A socio-economic status of maize farmers of Telangana and Andhra Pradesh, India

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Abstract

Objectives: The present study is to examine the cropping pattern and socio-economic status of the maize farmers of three districtsGuntur, Karimnagar and Mahabubnagarin Andhra Pradeshand Telangana.
Methods/Statistical analysis: Three districts were selected with a sample size of 30 per district and a total of 90 farmers were randomly selected. For assessing the existing situation, data was collected through primary as well as secondary source of information. The agricultural marketing and market related infrastructure and investment made was collected from secondary data. The details on households, cropping pattern, share of existing seed and pesticide companies and other sources were collected through a field survey conducted in 2011-12.Data were analyzed using SPSS software and Garrett scoring technique.
Findings: The cropping pattern of paddy-maize with 100% alone dominated in Guntur where as in Karimnagar and Mahabubnagar cropping pattern dominated by Paddy-Maize (57%) and Maize-Maize (37%).The average illiterates are 41.1 % in all three districts. Major proportion of the farmers found in the studied area are illiterates. Most of the farmers are not following recommendations after the soil testing, this may result in sub-optimal utilization of plant nutrients. All the seed companies are working vigorously in all the surveyed districts. Among the companies, Pioneer Hybrid India (PHI) is the major contributor and has large share in all the three district markets, followed by Kaveri seeds. As all the practices are almost common in maize crop in all the locations surveyed, there is a less difference in the expense on different activities. Major cost is incurred on labour (Rs. 5,588) ; due to availability of alternate works labour wages has been increased. Next to labour, major expenditure is for fertilizers. The strategy of the agricultural development should particularly focus on small and marginal farmers.
Application/Improvements: Agriculture in the above study area is very well responsive to the changes in numerous social, economic, scientific and market dynamics. There is a need to follow situational marketing approach and subsidies from public sectors which are encouraging for cost optimization.

Keywords: Cropping pattern, economics, farming, land, Maize

1. Introduction

Andhra Pradesh and Telangana are primarily agricultural states in which 70 percent of its population is living in rural areas. Majority of the farmers are small and marginal land holders comprising more than 60% people livelihood is farming. There is an enormous difference between the number of agricultural land holders and their land sizes. The small and marginal land holders were characterized by small size of cultivated land as less than two hectares, limited resources, low technology base and a little know how, limited capacity of marketing, storage and processing and are often vulnerable to value and supply chain opportunities. Agricultural growth is one of the important paradigms of inclusive growth as it is the basic structure for pro-poor growth and its success and sustainability is a key for small land marginal farmer's empowerment [1]. Maize(*Zea mays* L.) is considered to be the third most important cereal crop after rice and wheat and gaining more popularity across the globe than any other cereal crops due to its significant utility in various forms like industrial production as a major feed source for animals and for human consumption.Maize is the preferred source of energy in feed when compared with other substitutes due to availability, higher energy and price economics. In addition to this utility factor, low cost of cultivation, easy adaptability to various climatic conditions, increasing productivity, minor fluctuation in prices compared to other cereals and finally high potential for export demand from all over the world [2].

New production technologies offer great promise for increasing productivity to meet the growing demands of buyers. Maize cultivation is seen through the length and breadth of the country in all the three seasons in a year. Nearly 80-82% of the crop harvested from kharif season in India[2]. The Andhra Pradesh and Telangana are the non-traditional maize growing states but, the climate is very suitable for maize growing and emerged as a potential maize growing states contributing 21 % of the total production of the country. The present private sector involvement is the recent development in Indian agriculture. This is apparent in initiatives such as infusion of new technologies like hybrid seed technology in maize, Pusa basmati rice, etc. the novel technologies can be the prime mover of agriculture growth in future. Future breakthrough technologies in agriculture could come increasingly from the private sector. The major objectives of the present study is to examine the cropping pattern and socio-economic status of Maize farmers of Telangana and Andhra Pradesh.

2. Materials and Methods

Three districts of Andhra Pradesh and Telangana viz. Guntur, Karimnagar and Mahabubnagar were selected purposively for this study. From the selected districts, a total of 90 farmers were randomly selected. For assessing the existing situation of these three districts, data was collected through primary as well as secondary source of information. The agricultural marketing and market related infrastructure and investment made was collected from secondary data. The perception of different farmers about investment in pesticides was analyzed by using tabular analysis method. Farmers are classified into three broad categories with the land holding classification i.e. small farmers (1-2 Ha) marginal farmers (< 10 Ha) and large farmers (>10Ha). In the present study, the average land holding of the farmers is found to be 1.92 Ha. The details on households, cropping pattern, share of existing seed and pesticide companies and other sources were collected through a field survey conducted by us in 2011-12.Data were analyzed using SPSS software by preparing frequency tables, descriptive statistics and Garrett scoring technique. Then Garrett's ranking technique [3] were used to evaluate the preferences of farmers while selecting company's product for sale. In this method, farmers, dealers and distributors were asked to rank the attributes of different inputs according to their importance while making decision to buy the product. The orders of merit given by respondents were converted into percentage position by using the following formula [4].

Percentage Position = 100 ∗(R_{ij} – 0.5)/N_j
    Where
  R_{ij} = Rank given for i^{th} individual
  N_j = Number of items ranked by j^{th} individual

The percentage position of each rank thus obtained was converted into scores by referring to the table given by Henry Garret. Then, for each criterion, the scores of individual respondent were added together and divided by total number of respondents for whom the scores were added. These mean scores for all the criteria were arranged in the order of their ranks and inferences were drawn [3].

3. Results and Discussion
3.1. Cropping pattern followed in three districts
The cropping pattern followed by the farmers with reference to the primary data is paddy-maize, paddy-groundnut, paddy-blackgram, paddy-sesamum, paddy-safflower and cotton-maize in Karimnagar; cotton-maize, paddy-maize, Paddy-blackgram in Mahabubnagar; paddy-maize, paddy-jowar, paddy-blackgram and Paddy-redgramin Guntur. The major cropping pattern in Karimnagar is paddy-maize followed by paddy-blackgram, the major cropping pattern with Mahabubnagar is cotton-maize followed by paddy-maize and where as in Guntur paddy-maize is the major cropping pattern followed by paddy-jowar.

3.2. Literacy level of respondents in surveyed areas
Literacy is considered to be an important determinant of progressive nature of farmers as it is supposed to affect his borrowing behavior, intelligent use of credit and repayment of loans [5]. Among the total village only 58.9 % going to school and the frequency of going is only 53 %. The average illiterates are 41.1 % in all three districts. Large number of farmers in the present study area is found illiterates and higher education like post-graduation and other higher studies are completely nil.

3.3. District wise land holdings and soil testing

The average land holding by farmers in surveyed districts is about 2 Ha.It is known that smallholders' lives generally center on agriculture, yet many of their livelihoods are dependent upon a variety of economic activities and sources of income. Due to certain conditions prevailing in the market like steady and better price for maize and decreasing or low price for cotton and environmental conditions there may be an increase in the acreage of maize in districts like Karimnagar where cotton crop failed in the previous season. Only 15 percent of the sample *i.e.* 14 farmers out of 90 is opting for soil testing and the rest of the farmers are not getting their soil tested (Table 1). The cultivation of Paddy-Maize (100%) alone dominated in the cropping pattern in Guntur where as in Karimnagar and Mahabubnagar cropping pattern ruled by the Paddy-Maize (57%) and Maize-Maize (37%). When it is probed further, most of the farmers are not following recommendations after the soil testing's. This may result in sub-optimal utilization of plant nutrients. The strategy of the agricultural development should particularly focus on small and marginal farmers and other disadvantaged farmers [6]. The results were in correspondence with the studies conducted by [7] and [8]

Table 1. District wise land holdings & soil testing

Category	Guntur	Karimnagar	Mahabubnagar
Average Land holdings	2.00 (Ha)	1.72 (Ha)	2.06 (Ha)
Soil Testing (sample farmers)	33%	0%	12.5%
Testing Agency	ManaGromor	Nil	Regional Agricultural research Station, Palem
Farmer perception about maize growing area			
1. Increasing	7%	0%	9%
2. Decreasing	3%	11%	4%
3. Constant	90%	89%	87%
Current maize based cropping pattern for maize growing areas	Paddy-Maize: 100%	Cotton-Maize:29% Maize-Maize:14% Paddy-Maize:57%	Cotton-Maize :31% Maize-Maize :37% Paddy-Maize :32%

3.4. Share of different companies

All the seed companies are working vigorously in all the surveyed districts. Among the companies, Pioneer Hybrid India (PHI) is the major contributor and has large share in all the three district markets, followed by Kaveri seeds is the next major contributor in maize market (Figure 1). Popular maize hybrids existing in the surveyed areas are Pioneer (30V92,3396), Kaveri (EKKA13),Vibha (EDEN), NSL (SANDHYA 666),Monsanto (900M),Bioseed (9681),Seedtech (740), Cargil (900).The most preferred companies are Kaveri, Pioneer and Bioseed based on the survey sample.

Figure 1. Company-wise share of seeds in selected districts
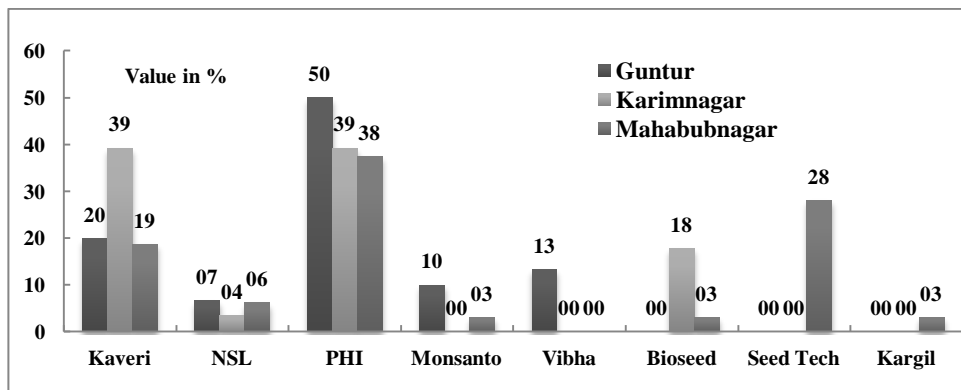
3.5. Selection criteria for maize seeds

For choosing a particular hybrid farmers take few attributes into consideration. The major attribute which decides the farmer choice towards a particular brand is better yield. It is evident that a particular hybrid in the previous season performed good with better yield than other hybrids (Figure 2).

Figure 2. Farmers selection criteria for maize seeds
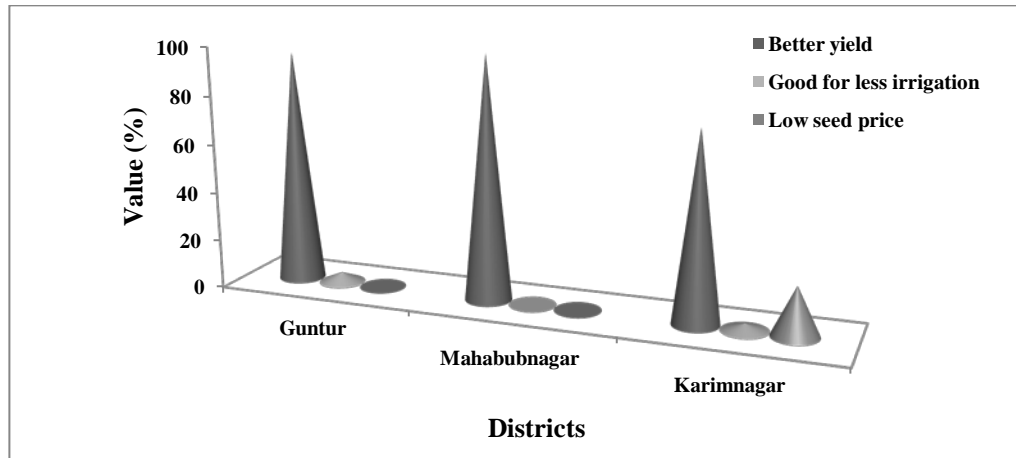
3.6. Maize cost of cultivation in surveyed districts

It is evident from the survey that cost of cultivation for maize in all the surveyed three districts is almost similar. As all the practices are almost common in maize crop in all the locations surveyed, there is a less difference in the expense on different activities. Cost of cultivation for maize growers in surveyed in Guntur (Rs.12,341) followed by Mahabubnagar (Rs.12,259) and Karimnagar (Rs.12,227).

3.7. Breakup economics of cultivation

The cost of cultivation in the present studied area is varying with season and not with the region, fertilizer usage is getting reduced and during rabi season incidence of pests is more hence cost of cultivation for rabi is comparatively more. There were instances where farmer started purchasing water when the ground water level is getting depleted for providing irrigation in the critical stages. It is observed that, the cost of cultivation during kharif is Rs.11,000 and during rabi is Rs.13,000 per acre. The additional burden is incurred on labour for weed management irrigation and pest control which are comparatively less in case kharif. Major cost is incurred on labour(Rs. 5,588) as due to availability of alternate works labour wages has been increased. Next to labour, major expenditure is for fertilizers (Table 2).

Table 2. Economics for maize cultivation

SN	Category	Cost (Rs.)
1.	Seed	760
2.	Herbicide application	248
3.	DAP	3,163
4.	Urea	310
5.	MOP	860
6.	Micro nutrients	210
7.	FYM	1,022
8.	Irrigation	335
9.	Pesticides	370
10.	Labour	5,588
Total cost		**12,866**
11.	Yield (qtl)	29
12.	Average price	1,310
13.	Gross returns	37,990
Net returns		**25,104**

3.8. Farmer preference for fertilizer

For choosing a fertilizer, farmers take product performance into consideration which is a critical component which decides the share of a particular fertilizer in the market (Figure 3). Brand and price are the next attributes considered while purchasing fertilizer. Availability of fertilizers is the least important among the options. Product performance is the critical attribute which favors trade-off among different company products.

Figure 3. Preference for choosing fertilizers by maize growing farmers
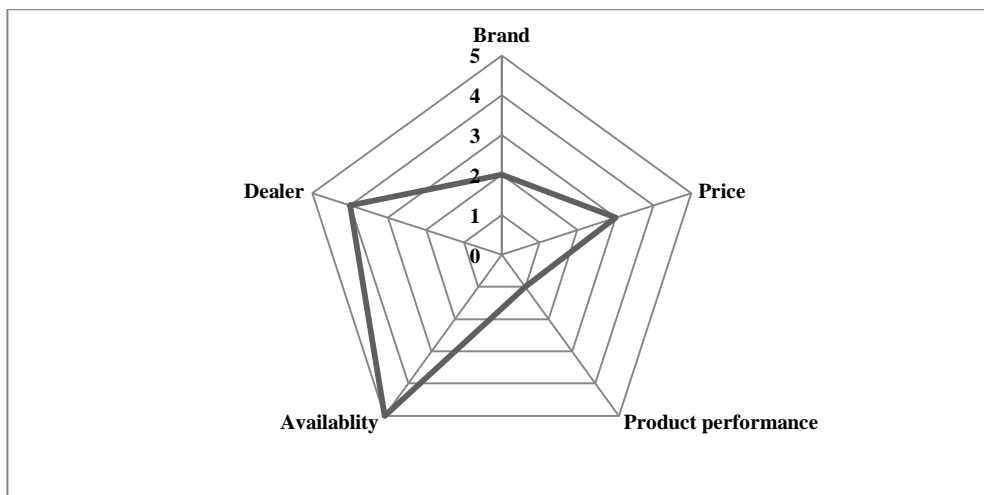
3.9. Fungicide preference and satisfaction level

Among the fungicide brands, three companies are having major share in the market namely MaktheshimAgan, Sinichem and NACL. In Fungicide sales MaktheshimAgan has a major share of 50% in Guntur district followed by Sinochem with 27% and NACL with 23% where as in Mahabubnagar and Karimnagar are 54% and 53% of MaktheshimAgan, 33% and 13% of Sinochem and 13% and 20% of NACL (Figure 4). Majority of the farmers are satisfied with the brands what they are presently using. The observations of the present study showed that the maize farmers were very much satisfied with the fungicides currently using in their fields (Figure 5).

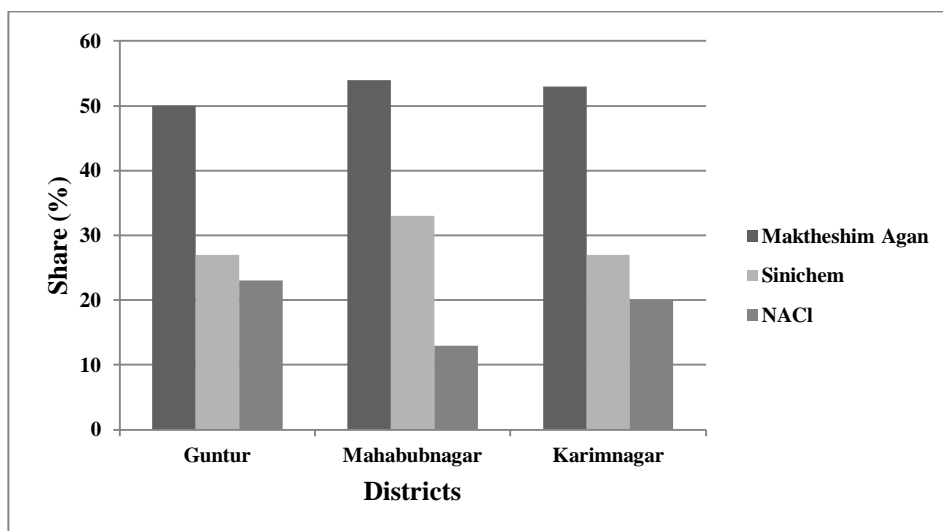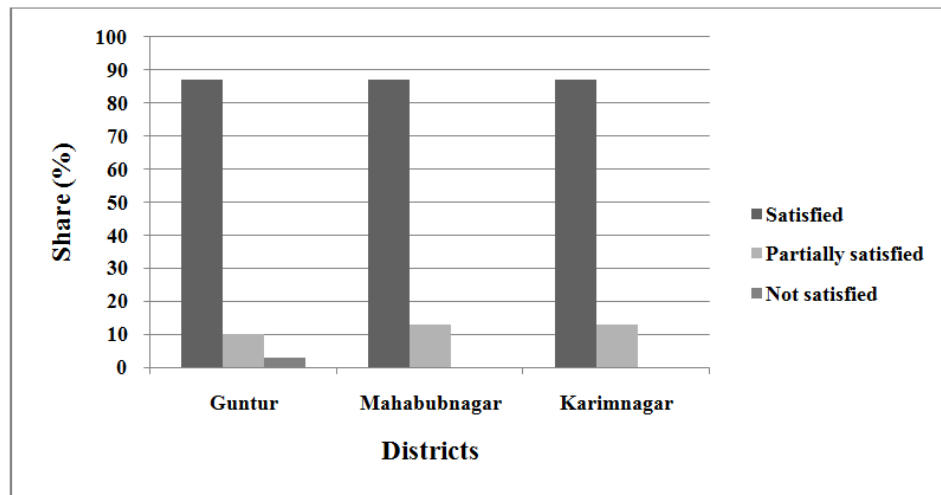*Figure 4. Preference for choosing fungicides by maize growing farmers*

Figure 5. Satisfaction level by maize growing farmers

4. Conclusion

Agriculture in Andhra Pradesh and Telangana as observed in this study is very well responsive to the changes in numerous social, economic, scientific and market dynamics. The outcome of the interaction with the farming communities reveals that in all the three districts maize is a promising successive crop than any other crop. The average land holding of the farmers is found to be 1.92 Ha. Majority of the farming community in those districts are found to be illiterates, so there is a need to educate and create awareness so the affinity towards the available technology escalate to the desired levels. Most of the farmers expressed high level of satisfaction with the available promising varieties from the major companies. For cost optimization there is a need to follow situational marketing approach and subsidies from public sectors which are encouraging.

5. Acknowledgement

6. References

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