



ESTIMATED DEMAND OF BIO PESTICIDES IN INDIA-A VIVID PICTURE

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ABSTRACT

Bio pesticides are pesticides which are formed by using natural materials like plants, animals and its excreta, bacteria and minerals. Bio pesticides are often used in Integrated Pest Management(IPM) also. Conventional pesticides, on the other hand, use synthetic materials to control pests. However, due to increased awareness about the detrimental effects of conventional pesticides, the demand for bio pesticides has been steadily increasing. With the organic farming being an influential factor in the current farming setup, bio pesticides play a significant role in the entire organic inputs sector. Bio pesticides are need of the hour due to increase in pest resistance and yield. The global biopesticides market size is projected to grow at a CAGR of 14.7% from an estimated billion value of USD 4.3 billion in 2020 to reach USD 8.5 billion by 2025. Thus, the growing organic products market has made a considerable impact in the demand for bio pesticides. Against this backdrop, the present study is taken up to analyse the estimated demand of bio pesticides in India.

KEY WORDS: Bio pesticides, demand

INTRODUCTION

Bio pesticides are pesticides which are formed by using natural materials like plants, animals and its excreta, bacteria and minerals. Bio pesticides are often used in Integrated Pest Management(IPM) also. Conventional pesticides, on the other hand, use synthetic materials to control pests. However, due to increased awareness about the detrimental effects of conventional pesticides, the demand for bio pesticides has been steadily increasing. With the organic farming being an influential factor in the current farming setup, bio pesticides play a significant role in the entire organic inputs sector. The threat that the conventional pesticides pose among humans, animals and nature has long been debated and bio pesticides have emerged as the solution. Sustainable solutions like Bio pesticides are need of the hour due to increase in pest resistance and yield. The global biopesticides market size is projected to grow at a CAGR of 14.7% from an estimated billion value of USD 4.3 billion in 2020 to reach USD 8.5 billion by 2025. Thus, the growing organic products market has made a considerable impact in the demand for bio pesticides. Against this backdrop, the present study is taken up to analyse the estimated demand of bio pesticides in India.

OBJECTIVES OF THE STUDY

- To depict the estimated demand of bio pesticides in India
- To analyse the estimated demand of bio pesticides with appropriate statistical tools

SCOPE OF THE STUDY

The scope of the study is restricted to the estimated demand of bio pesticides in India. The estimated demand for bio pesticides in various states and union territories in India, for the period from 2014-2019 have been collected and analyzed by adopting various statistical tools.

METHODOLOGY

This paper is based on Secondary data sourced from annual reports and other published sources.

TOOLS FOR ANALYSIS

Descriptive statistics have been employed to analyse the data and inferences were drawn.

The following table shows the estimated demand of bio pesticides in various states in India.



TABLE:1.1
ESTIMATED DEMAND OF BIO-PESTICIDES IN VARIOUS STATES DURING 2014-15 TO 2018-19
As on 28.11.2019 Unit: M.T. Technical Grade

S. No.	States/U Ts	2014-15	2015-16	2016-17	2017-18	2018-19
1	Andhra Pradesh	55	30	40	45	48
2	Bihar	278	320	364	370	461
3	Chhattisgarh	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
4	Goa	13	22	<i>NR</i>	4	<i>NR</i>
5	Gujarat	297	295	327	323	330
6	Haryana	350	360	400	400	420
7	Himachal Pradesh	40	20	2	1.45	2
8	Jharkhand	3	3	11	50	54
9	Karnataka	580	630	630	630	630
10	Kerala	473	473	667	729	789
11	Madhya Pradesh	302	413	1193	365	372
12	Maharashtra	3876	4353	4353	3957	3957
13	Orissa	315	315	315	315	315
14	Punjab	138	138	126	278	284
15	Rajasthan	18	19	19	19	19
16	Tamil Nadu	197	282	298	936	555
17	Telangana	75	75	<i>NR</i>	92	101
18	Uttar Pradesh	43	45	47	47	47
19	Uttaranchal	38	43	47	60	81
20	West Bengal	1200	1100	1265	1265	1265
SubTotal		8290	8938	10105	9887	9418
North-Eastern						
21	Arunachal Pradesh	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	17
22	Assam	180	<i>NR</i>	<i>NR</i>	217	234
23	Manipur	1	1	<i>NR</i>	1.20	<i>NR</i>
24	Meghalaya	15	<i>NR</i>	23	<i>NR</i>	<i>NR</i>
25	Mizoram	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
26	Nagaland	22	24	24	25	26
27	Sikkim	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
28	Tripura	266	235	279	262	<i>NR</i>
SubTotal		484	260	326	505	277
Union Territories						
29	Andaman & Nicobar	0.75	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
30	Chandigarh	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
31	Dadra & Nagar Haveli	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
32	Daman & Diu	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
33	Delhi	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	15
34	Jammu & Kashmir	1	1	2	2	2
35	Ladakh	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
36	Lakshadweep	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>	<i>NR</i>
37	Pondicherry	20	33	16	17	16
SubTotal		21	33	16	17	31
Grand Total		8795	9230	10447	10409	9725

Source: States/UTs Zonal Conferences on Inputs of Plant Protection during Kharif & Rabi Seasons. NR : Not reported by States/UTs.



It can be seen that apart from Nagaland, no other North-Eastern states have registered continuous demand in the years. The same scenario can be seen in Union Territories as well, Pondicherry and Jammu and Kashmir have registered continuous demand.

Telangana and Goa have exhibited irregular trend, whereas Chattisgarh has not shown any demand for bio pesticides in the given years. In the state of Tamil Nadu, the demand shows an increasing trend except in the year 2018-19.

TABLE:1.2
Descriptive Statistics

		2014-15	2015-16	2016-17	2017-18	2018-19
N	Valid	21	21	21	21	21
	Missing	0	0	0	0	0
Mean		396.24	427.24	486.71	472.69	465.43
Median		138.00	138.00	126.00	278.00	284.00
Mode		1 ^a	1 ^a	2 ^a	1 ^a	2
Std. Deviation		844.910	939.316	960.611	868.949	862.496
Variance		713872.190	882313.990	922773.014	755071.918	743899.957
Skewness		3.861	4.011	3.590	3.542	3.645
Std. Error of Skewness		.501	.501	.501	.501	.501
Kurtosis		16.005	17.140	14.302	14.050	14.724
Std. Error of Kurtosis		.972	.972	.972	.972	.972

Source: Computed Data

The above table exhibits the computed data of descriptive statistics for the states that have registered continuous demand; as such 21 states have been included for the study. The mean value of the estimated demand for bio pesticides have been increasing in the given years. A low standard deviation can be seen in major years, which indicates close association to mean. Other descriptive statistics like skewness, kurtosis can also be seen.

CONCLUSION

The growing demand scenario is well observed in majority of the states. This demand is an indicator of paradigm shift in the farming scenario. An increased share of bio pesticides in the pesticides market can be seen in the analyzed data. The increase in demand is met out by the supply, which balances the same. Thus, a new era has been ushered in, with the growing realization about organic inputs in general and bio pesticides in particular. With effective marketing strategy, bio pesticides are sure to emerge as an effective alternate to the conventional pesticides in the near future. A promising trend shows that due to increased awareness about sustainable solutions to conventional farming, chemical pesticides might get replaced with bio pesticides very soon. It is high time the policy makers take principled stand towards increasing the subsidies and incentives of bio pesticides, which will enhance both the production and marketing of the bio pesticides sector.

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