Crop Protection Chemical Market in India.

Mains: *GS III – Effects of Liberalization on the Economy| Conservation, Environmental Pollution and Degradation| Major Crops - Cropping Patterns in various parts of the country*

Why in news?

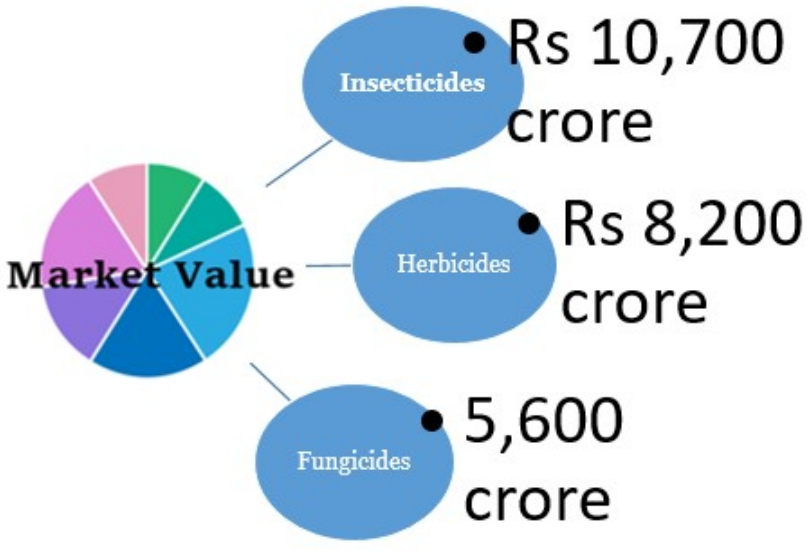
Recently, there has been a tremendous growth in the herbicides usage which is emerging as the largest segment of the crop protection chemical market in India.

What are crop protection chemicals?

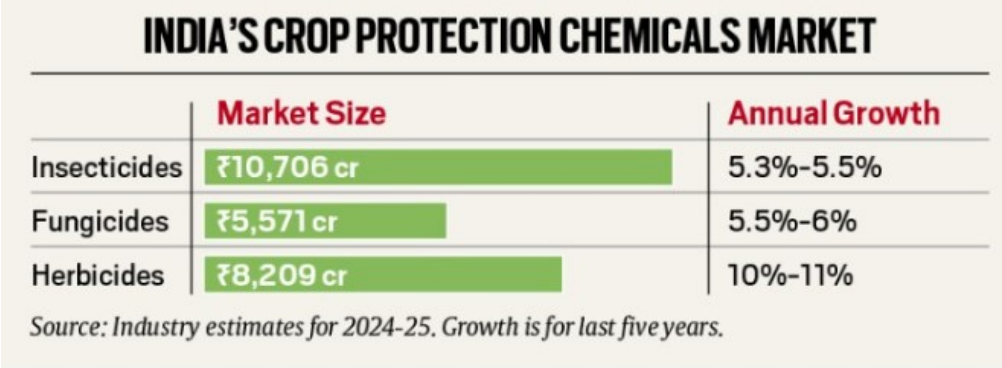
- **Crop protection chemicals –** They are substances used to manage and protect crops *from pests, diseases, and weeds.*
- **Types** – They include pesticides, herbicides, insecticides, and fungicides.
- **Pesticides** – These are basically substances sprayed on crops to protect against insects (pests).
    - Pests cause damage, whether directly by feeding on them or indirectly by transmitting disease.
    - ***For example**, white-backed plant hopper, a pest that both feeds on rice plants and also spreads the Fiji virus disease, resulting in their stunted growth.*
- **Fungicides** – Used to control fungal diseases such as *blast and sheath blight in rice* or powdery mildew and rusts in wheat.
- **Herbicides** – Used to kill or inhibit the growth of weeds.

What is the status of crop protection chemical market in India?

- **Total value** – India's organised domestic crop protection chemicals market is valued at roughly Rs 24,500 crore.



- **Emerging segment** – The market for herbicides is growing at the highest rate over 10% annually



- **Important players**

Companies	Country of origin	Market share
Bayer AG	German	15%
Syngenta	Chinese	12%
ADAMA	Chinese	10%
Sumitomo Chemical	Japan	7%
Corteva Agriscience	US	7%
Crystal Crop protection Ltd	India	4%
Dhanuka Agritech	India	6%

- **Sales rights with MNC's** – Crystal Crop protection Ltd (CCPL), recently purchased the rights to *Ethoxysulfuron* from Bayer AG for sales in India, Pakistan, Bangladesh and Southeast Asian countries.

***Ethoxysulfuron** is an herbicide used against broad-leaved weeds and sedges in rice and sugarcane.*

- The deal also covered the Bayer's sunrice trademark for mixture products containing this active ingredient.
- CCPL had also acquired Gramoxone from Syngenta for sale in India.

***Gramoxone** is a broad-spectrum herbicide containing the active ingredient Paraquat.*

Why there is an increase in the use of herbicide?

- **Traditional method** – Weed control has traditionally been through manual removal by hand or simple lightweight short-handled tools with flat blades such as **khurpi.**
- **Time-consuming** – Manual weeding labourer taking 8-10 hours to cover one acre.
- **Repetitive task** – Since the weeds regrow, the process has to often be repeated during the crop's lifecycle.
- **Increased labour wages** – According to the Labour Bureau's data, the all-India daily wage rate for plant protection workers averaged Rs 447.6 in December 2024, as against Rs 326.2 five years ago.
- **Labour shortage** – The number of people in rural India prepared to do this work of bending, digging and uprooting plants for long hours are getting fewer by the day.
- **Inefficiency of power weeders** – Power weeders take only 2-3 hours per acre, but aren't effective in pulling out weeds with deep roots or growing within densely planted crop areas.
- **Alternates solution** – Herbicides have become more like tractors and other labour-saving farm machinery a *substitute for manual weeding.*
- **Shift in approach –** Farmers tend to mostly spray herbicides only after the weeds appear and are seen (post-emergence).
- Recently farmers have been resorting to prophylactic application of pre-emergent herbicides around or just after crop sowing.

***Prophylactic method** is used for guarding or preventing the spread or occurrence of disease or infection.*

  - These stop the weeds from coming out, helping keep the field clean from the beginning.
  - Alternatively, they may use early post-emergent herbicides to control weeds at the crop's initial sensitive growth stage.
  - In both cases, the spraying is preventive, as opposed to being reactive.

***Pre-emergent** herbicides are applied before weeds germinate, creating a barrier in the soil to prevent weed seeds from sprouting.*

Post-emergent *herbicides are applied to control weeds that have already emerged from the soil.*

- **Increase in market** – The all-India market for herbicide segment grew by 10% in 2024-25 (from Rs 7,460 crore to Rs 8,209 crore).
- The sales of a Delhi-based company rose over 47%, from Rs 229 crore to Rs 337 crore.
    - It recorded a turnover of Rs 2,201 crore from crop protection chemicals last fiscal year.
- **Substantial market share** – Out of the estimated Rs 1,500-crore paddy herbicide market, *the pre-emergent sub-segment accounts for roughly Rs 550 crore.*
- That share is about a fifth in the Rs 1,000-crore market for wheat herbicides.
- **Monopoly** – The crop protection chemicals industry is practically *a multinational monopoly.*
- Some Indian companies, are attempting to acquire the rights to active ingredients and brands from big global majors or even introducing innovative formulations.
    - ***For instance****, CCPL has collaborated with the Ohio (US) - based Battelle and Japan's Mitsui AgriScience to develop a new paddy herbicide called Sikosa.*

Sikosa
• **Active ingredients** – Bensulfuron-methyl and Pretilachlor • **Method** – Oil-dispersion formulation (patented). ***Oil dispersion formulation method*** *is commonly used for water-sensitive active ingredients and require specific products with unique properties that aim to ensure long-term stability for pesticide applications.* • **Working** – Spreads quickly in water and works well when sprayed within 0-3 days after transplanting. • **Uses** – With a single 500-ml bottle, farmers can control narrowleaf, broadleaf and sedge weeds in transplanted paddy. • **Cost effective** – Rs 850-900 per acre, compared to Rs 2,000-plus with manual weeding.

What lies ahead?

- India industries could actively engage in innovation and indigenous production of crop protection chemicals.
- Government and agro industries could find an alternate, innovative and sustainable solution to weed management.

Reference

The Indian Express| Crop Protection Chemical Market in India.



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