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Examination of constraints and recommendations in maize production and marketing in the northern coastal region of Andhra Pradesh through Garrett's ranking method

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Abstract

This research aimed to investigate the obstacles confronted by maize cultivators in the Northern Coastal Region of Andhra Pradesh during the production and marketing of maize. Various responses were gathered to pinpoint the limitations experienced by maize growers in both production and marketing processes. The viewpoints of selected maize growers were solicited to gain a deeper understanding of the challenges they encountered. Subsequently, the recommendations offered by maize growers were recorded and analyzed. To identify the hurdles faced by maize farmers in maize production, Garrett's ranking technique was employed, which entailed assigning ranks and computing the total mean (score). The results indicated that the primary constraints in maize farming were the high level of risk and uncertainty in returns, along with the unavailability of quality seeds. Concerning marketing obstacles, the absence of a government procurement system and the lack of cooperative marketing were recognized as significant limitations. Furthermore, in terms of socio-personal constraints, the lack of awareness regarding the latest technologies and low self-confidence were identified as major challenges faced by maize farmers. The suggestions presented by the maize farmers included enhancing awareness about new technologies and techniques, reducing the involvement of intermediaries during the marketing of produce, offering timely credit facilities, and motivating farmers to store their produce and sell it during off-peak seasons by providing market information.

Keywords: Production, marketing, maize

Introduction

The agricultural sector has witnessed new opportunities with the advent of globalization, particularly for agricultural enterprises. Cereals play a crucial role, not only in providing nutritional support but also in generating supplementary income (Srikanth *et al.*, 2020) ^[5]. Enhancing corn cultivation is recognized as a crucial approach to ensuring food security in India. Corn is additionally utilized as feed for livestock. The characteristics under examination help identify the challenges encountered by corn farmers in both production and marketing (Krishna *et al.*, 2018) ^[1]. Maize is a widely cultivated crop worldwide due to its adaptability to various agro-climatic zones and its high genetic yield potential compared to other cereal crops. Its versatility makes it suitable for a wide range of purposes, including human and animal consumption as well as industrial applications. With the increasing global demand for maize in the food, feed, and industrial sectors, it is crucial to enhance production using the same or even fewer resources (Singh Y *et al.*, 2019) ^[2].

India was the fifth largest producer of maize in 2020 as per FAO data and India's share in world production accounted for 2.59 percent in the same year. According to the Press Information Bureau (Feb. 14, 2023) of GOI, production of maize in the country during 2022-23 is estimated at (record) 346.13 lakh tonnes, which is higher by 8.83 lakh tonnes than the previous farmers to acquire real-time information on weather patterns, market trends, crop management techniques, and government schemes (Sownthariya S *et al.*, 2023) ^[4] Maize cultivation in India spans various environments, ranging from extreme semi-arid to sub-humid and humid regions. The crop is particularly favored in the low and mid-hill areas of the western and northeastern regions. In general, maize cultivation can be categorized into two main production environments: traditional maize-growing regions (like Madhya Pradesh, Bihar, Rajasthan, and Uttar Pradesh) and non-traditional maize areas such as Karnataka and Andhra Pradesh (Sinha *et al.*, 2018) ^[3].

Materials and Methods

Srikakulam district is made up of 38 blocks, with the study focusing on three specific blocks: Hiramandalam, Jalumuru, and Narasanapeta. In Vizianagaram, there are a total of 34 blocks, with the study concentrating on Bobbili, Pusapatirega, and Therlam. The research included 18-gram panchayats from both Srikakulam and Vizianagaram districts. In Srikakulam district, the chosen panchayats were Hiramandalm, Rugada, Akkarapalli, Sri Mukalingam, Komanapalli, Akkarada, Narasannapeta, Komarthy, and Karagam. In Vizianagaram district, the selected panchayats were Paradhi, Alajanji, Chintada, Yerukonda, Alladipalem, Gumpam, Amity, Kagam, and Lingapuram. A total of 180 respondents were selected, with 10 maize respondents from each gram panchayath. The data was collected with the personal interview method.

Garrett’s ranking technique

The examination of the limitations in maize production and marketing was conducted through the implementation of Garrett's ranking technique. The rankings provided by each participant were transformed into percentage positions using the designated formula.

$$\text{Percent position} = \frac{100 \times (R_{ij} - 0.5)}{N_j}$$

Were,

R_{ij} = Rank given to ith constraint by the jth individual and
N_j = Number of constraints ranked by the jth individual.

The approximated percentage placements were converted to scores through the use of Garrett's reference table 1. The average scores calculated for each factor were organized in a descending sequence. The restriction with the greatest mean value was deemed the most crucial, with the rest following suit accordingly.

Results and Discussion

Constraints and suggestions of maize growers in the production and marketing of maize

Various responses were collected to determine the challenges encountered by maize farmers in the cultivation and promotion of maize.

The examination of constraints is increasingly recognized as a crucial aspect of extension research. Failure to assess these constraints hinders the dissemination of essential technologies to the agricultural community. A key aim of this research was to evaluate the obstacles faced by participants in maize cultivation.

Hence, the potential limitations were identified based on relevant research, through collaboration with extension agents, and development practitioners, and through dialogues with farmers in areas not included in the sample. The challenges faced by the participants in maize cultivation are outlined in Table-.1

Table 1: Garret's standings and results on Challenges faced by farmers in maize production in the Northern Coastal Region of Andhra Pradesh

Sl. no	Constraints	Mean	Rank
a	Constraints in maize cultivation		
1	Erratic monsoon	2.02	III
2	Diminishing soil fertility	1.97	IV
3	Non-availability of quality seeds	2.04	II
4	High risk and uncertainty of returns	2.17	I
5	More distance of the market from the village	1.93	V
6	Inadequate transport facilities	1.86	VI
b.	Constraints in marketing facilities		
1	Lack of exclusive market	1.85	III
2	Lack of government procurement system	2.05	I
3	Lack of co-operative marketing	1.87	II
4	Lack of market information	1.82	IV
5	Scarcity of labor for transportation & marketing	1.79	V
C.	Socio personal constraints		
1	Illiteracy	1.83	V
2	Inability to make decision	1.82	VI
3	Low self-confidence	2.01	II
4	Lack of self-reliance	1.88	III
5	Difficult to spend time on the farm due to other works	1.85	IV
6	Health problems	1.79	VII
7	Lack of awareness about the latest technologies	2.31	I

Constraints in maize cultivation

The information provided in the aforementioned table 1 indicates that the primary challenges faced by maize farmers are the high risk and uncertainty of returns, as well as the lack of access to quality seeds. These constraints were observed among the top-ranked farmers. On the other hand, the third and fourth-ranked farmers reported challenges related to erratic monsoon patterns and diminishing soil

fertility. Lastly, the fifth and sixth-ranked respondents highlighted constraints such as the distance of the market from the village and inadequate transport facilities.

The risks associated with agriculture are unpredictable due to the involvement of various intermittent factors. The uncertainty of returns is caused by price fluctuations. The government needs to provide farmers with quality seeds to enhance their production and income. The erratic monsoon

patterns, including the onset, duration, intensity, and distribution of rainfall, are unpredictable. Extension workers should provide timely weather forecasts to farmers to help them minimize field losses. The excessive use of land leads to a decline in soil fertility, which can be addressed by applying organic manures and practicing crop rotation.

Nearby market facilities should be made available to farmers for easy access to the market. Improving transportation facilities in rural areas would enable farmers to travel to nearby towns and acquire knowledge about new agricultural technologies and methods.

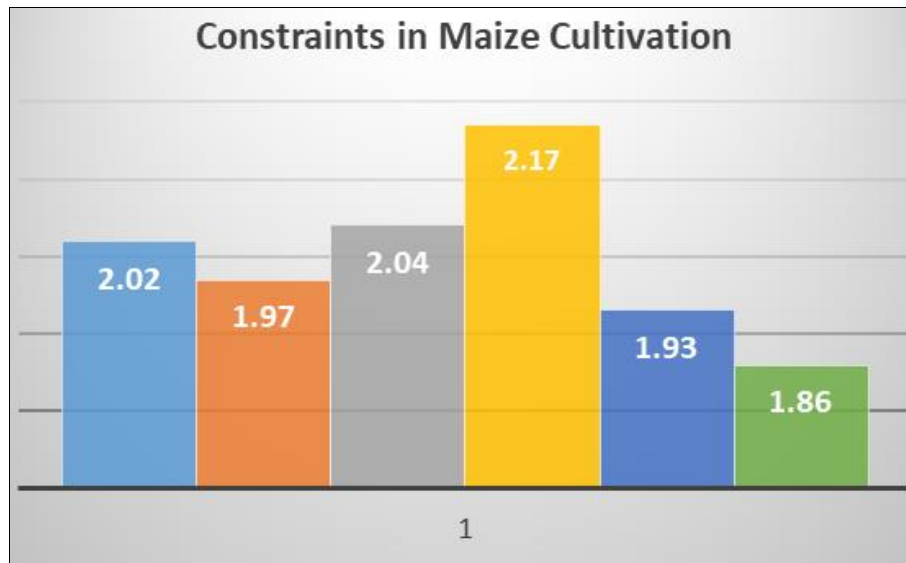


Fig 1: Constraints faced by maize growers during maize cultivation

Constraints in marketing facilities

Based on the data presented in Table -1, it can be deduced that the primary challenge identified by the respondents was the absence of a government procurement system, ranking first. This was followed by the lack of cooperative marketing in second place, lack of exclusive market access in third place, and insufficient market information in fourth place. Additionally, the scarcity of labor for transportation and marketing was reported as the fifth most significant constraint by the respondents.

procurement system arrangements, marketing officials may take the lead in establishing a system for maize procurement. Forming farmers' co-operatives and groups can help streamline the selling process. Additionally, the establishment of Farmer Markets can provide a direct avenue for farmers to sell their produce to consumers or targeted buyers. Extension workers should also play a role in providing farmers with up-to-date market information. Furthermore, investing in agricultural machinery for harvesting, packing, and transportation can help alleviate the scarcity of labor in these areas.

To address the issue of inadequate government

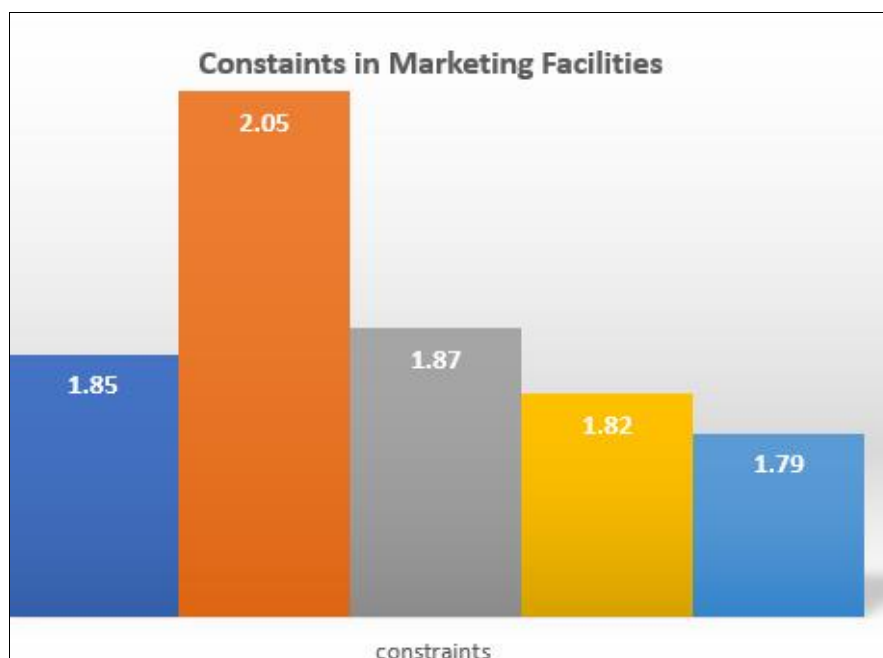


Fig 2: Constraints faced by maize growers in marketing

Socio personal constraints

According to Table 1, the primary personal constraint identified by the respondents is a lack of awareness about the latest technologies, followed by a low self-confidence level ranking second. The third rank is attributed to a lack of self-reliance, while the fourth rank is associated with difficulties in allocating time for farming due to other commitments. Illiteracy ranks fifth, followed by the inability to make decisions in the sixth position. Lastly, health problems rank seventh according to the respondents. Farmers should be provided with information about

technologies by extension personnel. To enhance their confidence and self-reliance, training programs should be conducted for farmers. Farmers need to allocate separate time for family and fieldwork. Extension personnel should be mindful of the farmers' education level and work towards improving their understanding. Additionally, they should assist in enhancing the farmers' decision-making abilities. Farmers must prioritize their physical and mental health promptly, as this will enable them to effectively care for their families and manage their fields.

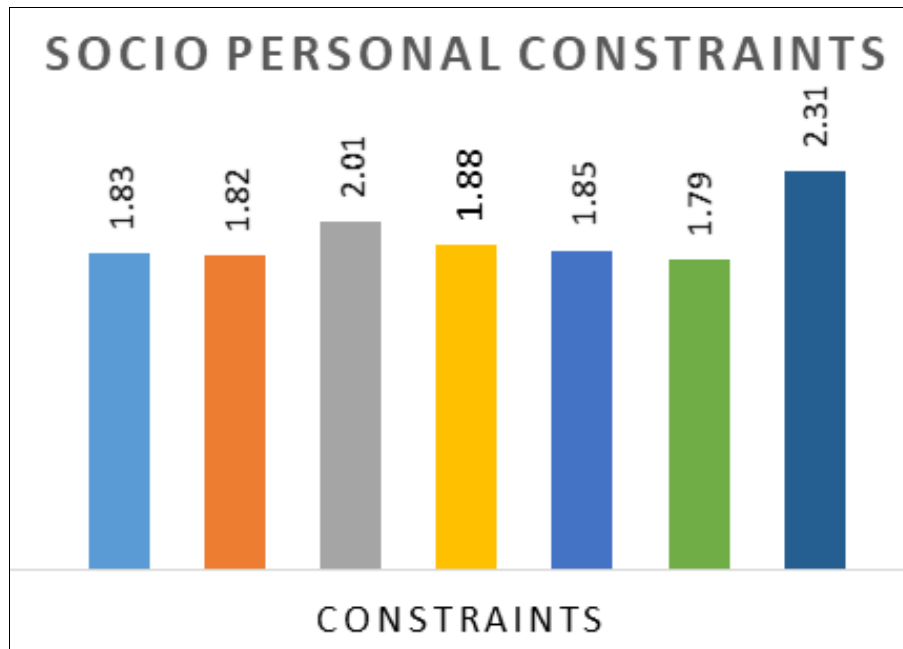


Fig 3: Constraints faced by maize growers in socio-personal constraints

Suggestions expressed by maize seed growers

The maize farmers were first asked about the challenges they encountered in both production and marketing. Additionally, they were requested to provide potential solutions to overcome these challenges. Furthermore, in-

depth discussions were held with extension personnel and progressive farmers to determine suitable measures. The suggestions that arose from the investigation are outlined below.

Table 2: Suggestions given by farmers for maize production and marketing

Sl. No.	Suggestions*	Remarks	
		Mean	Rank
1.	Awareness of new technologies and methods	2.51	I
2.	Timely credit facilities	2.45	III
3.	Training programmes	2.14	VI
4.	Encourage farmers to store their produce and sell at slack season by providing market information	2.41	IV
5.	Minimizing middleman involvement during the marketing of produce	2.46	II
6.	Timely supply of quality seeds	2.07	VII
7.	Encourage contract farming	2.45	III
8.	Remunerative market price	1.76	IX
9.	Sell their produce through regulated markets	1.87	VIII
10.	Timely crop loan at a lower interest rate	2.23	V

*Multiple responses

Based on the data presented in the table, it is evident that a significant portion of maize growers emphasized the importance of being aware of new technologies and methods first rank. This was closely followed by the need to minimize middleman involvement during the marketing of produce ranked second position, as well as the importance

of timely credit facilities ranks third, and encouraging contract farming ranked third position. Other key factors highlighted by the growers included encouraging farmers to store their produce and sell during the slack season by providing market information fourth, offering timely crop loans at lower interest rate ranks fifth, conducting training

programs ranks sixth position, ensuring timely supply of quality seeds ranks seventh position, selling produce through regulated markets ranks eighth position, and receiving remunerative market prices ranks ninth position.

The suggestions put forth by the maize growers emphasize the importance of farmers creating awareness about new technologies and methods to enhance their production and increase their income. Middlemen play a significant role in marketing, and many farmers seek to minimize their involvement in the marketing process. They prefer to directly connect with buyers to avoid commissions and improve their income levels.

It is essential to ensure that farmers have access to the necessary credit facilities through financial institutions for collective purchasing. By encouraging farmers to store their produce and sell during off-peak seasons, providing market information can help increase their income levels. The timely availability of crop loans at lower interest rates is crucial for acquiring farm inputs, especially considering the current lack of crop loans for maize production.

The majority of participants recommended that private organizations promote contract farming. Respondents proposed setting a procurement price as a solution. Maize growers identified market price fluctuations as a significant issue. The respondents likely made this suggestion due to the gradual rise in input costs.

Training and on-farm demonstrations may be conducted in regions where there is a low level of adoption of critical and new technologies. Maize growers should receive training on new technology from the Department of Agriculture to enhance their adoption rates. Following the training, each participant should be given special booklets on critical technologies to further their understanding of advanced agricultural practices.

The extension workers of the State Department of Agriculture must implement necessary measures to guarantee the prompt delivery of high-quality seeds. Farmers should be motivated to establish their seed farms for commercial purposes. It is recommended that local cooperative societies provide the necessary loans to farmers in need for this specific purpose.

Marketing officials need to generate extensive awareness regarding the benefits of regulated markets and other institutional markets. The market intelligence division within the State Department of Agricultural Marketing must be enhanced to effectively analyze market prices and ensure maize growers are well-informed.

It is crucial to establish a fair market price for maize to prevent price fluctuations and ensure maximum profit for marginal farmers. By eliminating middlemen, growers can directly market their produce without any intermediaries.

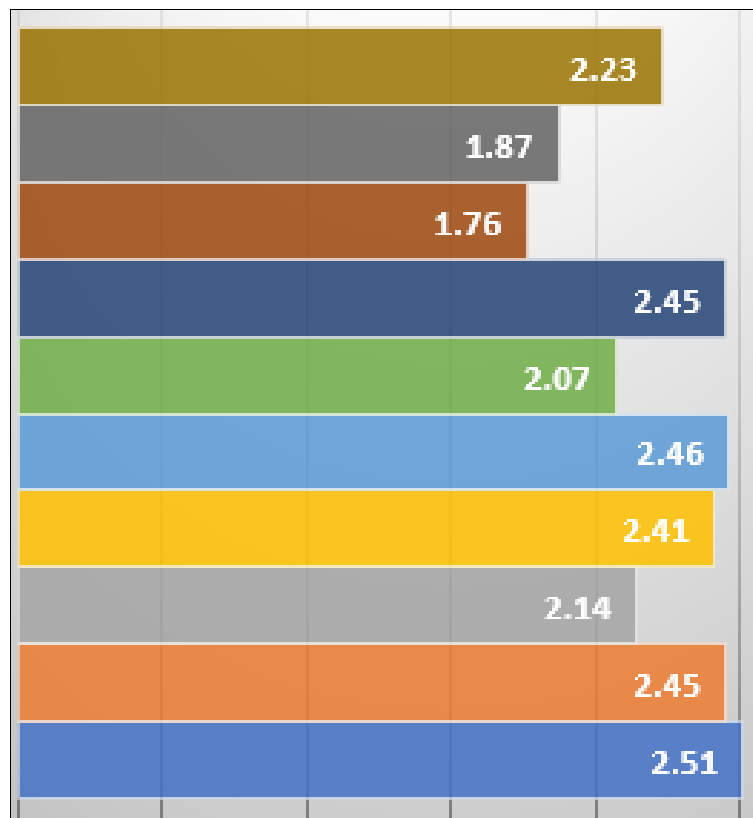


Fig 4: Suggestions given by maize growers in production and marketing

Conclusion

Therefore, it can be inferred that the majority of respondents indicated that high risk and uncertainty of returns were the primary production constraints, with marketing constraints following closely behind the lack of a government procurement system, socio-personal constraints are

insufficient awareness about the latest technologies related to the production and marketing of maize growers

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