



A Study on Biopesticides Market in Telangana

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Authors' contributions

This work was carried out in collaboration among all authors. Author KNK designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors PR and DSC managed the analyses of the study. Author Seema managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Biopesticides are a crucial component of integrated pest management programs for pest control. In India, so far only 12 types of biopesticides have been registered under the Insecticide Act, 1968. The present study entitled 'A study on biopesticides market in Telangana' was intended to examine the marketing mix and BCG Matrix for selected biopesticide companies, awareness towards biopesticides. The results revealed that K N Bioscience company, Pratibha Biotech company and Varsha Bioscience company biopesticide products are useful for all crops and these companies products are mostly available in Telangana, Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra and Gujarat region. The prices of chemical pesticides in all categories are more than the price of biopesticides whereas the price difference ranges between Rs 230 to Rs 680. The BCG analysis shows that Verchi power and Paci-N power products of K N Bioscience company fall in the stars quadrant, Biostrom and Shock products of Varsha Bioscience company fall under the question marks quadrant, CID, Pro-kill and De-bug are the products of Pratibha Biotech company fall in cash cow quadrant. VBT and Toxin products of Varsha Bioscience company fall under the dog's quadrant.

Keywords: *Biopesticide; Boston consulting group; marketing mix, quadrant.*

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1. INTRODUCTION

Agriculture has to face the destructive activities of numerous pests like fungi, weeds, and insects from time immemorial, leading to a radical decrease in yields. Violative pesticide residues also sometimes raise food safety concerns among consumers and pose trade impediments for export crops [1,2]. Therefore, an eco-friendly alternative is the need of the hour. Biopesticides or biological pesticides based on pathogenic micro organisms specific to a target pest offer an ecologically sound and effective solution to pest problems [3,4]. The global biopesticides market is projected to grow at a CAGR of 14.7 per cent from an estimated value of USD 4.3 billion in 2020 to reach USD 8.5 billion by 2025 [5,3]. The North American region accounted for the largest share of the global market in 2019 [6,7]. North America followed by Europe are the two largest biopesticides markets at present and they are expected to account for a significant proportion of the biopesticides production during the next decade. In the last 10 years, consumption of biopesticides increased by 23 per cent, while that of chemical pesticides grew only by 2 per cent. The main reason for such a massive boost in biopesticides is the government's support for the biofertilizer industries and rising awareness among the farmers [8-10].

In 2018-19, the percentage of cultivated land on which chemical and biopesticides were used was 49.2 per cent and 6.0 per cent. The consumption of biopesticides in India is showing an increasing trend from 2014-15 to 2017-18 as consumption has increased by 37.7 per cent during this period. The estimated demand for biopesticides for the year 2019-20 was 110 metric tonnes, whereas, the consumption of biopesticides in Telangana for the year 2017-18 was 77 metric tonnes.

1.1 Objectives of the Study

- 1) To examine the 4P's of marketing of biopesticides in Warangal district of Telangana.
- 2) To develop a BCG matrix for the biopesticide firms.

2. MATERIALS AND METHODS

For collecting primary data three mandals, where biopesticide usage is more in Warangal district are selected for the study. From the three mandals two villages each are selected. From

each village, data is collected from 20 farmers. Hence, in total data is collected from 120 farmers. To get better results, proportionate sampling is used to select the sample farmers. From each mandal, two or three dealers are contacted to collect data regarding the sale of biopesticides. From the biopesticide firms operating in Telangana, three firms are selected to collect data regarding their products and marketing strategies. Mandals and villages selected in Warangal district. The data collected was analyzed to attain the stated objectives by using market growth rate and relative market share were calculated.

- 1) Market growth rate: $(\text{Individual sale this year} - \text{Individual sale last year}) / \text{Individual sale last year} \times 100$
- 2) Relative market share: $(\text{Firm market share or revenue} / \text{Largest competitor's market share or revenue}) \times 100$

3. RESULTS AND DISCUSSION

Place:- The three selected biopesticide companies i.e., (K N Biosciences, Pratibha Biotech, Varsha Bioscience) and their products are mostly available in Telangana, Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra and Gujarat region and also sold in input dealers' shops.

Product:- The three selected companies branded their biopesticide products and sell the products in the market. The products of K N Biosciences company are VerchiPower, Meta Power, Paci-N-Power and BB Power, the products of Pratibha Biotech are Pro-kill and De-Bug and CID. Varsha Bioscience products are VBT, Toxin, Biostrom and Shock. Except for two products Meta power and Verchi power, all other biopesticides of the selected companies are available in granular form. The biopesticide products of K N Bioscience are targeted for Paddy, vegetables, chili and cotton crops. The biopesticides products of Pratibha Biotech company are useful for controlling pests on chili and cotton crops. The Varsha Bioscience company products are suitable for fruits, vegetables and cotton crops.

Price:- The prices of products of the three biopesticide companies in the same category are different from each other and the prices of chemical pesticides in all categories are more than the price of biopesticides. The price difference ranges between Rs 230 to Rs 680. Similarly, the spraying cost of chemical pesticide is more by 31.5 per cent, 33 per cent and 45 per

cent than that of biopesticides in Chili, Paddy and Cotton crops.

Promotion:- Training, demonstrations, T-shirt campaigns are major promotional activities taken up by the three companies next to product literature, posters, banners and dealer's general meetings.

3.1 BCG Matrix

The Boston Consulting Group Product Portfolio matrix is designed to help with long-term strategic planning to help businesses consider growth opportunities by reviewing its portfolio of products to decide where to invest, which products to discontinue and which products to develop further. This growth-share matrix was created by Bruce Henderson of the Boston Consulting Group. It provides a strategy for analyzing products, according to growth and relative market share. The products of the three selected companies have been analyzed using the BCG matrix to know in which quadrant they fall and also to suggest appropriate strategies for biopesticide firms.

3.2 Market Share and Growth of K N Bioscience Company Products

In the study area, the annual sales data of the company for biopesticide products was collected from sample dealers and it has been noticed that the company has increased its compound annual growth rate from 2017 to 2019 by 10.26 per cent, whereas the market share of the company works out to 11.3 per cent of the total

market size of 12 crores in the study area and the growth rate for the company was 13.75 per cent in the year 2019. The data is shown in the Table 1.

3.3 Market Share and Growth of Pratibha Biotech Company Products

In the study area, the annual sales data of the company for biopesticides products was collected from sampled dealers and it has been noticed that the company has increased its compound annual growth rate from 2017 to 2019 by 8.72 per cent. whereas the market share of the company works out to 8.3 per cent of the total market size of 12 crores in the study area and the growth rate for the company was 16.1 per cent in the year 2019. The analyzed data is presented in the Table 2.

3.4 Market Share and Growth of Varsha Bioscience Company Products

In the study area, the annual sales data of the company for biopesticides products was collected from sampled dealers and it has been noticed that the company has increased its compound annual growth rate from 2017 to 2019 by 24 per cent, whereas the market share of the company worked out to 6.1 per cent of the total market size of 12 crores in the study area and the growth rate for the company was 29.6 per cent in the year 2019. The data is shown in the Table 3.

Table 1. Sales data of K N Bioscience India Pvt Ltd (2017-19)

S.No	Products	Sales (in lakhs)			Market growth %	Market share %
		2017	2018	2019		
1	Paci-N-Power	29.5	32.4	41.4	27.7	3.4
2	Meta Power	27.6	30.6	33.5	9.4	2.79
3	Verchi Power	21.6	25.8	34.8	34.8	2.9
4	BB Power	29.1	31.5	34.8	10.4	2.9
Total		107.8	120.3	144.5	20.11	12.0

Table 2. Sales data of Pratibha Biotech Pvt Ltd (2017-19)

S.No	Products	Sales (in lakhs)			Market growth %	Market share %
		2017	2018	2019		
1	De-bug	29.1	32.3	36.3	12.3	3.0
2	Pro-Kill	27.7	29.3	34.2	16.7	2.8
3	CID	21.4	25.1	30	19.5	2.5
Total		78.2	86.7	100.5	16.1	8.3

Table 3. Sales data of Varsha Bioscience India Pvt Ltd (2017-19)

S.No	Products	Sales (in lakhs)			Market growth %	Market share %
		2017	2018	2019		
1	VBT	14.7	19.8	24.2	22.2	2.01
2	Toxin	12.0	16.4	20.1	21.5	1.67
3	Shock	2.6	8.8	11.6	31.8	0.96
4	Biostorm	9.42	12.4	17.6	41.9	1.46
	Total	38.7	57.4	73.5	29.6	6.1

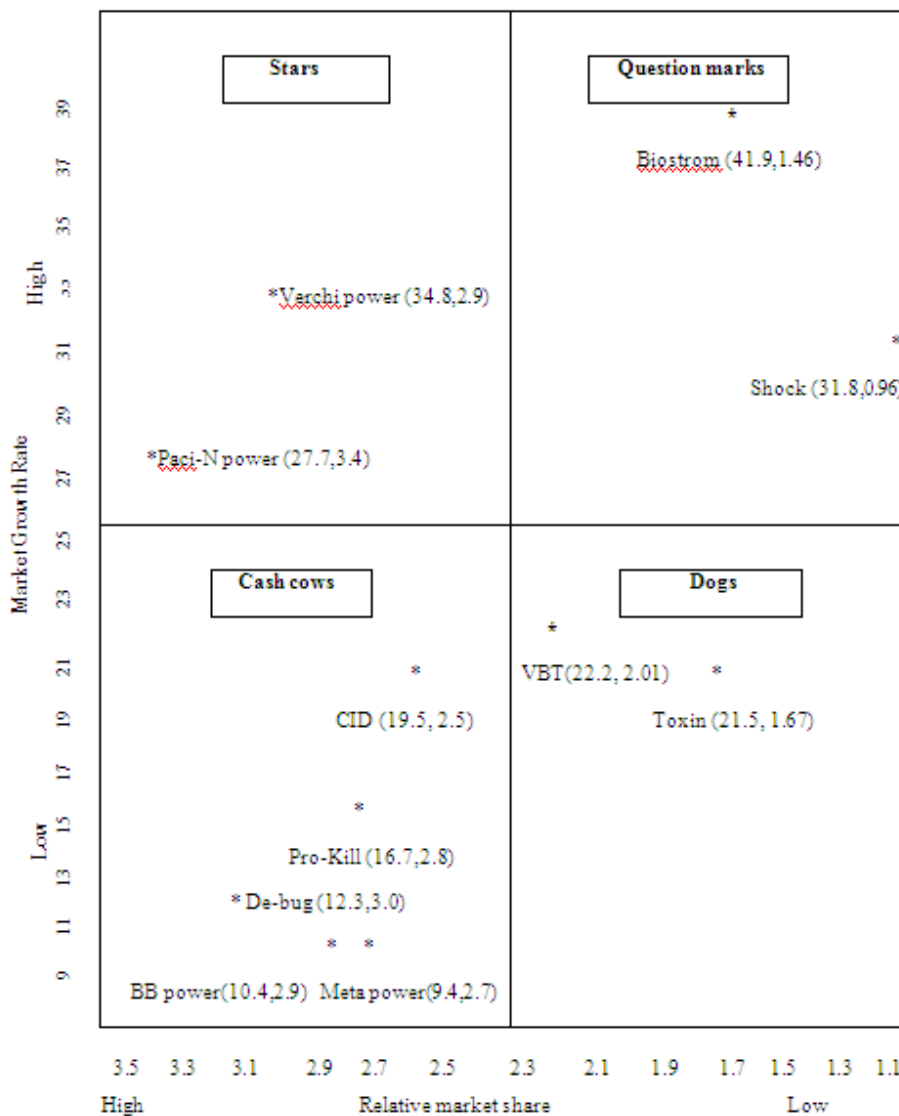


Fig. 1. BCG Matrix for three biopesticide firms products

It is noticed that Verchi power and Paci-N power of K N Bioscience company fall in stars quadrant, where the relative market share and market growth rate are high. The investments can be made on these products to further increase their

market share. The Biostorm and Shock products of Varsha Bioscience company fall under the question marks quadrant. Which implies that the market growth rate is high, but the relative market share is low. Since the market growth

rate is high, companies can think about investing in these products. The products CID, Pro-kill, De-bug, BB Power and Meta power of Pratibha Biotech and K N Bioscience companies fall in the cash cows quadrant. Hence, enough investment to maintain the market share should be made by the companies as the benefits that occurred from these products can be invested in stars and question marks. In this quadrant market growth rate is low. The products VBT and Toxin of Varsha Bioscience companies fall under the dog's quadrant, where both the market growth rate as well as relative market share, are low. Biopesticide companies can think about a strategy of divesting or they can think about creating new uses for these products.

4. CONCLUSIONS

- Based on the dealer's survey, it can be concluded that biopesticide companies are not putting in the required efforts to create awareness about the usage of their products and to promote their products.
- K N Biosciences has a better market reach compared to the biopesticide products of the other two selected companies.

5. SUGGESTIONS

- Biopesticide companies must put efforts in the form of farmer meetings, demo in fields and local advertising to increase the sale of their products.
- Biopesticide companies also have to take care to see that their products are available on-demand in the dealer shops.

DISCLAIMER

The company name used for this research is commonly and predominantly selected in our area of research and country. There is absolutely no conflict of interest between the authors and company because we do not intend to use this company as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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