



AGRICULTURAL PRODUCTION PRODUCTIVITY LEVELS VARIATIONS IN UNITED ANDHRA PRADESH

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Andhra Pradesh endowed with soils, irrigation facilities and climatic conditions suitable for cultivating a variety of crops. It is considered as one of the agriculturally progressive state in the country. With the introduction of economic reforms in the country, many changes have been taking place in agriculture both at the national and state level. There has been a change in the cropping pattern in favour of more commercial crops. In the event of low risk bearing capacity of the farmers in the small farm agriculture, this type of shifts may sometimes pose problems. This type of shifts in cropping pattern may have a bearing on employment and food security and adversely affected the interests of agricultural labourers and other poorer sections of the society. There has also been a deceleration in the growth of agricultural output and stagnation in the yields of many crops. These changes together with the declining size of land holdings and increase in the cost of production cause distress to the farmers. The geographical area of the state is 27.44 million hectares. Although the total cropped area of the state has increased nearly to 13.65 million hectares in 2000-01 as against 12.44 million hectares in 1956-57 it has declined to 12.81 million hectares in 2004-05. The share of agriculture in the state GDP is on the declining trend from about 53 percent in 1960-61 to about 13% in 2002-03. Many regional studies in the literature depict the fact that rural economy (Agriculture) of Andhra Pradesh is in crisis. In this paper an attempt has been made to examine the change in the cropping pattern, production and yields Andhra Pradesh. An attempt has also been made to examine the region wise variations in the agricultural sector of Andhra Pradesh.

This paper is based on the data drawn from the season and crop reports, statistical abstracts of Andhra Pradesh and hand book of statistics of state. It covers the period 1980-81 to 2004-05. The changes in the cropping pattern are studied in terms of the proportions of area under various crops in the gross cropped area. The proportions are computed for the triennium averages. The trends in the growth of area, production and yields of principal crops are studied in terms of compound growth rates. These various parameters at the region wise are compared with those at the state level in order to assess whether the broad trends in the region coincide with those at the state level.

Land Utilization

The favorable soils, climate and rainfall together with availability of water resources will ultimately determine a large part of the land for cultivation. The overall trends of growth rate of change in land use pattern in the state (Table – 1) during the 1980-81 to 2004-05 is marked by a increase in the fallow lands (8.22 to 8.87 from 1980-81 to 2004-05) and waste land (2.5) leading to the reduction in the total area available for cultivation. Despite large sums invested through waste land development projects, intermittent drought for a fifteen years period with high intensity resulted in decline in the net sown area and gross cropped area although over a period of two and half decades the gross cropped area showed an increase of 3.01 (45.69 to 48.70, from 1980-81 to 2004-05 respectively). However, a slight increase in the tree cover could rescind soil erosion and siltage of tanks necessary for carrying out agricultural activities without any hindrance, welcomes to the afforestation programmes.

Table -1, Land Use Pattern in Andhra Pradesh, 1980-81 – 2012-13

S. No	Category	(Area in hectares)	
		1980-81	2012-13
1.	Forests	6202916 (22.61)	6199225 (22.61)
2.	Barrens and Uncultivable Land	2328092 (8.48)	2083664 (7.6)
3.	Land Put to Non-Agricultural Uses	2167154 (7.90)	2615481 (9.5)
4.	Cultivable Waste	880704 (3.21)	699128 (2.5)
5.	Permanent pastures and other grazing lands	933167.7 (3.40)	676062 (2.5)
6.	Land under miscellaneous. Tree crops, groves not	272077.7 (0.99)	277653 (1.0)
7.	Current fallows	2314734 (8.44)	2434190 (8.87)
8.	Other fallow lands	1349030 (4.92)	1623024 (5.91)
9.	Net Area Sown	10865057 (39.60)	10838622 (39.5)
10.	Total Cropped Area	12536448 (45.69)	13362084
11.	Total geographical area by village papers	27440049	27440049

Note: Figures in parenthesis are percentages to total geographical area.

Source: Statistical abstracts of Andhra Pradesh GOAP – various issues.



Irrigation

The data presented table -2 suggest that there has been decline in the absolute number and area is covered under irrigation since 1980-81 to 2012-13. The major source of irrigation in the state is canals (35.79) followed by tube wells (30.74), tanks (15.06), other sources (3.92). As large part of the irrigation is under sustainable source, its exploitation may not pose serve environmental problems. However, sharp decline in the different sources of irrigation over a period of two and half decades with high intensity (1998-2013) of drought in the state.

Table – 2,Irrigated Area by Source in Andhra Pradesh 1980-81 – 2012-13
(Area in hectares)

S. No	Source	1980-81	2012-13
1.	Canals	1698493 (49.09)	1572222 (35.79)
2.	Tanks	897844 (25.95)	661626 (15.06)
3.	Tube Wells	146747 (4.24)	1350240 (30.74)
4.	Other Wells	620850 (17.94)	--
5.	Other Sources	95929 (2.77)	172227 (3.92)
6.	Net Irrigated Area	3459863 (100.00)	4392303 (100.00)
7.	Gross Irrigated Area	4418816	5996466
8.	Gross Cropped Area	12536447	13362084
9.	GIA as % of GCA	35.25	44.87

Source: 1. Statistical abstract of A.P.
2. Seasonal crop report of A.P. various issues.

Changes in Cropping Pattern

Cropping pattern changes have implications for food security, employment and the risk involved. A shift from food crops to non-food crops poses the problem for food security. Some commercial crops like chillies, cotton, etc. are more susceptible to disease and pest attack. A conversion in favour of these crops may pose problems in the event of low risk bearing capacity of the farmers. A shift in favour of horticulture crops, which are less labour intensive, may pose employment problems.

Table – 3,Cropping Pattern in Andhra Pradesh
(Area lakh hectares)

S. No	Crop	1980-81	2012-13	% Change
1.	Total serials	73.1	44.63	-38.93
2.	Total pulses	14.44	18.01	24.68
3.	Total food grains	87.55	62.65	-28.41
4.	Total oil seeds	18.61	29.16	56.08
5.	Tobacco	1.69	1.28	-24.26
6.	Sugarcane	1.71	2.1	22.09
7.	Chillies	1.62	2.37	46.29
8.	Cotton	4.19	11.77	181.14
9.	Total cropped area	122.82	128.18	4.35

Source: 1. NABARD state focus paper – 2013
2. Statistical abstract of A.P.
3. Seasonal crop report of A.P. various issues.

It is evident from the above table – 3 that the farmers in Andhra Pradesh shifted from cultivating food grains to commercial crops. The area under total food grains has drastically declined and this decline is seen due to a reduction in the area under major food grains. Further, the practice of mono-cropping and commercialization in agriculture has diverted the area towards the production of oilseeds like groundnut, castor oil, cotton, sugarcane and chillies. Area under cotton has tremendously increased to the extent of 181.15% followed by chillies (46.29) and sugarcane (22.09).

Now it is of interest to analyse the region wise trends in cropping pattern, irrigation intensity, fertilizer consumption and trends in area production and productivity for prominent crops in Andhra Pradesh for the selected study period (1980-81 to 2004-05).



Table – 4,Region-wise Intensity of Cropping & Irrigation, Fertilizer Consumption

Region/state	Crop intensity (%)		Irrigation intensity		Fertilizer		Growth
	1980-81	2012-13	1980-81	2012-13	1980-81	2012-13	1981-2013
Coastal Andhra	127.34	133.00	124.53	127.92	85	310	2.64
Rayalaseema	108.56	109.61	127.29	123.74	40	128	2.2
Telangana	110.46	118.01	132.45	131.02	46	243	4.2
Andhra Pradesh	115.10	122.53	127.25	128.44	58	238	3.10

Source: 1. Statistical abstract of A.P. – various issues.

2. Season and crop reports of Andhra Pradesh - various issues.

3. Fertilizer statistics – the fertilizer Association of India – New Delhi – various issues.

As can be seen from the table, the ratios of NIA/NSA and GIA/GCA present a partial picture of the extent of irrigation. The intensity of cropping in all three regions the including state has increased over time. The analysis of the three regions of the state revealed that the across the regions cropping intensity has increased in the Coastal Andhra (133) followed by the Telangana (118) and the Rayalaseema takes last place (109). It is quite compared to initial period and it is found to be higher than the state’s irrigation intensity. Across the regions it may be noticed that the irrigation intensity in Coastal Andhra has increased appreciably from 124.53 to 127.92 percent during the study period. It is disheartening to note that the intensity of irrigation in the case of Rayalaseema region has declined from 127.29 to 123.74 percent followed by Tenlangana region. Thus in all three regions the cropping intensity has increased but irrigation intensity has shown a mixed picture.

Per hectare fertilizer consumption in Andhra Pradesh has increased from 58 kgs in 1980-81 to 238 kgs in 2012-13. Across the regions highest growth rate (4.2) is found in Telangana followed by Coastal Andhra (2.64) and Rayalaseema (2.2).

Analysis of Growth Rates of Area, Production and Productivity

The exponential growth rates have been calculated for the area, production and productivity of the selected crops in the regions of Andhra Pradesh and are presented in table – 5.

Table – 5,Region Wise Growth Rates of Area, Production and Productivity of Selected Crops in Andhra Pradesh from 1990-91 to 2012-13

	Area									
	Rice	Jowar	Maize	Red gram	Green gram	Black gram	Ground nut	Cotton	Sugar cane	Tobacco
Coastal Andhra	-0.81 (-.62)	-10.43* (-3.3)	8.65* (9.28)	4.85* (6.92)	0.78 (.948)	-1.39 (-1.76)	-8.48 (-15.49)	0.26 (.30)	.28 (.35)	-3.41 (-1.28)
Rayalaseema	0.47 (.26)	0.04 (.01)	17.24* (13.56)	3.39* (4.36)	7.01* (4.36)	10.63* (3.12)	-1.02 (-.31)	-2.78 (-1.35)	-1.22 (-.99)	-3.22 (-2.04)
Telangana	-.34 (-.31)	-5.99* (-16.12)	5.62* (9.51)	3* (4.51)	-1.67* (-2.65)	2.95* (3.18)	-6.78* (-16.67)	4.53* (4.99)	-0.45 (-.52)	-8.92* (-4.80)
Andhra Pradesh	-6.01 (-2.18)	-7.38* (-4.22)	4.72* (2.73)	3.52* (6.27)	-0.45 (-.716)	-0.65 (-.82)	-2.94* (-6.17)	2.49* (2.88)	-0.07 (-.09)	-2.85 (-1.73)
	Production									
Coastal Andhra	0.67 (1.23)	-5.13 (-1.179)	15.8* (14.07)	6.8* (3.97)	-0.08 (-.051)	-2.05 (1.40)	-7.78* (-8.86)	-0.78 (-.33)	0.8 (.26)	-1.26 (-.83)
Rayalaseema	-0.95 (-.60)	-0.09 (-.07)	21.67* (11.44)	6.57* (3.87)	7.27* (2.69)	9.12 (2.51)	-4.21** (-1.97)	-6.17** (-2.52)	0.28 (.19)	-2.5 (-1.38)
Telangana	0.9 (0.61)	-3.45 (-4.17)	8 (9.98)	9.13 (4.83)	-0.96 (-.64)	5.78 (3.68)	-5.49 (-5.45)	7.98 (6.89)	1.46 (1.51)	-6.69 (-5.46)
Andhra Pradesh	0.67 (.862)	-5.39 (-1.48)	9.24 (13.04)	7.91 (5.15)	-0.54 (-.38)	-1.04 (-.84)	-4.88 (-3.15)	3.18 (3.48)	-0.9 (-.246)	-1.58 (-1.22)
	Productivity									



Coastal Andhra	1.48 (1.28)	5.3 (2.31)*	7.2* (11.71)	1.95 (1.32)	-0.87 (-.81)	-0.66 (-.67)	0.7 (1.42)	01.04 (-.42)	0.51 (.17)	1.78 (2.04)
Royalaseema	-1.42 (-1.08)	-0.13 (-.04)	4.42* (3.82)	3.8 (2.00)	0.26 (0.11)	-1.52 (-1.46)	-3.12 (-1.02)	-3.39* (-3.316)	1.5 (1.15)	0.72 (.85)
Telangana	1.24** (2.44)	2.54* (3.33)	2.34* (3.29)	6.14* (3.92)	0.71 (.56)	2.83 (2.08)	1.29 (1.49)	3.4* (4.63)	1.91 (1.60)	2.23 (1.251)
Andhra Pradesh	6.68** (2.30)	1.98 (.00)	4.51* (2.80)	4.39* (3.46)	0.07 (-.069)	-0.4 (-.48)	-1.94 (-1.60)	.69 (.776)	-0.83 (-.23)	1.27 (2.01)

Source: Statistical Abstracts of Andhra Pradesh.

Note: *Indicates 1%, **Indicates 5% significance.

Rice

Rice is a major food crops in Andhra Pradesh. As can be seen from the table the productivity of rice has increased during the study period and found to be statistically significant at the state level. It can also be observed from the table that among the regions of the state, the productivity of rice is found to be statistically significant in Telangana region.

Jowar

Jowar is the second major cereal crop grown in Andhra Pradesh. In the case of Jowar it may be observed that the growth rate of area under Jowar has declined significantly at the state level during the study period. The across the regional analysis revealed that though area under Jowar has declined, the productivity of Jowar has increased significantly in the Coastal Andhra Region. Similarly in Telangana Region, it is also interesting to note while the area under Jowar has declined, the productivity of the crop has increased significantly.

Maize

Next important crop in Maize is one of the cereal crops grown in Andhra Pradesh. It is very of interest to note that area, production and productivity of maize has shown an increasing growth rates which are also found to be statistically significant in all the three regions and as well as state level. At the regional level the productivity of maize is recorded to be highest in Coastal Andhra Region followed by Rayalaseema and Telangana Region.

Red Gram

At the state level the production of Red Gram has increased significantly, which may be attributable to both increase in area and also productivity.

Across the regions, it may be observed that the production of red gram has increased significantly in all the three regions of Andhra Pradesh. However, it may be pointed out that this increase may be due to an increase of only area in case of Coastal Andhra and Rayalaseema, while this increase of production may be due to both increase in area and in productivity in case of Telangana Region.

Green Gram

In case of green gram the production has increased significantly only Rayalaseema Region, which may be attributable to increase in area in this region. In other cases, the increases are not found to be statistically significant.

Black Gram

In the case of black gram, production has increased significantly in both the regions of Rayalaseema and Telangana. Only because of the increase in the area in the respective regions.

Ground Nut

It is observed from the table that the production of the ground nut has declined significantly in Coastal Andhra, Telangana and as well as at state level. This is mainly due to significant increase in the area under crop in the respective regions.

Cotton

In respect of cotton production has increased significantly only in Telangana region and resulted in the overall increase at the state level. This increase in production in Telangana region is attributable to both increase in area and productivity. It may be also pointed out that the production of cotton has declined significantly in Rayalaseema region mainly due to significant decline in the productivity of the cotton in this region.



Sugarcane

The production of sugarcane has increased in all the regions of the state. However, the growth rates are not found to be statistically significant.

Tobacco

In respect of tobacco, it can be observed from the table that the production has declined significantly in Telangana region which may be attributable to significant decline in the area under the crop.

Conclusions

From the above analysis it may be concluded that wide the variations are existing in the regions of Andhra Pradesh in respect of cropping intensity, and irrigation intensity. It may be inferred that the cropping intensity is relatively more in the regions, where irrigation intensity is more. This suggests the need for increasing the irrigation facilities to increase the cropping intensity in the regions of Andhra Pradesh.

It is also observed that wider variations are existing in respect of production of the selected ten crops. As land is a limiting factor in agriculture, more efforts are to be made to increase the productivity of crops so as to meet the requirements of the growing population in the near future. This also suggest the need for conducting more in depth studies at micro level to identify the precise reasons for regional variations in the state of Andhra Pradesh.

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