Marketing and Market Strategic Development

Commercialization of Biopesticides in Uttar Pradesh

Group Assignment as part of EP60002: Marketing And Market Research

Group 18
Indian Institute of Technology, Kharagpur

Our Team

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Agenda

- Market Study
- PESTEL Analysis
- Data Collection & Analysis
- SWOT Analysis
- Market Segmentation
- Risk Analysis
- Supply and Demand Market Trend analysis
- Market and marketing strategies under resource constraints.

Introduction

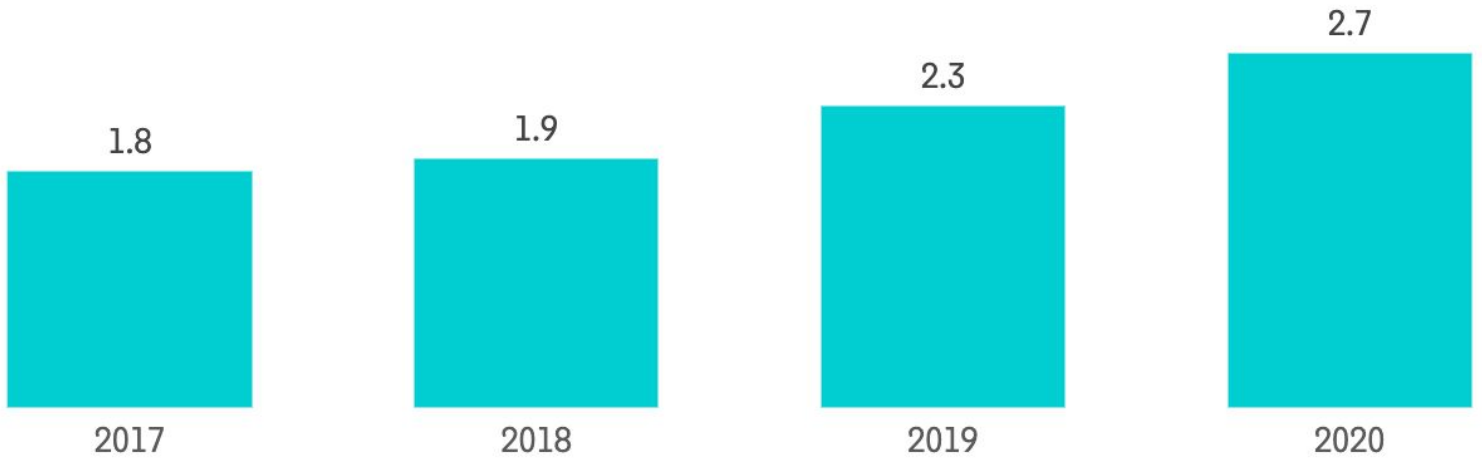
- Over the past 50 years, crop protection has relied heavily on synthetic chemical pesticides, but their availability is now declining as a result of new legislation and the evolution of resistance in pest populations.

- **Bio-pesticides** are pest management agents based on living micro-organisms or natural products. They have proven potential for pest management and they are being used across the world.

- The Biopesticides and Pollution Prevention Division of the Environmental Protection Agency, which registers biopesticides in the U.S., classifies classified biopesticides into three categories: ***biochemical, microbials and plant-incorporated protectants*.**

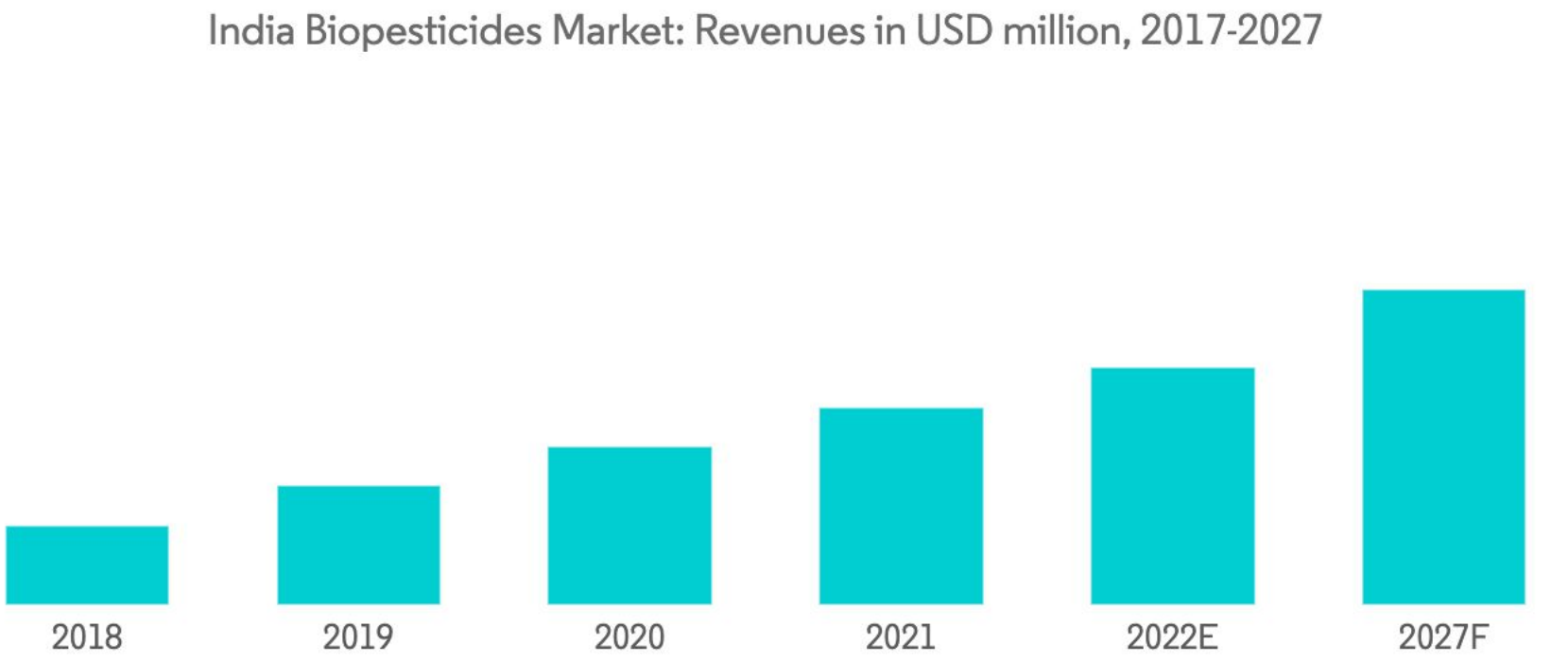
Market Information

India Biopesticdes Market: Area under cultivation in million hectares, Organic, 2017-2020



Source: FiBL

Market Information



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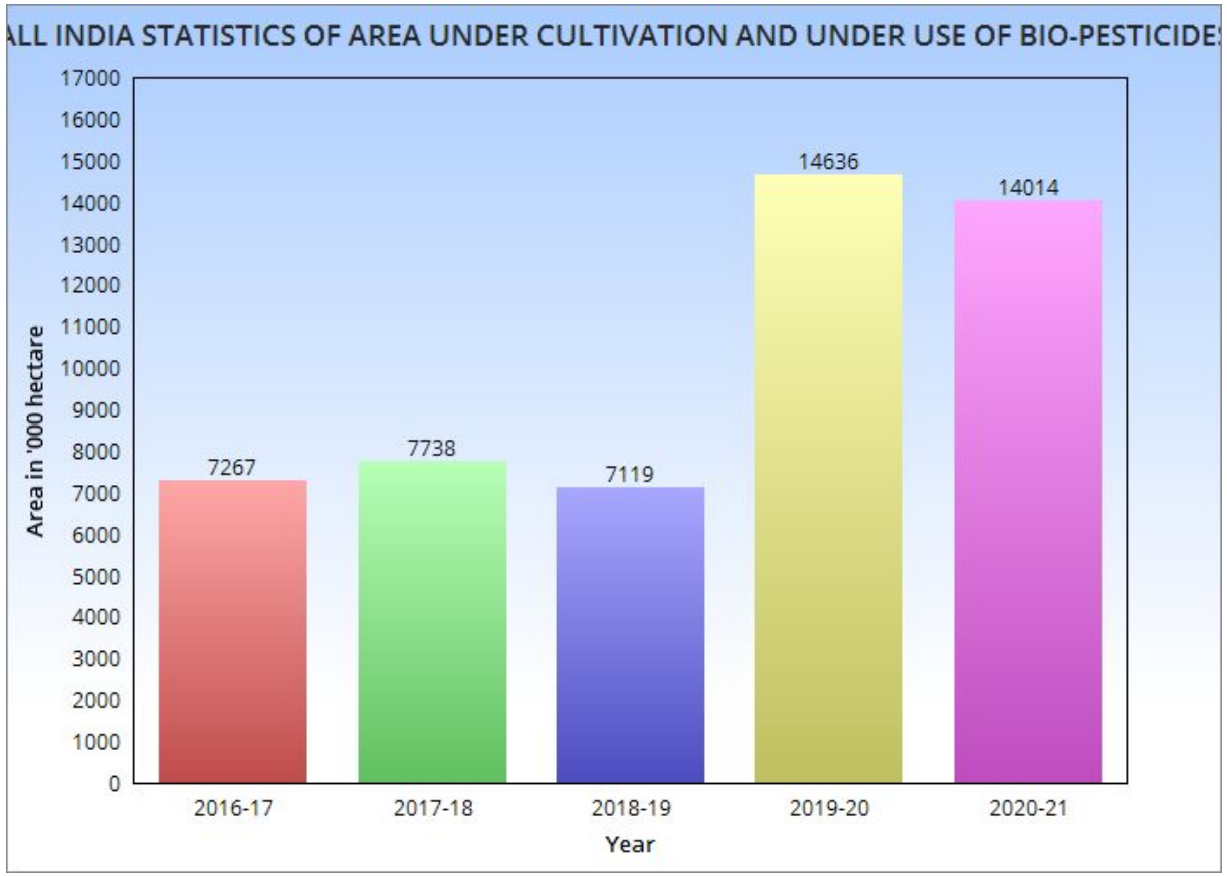
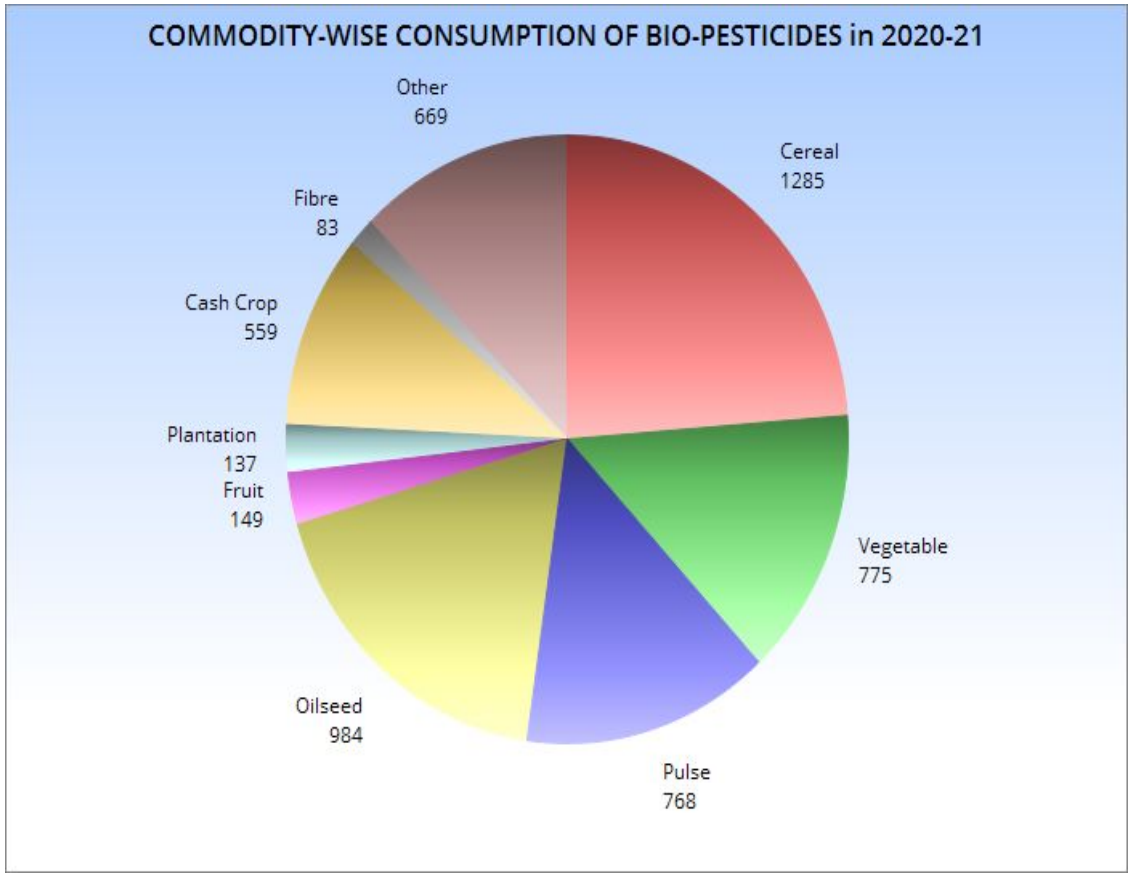
Data Collection





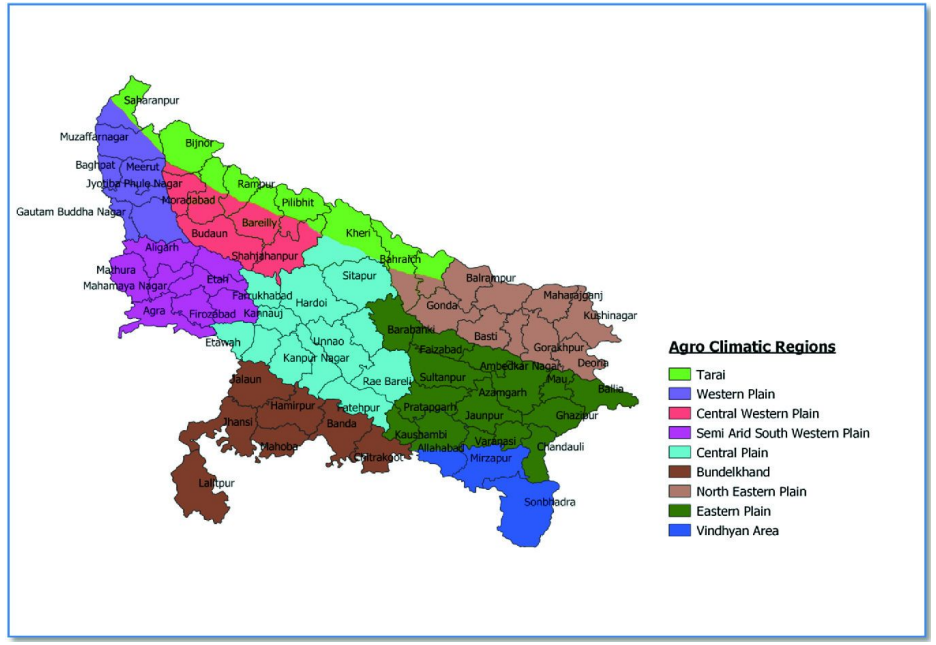
Data Collection

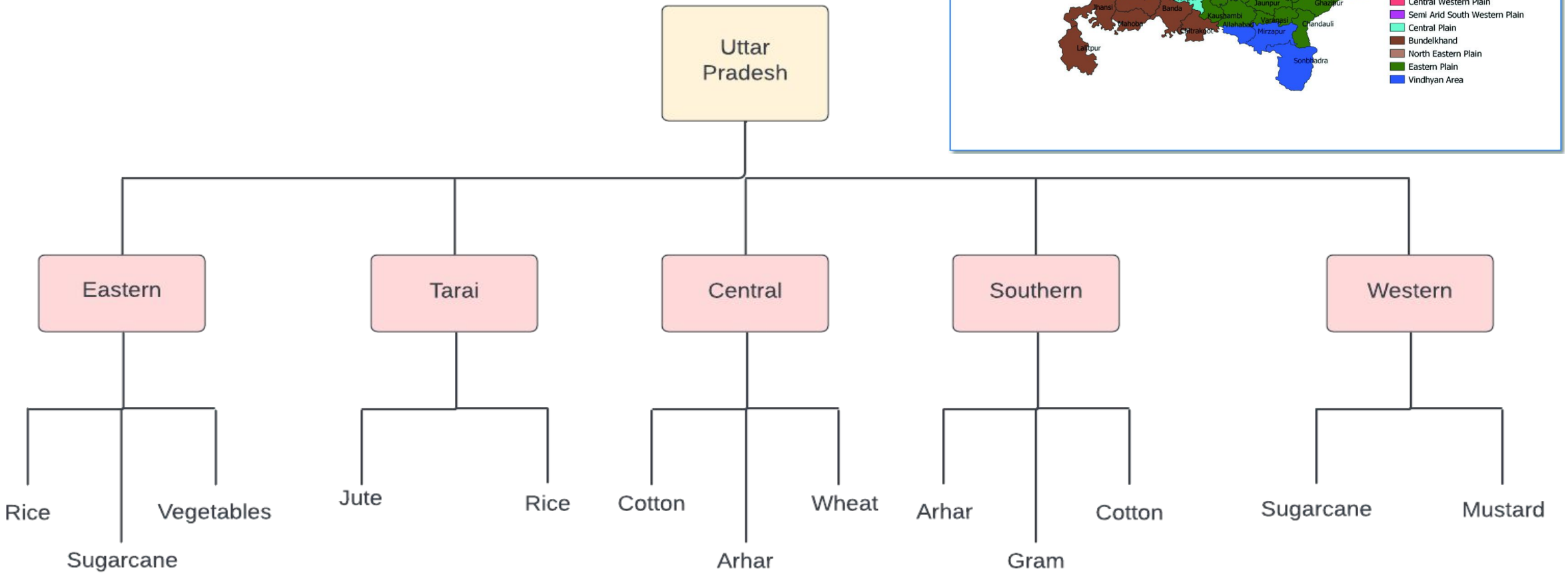
All the data is collected from (MoA 2021) and is shown in the list below

1. Consumption of bio-pesticides formulation in various states (2016-17 to 2020-21)
2. Area under cultivation of chemical \& bio-pesticides (2016-17 to 2020-21)
3. Estimated demand of bio-pesticides in various states (2016-17 to 2020-21)
4. Commodity-wise consumption bio-pesticides (2016-17 to 2020-21)
5. Pesticide wise statistics of import of key pesticides (2016-17 to 2020-21)
6. Pesticide wise statistics of export of key pesticides (2016-17 to 2020-21)

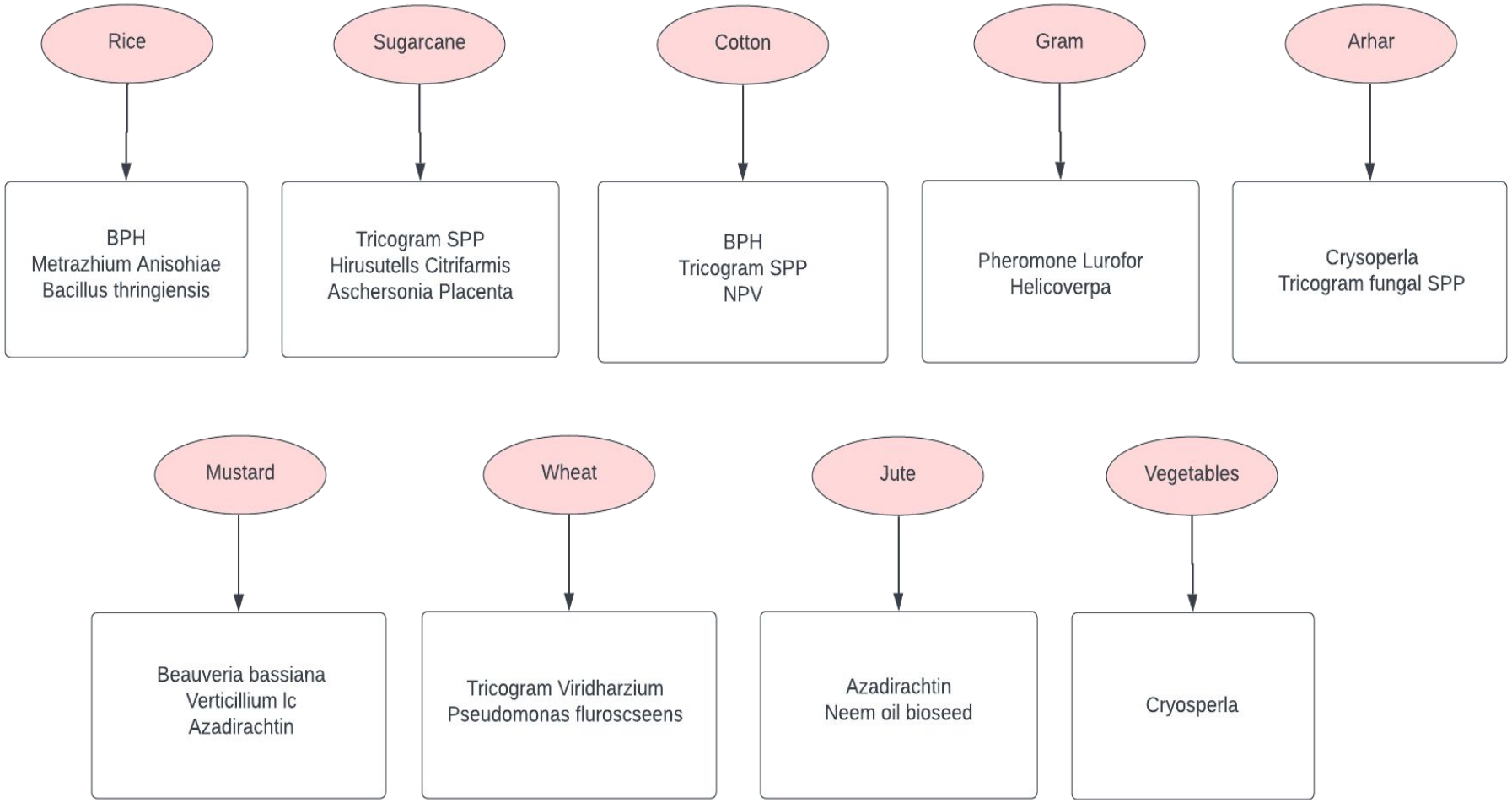
(Note: we have shared all the data resources in our submission)

Market Segmentation





Market Segmentation



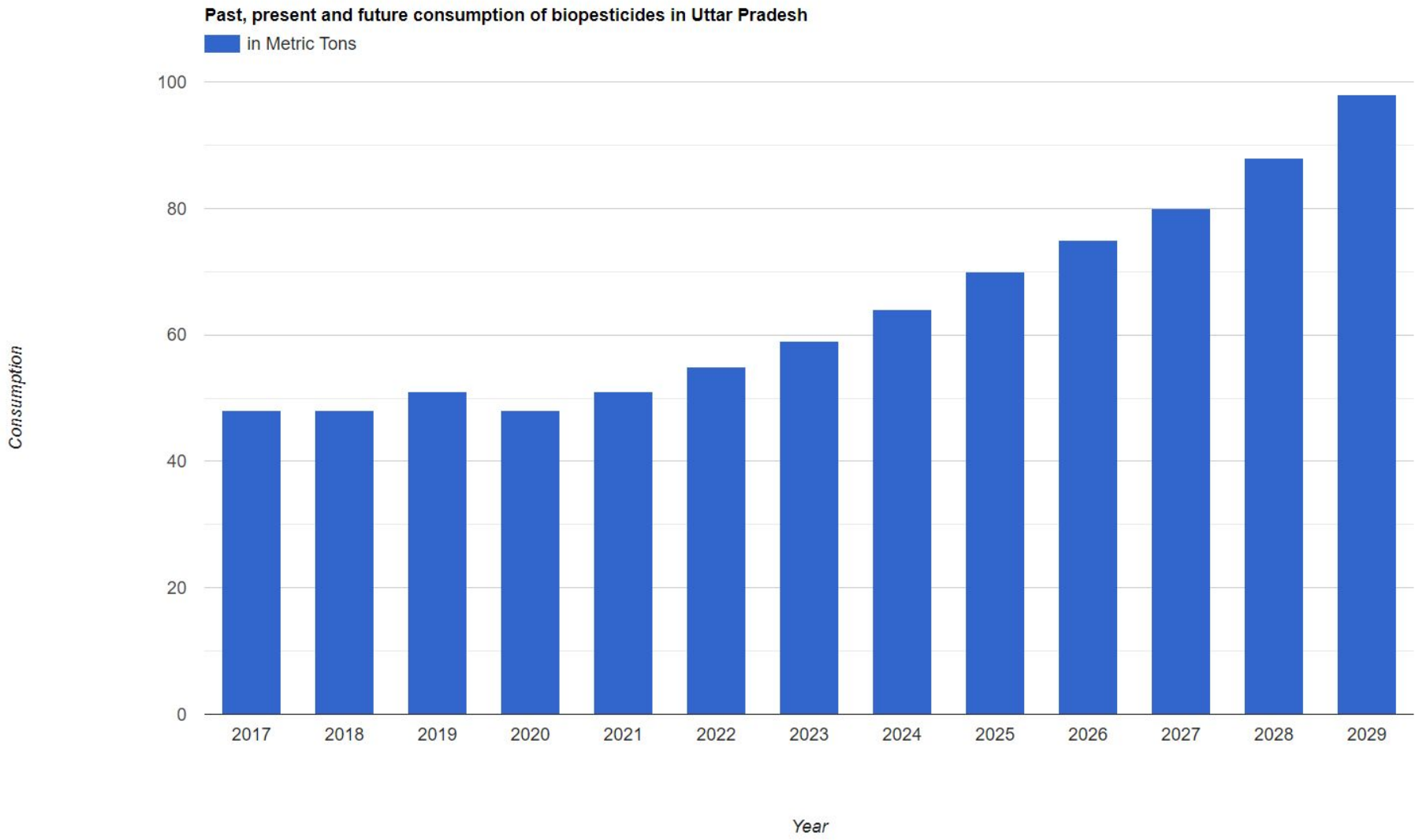
Supply and Demand Market Trend analysis

Past :
According to data from Ministry of Agriculture of India it has shown the demand and consumption of biopesticide in Uttar Pradesh at a really low yet steady rate. Uttar Pradesh has consumed 0.55-0.65% of the total consumption of biopesticide in India over the past couple of years. With this excessively low demand of biopesticide in the state the supply was enough to cater to the needs of the agricultural land.

Present :
Pandemic has negatively impacted the growth of biopesticide market due to hampering supply chain and the growth rate has lowered from what was predicted by various source prior to the pandemic. However still the supply and demand have not lowered much from previous years.

Future :
With the dynamics of pandemic coming to end, increasing demand of quality and organic food the market and adoption of more and more organic cultivable land the demand is certainly expected to increase in coming years. According to multiple reports the biopesticide market CAGR in India is expected to between 7-13%. With Uttar Pradesh being highly cultivable land with being in top supplier of various commodities in India and very less demand presently this growth rate is certainly expected to be higher in the coming years.

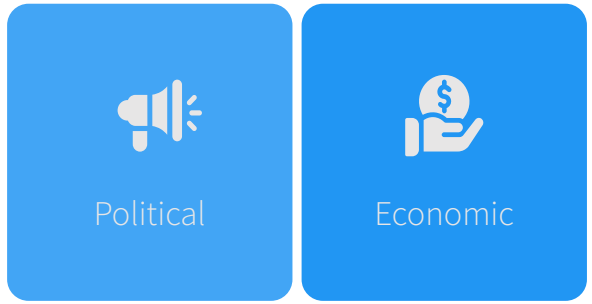
Supply and Demand Market Trend analysis



PESTEL Analysis

Political

1.Tax Policy
2.Trade Restrictions
3.Tariffs
4.Bureaucracy

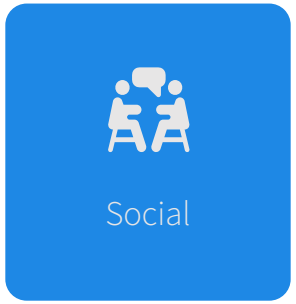


Economic

1.Economic Growth Rates
2.Interest Rates
3.Exchange Rates
4.Inflation

Social

1.Cultural Aspects
2.Population Growth Rates
3.Age Distribution
4.Health Consciousness



Technological

1.R&D Activity
2.Automation
3.Technological Incentives
4.Rate of Change of Technology

Legal

1.Industry Regulation
2.Licenses and Permits
3.Labor Laws
4.Intellectual Property

Environmental

1.Weather Conditions
2.Temperature
3.Climate Change
4.Pollution

PESTEL Analysis

Political Analysis

- **Tax Policy -** Reduction of GST on pesticides from 18 per cent to 5 percent.
- **Trade Restriction** - No trade restrictions

Economic Analysis

- **Economic Growth Rates -** The global biopesticides market is projected to grow at a CAGR of 14.7% from an estimated value of USD 4.3 billion in 2020.
- **Inflation -** Inflation Rate in India is expected to be 6.30 percent by the end of this quarter as opposed to 6.18% in 2020.
- **Exchange Rates -** India exports of pesticides to the world worth USD 2064 million in 2016 and represented 6.7% of the world exports.

Social Analysis

- **Cultural Aspects**
  - Biopesticides' low shelf life is a major concern for farmers.
  - Biopesticides consist primarily of living microbes; temperature fluctuations, humidity and exposure to ultraviolet radiation dampen their efficacy
  - Moreover, any contamination severely reduces its effectiveness in field conditions.
- **Health Consciousness**
  - Indians are increasingly becoming more aware to the adverse effects of chemical pesticides and are thus turning to bio crops. India is the fifth largest adopter of biotech crop in the world.

PESTEL Analysis

Legal

- **Industry Regulation -** 2 authorities:
  - Central Insecticides Board and Registration Committee (CIBRC)
  - Food Safety and Standards Authority of India (FSSAI)
- **Licenses and Permits -**
  - Presently, only 12 types of biopesticides are registered under the Insecticide Act, 1968 in India.
  - There are 970 biopesticides companies registered with (CIBRC)

Environmental

- **Weather Conditions -** The persistence of biopesticides is affected by a range of factors including UV radiation exposure, temperature, rainfall, etc
- **Temperature -** Biopesticides require normal temperature conditions and Uttar Pradesh has a good climate when it comes to manufacturing various biopesticides.
- **Pollution -** Biopesticides are usually inherently less toxic than conventional pesticides. Biopesticides generally affect only the target pest and closely related organisms, in contrast to broad spectrum, conventional pesticides

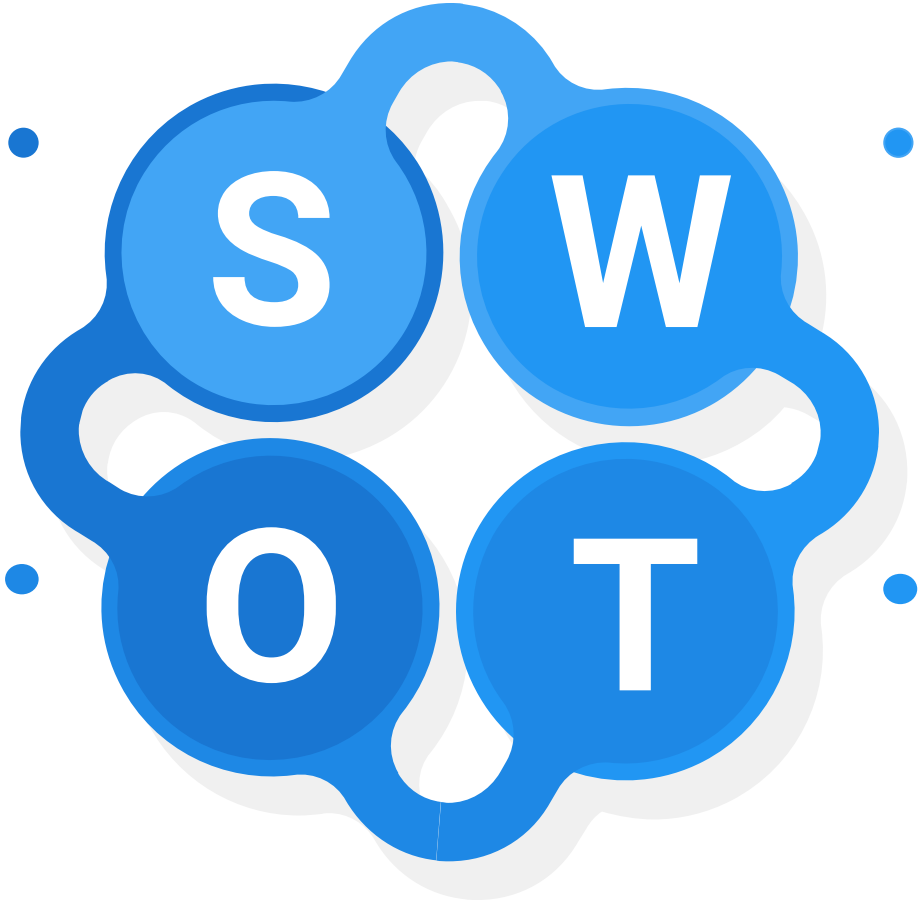
Technological

- **R&D Activities -** Major players in the biopesticides market are undertaking acquisitions and focusing on developing an innovative product portfolio by making significant investments in R&D activities.
- **Technological Incentives** - A novel synthetic typically requires $250 million and nine years for development and regulatory approval while a biopesticide needs less than $10 million and four years for the same process.

SWOT Analysis

Strengths

- More effective than conventional chemical based pesticides
- Supporting Government Policies



Weaknesses

- Lack of maintenance of quality, non-availability of bioagents unlike chemical pesticides & storability
- Slow-paced registration of biopesticide products
- No quality audit/inspection & Improper packaging
- User/consumer awareness issues

Opportunities

- Significant scope of technology advancement to improve effectiveness of biopesticides.
- Underdeveloped Market
- Strong Distribution Network

Threats

- Negative perceptions due to illegal products
- Exploitation of farmers due to unchecked industry regulations
- Inefficiency of bio-pesticides in certain scenarios
- Limited persistence due to environmental factors

SWOT Analysis

Strengths

- **More effective than conventional pesticides**
  - They do not contaminate the environment.
  - They decompose very easily as they are made up of bio compounds
  - It is effective in lesser quantity thus resulting in lower operator exposure.
  - Bio compounds can be lab-designed to target specific pests

- **Supporting Government Policies**
  - National Agricultural Policy (2000)
  - The National Mission for Sustainable Agriculture (NMSA) under the National Action Plan on Climate Change (NAPCC
  - Zero Budget Natural Farming (ZBNF)

SWOT Analysis

Weaknesses

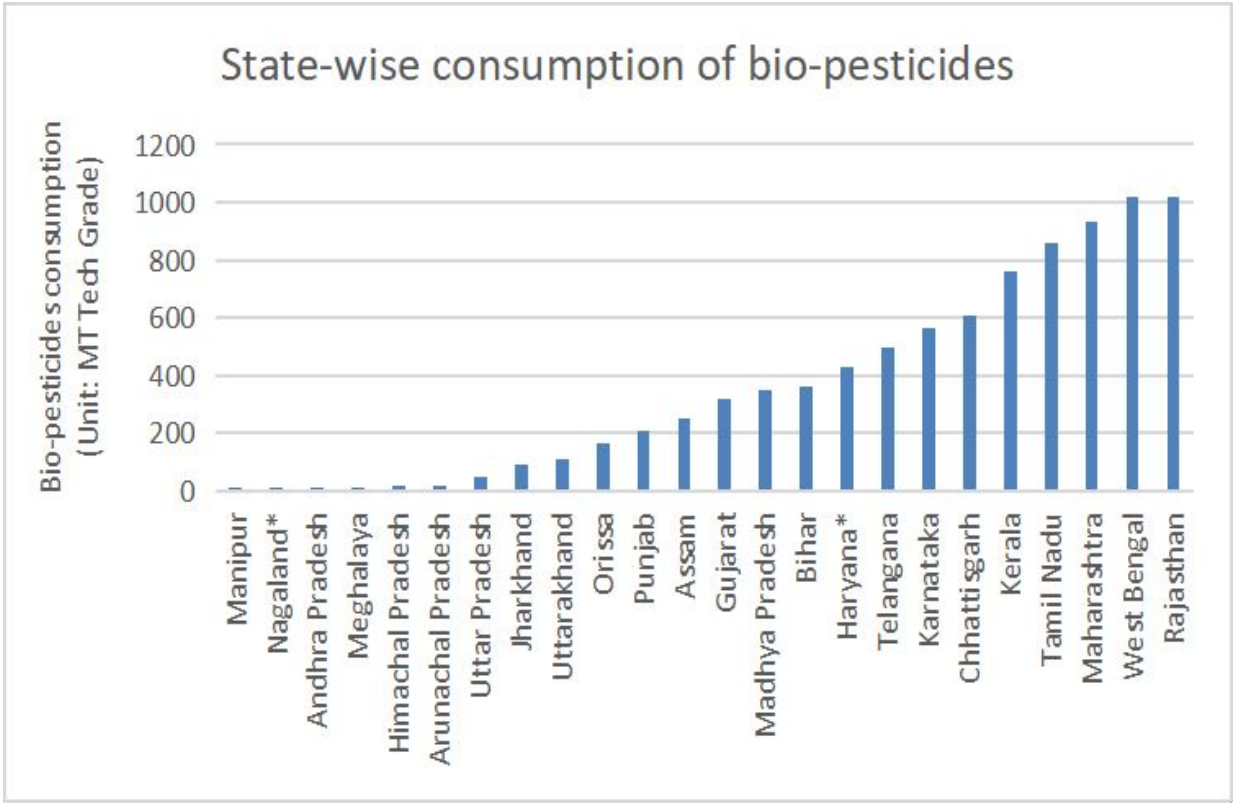
- Lack of maintenance of quality, non-availability of bioagents unlike chemical pesticides & storability
- Slow-paced registration of biopesticide products
- No quality audit/inspection
- Improper packaging
- User/consumer awareness issues

SWOT Analysis

Opportunities

- **Significant scope of technology advancement**
  - Developing techniques to improve shelf life and host range of biopesticides
  - Reduce cost of production

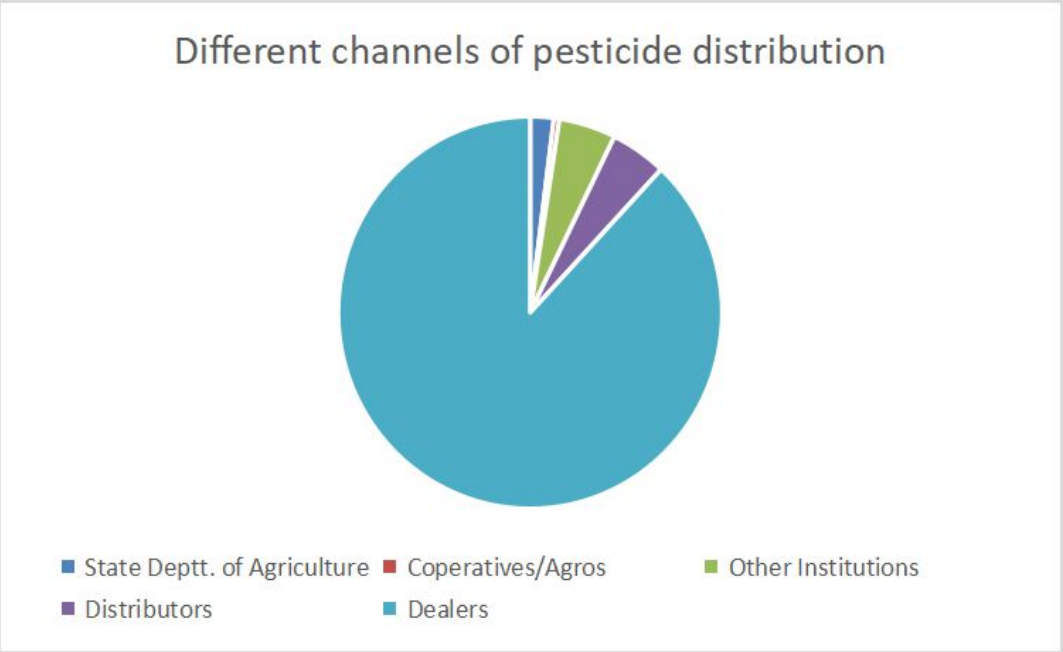
- **Underdeveloped Market**
  - Uttar Pradesh is second largest crop producing state in India
  - But contributes to only 0.55% of nation-wide biopesticide consumption

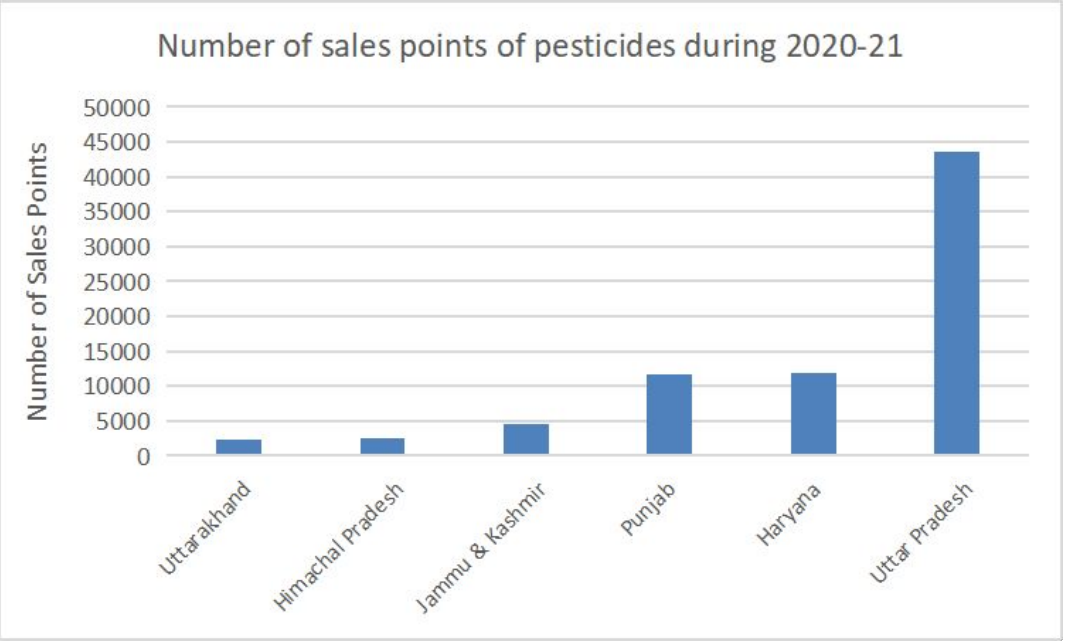


SWOT Analysis

Opportunities

- **Strong Distribution Network**
  - This is the highest number of sales points (more than 57%) in Northern India and around 18.07% of sales point in India.
  - It has 864 State Deptt. of Agriculture offices, 205 Coperatives/Agros, 2093 other Institutions, 2060 distributors and 38438 private dealers.





SWOT Analysis

Threats

- Negative perceptions formed due to illegal products
- Exploitation of farmers due to unchecked industry regulations
- Inefficiency of bio-pesticides in certain scenarios
- Limited persistence due to environmental factors
- Preference of chemical pesticides over bio-pesticides:

Risk Analysis

Key Stakeholders Against Biopesticides

- Low Profit Margins for Niche Market Products
- High fixed costs of adoption
- Farmers' Fear of Taking Risks

Risk Analysis

Risks Involved

- Very Strict Quality Control By CIBRC
- Inadequate Packaging
- Lack of Technological Prowess
- Low Familiarity with biopesticides
- Time Consuming registration Process
- Shorter Shelf-life

Market and marketing strategies under resource constraints

After in depth SWOT analysis we can say this is an untapped market with great potential to increase in the coming years.

Resource constrained Marketing Strategies to promote usage of biopesticides :

- Farm schools by the government of India are a brilliant initiative which needs to be more and more widespread and adopted by private manufacturers too.

- A personalised touch to the training can increase the footfall by a considerable amount to such programs. We can do some ground work before reaching out to farmers of a particular area like primary cultivation of crops, extent of pesticide usage, scope of improvement and then create a better custom training rather than teaching the same stuff to farmers of every region.

- Since most of the farmers live in villages and have small cultivation and limited resources they tend to have a limited social life with much importance given to festivals and local celebrations. We should try to reach out to farmers particularly during that time.

- Uttar Pradesh being a diverse terrain there needs to separate marketing and education content plans for the same depending on the region.

Market and marketing strategies under resource constraints

- We cannot ignore the fact that the world is now moving to digital medium much faster and the impact of digital medium is much more.

- We can have a dedicated channel posting usage/dosage/precautions of the biopesticides through social media and if possible multilingual will be of great help.

- The resource requirement is negligible in digital marketing and can help in the welfare of multiple stakeholders.

- A proper system should be established to address the issues faced by the farmers and cater with the complaints which will ensure retention of existing customers.

- Majority of the production of biopesticides is by the private sector(nearly 70%) and it is the same private sector which can invest in such customer service setup.

Thank You!

It has been a **great** **learning** *experience*

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