

Marketing of Chili Seeds in Anantapur District of Andhra Pradesh

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Abstract: *Objectives:* To study the market potential of chili seeds and what are the factors influencing farmers to purchase those seeds. And, to study the sellers' perception emphasis has been led to describe factors influencing dealers' preference for chili seeds of different major players. Along with this study of Benefit-Cost ratio for farmers in cultivating chili. *Methods:* Descriptive research approach is followed. Data is collected from 125 respondents with the help to both close ended and open ended questions. Respondents are selected using judgmental sampling for dealers and multistage sampling for farmers. *Findings:* In this study, we have worked upon the market potential of chili seeds, influencing factors of chili seeds purchase and sell for both farmers and dealers, and benefit-cost ratio for farmers because as per the latest previous production results India is the largest producer, consumer, and exporter of chili. Along with this hybrid seed, demand has increased because it provides surety in terms of yield potential and resistance to pests and diseases. *Novelty:* Indian agriculture is losing its contribution to GDP but still employing a large population. Especially horticulture crops are seen as a way of early cash recovery and that is one of the most important things in farming practice. That's why this study will help the readers to get the insights about the financial feasibility of in chili production and also from the point of view of sellers if anyone wants to try this business.

Keywords: Chili Seeds, Benefit-Cost Ratio, Seed Marketing, Hybrid Seeds, Perception

1. Introduction

Indian economy and agriculture sector have an everlasting bond that got strengthened during the pandemic and confirmed its significance by sharing nearly a 20% stake in GDP after 17 years (*Economic Survey, 2020*). Agriculture is the major source of livelihood of two-third of India's working population. (*Dolli & K.S., 2020*). Gross value added by agriculture and its allied sectors in the economy has come to its pre covid situation in the financial year 2020 which was around \$289 billion in the financial year 2018 and in 2019 it was \$268 billion. But, post covid situation has changed the way of farming while recovering to its previous edge and in the financial year 2020 it was around \$276 billion (*Indian Agriculture Industry Analysis Presentation / IBEF, 2021*). Covid adversity has marked the significance of farming in the farming community as well as in the mind of a common man by showing the positive growth of 3.4% in 2020 while other sectors collapse (*Economic Survey, 2020*).

As every sector has short and long-term gains and their different ways, agriculture also has. The area under horticulture crops has been increasing for the last few years (*Hussain et al., 2020*), and Covid has boosted farmers' regular cash flow mentality, emphasizing cash crops (*International Trade Centre, 2020*). Chilies are the most important ingredient in many different kitchens worldwide as it adds pungency, taste, flavor, and color to dishes. (*Red Chilli - Wonder Spice, n.d.*). Indian Chili is known worldwide for its two important commercial qualities, its color and pungency levels. Chilies are grown in both *Kharif* and *Rabi* seasons (*Protector Livelihood, 2021*).

India is the largest producer (1.75 million tonnes), consumer (80% of production), and exporter (15-20% of production) of chili in the world (*ANGRAU, 2021*), and contributes to around 40% of world chili production (*Tridge, 2020*). In total spices, export chili alone contributes around 42% of total export (*ANGRAU, 2021*). Chilies are grown in almost all the states in India. But, Andhra Pradesh is the largest producer, accounting for more than 43% (8.05 lakh tonnes) of total chili production in our country during 2019-20 (*Numerical, 2021*). Major chili grower districts in Andhra Pradesh are Guntur, Prakasam, Kurnool, Krishna, Ananthapur, East Godavari which account for 96.07% of total state production (*Chilli Outlook, 2021*).

India is the largest consumer and exporter (410069 MT in 2019-20) in the world (*Indiastat*), and it is exporting to the USA, UAE, China, Malaysia, and many more. To export worldwide and compete for price and quality is not an easy process every year. Furthermore, global climate change has created a challenging environment for the farmers to produce a standard quality chili that can be consumed at a global level. Global competition and climate have forced the growers to try and rely on new varieties. New hybrid seeds have yield potential and resistance to pests and diseases (*TOI, 2021*). Then, many companies have entered into the market with different brands to fulfil the market demand.

2. Methodology

In the process to attain the objectives of the study, it is essential to follow a systematic and scientific procedure. Essential information was collected through a pre-organized

timetable by close-to-home meetings with the sellers, merchants, and ranchers. While the optional information was gathered from a web-based interface, and so on. The research approach was descriptive. A pre-structured schedule was used as an instrument for collecting information, which included both open and close-ended questions. Farmers were selected according to researcher convenience. Judgmental sampling was used to collect data from dealers and distributors, based on the judgment that the respondents were producing chili in the selected district. Multistage sampling was done to survey the farmers. Firstly, by using judgmental sampling tehsil was selected based on potential pockets of Chilli cultivation. Villages were selected purposively according to the potential of Chilli cultivation. After that farmers were selected based on judgment sampling according to the size of the farm field for chili cultivation. A total of 15 dealers, 10 vegetable nurseries, and 100 farmers were interviewed to carry out the study.

2.1 Area of study

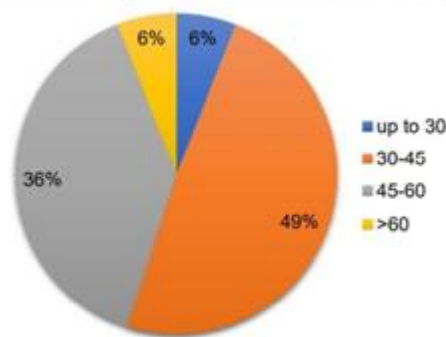
The area of study was the Anantapur district of Andhra Pradesh. Anantapur district is a district in the Rayalaseema region of Andhra Pradesh. Anantapur receives very little rainfall due to its location in the rain shadow area of the Indian Peninsula. Prominent crops include groundnut, sunflower, rice, cotton, maize, chilies, sesame, and sugarcane.

3. Results and Discussion

Socio-Economic Profile of farmers

The study required the analysis of demographic data of the respondents in the study area. The tabulation was done based on the age and education frequency distribution of the respondents.

Classification of respondents on the basis of age



Source: Primary data

Figure 1 shows that the maximum farmers belonged to the 30- 45 age group. 49 percent of the farmers were between the age groups of 30- 45 and 36 percent were between 45 to 60 years. 6percent were above 60 years and below 30 years. Around 75 percent of farmers were literate whereas 25 percent are illiterate.

3.2 Market potential of chili seeds

Market potential represents the upper limits of the market for a product. Market potential is usually measured either by sales value or sales volume. To calculate the market potential of the study area, we had to multiply the area under chili with the seed rate of the chili. Seed rate of chili was also taken from the district agriculture department. Market potential for seed on a volume basis is done using the formula given below:

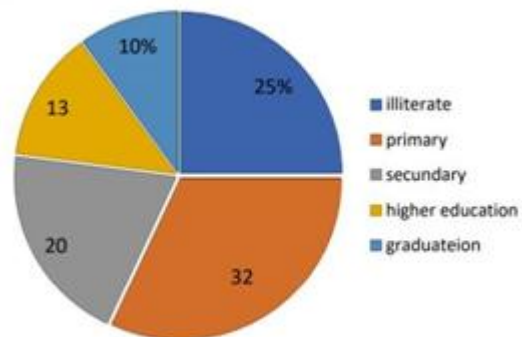
Market potential= Projected area under chili x Seed rate

Table 1: Market Potential of chili seeds in Anantapur district

Year	Chili Seeds Area (hectare)	Seed Rate (kg/hectare)	Market Potential (kg)
2017-18	3905	.125	488.125

Table 1 shows the market potential of chili seeds in the Anantapur district of Andhra Pradesh. Overall potential in the Anantapur district was estimated to be 488.125 kg for

Classification of respondents on the basis of education



the year 2017-18. Seed replacement rate was very low in the area of study hence there is a vast scope of increasing market share of chili seeds in the future because due to new varieties farmers are getting unexpected growth in price (B. Maralihalli, 2020)

3.3 Factors influencing farmers to purchase chili seeds

To fulfill this objective the primary data was collected from 100 farmers and a prestructured schedule was used. Table 2 depicts the perception of farmers on chili seeds preference. RBQ Mean was calculated based on ranks given to the parameters which were considered by farmers the most while purchasing chili seeds like production, peer farmers reference, dealer’s suggestions, price, and Uniformity. Rank 1 was given to the highest preference and 5was given to the lowest preference of distributor.

Table 2: Perception of farmers regarding chili seeds purchase decision

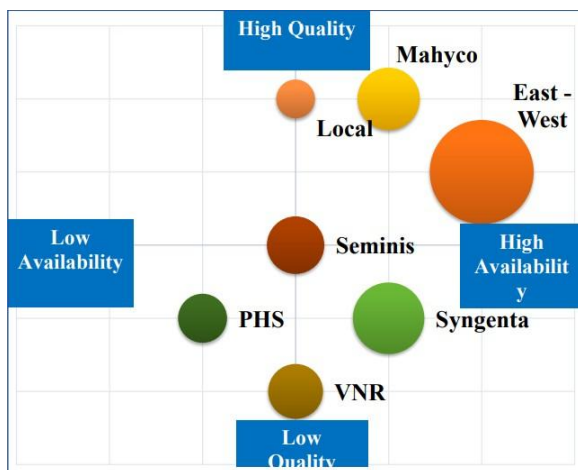
Factors	RBQ Mean	Rank
Production	91.8	1
Peer Farmers	77.0	2
Dealers Suggestion	56.6	3
Price	42.8	4
Size Uniformity	29.4	5

Source: Primary Data

Above table depicts that, factors influencing the farmers while purchasing chili seeds. The five important factors that farmers prefer when they purchase the product from the distributor were production, peer farmers' reference, dealer suggestion, price, and uniformity.

From these five factors, farmers gave the first rank to production which was highly preferred by maximum farmers having RBQ mean of 91.8 followed by peer farmers with RBQ mean of 77.0 as farmers prefer to buy the seeds by following the peer farmers' reference because at times they see the growth of a particular variety very well and then prefer the same variety. Next, the dealer's guidance was also found as an important factor while purchasing the chili seeds (Hussain K.A. et al., 2020). Dealers' guidance was required because many farmers don't know sometimes which seed, they should grow so they prefer recommendations from dealers and distributors to get the best seed. Next was price another important factor and the lowest rank was given to uniformity with an RBQ mean of 29.4.

Figure 2 shows the perception of farmers regarding the quality and availability for different players. Since the quality and availability of seeds is the major factor to be considered while making the purchasing decision. Quality cannot be compromised with price.



Source: Primary Data

Figure 2: Farmers' perception regarding Quality and Availability

Perceptual map shown in Figure 2 confirms that East-West is perceived to be the best in terms of quality followed by Mahyco, Syngenta, Seminis, respectively. Among availability, Mahyco is perceived the best followed by East-West, Seminis, and Syngenta respectively, same suggestions have been given by Hussain, K.A. et. al. (2020) that quality cannot be compromised over price [14].

3.4 Factors influencing dealer's preference for chili seeds of different companies

In the study area, chili seeds were being sold by companies like east-west seeds, Seminis, Mahyco seeds, VNR seeds, Badiga, Swati, Druva and some other local companies. Major players of chili seeds in the study area we represented in

figure 3.



Figure 3: Market share of chili seeds in the study area

Source: Primary Data

Figure 3 depicts that East-West is a major player according to market share with 36 percent followed by Syngenta with 17 percent, Mahyco with 13 percent, Seminis with 11 percent, VNR Seeds with 10 percent, PHS with 8 percent, and local with 5 percent.

3.5 Product portfolio of chili seeds companies in study area

The study involved understanding the product portfolio of the different companies that exist in the study area in terms of their prices, availability, and promotional activities carried out. The details are shown in the following tables 3 presented below.

Table 3: Price of chili seeds of different companies

S. No.	Company Name	Variety	Price in (10gm)
1	Mahyco	Yashaswini	300
		Teja	300
2	Seminis	4884	350
		2222	340
3	East-West Seeds	Demon	330
		Ulka	280
4	VNR Seeds	VNR-145	370
5	Syngenta	Byadgi	450
6	PHS Seeds	Swati	240
		Sanju	270
7	Local Company Seeds	Druva	270

Source: Primary Data

Table 3) depicts the price of chili seeds of different companies. The variety of chili seeds of company Syngenta was having a maximum price that was '450/10gm whereas Swati of company PHS Seeds was having the lowest price of 240/10gm. This price difference exists because new varieties claim to have more resistant power against viruses and leaf curl disease etc. (Pandy S., 2021)

3.6 Promotional activities followed by different Companies

Different Promotional activities were followed by different companies to promote their product and to make aware farmers about their product. Promotional activities include advertising, personal selling, farmers' meeting, leaflet distribution, demonstrations.

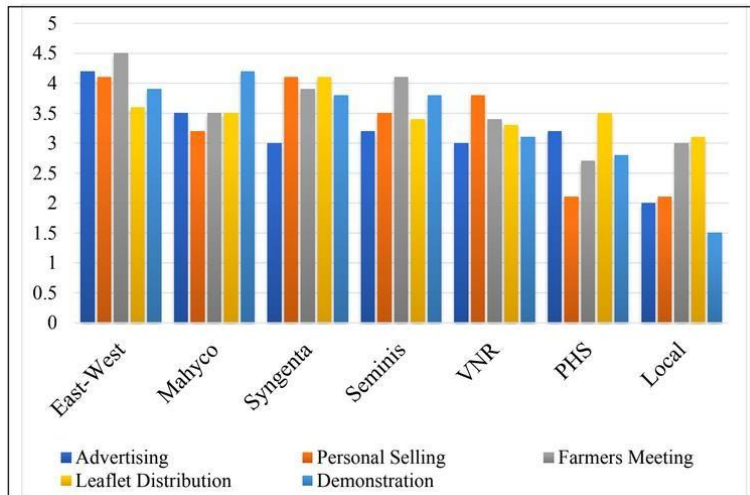


Figure 4: Promotional activities followed by different Companies

Source: Primary Data

Figure 4 depicts that, East-West has maximum promotional activities like advertising, farmers' meetings, leaflet distribution, and demonstration when compared to local seeds. In advertising, East-West is on top followed by Mahyco and Seminis. In Personal selling, Mahyco and East-West are on top followed by VNR seeds. In the Farmers meeting, East-West is on top followed by Seminis, Mahyco. In Leaflet distribution, Syngenta is on top followed by East-West and Mahyco, and Seminis. In demonstration, Mahyco is on top followed by East-West and Syngenta.

3.7 Place related strategies of different companies

Place refers either to the physical location where a business

carries out business or the distribution channels used to reach markets. To snatch maximum share in market company has to rectify their marketing mix which includes product, price, place, promotion.

The descriptors for the study were Transportation, Market coverage, and Distribution. Transportation play important role in moving product from one place to another place and transportation of the products helps in market coverage of the product and finally, the products are distributed through the proper distribution channel. In the following table, companies are using different parameters like transport, market coverage, a distribution channel.

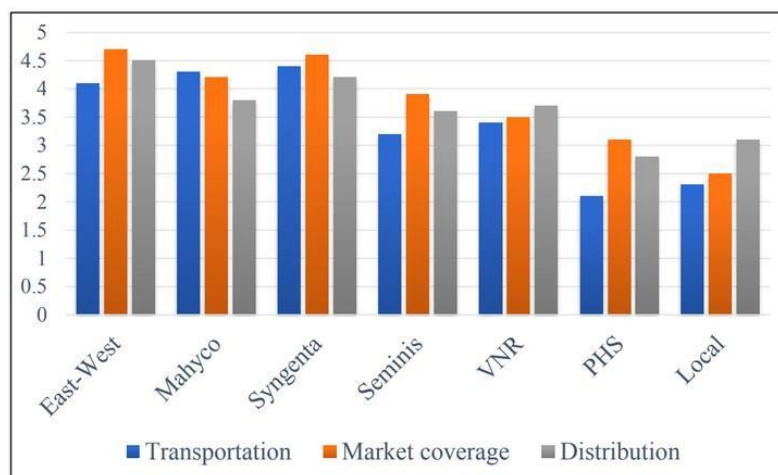


Figure 5: Place related strategies of different companies

Source: Primary Data

Figure 5 depicts that, Syngenta was best in Transportation followed by Mahyco, East-West, VNR respectively. In Market coverage, East-West is the best followed by Syngenta and Mahyco. Among Distribution East-West is on top followed by Syngenta, VNR seeds, and Mahyco, etc. these results about place utility has pointed out by (Kinsu, J.N., 2015) because ultimately place utility and quality are the main factors of getting business in agri input industry.

3.8 Benefit-Cost ratio for farmers in cultivating chili

Cost-Benefit Analysis is a systematic approach to estimating the strengths and weaknesses of alternatives used to determine options that provide the best approach to achieving benefits while preserving savings.

Table 4: Variety wise expenditures in cultivating the chili

Item	DEMON	YASHASWINI	BADIGA	SEMINIS(4884)	VNR-145	SWATI	DRUVA
Land preparation	12000	12000	15000	12000	12000	12000	10000
Intercultural operations	12000	15000	15000	15000	10000	10000	8000
irrigation	2000	2000	2000	2000	2000	2000	2000
Planting cost	15000	12000	10000	10000	8000	10000	8000
Fertilizers	14620	18620	20000	15000	15000	15000	12000
Crop protection cost	6000	8000	12000	10000	10000	10000	8000
Harvesting cost	14000	15000	10000	12000	12000	12000	10000
Labour cost	2000	3000	1500	2000	2000	2000	2000
Yield in farmers plot(q/a)	20	25	15	20	20	15	15
Output price	7000	6000	10000	6000	6000	6000	6000
Total input	77620	85620	85500	78000	71000	73000	60000
Total output	140000	150000	150000	120000	120000	90000	90000
Cost/ Benefit Ratio	1.80	1.75	1.75	1.54	1.69	1.23	1.50

Approx

Both (Tsope, J. et. al., 2020) and (Muslimin, 2021) has found the chili cultivation beneficial in terms of return and investment, furthermore marginal farmers are getting more benefit than small and medium as per the studies.

The details of each variety are presented below:

Demon is most probably used variety. It has high productivity and demand in the market. As per BCR (Benefit-CostRatio), it is 1.80 percent. It indicates almost 2 times of investment. So, it is mostly preferred by farmers. Demon variety is a very vigorous variety of reliable yields. It can be cultivated in different conditions and also throughout the year. Chilies of Demon which shows the upward bearing. Demon's chili appeal is good in fruit quality, bright in color (red), uniform fruit size (8*1), and firmness. **Vaishnavi** is one of the varieties grown for culinary purposes. Though it has good product productivity, as per BCR it is around 1.75 percent. Variety is suitable for growing but the drawback lies in its investment. Yashaswini is a variety of Mahyco seeds. It is a very highly pungent attractive dual-purpose chili hybrid that is easy to pick and bears suni form length fruits of 9 – 10 cm long and 0.8 – 1 cm diameter. Fruit is dark green when immature and turns red on maturity, fruit surface has moderate wrinkles. **Badiga** is used for emulsions and paints as a color enhancer. It has huge demand and heavy investment. There are three types viz. Kaddi, Davanuoor and Dabbi. Fruits 12-15cm long, dark red, wrinkled, and less pungent suitable for export. Comparatively, it has fewer man-days than other varieties of chili. The BCR is 1.75 almost equal to Yashaswini. **Seminis (4884)** is for culinary purposes and has a BCR of 1.54. It is suitable for all types of soils and has more acceptance. Fresh fruit is in green, dried fruits are shiny red with slight wrinkles and slightly rough skin. **VNR-145** has a BCR of 1.69 and it is good in growth and requires fewer seedlings when compared to all of the above. Chilies are in light green and wrinkled, length of chili 10-13cm, the width of the chili 1-1.2cm. **Swati** has a BCR of 1.23 and it is low in productivity. **Druva** is among the fast-growing and has a BCR of 1.5. It requires less investment and has low yields.

4. Conclusion

Most farmers lie between the age group 30-45 i.e. around 49 percent and 39 percent were between the age group of 45-60 percent. Around 2 percent of farmers were educated up to the 10th standard and 25 percent were illiterate and 10 percent were graduated. Production was the most important

factor that influence farmers' preference for chili seed followed by peerfarmers. East-West has high quality and availability in the market followed by Mahyco. East-West has a maximum market share of chili in Anantapur district i.e 36 percent followed by Syngenta i.e 17 percent. Major varieties grown are Demon, Byadgi, Yashaswini, VNR-145, and Swati, etc.

East-West was doing maximum advertisement and personal selling, Seminis doing maximum farmers meeting, Syngenta doing maximum leaflets distribution, and Mahyco doing maximum demonstration. Syngenta has maximum market coverage and East-West has maximum transportation and distribution amongst all other companies.

There were small changes in area under chili during past few years but during 2016 farmers get a good price for their production so area under chili has increased in 2017-18. Sales under hybrid seeds have also increased and it was very high during 2017-18 in comparison to the past few years i.e. 110kg. There are some small companies like Amazon Seeds, Nirmal Seeds, etc. with open-pollinated varieties Alaska and 705 respectively. These varieties were sold in very small amount in comparison to the hybrids.

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