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Jitendra Kumar Fogya
Institute of Agribusiness Management, JNKVV, Jabalpur, Madhya Pradesh, India

Bhashkar Sahu
Institute of Agribusiness Management, JNKVV, Jabalpur, Madhya Pradesh, India

AK Sarawagi
Institute of Agribusiness Management, JNKVV, Jabalpur, Madhya Pradesh, India

Corresponding Author:
Bhashkar Sahu
Institute of Agri- Business Management, JNKVV, Jabalpur, Madhya Pradesh, India

To assess the market potential of vegetable seed of at Dhamtari district of Chhattisgarh

Jitendra Kumar Fogya, Bhashkar Sahu and AK Sarawagi

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Abstract
The present study on to assess the market potential of vegetable seed of at Dhamtari district Chhattisgarh. Main objectives of the study were to analyze the market potential of vegetable seed market at dealers' level, to assess the farmers' preferences in vegetable seed purchases and to examine the promotion measures adopted by seed companies. Primary data were collected from 60 farmers and 13 vegetable seed dealers from whole dhamtari district through personal interview method with the help of pre-structured schedule for the year 2014-15. The state of Chhattisgarh has a number of Multinational/National companies supplies the vegetable seed in the state but substantially having a major share of Syngenta Company in Dhamtari district of Chhattisgarh. The products of Syngenta Vegetable seed are popular among farmers in Dhamtari district. Many farmers involve growing the vegetables in this district on commercial basis. Syngenta organization assigned the project work for its market status for future strategy or comparing to other competitor in the study area. Therefore, this study suggests that seed companies should look on this aspect while making promotional strategies in vegetable seed marketing in the study area.

Keywords: Market potentials, farmers' preferences, vegetable seed marketing

1. Introduction
Agriculture continues to be the mainstay to India's large and growing population for its sustained food security. More than 70 percent people are engaged in agriculture sector. The sector provides employment to over half of country's work force and is the single largest private sector occupation. Due to the prominence of agriculture in the national food security and the employment, its performance is of great focus in the India's policy and planning. The contributory share of agriculture in GDP was 55.4 percent in 1950-51, 52 percent in 1960-61 and is reduced to 13.7 percent only in 2012-13. Moreover, the Indian agriculture is characterized by dominance of the small and marginal farmers having very small land holdings. Majority of the people belong to farming communities. It provides food and raw materials to the small scale and cottage industries who's are directly dependent on agriculture. Seed industry is one of the most important source seed is one of the basic and most critical input for sustainable agriculture. The response of all other inputs depends on quality of seeds to a large extent. It is estimated that the direct contribution of quality seed alone to the total Production is about 15 – 20 percent depending upon the crop and it can be further raised up to 45 percent with efficient management of other inputs. The developments in the seed industry in India, particularly in the last 30 years, are very significant. The private sector has started to play a significant role in the seed industry over the last few years. At present, the number of companies engaged in seed production or seed trade is of the order of 400 or 500. However, the main focus of private seed companies has been on the high value low volume seeds and market for low value high volume seeds Private sector companies have a significant place mainly in the case of vegetable seeds and planting materials of horticultural crops.
The synthesis of Seed industry in India involves a complex chain of manufacturers, formulators and distributors. A current status shows that, there are 125 technical grade manufacturers including 10 multinationals, 800 formulators and over 145,000 distributors. About 60 technical grades are manufacture hybrid seed with disease, insect resistance, and sort life cycle or high yielding verities etc. They are sold in bulk (usually 50-100 kg bags) by the technical grade manufacturers to synthesize the desired quality.

The desired quality are then packed and sold in retail to the farmers by the distributors. The low utilization of vegetable seeds in our country is mainly due to irregular demands during seasonal crops and dependence of farmers on the monsoon season. Operational working capitals are further hiked due to the long credit given to the farmers.

1.1 Scope of the study

The state of Chhattisgarh has a number of Multinational/National companies supplies the vegetable seed in the state but substantially having a major share of Syngenta Company in Dhamtari district of Chhattisgarh. The products of Syngenta Vegetable seed are popular among farmers in Dhamtari district. Many farmers involve growing the vegetables in this district on commercial basis. Syngenta organization assigned the project work for its market status for future strategy or comparing to other competitor in the study area.

2. Profile of the organization

Syngenta is a world-leading agribusiness committed to sustainable agriculture through innovative research and technology. The company is a leader in crop protection, and ranks third in the high-value commercial seeds market and sales were $15.13 billion in 2014. Syngenta employs over 29,340 people in more than 90 countries. Company is listed on the Swiss stock exchange (SYNN) and in New York (SYT) in the developed world it has become the norm to walk into a supermarket and choose from a wide variety of food products of very high quality.

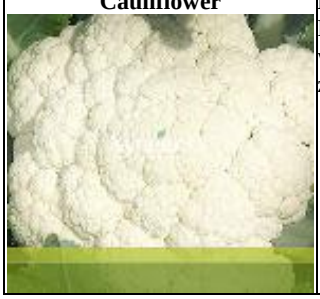
It would not be possible to maintain the supply and quality products we now expect, at today's prices, without using some crop protection products. The key is to strike the balance between using as few chemicals as possible while delivering the consumer's expectation on food quality and affordability. Crop protection products are designed to protect crops from attack by pests, weeds and diseases. Their use is not just only about producing higher yields, but also about optimizing the use of scarce resources including land, water and labour. The benefits of crop protection products to food quality are in three-fold: vital component in producing crops of uniform quality, unblemished, pest-free with minimum wastage, they can reduce the level of natural toxins produced by fungi and bacteria in food crops. They can increase the nutritional value of food, for example fungicide treatment can improve the protein content in cereals. Crop protection products not only allow foodstuffs to reach the shops in good condition, but also extend the supply in seasons for a wide range of produce. Their role in food hygiene – preventing contamination by rats, mice, flies and other insects is also of significant importance to our health.

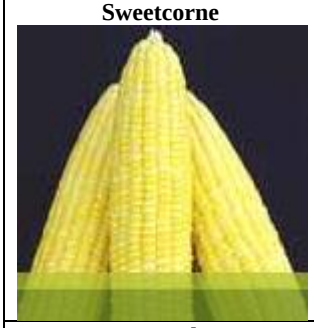
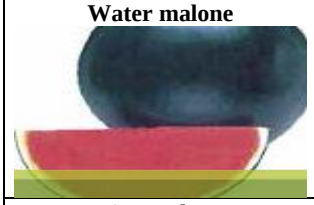
2.1 Seed Production

Syngenta seeds improve yield by prompting early emergence, vigorous growth and highest quality output. It has an established presence in India, with indigenous research and development centers, well equipped laboratories for seeds testing and efficient all- India network of field force and distributors.

2.2 Vegetable seed

Syngenta continues to invest strongly in technology and marketing of vegetable seeds. State-of-the-art molecular markets technologies help broaden and deepen our germplasam base from conventional breeding. The range of crops includes manufactures tomatoes, chilli, cucumbers, cabbage, cauliflower, sweet corns, beans and watermelons. Seed variety of company is given.

Tomato 	**Abhinav** **Plant** Semi determinate with vigorous plant habit Broad leaves with excellent foliage covers. **Fruit** Fruit harvesting starts 60-65 days after transplanting Tolerance to TYLCV Suitable for long distance transport Very Firm fruits with good keeping quality medium size (80 -100gm).Good heat set high yield potential.
Cabbage 	**BC-64** Plant Plants are green with limited auxiliary leaves. Suitable for high density close planting. Fruit Head is ready for harvest in 60-65 days after planting. Suitable for growing in cool and dry season. Uniform maturity helps single harvest. Round, attractive, compact, green in colour. Weight is 1-1.25 Kg
Cauliflower 	**Pawas** Plant all and erect plant with vigorous growth. Green and broad leaves. Curd Compact dome shape ceramic white, curd Weight is 1 - 1.25 kg. Ready for harvest in 50-55 days after planting. Suitable for Tropical climatic zones. Moderate heat tolerance.

Chilli 	**Agnirekha.** Plant Plants are vigorous, 60-100 cm high, with strong lateral branches. Green colored dense foliage. Fruiting starts in 50-55 days after transplanting. Fruit Medium long, thick walled and uniform. Bearing is solitary. Average fruit length is 10-11 cm and around 1.5 cm in diameter.
Okra 	**OH-016** Plant Strong medium tall plant with productive branches Fruit harvesting starts 40-45 days after sowing Fruit Attractive dark green tender fruits Average fruit size is 9-10cm. Average fruit weight is 9-10gm Fruits are shiny, smooth and easy to pick. Good field adaptability with dark green fruits and foliage. High yield with excellent fruit quality.
Sweetcorne 	**Sugar - 75** Plant Very good plant vigour and height. Recommended for winter sowing. Maturity - 80 to 90 days. Fruit Long uniform cylindrical cobs. Golden yellow kernels. Excellent tip filling. Very sweet (TSS about 16%) High yielding variety. Both for Fresh as well as Processing market. Due to it's very sweet taste and tenderness, this variety is the first of farmers.
Water malone 	**Sugar King** Plant This vigorous, good fruit setting variety produces round, dark black skinned fruits. Fruit Each fruit weights about 8 to 10 kg and has good taste. The rind is hard and can stand long distance transportation.
Cucumber 	**Tasty** Plant Vigorous growth habit. Fruit Maturity 35-40 days. Uniform long, cylindrical, medium green fruits with light stripes. Average fruit is 18 to 20 cm long weighing 150-200 gm. Suitable for Karnataka, North, East, Rajasthan, M.P. & Gujarat. Good for long distance transportation.
Radish 	**Plant** Plants roots are smooth & white Fruit Approx 10-12 inches with average weight of 600-750 gm. Roots can stay in the soil for long period after maturity. Early maturing hybrid (40-50 days)
Paddy 	**NK-5251** Crop Suitable for early as well as late planting. Short duration 120-125days maturity. Plant height-105-115 cm. Productive tiller/m2 =300-350. Desired quality grain (Medium Slender) & Shining grain, Fetch high price in market. Moderately tolerant to BLB. Fitted well in potato early wheat/vegetables rotation. Perform well in stress condition like drought, Salinity etc.

Sunflower 	**NK Armoni** Plant Plants are medium tall. Robust growth, Versatile hybrid, Suitable for major soil types & Agro climatic conditions. Medium duration, 100-110days. Medium uniform maturity. High yield potential good oil content. Convex, semi erect, compact, uniform, Good eye appeal, Completely filled upto the centre.
Maize 	**NK-6240** Features Widely Adapted Hybrid with Outstanding Yield and Stability. Stable yielder across the environments good responsive to high input management Excellent Agronomics and Consistency. Orange Yellow semi dent with bold kernels with excellent tip. Very uniform and appealing plant type. Very uniform and appealing plant type.

3. Methods and Materials

This chapter deals with methodological aspect of the present investigations. The chapter splitted in to following heads.

1. Selection of study area
2. Selection of distributor
3. Selection of farmers
4. Selection of crops
5. Nature and collection of data
6. Period of study
7. Method of analysis

3.1 Selection of study area

The present study was confined to Dhamtari district of Chhattisgarh. Dhamtari district comprises 04 blocks namely Dhamtari, Kurud, Nagari, and Magarloud. Syngenta. Company assigned all the blocks of Dhamtari district (vegetable raised by the farmers) for detail investigation.

3.2 Selection of distributor

The 13 distributor from 8 major players i.e. VNR seeds, Syngent India, Nunhems vegetable seed, Seminis vegetable seed India, JK seeds, Mahyco Hybrid seed, Advnta India and Namdhari seeds were selected under different block of Dhamtari district. The details about block wise selected distributor are given below.

Table 3.2.1: Block wise selected distributor

S. No.	Block	Distributors name
1.	Dhamtari	1. Navdeep Traders
		2. Dhamtari Krishi Kendra
		3. Mohan Traders
		4. Madhu Traders
2.	Kurud	1. Kishan Beej Utpadak
		2. Aadil Krishi Kendra
		3. Kishan Sansar
		4. Kishan Ghar
3.	Nagri	1. Parmeshwari Traders
		2. Ankit Traders
		3. Yadav Krishi Kendra
4.	Magarlod	1. Bharat Krishi Kendra
		2. Kelash Beej Bhandar

3.3 Selection of farmers

From the selected block 14 village and 60 farmers who raised vegetable crops were considered for judging the consumers opinion. Details about selected village and number of farmers are given below.

Table 3.3.1: Selected villages and number of vegetable growing farmers

S. No.	Name of Block	Selected villages	Selected farmers (No's)
1.	Dhamtari	1. Chatti 2. Puri 3. Demar 4. Piparcheri	15
2.	Kurud	1. Joaratari 2. Seldeep 3. Nawagaou	15
3.	Nagri	1. Salhebhath 2. Nagri 3. Korra 4. Amdi	15
4.	Magarlod	1. Khisora 2. Bhaismundi 3. Kundel	15
	Total	14	60

3.4 Selection of crops

Crops in the study area are selected on the basis of maximum area under the crop and following vegetable crops are selected.

- Tomato
- Chilli
- Cauliflower
- Okra

3.5 Nature and collection of Data

To fulfil the stated specific objectives, both primary and secondary data are required to collect. The primary data regarding selling quantity and its value of vegetable seeds, sales promotional activities from the distributors and for

knowing the consumer behaviour, data from farmers at village's level were collected. The selected farmers were interviewed with the help of questionnaire scheduled for preferred vegetable seed. Company wise quantities of vegetable seed sold in different blocks were collected from the distributors.

The secondary data regarding block wise area of selected vegetable crops and other related information were collected from the Agril. Statistics and Annual report of KVK Dhamtari. For the purpose of company profile, information were collected from the company annual report and company official website i.e. syngenta.co.in A separate questionnaire schedule was also prepared for collection of information from distributors.

3.6 Period of study

The study pertains to the agriculture year 2014-15.

3.7 Method of analysis

The market potential, market share were estimated by using simple arithmetic average and percentage statistical tools.

Market potential of vegetable seed – It is estimated by multiplying cropping area under crop with per hectare recommended doses of seed.

4. Market Potential

Market potential is the entire size of the market for a product at a specific time. It represents the upper limits of the market for a product. In this section, effort has been made to estimate the market potential of vegetable seeds in the study area. As mentioned in methodology chapter, market potential has been estimated by multiplying cropped area under crop with per hectare recommended seed rate. The block wise detail information of market potential of vegetable seed for tomato, chilli, cauliflower and okra seed in the study area have been given in the following section.

4.1. Market potential of Tomato seed

The block wise estimated market potential of tomato seed are given in Table 4.1.1.

Table 4.1.1: Block wise Market Potential of Tomato Seed

S. No.	Name of Block	Area under Tomato crop (Hectare)	Recommended Seed rate (Gm/hact.)	Total quantity required (Kg.)	Total selling quantity by major players (Kg.)	Total Selling quantity by Syngenta (Kg.)
1.	Dhamtari	275	600	165	140 (85)	38 (23)
2.	Kurud	280	600	168	135 (80)	35 (21)
3.	Nagri	185	600	110	97 (88)	30 (27)
4.	Magarlod	192	600	115	90 (78)	25 (22)
	Total	932	600	558	462 (83)	128/ (23)

Figure in bracket shows the percentage to total quantity required.

The total 558 kg quantity of tomato seed was required in the Dhamtari district out of which 85 percent quantity was sold out by major player. While only 23 percent quantity was sale out by Syngenta Company in the study area. Although block wise variation in seed quantity was also observed it was ranged from 21 to 27 percent.

4.2 Market potential of Chilli seed

The estimated market potential of chilli seed are provided in Table 4.2

Table 4.2: Block wise Market Potential of Chilli Seed

S. No.	Name of Block	Area under Chilli (Hectare)	Recommended Seed rate (Kg./hact.)	Total quantity required (Kg.)	Total selling quantity by major players (Kg.)	Total Selling quantity by Syngenta (Kg.)
1.	Dhamtari	145	1.3	188	135 (71)	45 (24)
2.	Kurud	150	1.3	195	150(77)	45 (23)
3.	Nagri	120	1.3	156	120 (77)	40 (26)
4.	Magarlod	115	1.3	150	110 (73)	35(23)
	Total	530	1.3	689	515 (75)	165 (24)

Figure in bracket shows the percentage to total quantity required.

The data shows that 75 percent quantity of chilli seed covered by major players to the total estimated quantity (689 kg) and Syngenta company alone sale out 24 percent quantity to the total required quantity of tomato seed in the study area.

4.3 Market potential of Cauliflower seed

The estimated market potential of cauliflower seed are provided in Table 4.3

Table 4.3: Block wise Market Potential of Cauliflower Seed

S. No.	Name of Block	Area under Cauliflower (ha)	Recommended Seed rate (gm/ha.)	Total quantity required (Kg.)	Total selling quantity by major players (Kg.)	Total Selling quantity by Syngenta (Kg.)
1.	Dhamtari	142	600	85	75 (88)	25 (29)
2.	Kurud	150	600	90	72 (80)	22 (24)
3.	Nagri	95	600	57	48 (84)	15 (26)
4.	Magarlod	100	600	60	45 (75)	11 (18)
	Total	487	600	292	240 (82)	73 (25)

Figure in bracket shows the percentage to total quantity required.

The total cauliflower seed required in the four blocks was 292 kg which is indicates entire size of market and the major players handled 82 percent in which Syngenta only selling 25 percents which was good achievement of company.

4.4 Market potential of Okra seed

The estimated market potential of okra seed are provided in Table 4.4

Table 4.1.4: Block wise Market Potential of Okra Seed

S. No.	Name of Block	Area under Okra (ha)	Recommended Seed rate (Kg./ha.)	Total quantity required (Kg.)	Total selling quantity by major players (Kg.)	Total Selling quantity by Syngenta (Kg.)
1.	Dhamtari	240	10	2400	1650 (69)	450 (19)
2.	Kurud	260	10	2600	1800 (69)	500 (19)
3.	Nagri	180	10	1800	1150 (64)	300 (17)
4.	Magarlod	210	10	2100	1400 (67)	350 (17)
	Total	890	10	8900	6000 (67)	1600 (19)

Figure in bracket shows the percentage to total quantity required.

It revealed from the table that only 67 percent quantity was sale out by major companies to total required quantity of okra seed in the study area. The Syngenta company sold out by only 19 percent quantity of okra seed its indicated that one fifth portion of market size covered by Syngenta company.

5. Conclusion

In agriculture, vegetables are vital sources of proteins, vitamins, minerals, dietary fibres, micronutrients, antioxidants and photochemical in our daily diet. Apart from nutrition, they also contain a wide array of potential phyto-chemicals like anti-carcinogenic principles and anti-oxidants (i.e. flavonoids, glucosinolates and isothyocynates). In India, vegetables are valuable biological assets especially genetic resources. India produces 14 percent (162.19million tonnes) of world's vegetables on 15 percent (9.21 million hectares) of world area under vegetables. Productivity of vegetables in India (17.3t/ha) is less than the world average productivity (18.8t/ha). (2013-14). The private sector has started to play a significant role in the seed industry over the last few years. At present, the number of companies engaged in seed production or seed trade is of the order of 400 or 500. The synthesis of Seed industry in India involves a complex chain of manufacturers, formulators and distributors. The state of Chhattisgarh has a number of Multinational/National companies supplies the vegetable seed in the state but substantially having a major share of Syngenta Company in Dhamtari district of Chhattisgarh. The products of Syngenta Vegetable seed are popular among farmers in Dhamtari district. Many farmers involve to grow the vegetables in this district on commercial basis. Syngenta organization assigned the project work for its market status for future strategy or comparing to other competitor in the study area.

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