

The present study makes a modest attempt to know the progress and problems of paddy cultivation in a drought – prone district and make suitable suggestions. Both Secondary and primary data have been collected for the study. The study covers 300 paddy cultivators (under canal irrigation 100 farmers, wells 150 farmers and tanks 50 farmers).

The study has been confined to Anantapur District of A.P. However this study also presents the particulars of Paddy Cultivation in Andhra Pradesh and India. The Secondary data relating to Paddy Cultivation covers the period from 2001-02 to 2012-13.

OBJECTIVES OF THE STUDY

1. To analyze the trends in the production and productivity levels of paddy and principal crops in India.
2. To know the sources of irrigation and the area under paddy and principal crops and their production levels in Andhra Pradesh.
3. To study the cropping pattern and the production and productivity levels of paddy in the study area.
4. To evaluate the cost of production and profitability of paddy in the study area.
5. To assess the income and employment generation through paddy cultivation and

6. To understand the problems of paddy cultivators and to give suggestions.

HYPOTHESIS

1. The area under paddy and the production and productivity levels of paddy are declining.
2. There is no change in the cropping pattern.
3. Paddy cultivation is generating more employment opportunities.
4. The Paddy cultivators are facing many problems.

India is the second largest the data reveals that producer as well as consumer of rice in the world. Nearly all states and union territories of India produce paddy. The most important states are West Bengal, Bihar, Uttar Pradesh, Assam, Orissa, Andhra Pradesh, Tamil Nadu, Punjab, etc. West Bengal ranks 1st in India in rice production with 14 per cent of the total production in India. Nearly 72 per cent of agricultural land in West Bengal is under rice cultivation.

Andhra Pradesh ranks 3rd in rice production. High production occurs in the river valleys of Godavari, Krishna and their deltas. Consumption levels of rice have also gone up steadily from about 80-85 million tonnes in the early 2000s to about 99 million tonnes in 2014-15. The production of paddy during 2013-14 is 101.80 million tonnes. The production is less than 100 million

tonnes from 2001-02 to 2011-12, it is high at 105.31 million tonnes during the year 2012-13.

The yield of paddy in India was 2079 kg/hectare in 2001-02 and it increased to 2462 kg/hectare in 2013-14 and is low at 1984kg/hectare in 2004-05. The yield of paddy increased from 2129.7 kg/hectare in during 2009-10 to 2462kg/hectare during 2012-13. The area under paddy in India declined from 438.136 in 2006-07 to 402.41 lakh hectares in 2012-13.

It is observed that the maximum production comes from four states i.e. west Bengal, Utter Pradesh, Andhra Pradesh and Punjab. West Bengal produced as high as 150.372 lakh tonnes during 2008-09. In the same year the production in Andhra Pradesh State was 142.41 lakh tonnes.

West Bengal has been the largest paddy producing state (14 per cent of total rice output in the country) followed by Uttar Pradesh and Andhra Pradesh competing for the second position with about 12-13 per cent share in total production. Tamil Nadu, Bihar and Orissa are the other major rice producing states contributing together for 20 per cent of country's paddy total output.

India is exporting Basmati Rice to various countries in the world. Between 2010 and 2013 the exports increased from 31.45 to 34.61 lakh tonnes, registering an increase of 10.04 per cent.

The earnings from the export of basmati rice increased from ₹ 2054.47 crores in 202-03 to ₹18985.37 crores in 2012-13, registering an increase of 824.10 per cent.

India is also exporting a substantial quantity of non-basmati rice to various countries in the world. The export of non-basmati rice increased from 42.59 lakh tonnes in 2002-03 to 66.92 lakh tonnes in 2012-13. In 2011-12, the export earning of non-basmati rice was ₹ 8659.126 crores which registered an increase of 129.52 per cent over the year 2002-03.

Andhra Pradesh State is “**the bejewelled rice bowl of India**”. As it produces the second highest level of rice in the country. According to the prevailing view the domestic production in the state far exceeds the consumption. In the last one decade, during every good monsoon year, there is almost a glut in the state leading to price crash and farmers’ outrage.

Andhra Pradesh situated in the southern part of India is the fifth largest state. It has longest coast line (972 km) amongst all states in India. Andhra Pradesh is the seventh most populous state in the country.

West Godavari, East Godavari and Krishna are three most important rice producing districts not only of Andhra Pradesh but of the whole of India as their product account for over 7 per cent of the total rice production of the country.

The percentage of net area sown (including Fish Culture) in Andhra Pradesh increased from 37.2 per cent in 2003-04 to 40.4 per cent in 2012-13. The percentage of current fallow lands decreased from 11.1 per cent in 2003-04 to 8.5 per cent in 2012-13.

It is evident from the data that food crops occupied prominent place in the cropping pattern representing about 66.92 per cent of the total cropped area. Among the food crops, rice being an important crop occupies about 30.83 per cent of gross cropped area. Among the non-food crops the share of groundnut is highest i.e. 12.41 per cent followed by cotton 9.83 per cent of the gross cropped area.

It is observed that in Andhra Pradesh the net area irrigated under canals significantly declined from 37.0 per cent in 2001-02 to 26.85 per cent in 2012-13. Similarly the percentage of tanks showed declining trend from 15.0 per cent to 8.92 per cent during the same period. While the area served by wells increased from 42.0 per cent 2001-02 to 61.30 per cent in 2012-13.

The net irrigated area in Andhra Pradesh ranged from 36.20 lakh hectares in 2003-04 to 50.90 lakh hectares in 2011-12.

The total rainfall in Andhra Pradesh fluctuated from 704 mm in 2004-05 to 1227 mm in 2010-11. The state received 64.2 per

cent the total rainfall from the South- West monsoon period and 27.3 per cent from the North – West monsoon period.

In 2012-13 Krishna district has maximum area i.e. 2.26 lakh hectares under canals while Chittoor, Karimnagar and Warangal districts have an insignificant area under canals.

Vizianagaram district with large area (0.80 lakh ha) under tanks stood first in the state and Guntur, Kurnool and Nalgonda districts have least irrigated area under tanks in the state.

Total net irrigated area under wells in Andhra Pradesh was 26.44 lakh hectares in 2012-13. The distribution of net irrigated area under wells reveals that Karimnagar district has large area of 3.01 lakh hectares. While Kurnool district has a least area of 0.10 lakh hectares under wells in 2012-13.

The total irrigated area in Andhra Pradesh in 2012-13 was 45.75 lakh hectares'. Of this the major Part i.e. 57.79 per cent was served by wells, 27.66 per cent by canals, 11.00 per cent by tanks and the rest 3.55 per cent by other sources like streams, filter points etc.

The percentage of area under paddy varied from 64.05 in 2010-11 to 56.03 in 2012-13. The percentage of area served by canals declined to 42.5 per cent while that of wells increased to 39.2 per cent.

On an average in every year 23.93 lakh hectares of land was cultivated under paddy in Kharif season and 12.66 lakh hectares of land in Rabi season.

The total production of paddy in Andhra Pradesh increased from 73.27 lakh tonnes in 2002-03 to 142.41 lakh tonnes in 2008-09.

In the state on an average in every year 69.07 lakh tonnes of paddy was produced in Kharif season and 46.00 lakh tonnes in Rabi season.

It reveals that the productivity of paddy in Andhra Pradesh increased from 2978 kg per hectare in 2001-02 to 3173 kg per hectare in 2012-13. In Kharif the productivity of paddy increased from 2679 kg per hectare to 2882 kg per hectare during the same years.

The productivity in Rabi season also increased from 3496 kg per hectare in 2001-02 to 3808 kg per hectare in 2012-13. It is evident that the productivity of paddy is high in Rabi compared to that of Kharif.

It is observed that nearly 10 per cent of total area under paddy in India is in Andhra Pradesh. The production of paddy in Andhra Pradesh is high i.e.144.20 lakh tonnes in 2010-11 which accounted for 15.1per cent of all India.

The productivity of paddy in Andhra Pradesh ranged from 2997 kg/ha in 2002-03 to 3345 kg/ha in 2007-08. It is observed that the productivity of paddy is relatively high in Andhra Pradesh compared to that of all India figures from 2000-01 to 2011-12.

The Harvest Prices of paddy in Andhra Pradesh increased from ₹ 630.30 in 2001-02 ₹ 1399.56 per quintal in 2012-13. The minimum support price for common paddy per quintal also increased from ₹ 440 in 2000-01 to ₹ 1000 in 2012-13. It is observed that the harvest price is greater than that of support price in all the years.

Anantapur district is the driest part of the country with the second lowest average rainfall of 552 mm after Jaisalmer district in In 2012-13 the rainfall was 275 mm (60.45 per cent) in the South-West monsoon period followed by 135 mm (29.66 per cent) in North-East monsoon period. The total rainfall of the district ranged from 814 mm in 2008-09 to 290 mm in 2002-03.

It is observed that the net area irrigated under canals significantly declined from 17.24 per cent in 2001-02 to 10.90 per cent in 2012-13. The area irrigated by tanks showed declining trend from 5.73 per cent to 0.60 per cent during the same period. While the area served by wells increased from 76.46 per cent 2001-02 to 87.93 per cent in 2012-13.

The net irrigated area in Anantapur ranged from 13.74 lakh hectares in 2006-07 to 17.71 lakh hectares in 2012-03. The percentage of area under paddy varied from 98.27 in 2006-07 to 68.83 in 2012-13. In Anantapur district 55.11 per cent of the total area under paddy was served by wells, 40.37 per cent by canals and 4.50 per cent by tanks in 2012-13.

The total area under paddy ranged from 71 thousand hectares in 2001-02 to 60 thousand hectares in 2012-13. By 2012-13. During twelve years period the percentage of area under paddy in Kharif varied from 52.08 per cent in 2005-06 to 75.57 per cent in 2012-13. Similarly the percentage of area under paddy in Rabi ranged from 24.13 in 2012-13 to 47.92 per cent in 2005-06.

The total production of paddy declined to 62 tonnes in 2003-04 from 205 tonnes in 2001-02. It reveals that the productivity of paddy in Anantapur District declined from 2881 kg per hectare in 2001-02 to 2631 kg per hectare in 2012-13. It is evident that the productivity of paddy is high in Rabi compared to that of Kharif.

The primary data reveals that there are 1283 members in the selected households. Of them, 684 (53.32 per cent) are males and 599 (46.68 per cent) are females. Out of 300 respondents 52 (17.30 per cent) belong to Other Caste, 223 (74.40 per cent)

belong to the Backward Castes and 25 (8.30 per cent) belong to Schedule Caste and Schedule Tribes.

Out of 300 sample respondents, 41.66 per cent are illiterates, 30.66 per cent have primary education, 18.66 per cent have secondary education, 7.33 per cent have studied up to intermediate and only 1.66 per cent of respondents are degree holders.

The occupation of 622 (53.25 per cent) members of sample households is agriculture. About 65 per cent of sample respondents' also work as coolies, 7.33 per cent have business and 27.67 per cent in dairy.

On an average the sample respondents' households are spending 58 per cent of total expenditure on food and 42 per cent on non-food items.

All the sample respondents own an area of 2970 acres. Of which irrigated land is 1341 (45.15 per cent) acres and un-irrigated land is 1615 (54.85 per cent) acres. About 33 sample respondents (11 per cent) fall in the income class of ₹50,000 below. 47 respondents (15.70 per cent) fall in the income class of ₹3,00,000 and above.

Out of 1341 acres of irrigated area of sample respondents, wells provided irrigation facilities for 573 acres (62.28 per cent) in Kharif season and 229 acres (63.10 per cent) in Rabi season, Canals irrigated 251 acres (27.28 per cent) in Kharif season

and 147 acres (28.30 per cent) in Rabi season. Tanks provided irrigation facilities for 96 acres (10.44 per cent) in kharif season and 45 acres (8.60 per cent) in Rabi season.

On an average an acre of land of under principal crops generated an employment of 72 person days. Of which family labour accounts for 59.09 per cent and that of hired labour for 40.91 per cent. Paddy cultivation in an acre of land generated an employment of 83 person days of which family labour constitutes 57.83 per cent and hired labour 42.17 per cent.

The yield per acre was estimated at 2000 kgs in Kanekalmandal and 2100 kg in Garladinnemandal. In Rabi season paddy was grown only in 222 acres (50 Kanekal and 172 Garladinne). This is because of the shortage of irrigation water.

Majority (25 per cent) of the selected farmers sold paddy at Kalyandurg and (27.34 per cent) at Anantapur agricultural marketing yards.

The average net profit per acre is estimated at ₹19, 741.89. The per acre cost of cultivation was worked out to ₹18, 995.47. The total value of produce is ₹38, 737.36. It is observed that the value of per acre average produce in the case of wells is higher i.e. ₹44,139.33 compared to that of canals (₹36,681.45), and tanks (₹35, 337.03).

All the selected respondents who have grown paddy under wells expressed the following problems.

- All the selected farmers who cultivated paddy under wells stressed the problem of low voltage and irregular supply of electricity.
- Sufficient water is not available for growing crops in all seasons.
- Quality seeds are not available in sufficient quantity.
- Qualitative fertilizers are not available in the market in sufficient quantity.
- A large amount has been spent to construct the wells but those wells are not dependable. Many of them have run dry.
- About 65 per cent of the farmers borrowed money from private money who charged high rate of interest.
- Soil testing Laboratories are not available.
- Inadequate ground water due to low rainfall.

The selected respondents of Bukkapatnammandal noticed the following problems with regard to irrigation under tank.

- The selected tank namely Bukkapatnam was not full.
- Sufficient water is not available for growing crops in all seasons.
- Repair works are not taken up.
- Many farmers practice unauthorized cultivation by utilizing

tank water for irrigation purposes.

- The important problem of the tank irrigation is silting.
- No planning for distribution and maintenance of water resources
- The seepage problem is most prevalent because of the peculiarities of soil composition and its mineral associations.
- Improper developments of canals are reported.

The selected respondents who have canal irrigated land expressed the following problems.

- Importance was not given to proper distribution and to check wastage of water.
- Appropriate cropping pattern is not followed.
- The tail end farmers are not getting water for their field due to improper maintenance of canals.

HYPOTHESIS TESTING

1. The area under paddy in Anantapur district showed a declining trend from 71000 hectares in 2001-02 to 29000 hectares in 2012-13. Whereas the area under paddy in the study area fluctuated from year to year.

The analysis of data also reveals that there are declining trends in the production of paddy from 205 tonnes per hectare in 2001-02 and 76 tonnes per hectares in 2012-13.

Similarly the productivity of paddy has shown decreasing trends during the period 2001-02 to 2012-13 in the study area. The productivity of paddy declined from 2881 kg/hectare in 2001-02 to 2631 kgs/hectare in 2012-13. Hypothesis seems to be correct.

2. The second hypothesis is that there is no change in the cropping pattern. The study reveals that there is a change in the cropping pattern. The area under food grains declined while that under non-food crops the second hypothesis is not correct.
3. The third hypothesis that the paddy cultivation generates more employment opportunities. Paddy cultivated in one acre of land generated an employment of 83 person days. In the case of others the employment generated per acre is 71.50 person days. Thus the paddy crop has generated more employment opportunities.

't' test also reveals that there is a significant difference in the many between family labour, hired labour and total human labour engaged in paddy and other crops in the study area. Hence, the third hypothesis is correct and accepted.

4. The fourth hypothesis is that the paddy growers are facing number of problems. The study proves that there are number

of problems in the production of paddy. Therefore the fourth hypothesis is accepted.

SUGGESTIONS

- ✓ There is need to enhance the supply timings of electricity. Sufficient transformers are necessary to supply electricity to motors.
- ✓ Ground water levels must be improved by taking up the watershed development activities.
- ✓ Timely loans through banks at reasonable interest rates must be provided to paddy farmers.
- ✓ Suggestions by agricultural extensive officers on modern methods of paddy cultivation are necessary.
- ✓ Land leveling is necessary to apply water uniformly.
- ✓ Modernization of channels is necessary.
- ✓ Feeder canals must be developed, if possible, to fill the tanks. The silt in tanks must be removed.
- ✓ Canals must be repaired before releasing water from reservoir.
- ✓ Farmers must form organizations so that collective bargaining is possible.
- ✓ Measures such as cloud seeding etc. must be taken to increase rainfall.

- ✓ Water management campaigns must be conducted to create awareness among the farmers regarding scarce water resources.
- ✓ Water harvesting structures should be constructed to conserve the erratic rain water for the use in the drought areas and irrigation facilities must be improved to irrigate large area.
- ✓ Farmer's participation in repairs and rehabilitation works is necessary.
- ✓ Govt. investment in agriculture must to be increased.
- ✓ Different crops that are suitable to this region must be suggested.
- ✓ A favorable support price policy is necessary.
- ✓ Incentives must be extended to the paddy growers by the Central and State governments.
- ✓ The production and productivity of paddy must be improved.
- ✓ When there is glut in the market the government should purchase paddy at support price.
- ✓ Linking of rivers flowing the state is also necessary to improve drought- prone areas.