times. The total warehousing capacity in the State with public and private warehouses (including space available with rice mills) is about 8.5 million tonnes. Out of these, godown space under FCI, Central Warehousing Corporation and State Warehousing Corporation for foodgrains is about 4.7 million tonnes (55 per cent of total storage capacity (Table 7.1). In a regular *kharif* season, a volume of about 10 million tonnes of paddy arrives in a span of two months during November and December and much of it is acquired by the mills and is milled. Out of the total milled rice, FCI procures up to 3 million tonnes during the period January to March.

Table 7.1: Godown Space with Various Agencies in Andhra Pradesh

Depot	No of Godowns	Capacity (Mt)	Stocks (Mt)	Vacant space (Mt)	per cent of utilization
FCI	36	1.27	1.08	0.22	84.97
AP CSC	5	0.008	0.08	0.009	94.03
CWC	41	0.78	0.68	0.11	88.58
SWC	135	2.03	1.87	0.73	89.71
Pvt ARDC	0	0	0		0
Pvt Hired	8	0.32	0.34	0.04	97.80
Total	225	4.43	3.98	0.65	88.81
Cap/open	2.25	0.26	0.12	0.001	86
Grand Total	225	4.7	4.07	0.79	86

Source: FCI as on 01.11.2011.

In any given year, there is not much storage problem until April. However, from April and May onwards, while the *kharif* rice is still lying with FCI, the *rabi* rice arrivals start constraining the storage capacity available with the FCI. There is a monthly total outflow of 0.7 million tonnes (0.3 million tonnes for PDS in the State and about 0.4 million tonnes to out of State) from the warehouses. By the end of June, the free space available with the warehouses is only around 2.7 million tonnes. The *rabi* arrivals amount to around 5-6 million tonnes, depending upon the level of production, all of which goes for FCI procurement. The outflows are constrained by shortage of wagons as the railways are not able to assign adequate wagons. The current allocation is only 40 rakes a month which means virtually one goods train, which goes all the way to Kerala, unloads and returns. Thus the inflows are much higher than the outflows in this season, resulting in severe shortage of godown space. According to FCI, there is a storage deficit of 1.9 million tonnes from June to August in case the *rabi* crop output exceeds 5 million tonnes of production. When FCI slows down procurement due to lack of storage space, it in turn slows down the milling pace, causing a

buildup of inventories with millers. This slows down the purchases from farmers, which in turn depresses the price. There are two solutions to this problem, first is to immediately create more godown space. Second, is to allocate more rakes to the State. State Government recently announced a plan to create 2.5 million tonnes as additional capacity in the coming four years, of which 0.4 million tonnes space is likely to be added in the current financial year. If this additional capacity is created, it can take the total storage capacity with public agencies to 7.2 million tonnes, which should be fairly adequate [Table 7.2]. State Government has requested for an allocation of 200 rakes, which is also an important mechanism to keep the regular outflow. However, since no more than 0.4 million tonnes additional space is being made available this year, there is a need to achieve greater level of efficiency in offloading. Therefore, creating additional storage and rail transport are critical for an efficient and effective procurement system in the State.

Table 7.2: Additional Warehousing Capacity Proposed by State Government

Agency	Capacity
AP State Warehousing Corp.	0.7 million MTS
Private Parties (PPP Mode)	1.5 million MTS
Marketing Department	0.3 million MTS
Total	2.5 million MTS

Source: Mohan Kanda Committee Report (2011)

Section VIII

Conclusion

In this study, we have addressed some of the serious concerns of paddy farming and public policy in Andhra Pradesh in the recent period. The broad conclusions are as follows:

1. The agrarian structure in the State of Andhra Pradesh is dominated by small and marginal farmers with an increasing share of land under their cultivation. In the past two decades there have been two major related developments in agriculture. One, an increasing proportion of cultivable land is under minor and groundwater irrigation, up to 64 per cent of cultivated area. As a result of increasing availability of water, the cultivation of rice has expanded and that of coarse cereals and millets has declined. As the least-labour intensive crop that has the coveted market support, farmers increasingly prefer to cultivate paddy. Two, on the demand side too, rice has emerged as a dominant cereal.
2. The long term growth of production of rice between 1991 and 2010, of about 3.2 per cent, is assisted by increase in area as well as yield. The steady rise in fertiliser consumption and area under HYV are the primary factors resulting in an improvement in the yield. The productivity growth during 2000-10 is about 1.8 per cent per annum.

The per capita production has also registered a steady increase, from 162 kg/year in 1991-92 to 174 kg/year in 2010-11, based on 3-year moving average.

3. The production of rice has witnessed fluctuations due to the large share of cultivated area under tank and well irrigation, which directly varies with the rainfall. There is a 72 per cent correlation between the production of rice and rainfall in the State. Any deviation above 20 per cent from the normal results in substantial fluctuations in production. For instance, during the three drought years, 2002-05, rice production fell below the decadal average of 11.5 million tonnes, *i.e.*, a decline of around 25 per cent. Similarly, favourable monsoon during 2006-11 resulted in higher production.
4. During 2010-11, the estimated consumption demand in the State, based on average per capita consumption as per NSS data, is about 10.7 million tonnes. In the next five years, it is likely to increase up to 11.2 million tonnes. In the event of new Food Security legislation coming into force, the requirement is likely to go up by another 0.45 million tonne. The decadal average production is about 11.5 million tonnes which makes the State internally self-sufficient in foodgrains. This level of production is likely to occur even with a marginal deficit in rainfall. In case of normal or excess rainfall, there is a possibility of surplus production. A continuous spell of good monsoon can result in a surplus of up to 2 million tonnes as has been the case in the recent years.
5. The rice markets are segmented in production and consumption. The major portion of *kharif* rice produced belongs to superfine *Sona Mahsuri* varieties and *rabi* produce, to common varieties. Due to the preferred status of superfine varieties in the domestic market, they command higher market prices. A major part of the *rabi* produce, which is not consumed in the State, goes for procurement. Roughly, 60 per cent of *rabi* is suitable for making parboiled rice. Thus, the superior varieties are marketed by the private traders, while State procurement is critical for common varieties.
6. Based on our Survey and estimates, the average full cost of production (Cost C3) of paddy in the State has gone up to Rs.1460 per quintal during 2010-11. The MSP for the year 2011-12 is Rs.1110 for Grade-A and Rs.1080 for Common. Thus the MSP has been below the cost of production. The MSP currently covers only paid-out costs namely Cost A1 in the State of Andhra Pradesh, and not the total costs, leaving negative margin to the farmer.
7. The MSP is covering costs of owner-cultivator, when family labour cost is omitted. But when family labour cost is included, then MSP covered full cost in Telangana, but not in Coastal Andhra, which has higher cost of cultivation due to higher rents and lesser mechanization.

8. Since 2008-09, the market prices during *rabi* season have been consistently below the MSP. The bumper production during 2010 has led even the prices of super fine rice to fall below the MSP which is an unprecedented phenomenon in the State.
9. Further, the average price received by the farmers during 2010-11 was only about Rs.892 per quintal i.e., Rs.142 less than the MSP. Farmers across the districts have incurred losses during the year. This has led to farmers' protests in several districts. Farmers in the district of East Godavari have even expressed their protest by voluntarily observing a 'crop holiday'.
10. In general, the cost of cultivation has gone up in the State, irrespective of the region. The major reasons for increasing cost of cultivation are: first, labour costs and fertiliser prices have gone up substantially in the last one year. The provision of employment through MGNREGS, even to the little extent of 40 days against the target of 100 days along with subsidised PDS in general has enhanced the bargaining power of labour. Coupled with a considerable rise in demand for labour in the non-agricultural sector and migration has led to an unprecedented rise in the wage costs, pushing up the cost of cultivation significantly.
11. During 2010-11, the loss incurred in Telangana is about Rs.340 per quintal over the full cost and Rs.740 in Coastal Andhra. This huge difference in returns between the two regions is due to the large differences in the cost of cultivation. Though the paid-out costs are similar across regions, the paid-out costs inclusive of rent (Cost A2) are 30 per cent higher in coastal districts compared to Telangana districts. Consequently this difference remains in Cost A2+FL, cost B2, Cost C2 and the overall cost C3 between the two regions. There are two reasons for this, one, much higher rents and two, labour costs in coastal districts. Firstly, higher rents have emerged due to the changes in the agrarian structure and secondly, labour costs are higher because of complete dependence on manual labour.
12. The returns on paddy farming for the two regions, Coastal Andhra and Telangana have fallen sharply. The return on full cost, i.e., Cost C1, C2 and C3 has turned negative in both the regions. In Coastal Andhra farmers incurred a loss of 109 per cent over Cost C3, 90 per cent over Cost C2 and 24.5 per cent over Cost C1.
13. In the coastal districts, erstwhile farming households have migrated and diversified into non-agricultural activities. Due to the pressure of assured canal irrigation they have leased out their land to tenants. This has led to large scale tenancy. The rents have been pushed up by large number of tenants competing for limited land. In contrast, tenancy is only marginal in Telangana districts. The material input costs are found to be uniformly high everywhere. Besides the overall increase in costs witnessed in all the regions, cost of cultivation in coastal districts is currently one third higher than in Telangana districts.

14. The farm harvest prices have always hovered at a level marginally higher than MSP for Grade-A and Common varieties, particularly in the case of *rabi* crop. For the first time in 2010-11, the farm harvest prices have dipped below MSP. Given the nature of procurement operations, where practice of purchasing paddy by the Government is weak in coastal districts, farmers have suffered huge losses. In Telangana, farmers received MSP from the procurement agencies and even millers have paid only marginally less than the MSP.
15. Traditionally, Andhra Pradesh being a rice consuming State, Government procurement for central pool used to be marginal. The market prices too used to remain above the MSP, leaving no case for the Government to intervene for supporting the market prices. The Food Corporation of India resorted to levy rice from the millers for the purpose of PDS and to meet the requirements of central pool. However, with a gradual increase in production, procurement to the central pool also increased. However, FCI continued the practice of procuring rice from the millers. It also expected millers to pay MSP by fiat. But, in practice, millers do not always follow these norms. During every bumper crop year, millers manage to depress the market price below the MSP, while during a poor crop year market price prevails marginally above the MSP.
16. The problems of paddy cultivation during 2010-11 is due to a conflation of several factors, such as sharp escalation in cost of production, surplus production due to successive good monsoons, consequent crash in market prices, major share of the procurement largely through millers, and lack of infrastructure like warehousing and transport.

Section IX

Policy Suggestions:

1. The cost of production at times is underestimated by the CACP. There is a time lag between the collection of data, processing and the projections. The projections are based on cost indices which may not accurately capture the actual costs. Therefore, CACP may consider a relook at its methodology.
2. There is a demand from farmers' organisations to integrate MGNREGS with agriculture, so that it can work as a labour subsidy. This is being implemented in the horticulture sector in the State. The possibility of including agricultural cooperatives in paddy cultivation may be examined.
3. The actual prices received by the farmers are tending to be lower than the MSP. This is largely due to the existing policy of procurement in Andhra Pradesh, where, paddy procurement from farmers is marginal. There is a need to increase direct procurement of paddy from the farmers, instead of rice from the millers. Such a practice is not new

and is already prevalent in other States like Tamil Nadu, Punjab and Chhattisgarh. Andhra Pradesh Government may like to examine the possibility of increasing the procurement from the farmers.

4. There is a need to install driers at the procurement centers so that moisture issues are addressed. This does not discourage or turn away the farmers from coming to the *mandi*. Technologically, it would be ideal if the harvesters are combined with driers, if possible.
5. In order to prevent any unethical marketing practices, there should be greater vigilance in the procurement centers at the market yards.
6. An important procurement innovation initiated by the State is to assign procurement operations to SHG groups (called IKP groups). The members of SHGs under IKP are given training in measurement, accounting, quality assessment and handling stocks. They have handled 1.9 million tonnes in 2010-11 and in 2011-12, they were given a target of procuring up to 3 million tonnes. It is not only a decentralised model that reaches the farmer in the village but it also earns the SHG a commission which they can use for their internal lending. This is a commendable innovation of the Government of Andhra Pradesh and its potential for up-scaling should be fully explored.
7. There are some serious infrastructural bottlenecks that prevent the State agencies from playing a more active role. There is a capacity shortfall in godown space to the extent of at least 2.0 million tonnes in the State. Hence, on priority basis, need arises to build the extra storage facilities as well as to allocate more railway rakes. The State Government has initiated the process for construction of godowns up to 0.4 million tonne in the year 2011-12 and 2.0 million tonnes capacity in the coming 5 years. This process may be fast tracked to meet the demands of increased storage.
8. There is a need for greater economic intelligence, planning and coordination between the various Departments of the State Government for an effective procurement policy and supply chain management.
9. Since the long term trend in rice consumption shows a decline, there should be greater emphasis on other food production support strategies such as extensive small scale dairy, poultry and sheep farming, in addition to the ones currently existing for foodgrains. This is likely to lead to diversification and affordability of non-cereal consumption, reduce the upward pressure on agricultural rent and provide livelihoods for a part of the population that now subsists on agricultural production. The consequent use of food preservation and transportation technologies would provide a platform for industrialising the rural areas at a faster pace.

10. There is a proposal from organic farming activists that the fertiliser subsidy should be directly given to the farmers. This would enhance the choice between bio-fertilisers and inorganic fertilisers, encouraging the farmers to increase the application of micronutrients to soil. The Government may consider further deliberation on this proposal.

11. Agricultural tenancy is on the rise in the State. As most of the tenancy contracts are informal in nature, the tenants lack access to institutional credit. The State Government has initiated steps to issue identity card in order to provide institutional credit. However, there is a resistance from landlords to this process due to their apprehensions about legal implications to their ownership. Given the plight of tenant farmers, at least the possibility of the adoption of SHG model may be explored to make crop loans available to the tenants.

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‘Crop Holiday’ Movement in East Godavari

The coastal districts of Andhra Pradesh were hit by cyclone ‘Lila’ in the month of November 2010 and *kharif* crop was badly damaged. East Godavari was the worst hit. Though the second crop of paddy has come up well, the prices took a plunge. Millers offered a price of Rs.700-800 per quintal for paddy. The cost of cultivation on the other hand has gone up since 2007-08. This has adversely affected the farmers. The position of tenant farmers who do most of the cultivation was the worst. On the one hand they did not have access to institutional credit and no protection against natural calamities (land owners have access to institutional support like credit and insurance) and on the other the rents increased up to 50 per cent of the output. All farmers suffered losses after selling the *rabi* crop as well as the *kharif* crop, while tenants suffered more severely. Stung by the financial loss, farmers groups announced ‘a crop holiday’ as a protest in *kharif* season of 2011, putting up a string of demands. The major demands include: i) to raise the MSP to Rs. 2035 as per M S Swaminathan Committee recommendation; ii) to allow export of rice so that godowns of millers are cleared; iii) to integrate MGNREGS with agriculture; iv) to provide small scale mechanisation at 90 per cent subsidy; and iv) to provide a bonus of Rs.200. Responding to the call given by Konaseema Farming Protection Committee, farmers have voluntarily observed crop holiday in 9 mandals in 78,000 acres. Some analysts believe that the movement also reflected ire of landlords jointly towards labour (whose bargaining power has gone up in recent period) and at the same time at the tenants who are seeking formal identity as tenants (which can threaten the legal proprietary of ownership) and at the State (which has neglected the farming community in general). Government responded by appointing a Committee headed by Mohan Kanda, former Chief Secretary, IAS.

Box: Mohan Kanda Committee Recommendations

The Andhra Pradesh Government had constituted the Mohan Kanda committee, to study the ‘crop holiday’ declared by the farmers in Godavari districts. The committee made consultations with farmers, farmers organisations, officials of the State agricultural department and Civil Supplies Department. The Committee after deliberating on all related and relevant issues gave three sets of recommendations to the State Government: first as immediate measures, such as: State to undertake desilting and modernisation of irrigation channels, to work out a flexible MSP to cover the (increased) cost of cultivation and to speed up payment of insurance, to advance the crop cycle to avoid harvesting in the cyclone-prone months through mechanised transplanters and opening water in canals right in the first week of June. In the medium run, reduce cost of cultivation through mechanisation and rational use of inputs, to provide green manure at subsidy, to increase its share in procurement, to include drainage clearance and desilting under MGNREGS, and encourage early *rabi* cultivation, to increase the allocation of railway rakes up to 100 to East Godavari, to announce export policy during/before harvesting period but not later, and iii) to increase the storage space in the district. In the long run, to set up regulated market yards, to increase capacity building of farmers in marketing, to improve marketing intelligence to farmers, to consider shifting of cropping pattern to oil palm and others to ease excess supply, to set up a coir board for the district and help coconut cultivation in the State, to develop demand-driven information systems, and early-warning weather forecasting. State Government has accepted several of these in principle, to begin with has announced that 5.0 million tonnes of paddy will be lifted from the farmers, which is double than last year.

Statement 1: Comparison of Cost of Cultivation with CACP Estimates

(in Rupees)

	CACP Estimates					Estimated 2010-11
	2003-04	2004-05	2005-06	2006-07	2009-10	
Cost A1	17991	16160	15950	16617	25782	50340
Cost A2	17991	21183	16319	17068	26546	58964
A2+FL	20364	21183	18787	19778	30557	70583
Cost B1	19477	19640	17083	17457	27740	50469
Cost B2	33829	29732	26278	27781	43279	67331
Cost C1	21850	22643	19550	20164	31413	62088
Cost C2	36202	32736	29256	30491	47485	78951
Cost C2	36202	32803	29461	30658	47746	86846

Statement 2: Cost of Cultivation per Hectare

(in Rupees)

District	East Godavari	Krishna	Karim nagar	Mahabub nagar	Medak	Nalgonda	Nizamabad	Warangal	AP State Avg
Cost A1	53460	50541	49885	51646	44861	48722	48184	55421.65	50340
Cost A2	74309	64007	57265	56833	49678	54897	54359	60361.65	58964
A2+FL	87470	79166	69421	67417	63834	63062	59506	74789.11	70583
Cost B1	53463	50611	50012	51820	45032	48878	48322	55613.11	50469
Cost B2	94072	76883	63568	61947	54789	61228	60672	65493.11	67331
Cost C1	66624	65770	62168	62404	59188	57043	53469	70040.57	62088
Cost C2	107233	92042	75724	72531	68945	69393	65819	79920.57	78951
Cost C3	117956	101246	83296	79784	75840	76333	72401	87912.63	86846
Yield	64.22	51.87	66.69	41.99	66.69	61.75	69.16	66.69	61.13

Source: Field study

Statement 3: Paddy Cost of Cultivation and MSP

Year	Grade	Cost of Production (Rs./qtl.)	MSP proposed by Agrl. Dept (Rs/qt)	MSP fixed by GoI (Rs/qtl.)
2008-09	Common	921	1382	900+50 (Bonus)
	Grade-A	963	1445	930+50 (Bonus)
2009-10	Common	1038	1557	950+50 (Bonus)
	Grade-A	1093	1640	980+50(Bonus)
2010-11	Common	1092	1646	1000
	Grade-A	1121	1682	1030
2011-12	Common	1270	1905	1080
	Grade-A	1355	2033	1110

Source: Mohan Kanda Committee Report (2011)

Statement 4: District-wise Area, Yield and Production of Paddy in A.P during 2010-11

Sl. No	District	Kharif-2010			Rabi 2010-11			Total (Kharif+Rabi)		
		Area ha	Yield Kg/ha	Prodn. ('000 tons)	Area ha	Yield Kg/ha	Prodn. ('000tons)	Area ha	Yield Kg/ha	Prodn. ('000 tons)
1	Srikakulam	205853	1221	251334	7098	3547	25179	212951	1298	276513
2	Vizianagaram	126290	3862	487771	7254	4944	35862	133544	3921	523633
3	Visakhapatnam	110289	2616	288502	7262	1950	14160	117551	2575	302662
4	East Godavari	237640	2889	686508	172888	7324	1266255	410528	4757	1952762
5	West Godavari	256147	3273	838327	200369	6876	1377668	456516	4854	2215996
6	Krishna	260350	4165	1084434	94991	5829	553675	355341	4610	1638109
7	Guntur	271072	3595	974591	58393	5223	304971	329465	3884	1279562
8	Prakasam	48878	4398	214955	107903	5205	561607	156781	4953	776562
9	P.S.Nellore	69873	4905	342710	200990	5782	1162167	270863	5556	1504876
10	Kurnool	104110	4200	437240	32470	4803	155946	136580	4343	593186
11	Anantapur	34973	4375	153017	24828	4119	102261	59801	4269	255278
12	YSR Kadapa	53345	2268	120980	17037	4281	72932	70382	2755	193912
13	Chittoor	18019	4465	80460	43558	4506	196263	61577	4494	276722
14	Rangareddy	30985	3816	118233	21375	4044	86436	52360	3909	204669
15	Nizamabad	116729	5493	641160	104894	5848	613442	221623	5661	1254602
16	Medak	81914	5235	428798	62644	5472	342771	144558	5337	771569
17	Mahabubnagar	130411	4143	540266	66287	4230	280380	196698	4172	820646
18	Nalgonda	206149	4675	963801	199166	5092	1014202	405315	4880	1978004
19	Warangal	169278	4602	778978	98782	5076	501392	268060	4776	1280371
20	Khammam	167037	4696	784450	51215	5275	270171	218252	4832	1054621
21	Karimnagar	159548	4921	785176	221971	5655	1255183	381519	5348	2040359
22	Adilabad	62903	4179	262858	27644	4243	117301	90547	4198	380160
A .P. Total		2921793	3855	11264549	1829019	5637	10310225	4750812	4541	2157474

Source: Department of Economics and Statistics, Government of Andhra Pradesh.

Statement 5: Rice Production, Procurement and Public Distribution in A.P
(Mt)

	Production	Procurement	PDS	Net Contribution to Central Pool
1970-71	4.78	0.46	0.122	0.34
1971-72	4.71	0.26	0.25	0.04
1972-73	4.25	0.32	0.22	0.11
1973-74	5.58	0.69	0.24	.045
1974-75	5.70	0.88	0.25	063
1975-76	6.45	0.13	0.26	1.30
1976-77	4.93	0.48	0.71	-1.22
1977-78	5.60	0.61	0.84	0.52
1978-79	7.43	1.04	0.23	0.81
1979-80	6.30	0.46	0.36	0.10
1980-81	7.01	0.69	0.41	0.28
1981-82	7.86	1.10	0.43	0.66
1982-83	7.67	1.99	1.37	0.62
1983-84	8.79	2.47	1.83	0.64
1984-85	6.90	2.67	1.89	0.78
1985-86	7.61	2.47	2.15	0.32
1986-87	6.59	2.30	2.21	0.09
1987-88	7.02	2.40	1.87	0.53
1988-89	10.62	2.78	2.00	0.78
1989-90	10.12	3.59	2.12	1.47
1990-91	9.65	3.32	2.12	0.90
1991-92	9.24	2.26	1.78	0.48
1992-93	8.73	3.30	1.88	1.42
1993-94	9.56	3.99	2.25	1.74
1994-95	9.27	4.01	2.25	1.76
1995-96	9.014	3.59	2.52	1.07
1996-97	10.68	4.50	2.36	2.7
1997-98	8.51	3.85	2.28	1.5
1998-99	11.87	5.07	2.28	2.79
1999-00	10.65	5.49	2.36	3.1
2000-01	12.45	7.17	2.36	4.8
2001-02	11.39	6.42	2.42	4.0
2002-03	7.327	2.62	2.45	0.17
2003-04	8.93	4.22	2.52	0.17
2004-05	9.60	3.90	2.85	0.10
2005-06	11.70	4.97	3.00	1.97
2006-07	11.87	5.32	3.08	2.24
2007-08	13.33	7.59	3.49	4.09
2008-09	14.24	9.05	3.55	5.5
2009-10	10.83	7.55	3.91	3.6
2010-11	14.32	9.08	3.47	5.6
CAGR				
1990-01	2.58	8.00	-0.25	42.2
2001-11	3.12	3.92	4.08	1.91
1970-11	2.90	7.71	8.74	8.6

Source: Department of Economics and Statistics, Govt. of A.P., APCSC and FCI.