

## A Study on Farmers' Perception and Performance of Various Brands of Vegetable Seeds in Durg District Chhattisgarh

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### ABSTRACT

Seed is the basic and most critical input for sustainable agriculture. The response of all other inputs depends on quality of seeds to a large extent. Use of good and assured quality seed is necessary for attaining high crop yield. "A Study on Farmers Perception and Performance of Various Brands of Vegetable Seeds in and around Durg District of Chhattisgarh" was taken up to examine farmer's perception about the various brands of vegetable seeds and to study performance of brands in Durg district. A total of 200 farmers from 8 villages i.e. 25 farmers from each village were selected by random sampling, similarly 20 dealers were selected randomly and the survey method was adopted to gather the information from the farmers and the dealers with the help of pre tested questionnaire. The results of study revealed that the most important factor that influenced the farmer in selecting a particular hybrid was superior quality followed by insect and disease resistant and high yield. It is also found that the popular brands of tomato are Lakshmi (Nunhems), Rocky (Syngenta) and Ganesh (Seminis) whereas in okra crop the popular brands are 7109 (US Agri), 152 (Syngenta) and No.10 (Maycho). In brinjal the popular brands are Krishna (Golden seeds), Kanhaiya (Sungro) and 707 (Nunhems) while in onion crop the popular brands are N-53 (Jindal seeds), N53 (Malav seeds) and Safal (Beejo sheetal). The performance of brands was analyzed by using rating index method with 5 point scale. The top brands which performed well in the study area in accordance to farmers expectations were Lakshmi (3.95) in case of tomato, US Agri (4.4) in case of okra, Krishna (4.41) for brinjal and N-53(4.43) in onion. Their market share was in the order of 30%, 30.6%, 61.9% and 45% respectively in the year 2010-11. The result also indicated that the market share was not highly concentrated with one brand in any

vegetable seed category in the study area indicating a highly competitive market. The major constraints faced by the farmers while purchasing hybrid was unavailability of preferred brand as expressed by 44 percent of the farmers followed by exorbitant price of seed with 23% responses. The main reasons for unavailability of preferred brand in time in the study area are due to uncertainty of monsoon, uneven demand pattern, lack of awareness of new improved varieties and hybrids and their source of purchase. The word of mouth plays a very important role in the dissemination of information regarding the new technology and variety through fellow farmers as expressed by 42 percent farmers. A majority of the dealers felt that the main factors influencing sales of hybrid were good quality of seed and high margin. For all the vegetable seeds, majority of dealers considered field day and farmer meeting as the most effective promotion measure. Farmer fair was third most effective promotion measure followed by jeep campaigning, schemes, pamphlets and free sample distribution by company. The study suggests that deputing more field staff and conducting more farmers meetings with increased dealer margins would help to improve the seed sales in the market.

### I. INTRODUCTION

India is the second largest producer of vegetables in the world, next only to China, with an estimated production of about 146 million tons from an area of 8.4 million hectares during the year 2010-11 (National Horticulture Board, 2011). India produces approximately 15% of the world's vegetables from approximately 2.8% of the total land. In India, about 40 kinds of vegetables belonging to different groups are being cultivated. These include solanaceous, cucurbitaceous, leguminous, cruciferous (Cole crops), root crops and leafy vegetables. Major vegetable crops grown



in the country are tomato, onion, brinjal, cabbage, cauliflower, okra and peas. The present annual requirement of vegetables is estimated to be 157 million tones and is expected to be over 206 million tons by 2016 (National Horticulture Board, 2011). As we cannot increase the area under production because resources like land and water are continuously diminishing so the only way left is to increase productivity which can best be achieved through use of improved varieties and hybrid technology in combination with superior crop management skills. Farmer can enhance approximately 20% production while he uses good high quality of seed. The vegetable seed industry in India had a very modest beginning during 1960s and 70s with handful of companies which were mostly selling imported seeds. An important landmark in the development of Indian seed industry was the production of hybrid seeds of vegetables for commercial growing. On the lines of the recommendation made by NCA, 1971 the NSP, 1988 allowed import of seeds and germplasm for research purposes. The purpose was to promote development that would maximize yield and increase farmer's income. Hybrid vegetable technology has made significant impact in most crops in developed countries. India has not lagged behind in adopting this technology. The area under vegetable hybrids has gone up from 192,100 ha in 1993-94 to 416,013 ha in 1999-2000. Vegetable productivity increased from an average of 10.5t/ha in 1991-92 to 15.2t/ha in 1999-2000 amounting to an increase of 52 per cent. During 2009-10 the productivity achieved was 16.7t/ha.

Production and productivity over the last decade reveal that overall production showed an upward trend while the total area showed an erratic movement and had an increase of only 63%. During the corresponding period, there had been a substantial growth in hybrid seed usage in India and this can be directly attributed to the steep increase in total production and productivity. With intensive cultivation using hybrids, the average yields under open field condition in India has been steadily increasing and the yield difference with developed countries is getting narrower. It is not uncommon to see growers achieving yields of 100 tons per hectare in tomato, 50 tones/ha in watermelon, 70t/ha in eggplant and 35t/ha in chilli pepper. The advantages conferred by hybrids include higher yields, increased harvesting period, better adaptability, better transport quality favoring the growers and occasional disease resistance. The consumers are benefited by better quality of

hybrids, in terms of eye appeal, keeping quality and with all-important nutritional value. Realizing the benefits that accrue in terms of productivity and the possibility of enhanced income, hybrid cultivation has become popular in traditional vegetable belts. The value of the global proprietary seed market grew by over 10% to reach a value of nearly \$32B USD in 2009. The Context Network has just released its Multi-Client study, 2010 Global Seed Market Database (GSMD) which shows that since its 2001 estimate, the value of the global seed market has expanded by roughly \$18B USD. The global vegetable seed market value is growing. Released along with Global Seed Market Database (GSMD), Context issued its second edition of Major Vegetable Crops 2020 Outlook. Context estimates the commercial vegetable seed sectors will more than double from a current market value of \$3.8b to \$8.0b in 2020, reflecting a 7% compound annual growth rate (CAGR).

The lack of organized statistics in the vegetable sector has masked the contribution of the private seed industry. The hybrid vegetable seed market in India is estimated to be around Rs.1500 Crores (300 mill USD). It is reckoned that the Indian vegetable seed market is growing at a rate more than 10-15% a year. During the decade 1998-2008 there was a remarkable increase in market size of vegetable hybrid seeds (194%). It is anticipated that during the next five years also the growth will continue at a rapid pace (45.4%). Among the different crops, vegetables are the fastest growing sector in the world (Asian Vegetable Research and Development Center, 2006). No wonder that more and more arable land is being turned over to vegetable cultivation and the demand for quality seed is growing. Seed industry in India is very heterogeneous in terms of ownership, scales of operation and functioning and integration of research, production and marketing units.

The names of top 10 companies which control more than 80% of the vegetable seed market are Syngenta, Nunhems, Namdhari, Bejo Sheetal, Mahyco, Seminis, Advanta, Vibha, US Agri and Ankur. While Syngenta, Nunhems, Bejo Sheetal, Seminis, Advanta and US Agri are multinational companies, Namdhari, Ankur, Vibha are leading Indian companies. Mahyco has a joint venture partnership with Monsanto. The state of Uttarpradesh is situated in the north part of the Indian Union. Around 2.5 million ha was covered under vegetables in Uttarpradesh during the year 2015- 16 with the annual production of 2.07

million tonnes (National Horticulture Board, 2010). The major vegetables grown are tomato, brinjal,

chilly, cauliflower, cabbage, okra, bottle guard, onion etc.

Country	India
State	Chhatisgarh
Headquarters	Durg
Tehsil	3
Area	4,521 Km <sup>2</sup>
Population(2011)	2,494,533
Average annual precipitation	1043mm

## II. RESEARCH METHODOLOGY

### 4.1 DESCRIPTIVE RESEARCH

The research is to describe the data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations. Although this research is highly accurate, it doesn't gather the causes behind a situation. Descriptive research is mainly done when a researcher wants to gain a better understanding of a specific topic. Descriptive research is the exploration of the existing certain phenomena. The details of the fact won't be known.

### 4.2 SAMPLE SELECTION

The total sample selected for the study was 40 respondents. In the first phase Fuliari village is selected purposively. In the next phase, 40 samples were selected through convenient sampling irrespective of age, education and income level.

### 4.3 SAMPLE SELECTION PROCEDURE

Since it is the survey of customer to obtain an unbiased result in farmers' sample from population were interviewed on the basis of convenient sampling. Fuliari village was selected for

the purpose of research. Farmers were selected on the basis of convenient sampling.

### 4.4 COLLECTION OF DATA

To study the objectives, required data were collected from primary as well as secondary sources. The data required for the study were collected from the respondents by with the help of pre-structured questionnaire and schedule which asks farmers about their preference and buying behavior towards various brands of vegetables seeds.

### Garrett Ranking Technique

This technique was used to evaluate the factors considered by the farmers in selecting particular hybrid seed and to understand the purchasing behavior of farmers in the study area. In this method, the farmers were asked to rank the given factor according to the magnitude of its

importance. The orders of merit given by the respondents were converted into ranks by using the following formula.

$$\text{Per cent position} = 100 (R_{ij} - 0.5) / N_j$$

Where,  $R_{ij}$  Stands for rank given for the  $i$ th factor ( $i = 1, 2, \dots, 7$ ) by the  $j$ th individual ( $j = 1, 2, \dots, 36$ )  $N_j$  stands for number of factors ranked by  $j$ th individual the percent position of each rank thus obtained was converted into scores by referring to the table given by Henry Garrett.

Then for each factor the scores of individual responses were added together and divided by the total number of respondents for whom the scores were added. Then mean scores for all the factors were arranged in the order of their ranks and inferences were drawn.

## III. RESULT AND DISCUSSION

The brief summary of the findings is presented hereunder:

The farmers of study area were mostly middle aged (45 percent). Among the sample farmers, 48 percent possessed primary school education, 37.5 percent had middle level of education and 11 percent possessed high school education. The average family size of sample farmers was 7.6 in the study area. The average land holding size of selected farmers was 4.8 ha in case of Dhamdha tehsil whereas the average land holding size of selected farmers in case of Bori tehsil was 4.2 ha.

### Factors considered by the farmers in selecting a hybrid seed

The most important factor considered by the farmers in selecting particular brand of hybrid seed is quality with a Garrett score of 76. The second important factor considered by the farmers was pest and disease resistance with a score of 61. High yield and price was considered moderately important by the farmers while selecting a particular brand of hybrid seed with a score of 52 and 49 respectively. The less important factor considered by the farmers was timely and easy

availability of the seed in the market with a score of 32 and 31 respectively.

#### **Performance of various brands**

The actual performance of Lakshmi brand of tomato hybrid seed was very close to the expected performance with a Rating Index score of 3.95 out of 5 followed by Rocky and Ganesh brand with scores of 3.55 and 3.48 respectively in the study area. The actual performance of 7109 brand of okra hybrid seed was very close to the expected performance with a score of 4.4 out of 5 followed by 152 brand and No.10 brand with scores of 4.05 and 3.68 respectively. Respondents in the study area felt that the Krishna brand of Golden Seed Company performed well with a score of 4.41 followed by Kanhaiya and 707 with scores of 3.85 and 3.38 respectively in the case of brinjal. With regard to the onion crop, the actual performance of N-53 brand of Jindal seeds was very close to the expected performance with a score of 4.43. The other popular brands were N-53 of Malav seeds and Safal of Beejosheetal with a score of 4.18 and 3.58 respectively.

#### **Factors influencing farmers in purchasing hybrid seed**

Dealer advice and fellow farmer's advice are most important factors which influence farmer's decision in purchasing hybrid seed with Garret scores of 84 and 65 respectively. Brand name, progressive farmer's advice and availability of seed are moderately important factors considered by farmers in influencing their decision with Garret scores of 51, 42 and 40 respectively. The sample farmers in the study area felt that company people and promotional activities of the companies are relatively less important factors influencing their decision while purchasing hybrid seed with Garret scores of 30 and 22 respectively.

#### **Constraints faced by the farmers while purchasing hybrid seed**

About 44% of the farmers in the study area faced the problem of unavailability of preferred brand of hybrid seed in time. Out of total, 23% sampled farmers felt higher price as the major constraint. Non availability of seeds on credit was another constraint faced by 11.5% farmers. About 10% of total sampled farmers felt that lack of thorough knowledge about the various brands available was major constraint in purchasing hybrid seed. Spurious seed was another constraint in purchasing hybrid seed as expressed by the 7% of farmers. About 4.5% sampled farmers felt distance as the constraint in the study area.

#### **Sources of information to the farmer regarding the vegetable hybrids**

The source of information for 42% of sampled farmers regarding the seed or any new and improved variety was fellow farmer. About 27% farmers in the study area got information from dealers whereas 11% farmers got information from Department of Agriculture while KVK and promotional activities of company both are the source of information for 10% farmers individually.

#### **Dealer's perception about the popular brands of vegetable seeds**

The most popular brand of tomato seed is Lakshmi of Nunhems according to 60 percent of sampled dealers. About 20 percent of dealers in the study area felt that Rocky brand of Syngenta as popular in Durg district whereas remaining 20 percent dealers felt that Ganesh brand of Seminis is popular among all the brands.

The 7109 brand of US Agri is the most popular brand of okra seed according to 40 percent of sampled dealers. About 35 percent dealers felt that 152 brand of Syngenta as popular brand among all the available brands in the market whereas 25 percent dealers felt that hybrid No.10 of Mahyco is popular brand in the Durg district.

The most popular brand of brinjal seed is Krishna according to 65 percent of sampled dealers. About 25 percent dealers felt that Kanhaiya brand of Sungro as popular brand among all the available brands in the market whereas only 10 percent dealers felt that 707 brand of Nunhems as popular brand in the Durg district.

N-53 brand of Jindal seeds is the most popular brand of onion seed according to 55 percent of sampled dealers. About 35 percent dealers felt that N-53 brand of Malav seeds as popular brand whereas 10 percent dealers felt that Safal brand of Beejo sheetal as popular brand in the Durg district.

#### **Market share of popular brands**

The market shares of Lakshmi, Rocky and Ganesh brand of tomato seed constituted about 29.5%, 16.7% and 12.8% respectively in the year 2009-10 whereas in the year of 2010-11, they had market share of about 30%, 16% and 12% respectively. The market shares of 7109, 152 and No.10 brand of okra seed constituted about 32.5%, 25% and 17.5% respectively in the year of 2009-10 whereas in the year of 2010-11, their market share was about 30.6%, 23.7% and 17.7% respectively. The market shares of brand Krishna, Kanhaiya and 707 of brinjal seed constituted about 61.9%, 5.27% and 3.3% respectively in the year of 2009-10

whereas in the year of 2010-11, they had market share of about 61.9%, 5.23% and 3.3% respectively. The market shares of brand N-53 of Jindal seeds, N-53 of Malav seeds and Safal of Bheejosheetal of onion seed constituted about 44.4%, 39% and 5.5% respectively (2009-10) whereas in the year of 2010-11, the market share was about 45%, 41% and 6% respectively.

#### **Dealer perception about the different attributes influencing sales**

The major influencing factors for seed sales were superior quality and high margins with rank 1 and rank 2 given by majority of dealers in the study area. Timely supply of seeds was ranked fourth by most of the dealers whereas a promotional activity by the company was ranked third according to dealers. Most of the dealers (18) gave first rank to field day while only few dealers (2) in the study area gave second rank to the field day. Farmer/dealer meeting was ranked second by most of the dealers (17) in the study area.

- The major factors influencing farmers in selecting particular hybrid seed are superior quality, disease and pest resistance and high yield.
- In the case of tomato seeds, farmers preferred Lakshmi brand the most. In respect of okra and brinjal seeds, the most preferred brand were 7109 and Krishna, respectively. N-53 brand was the most preferred brand in case of onion.
- The seed companies which performed well in vegetable seeds market are Golden seeds, Seminis, Syngenta, Sungro, Nunhems, Bheejosheetal and JK seeds in the same order.
- The popular brands of vegetable seeds which had highest sales as compared to other brands available in the market is because their actual performance was close to expected performance.
- The market share was not concentrated with one brand in any particular vegetable seed in the study area. All the brands had equally competitive shares in the total sales.
- The word of mouth played a very important role in the dissemination of information regarding the new seed and variety with 42% share.
- The major constraints faced by farmers while purchasing hybrid is the unavailability of preferred brand (44%) followed by exorbitant price of seed (23%). The main reason of unavailability of preferred brand in time in the study area were uncertainty of monsoon, uneven demand pattern, lack of awareness of

new improved varieties and hybrids and their source of purchase.

#### **IV. SUGGESTIONS**

- As the majority of the dealers felt that the main factors influencing the sales of hybrid is good quality of seed and high margin to them to promote sales, therefore the companies should focus on these parameters as the dealers also play a significant role in increasing sales.
- The companies should make all the efforts to make the seed available in time to the dealers and in turn to the farmers.
- Majority of the dealers considered field day and farmer meeting, as the most effective promotion measure, therefore the companies should hold more field days and farmers meetings which would help in understanding the farmers concerns and deliver him the needed information.
- Since the field day along with F/D meeting is judged as best promotional activity, the companies which have limited number of field staff should increase the number so as to effectively reach the farmers. The frequency of visits is not satisfactory according to dealer / farmer therefore frequency of interaction should be improved.
- Since the farmers are preferring high yielding, good quality and pest and disease resistance variety therefore, more emphasis should be paid and R & D should work in the same direction.
- The companies apart from focusing only on marketing of their seed should also guide the farmers on appropriate cultivation practices and cost saving activities.
- The companies should educate the farmers in identifying the spurious seeds and all the measure to stop the entry of such seeds should be initiated.
- Since Durg district has lot of market potential for vegetables and farmers are also getting good income, the farmers should be encouraged to bring more area under vegetable cultivation.

#### **V. CONCLUSION**

India is the second largest producer of vegetables in the world, next only to China, with an estimated production of about 146 million tons from an area of 8.4 million hectares during the year 2010-11 (National Horticulture Board, 2011). India produces approximately 15% of the world's

vegetables from approximately 2.8% of the total land. Major vegetable crops grown in the country are tomato, onion, brinjal, cabbage, cauliflower, okra and peas. The present annual requirement of vegetables is estimated to be 157 million tonnes and is expected to be over 206 million tons by 2016 (National Horticulture Board, 2011). As we cannot increase the area under production because resources like land and water are continuously diminishing so the only way left is to increase productivity which can best be achieved through use of improved varieties and hybrid technology in combination with superior crop management skills. Farmer can enhance approximately 20% production while he uses good high quality of seed. Around 1.3 million ha was covered under vegetables in Rajasthan during the year 2009-10 with the annual production of 1.07 million tonnes (National Horticulture Board, 2010). The major vegetables grown are tomato, brinjal, chilly, cauliflower, cabbage, okra, bottle guard, onion etc. Durg district is the biggest market of vegetables in Rajasthan. The major players in vegetable seed business of Durg district are Seminis, Syngenta, Mahyco, Golden seeds, Bheejosheetal, JK seeds and Ankur seeds. The study is planned to understand the perception of farmers and dealers about the various brands of vegetable seeds and the performance of these brands in accordance to the farmer's expectations.

## VI. LIMITATIONS

Due to constraint of time and resources the study is likely to suffer from certain limitations. Some of the more mentioned below so that the findings of the study are understood in proper perspective. The biggest constraint for the preparation of this report was the time constraint.

- Accuracy of data depends upon the willingness and ability of respondent.
- Secondary data were available in scattered manner due to which problems arise in summarization of data.
- Some of the respondents of the survey were unwilling to share information.
- The research was carried out in a short period of time so. Therefore, the sample size.
- Parameters were selected accordingly so as to finish the work in given timeframe. The information given by the respondents might be biased because some of them might not be.
- Interested in providing correct information.

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