

Current Status of Bio-pesticides Registration in Sri Lanka



U.S.K. Abeysinghe
Office of the Registrar of Pesticides

Agriculture in Sri Lanka: Current Status in Pesticide Usage



- Agriculture remains a foundational pillar of Sri Lanka's economy
- Contributes 7.5 % to gross domestic production (GDP) and 25.7% to employment
(Central bank annual report-2024)
- The pest control is mostly dependent on the use of synthetic pesticides

Over 735 brands of
Agro- pesticide products
are registered

62 insecticide
active ingredients/formulations

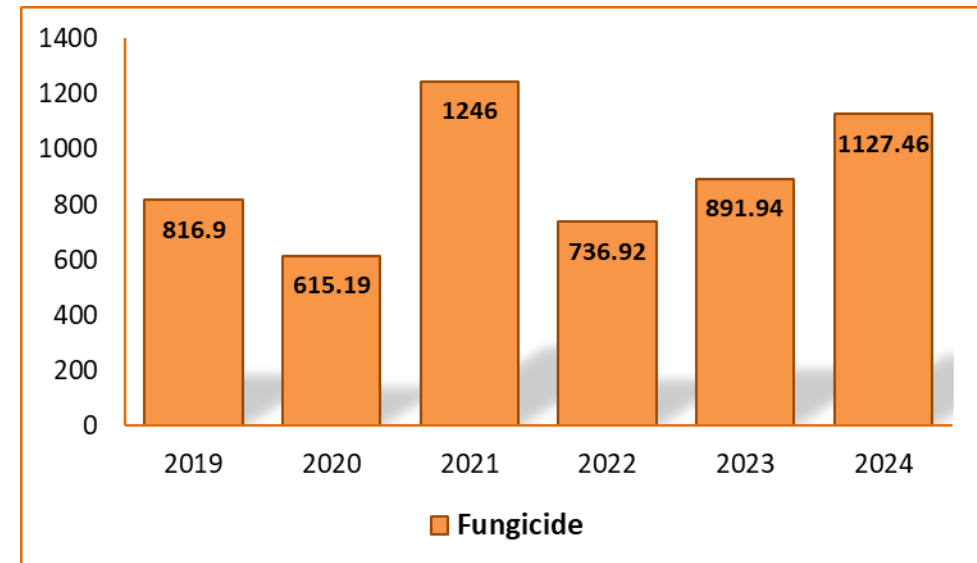
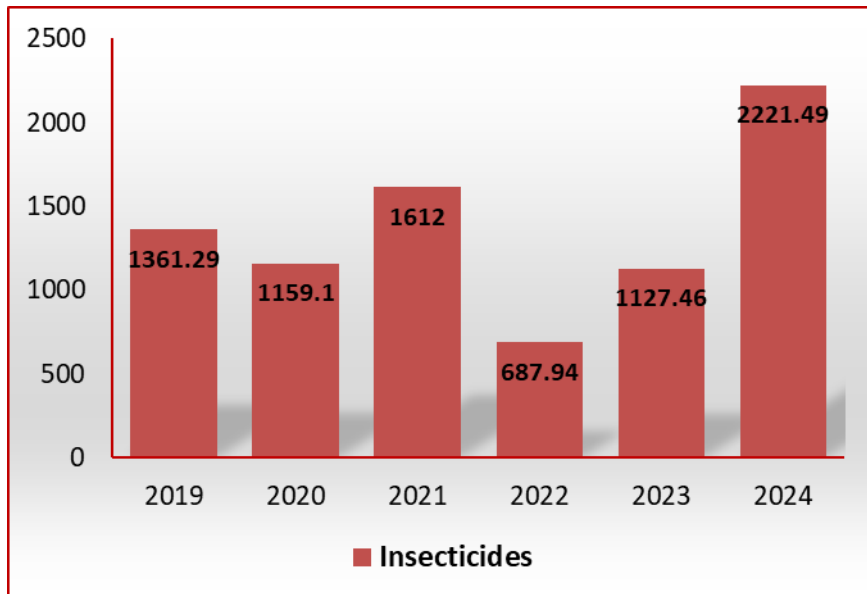
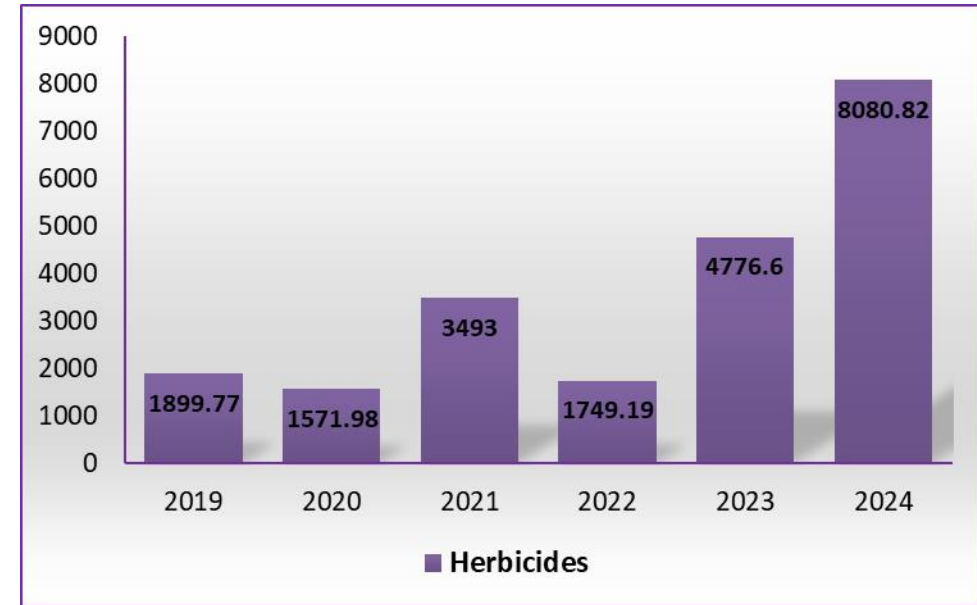
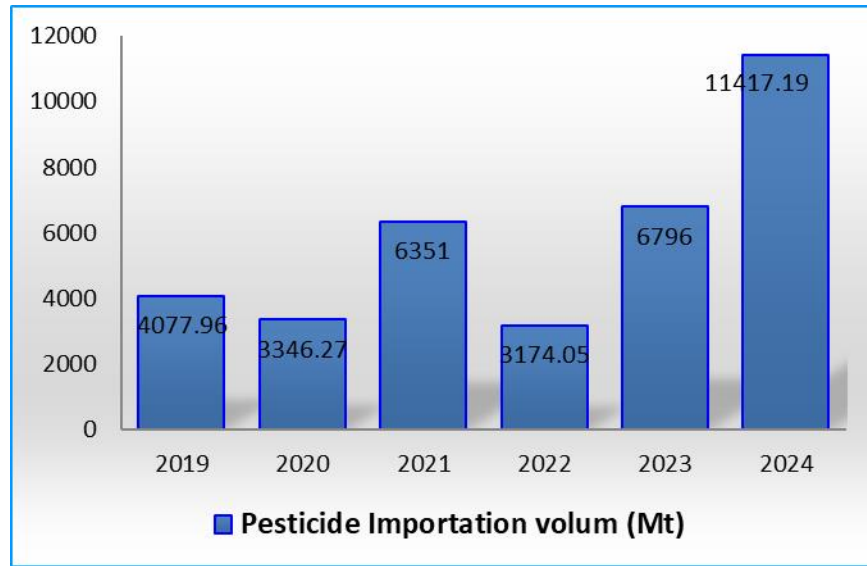


40 fungicide
active ingredients/formulations

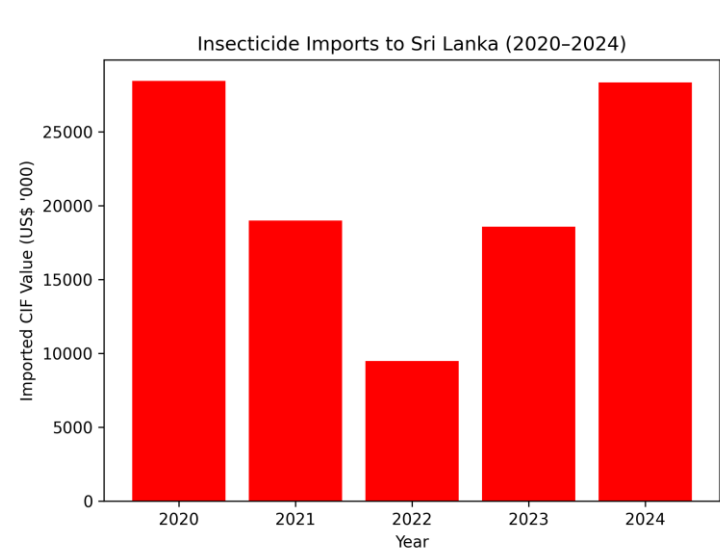
52 weedicide
active ingredients/
formulations

Total-154

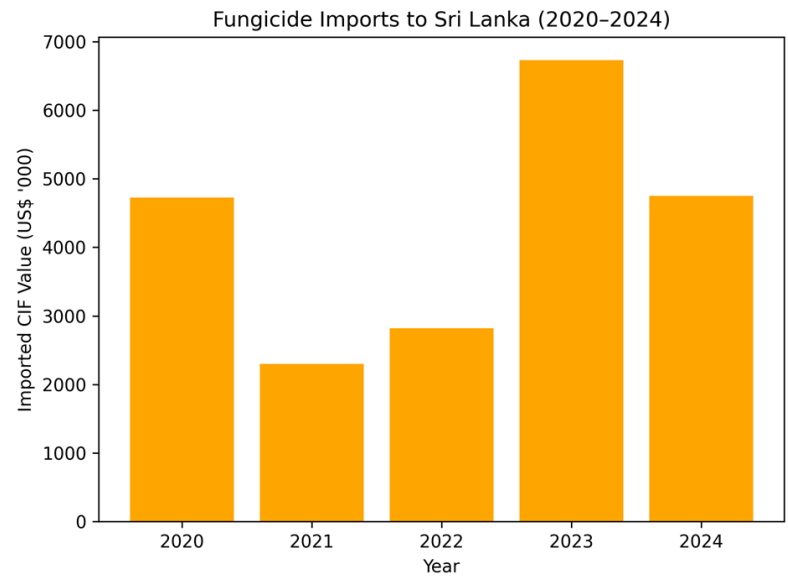
Trends in Pesticide Importation (in volumes)



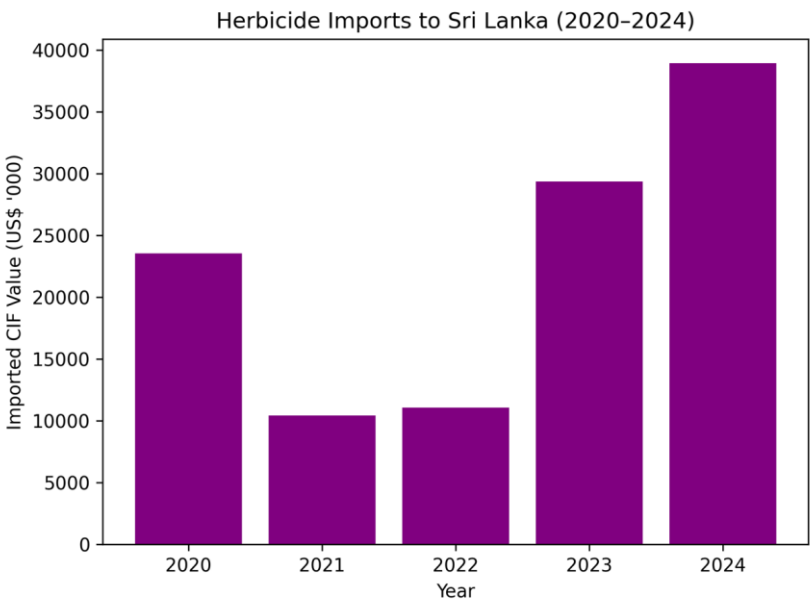
Trends in Pesticide Importation (CIF values US\$ '000)



Insecticides



Fungicides



Herbicides

Source-Office of the ROP

Bio-Pesticides



Bio- pesticides

Bio-pesticides are certain types of pesticides derived from such natural materials as animals, plants, bacteria, and certain minerals (USEPA)

include microorganisms (including viruses), extracts from natural plant materials (i.e. botanicals) or semio-chemicals as active ingredient, except pheromones (but includes repellents), but exclude genetically modified organisms and chemically- derived analogues of plant extracts (which are mimics, natural- identical synthesized molecules and biosimilars)

Importance of Bio-pesticides in Green Agriculture

Environmental protection & ecological balance

Biodegradable, target-specific, maintain biodiversity and ecosystem stability

Human health & food safety

Lower toxicity, safer, residue-free food

Reduced chemical dependency

**Reduce reliance on synthetic agrochemical
Slow the development of pest resistance**



Environmental Protection & Ecological Balance



Human Health & Food Safety



Reduced Chemical Dependency



Importance of bio-pesticides in green agriculture

Support for Sustainable Agricultural Systems

**Integral to Integrated Pest Management (IPM) system,
Enabling system-based pest management**

Climate-Smart & Resource-Efficient Technology

Lower carbon footprint, Reduced environmental remediation cost, Align with climate-smart agriculture



Support for Sustainable Agricultural Systems



Climate-Smart & Resource-Efficient Technology

Why is Sri Lanka moving towards bio- pesticides??



- ✓ Alignment with National Green & Agricultural Policies
- ✓ Reduction of Foreign Exchange Outflow
- ✓ Environmental Protection & Climate Resilience
- ✓ Human Health & Food Safety
- ✓ Support for Integrated Pest Management (IPM)
- ✓ Export Competitiveness & Market Access
- ✓ Rural Employment & Green Innovation
- ✓ Lessons from Past Policy Experience
- ✓ To utilize the rich bio-diversity and traditional knowledge

Institutional Arrangements and Legal Framework for Registration of Bio -Pesticides

A

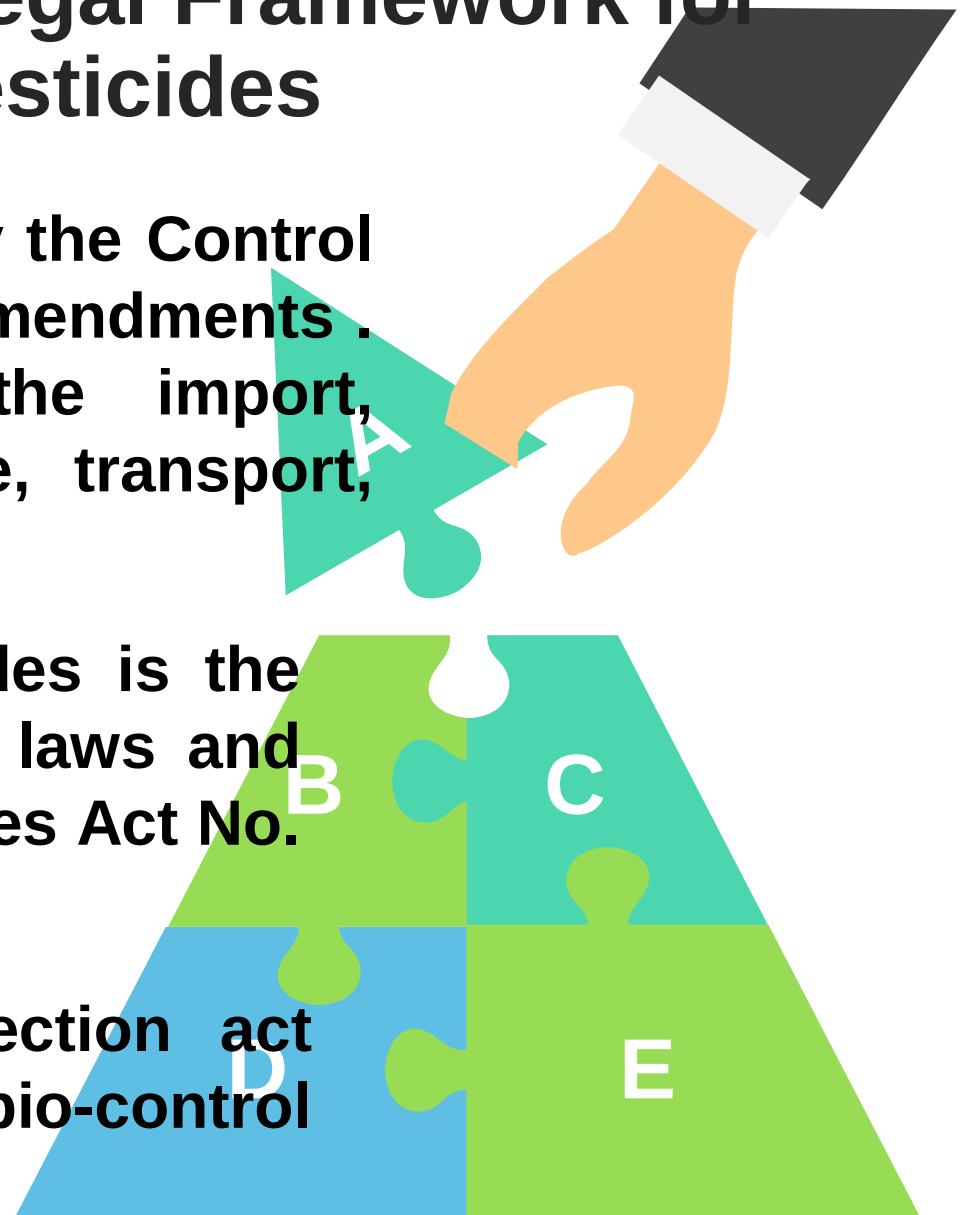
In Sri Lanka pesticides are regulated by the Control of Pesticides Act No. 33 of 1980 & it's amendments . It makes provisions to regulate the import, formulation, packing, labeling, storage, transport, sale and use of pesticides

B

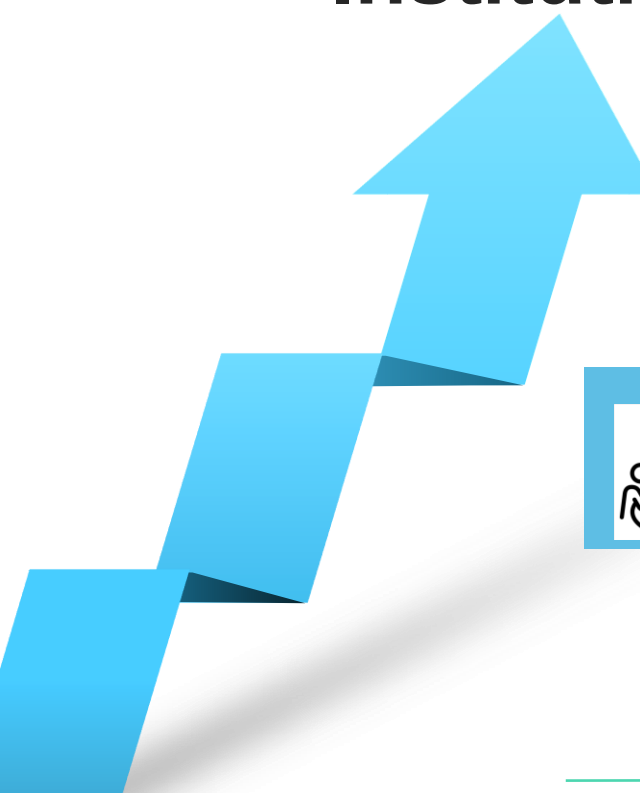
The office of the Registrar of Pesticides is the national authority for implementing the laws and regulations under the Control of Pesticides Act No. 33 of 1980

C

Regulations Made by the Plant protection act No.35 of 1999 regulates the import of bio-control agents and microbes



Institutional Arrangements & Legal Framework for Registration of Bio-pesticides

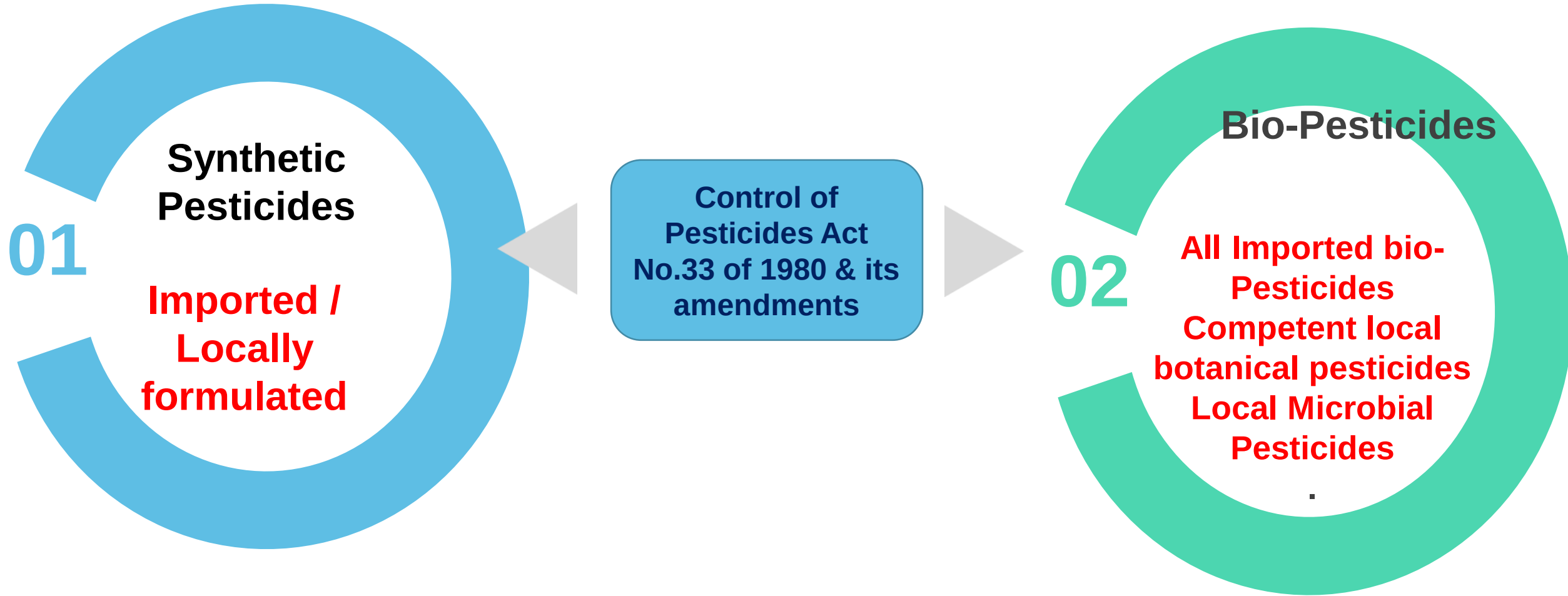


2021 Director General of Agriculture has appointed special sub-committee on registration of bio-pesticide with the government decision of total banning of synthetic pesticides



2015 Special Technical Advisory Committee was appointed to prepare the guidelines for bio-pesticide registration in Sri Lanka based on the ASEAN BCA guidelines and other regional guidelines
Guidelines were prepared for registration of locally produced botanicals & microbial pesticides

Pesticide Registration Process



Data Requirements for the Bio-pesticide Registration



**Checklist for Evaluation of Bio-pesticides of Foreign Origin-
RP-2D**



**Checklist for Evaluation of Bio-pesticides of Local Origin
RP-2D1**

Purpose of the Checklists

- To evaluate bio-pesticide products of local/foreign origin
- Ensures product authenticity, safety, and effectiveness
- Requires documentary evidence and verified reports
- Supports decision-making for registration approval

Data Requirements for the Bio-pesticide Registration



Checklist for Evaluation of Bio-pesticides of Local Origin- RP-2D 1

Product Authority (Applicant Information)

- Business/company registration certificate
- Manufacturing license or regulatory approvals
- Authorization letter (if dealer/trader)
- ISO certifications (ISO 9001, 14001, 18001)
- Patent information

Product Parameters

- Manufacturing process (step-wise description)
- Raw materials and ingredient details
- Source of raw materials (local/imported)
- Specifications of materials used
- For microbial products-Origin and natural occurrence



Checklist for Evaluation of Bio-pesticides¹ of Foreign Origin RP-2D

Product Authority

- Registration status in the country of origin
- Registration status in a foreign country
- Documents such as registration certifications on organic farming
- Certificate of manufacturing license
- Certificate from manufacturer that the importer is an authorized dealer/ trader

Product parameters

- Process of manufacture
- Information about raw materials/ ingredients used
- Source(s) of supply raw materials/ ingredients
- Step-wise manufacturing process
- Identity of the origin and natural occurrence (in case of microbial products)
- Specification of the material(s) used for manufacture of formulated product

Data Requirements for the Bio-pesticide Registration



Checklist for Evaluation of Bio-pesticides of Local Origin- RP-2D 1

Composition & Technical Details

- Chemical/biological composition
- Microbial strain identification
- Minimum active ingredient content
- Physico-chemical properties of additives
- Analytical methods (e.g., DNA/RNA sequencing)

Quality & Stability Data

- Batch analysis reports (3–5 batches)
- Shelf-life claim and supporting data
- Stability and consistency of product

General Declarations

- Product contains no GMOs
- Product is fully natural and free from synthetic pesticides
- Microbial strains are :Indigenous, Naturally occurring, Non-exotic



Checklist for Evaluation of Bio-pesticides¹ of Foreign Origin RP-2D

Product identification

- Product type (insecticide, fungicide, etc.)
- Target crops and pests
- Application details:
 - Rate, frequency, interval, method
- Crop residue data & pre-harvest interval
- Composition & Quality Data
- Chemical/biological composition
- Microbial strain identification
- Active ingredient content
- Impurities and contaminants
- Batch analysis (5 batches)Slide

Analytical & Stability Data

- Analytical methods (e.g., DNA/RNA analysis)
- Shelf-life claim and supporting data
- Proof of equivalence (technical grade/strain)

Data Requirements for the Bio-pesticide Registration



Checklist for Evaluation of Bio-pesticides of Local Origin- RP-2D 1

Environmental & Safety Considerations

Additional studies may be required on:

- Environmental fate and behavior
- Impact on non-target organisms

Requirements determined case-by-case

Applicant Declaration

Applicant must certify that:

All information provided is true and accurate

Based on factual documentation



Checklist for Evaluation of Bio-pesticides¹ of Foreign Origin RP-2D

Environmental Fate & Behavior

- Dispersal in environment
- Persistence (soil, water, air)
- Sensitivity (UV, temperature, pH)
- Genetic stability
- Potential pathogenicity & metabolites

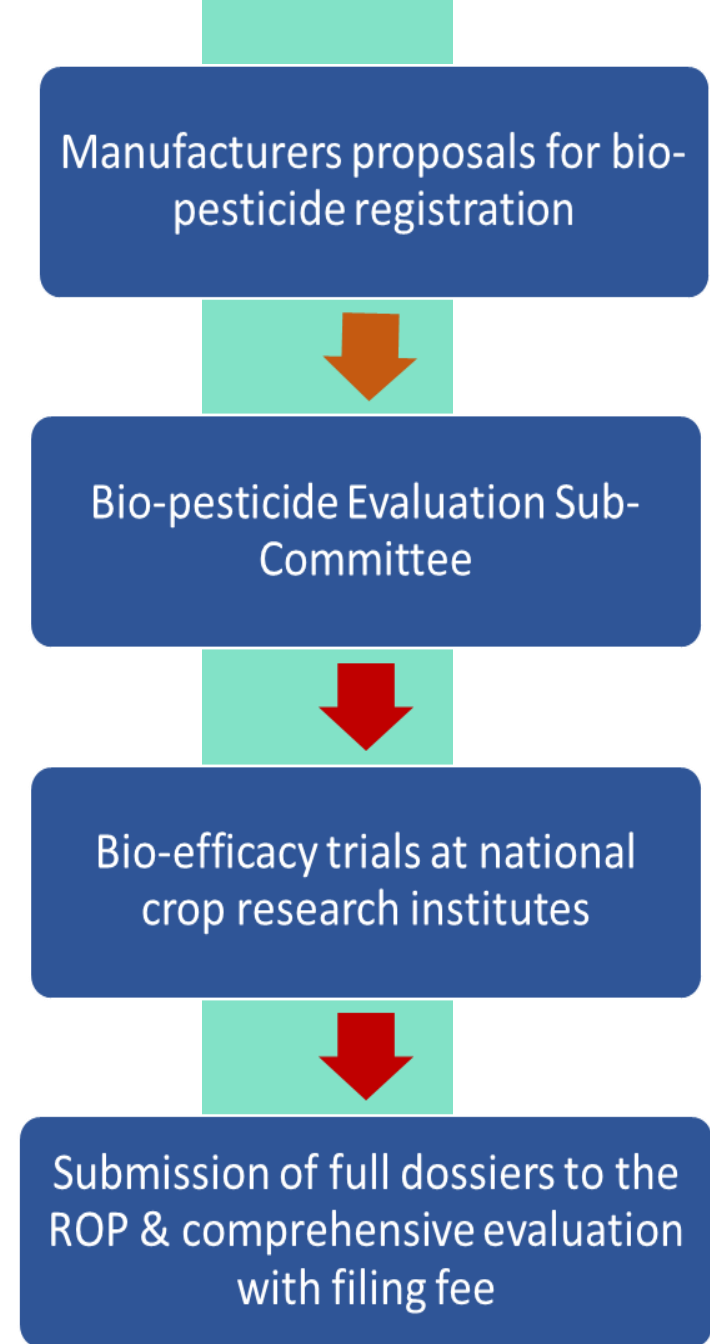
Toxicity & Non-target Effects

- Acute toxicity (oral, dermal, inhalation, etc.)
- Chronic toxicity (carcinogenicity, mutagenicity)
- Pathogenicity & infectivity
- Ecotoxicology: Bees, fish, birds, earthworms, silkworms

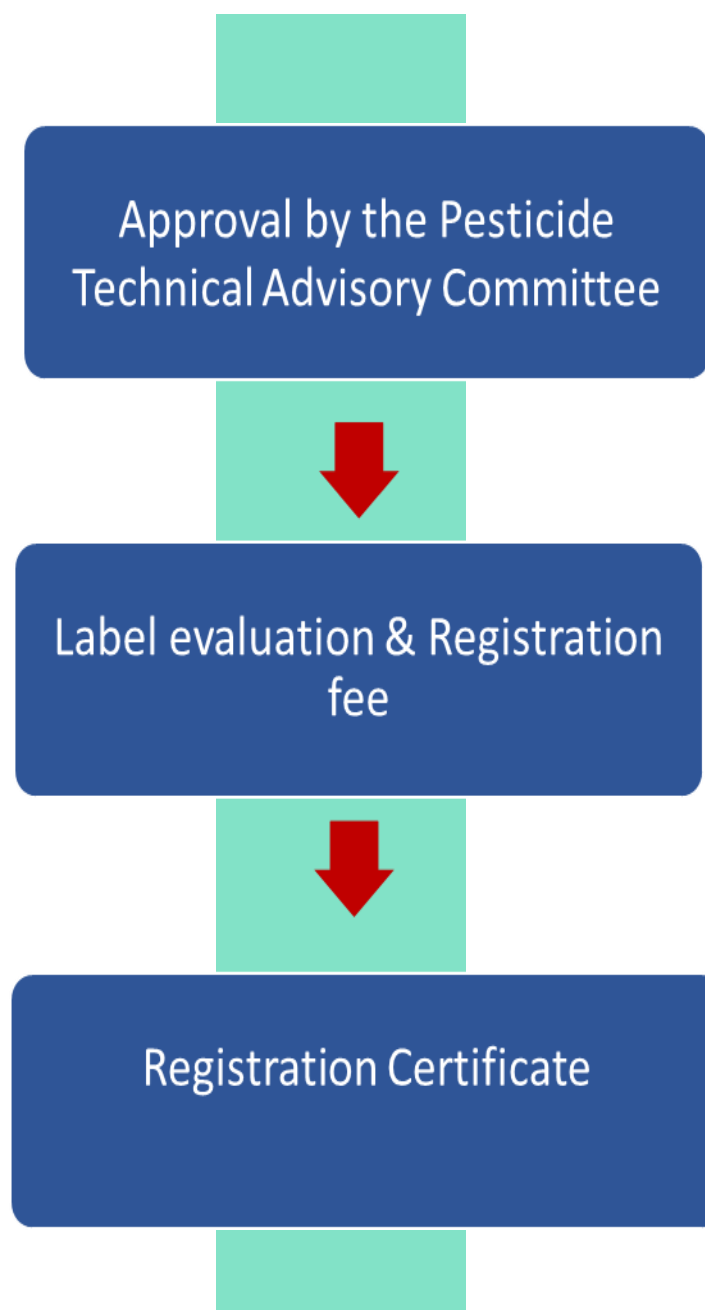
General Declarations

- No genetically modified organisms (GMOs)
- Fully natural origin
- Free from synthetic pesticides
- Information must be true and documented
- Commitment to submit further data for verification

Bio-Pesticides Registration process



Bio-Pesticides Registration process Cont...



Cost of Registration- 200,000 LKR

Exemptions and waivers for the registration of bio-pesticides

 Simplified data requirements for the registration of local bio-pesticides

 Acceptance of published data where appropriate

 A provisional registration effective for one year for locally manufactured bio pesticides, with commonly used active ingredients/technical material, which have proven bio efficacy of formulation tested by the relevant institute

Registered bio- pesticides in Sri Lanka

Common Name	Crop	Pest
1. Azadirachtin 0.75 g/l EC	Cabbage, Raddish, Knol Khol , Cauliflower	Diamond Backed Moth (<i>Plutella xylostella</i>)
	Sesame, Mustered	Leaf eating caterpillars (<i>Spodoptera litura</i> , <i>Hellula undalis</i> <i>Chrysodeixis eriosoma</i> , <i>Crocidolomia binotalis</i> <i>Plutella xylostella</i>)
	Bell Pepper, Capsicum	Leaf Curl Complex Causing Pests Thrips (<i>Scirtothrips dorsalis</i>) Aphids (<i>Aphis gossypii</i> , <i>Myzus persicae</i>) Whiteflies (<i>Bemisia tabaci</i> , <i>Trialeurodes vaporariorum</i>)

Registered bio-pesticides in Sri Lanka Cont...

	Common Name	Crop	Pest
2.	Azadirachtin 1% EC	Rice	Leaf folder (<i>Cnaphalocrosis medinalis</i>)
		Cucurbits	Mites (<i>Tetranychus spp</i>)
3.	Azadirachtin 50 g/l EC	Beans And Yard-Long Bean	Whiteflies (<i>Bemisia tabaci, Trialeurodes vaporarior</i>)
		Cabbage/Radish/Knolkhol/Cauliflower	Diamond back moth (<i>Plutella xylostella</i>)
		Capsicum/Bell pepper	Leaf curl complex Thrips (<i>Scirtothrips dorsalis</i>) Aphids (<i>Aphis gossypii</i> , <i>Myzus persicae</i>) Whiteflies (<i>Bemisia tabaci, Trialeurodes vaporariorum</i>)
		Cucurbits	Whiteflies (<i>Bemisia tabaci, Trialeurodes vaporariorum</i>)
		Tomato	Leafminer (<i>Liriomyza sativa</i>)
		Potato	Leaf miner (<i>Liriomyza huidobrensis</i>)

Registered bio pesticides in Sri Lanka Cont...

	Common Name	Crop	Pest
4	Azadirachtin 0.03% g/L EC	Rice	Brown planthopper (<i>Nilaparvata lugens</i>)
5	Potassium Salt of Fatty Acids 500 g/l SL	Tomato	Thrips (<i>Scirtothrips dorsalis</i> , <i>Thrips palmi</i>) Whiteflies (<i>Bemisia tabaci</i> , <i>Trialeurodes vaporariorum</i>) Aphids (<i>Aphis gossypii</i> , <i>Aphis craccivora</i> , <i>Myzus persicae</i>)
6.	<i>Spodoptera frugiperda</i> MNPV 32 %	Maize	Fall Armyworm (<i>Spodoptera frugiperda</i>)
7.	Carboxylic Acids (C14-C20) Potassium salts 479.8 g/l EW	Brinjal, Gerbera, Potato	Sucking pests, whiteflies, Aphids, Thrips, Mealy bugs, Scales, Psyllids Mites

Registered bio pesticides in Sri Lanka Cont...

	Common Name	Crop	Pest
8.	<i>Trichoderma asperellum</i> 1.2x 10 ⁶ cfu/ml SL	Capsicum	Anthracnose (<i>Colletotrichum spp</i>) Leaf spot (<i>Cercospora spp</i>)
		Tomato	Early Blight (<i>Alternaria spp</i>)
		Okra	Leaf spot (<i>Cercospora spp</i>) Powdery Mildew
		Bitter guard, Luffa	Powdery Mildew
		Lettuce	Graymold
		Nursery Crops	Damping off (<i>Pythium spp.</i> , <i>Rhizoctonia solani</i> , <i>Phytophthora spp.</i> , and <i>Fusarium spp.</i>)

Commercialization opportunities & challenges of bio- pesticides in Sri Lanka

Government 

Opportunities

- Increasing public demand for safer food
- Safer products are needed to produce for the export markets
- international linkage of local scientists worldwide to easily exchange their knowledge
- Lessons from Past Policies



Challengers

- Lack of central national institute to coordinate the bio- pesticides research & development
- Lack of competent laboratories for testing & analyzing
- Lack of multidisciplinary expertise
- Poor infrastructure development
- Lack of training for the government officials
- Huge extension gaps between researchers, entrepreneurs & farmers



Commercialization opportunities & challenges of Bio- pesticides in Sri Lanka



Entrepreneurs

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Opportunities

- Government policies towards reduced synthetic chemicals
- Increasing public demand for safer food
- High bio- diversity to extract beneficial microbes from native environment
- Capability of Update with novel technology



Challengers

- Lack of competent laboratories to generate required test data
- Time taken for the registration
- Have to cater the niche market
- Lack of training for the government officials
- High cost involve in registration



Commercialization opportunities & challenges of bio -pesticides in Sri Lanka



Farmers

Opportunities

- Supportive government policies
- Increasing demand for the safer products
- Domestic and export market opportunities

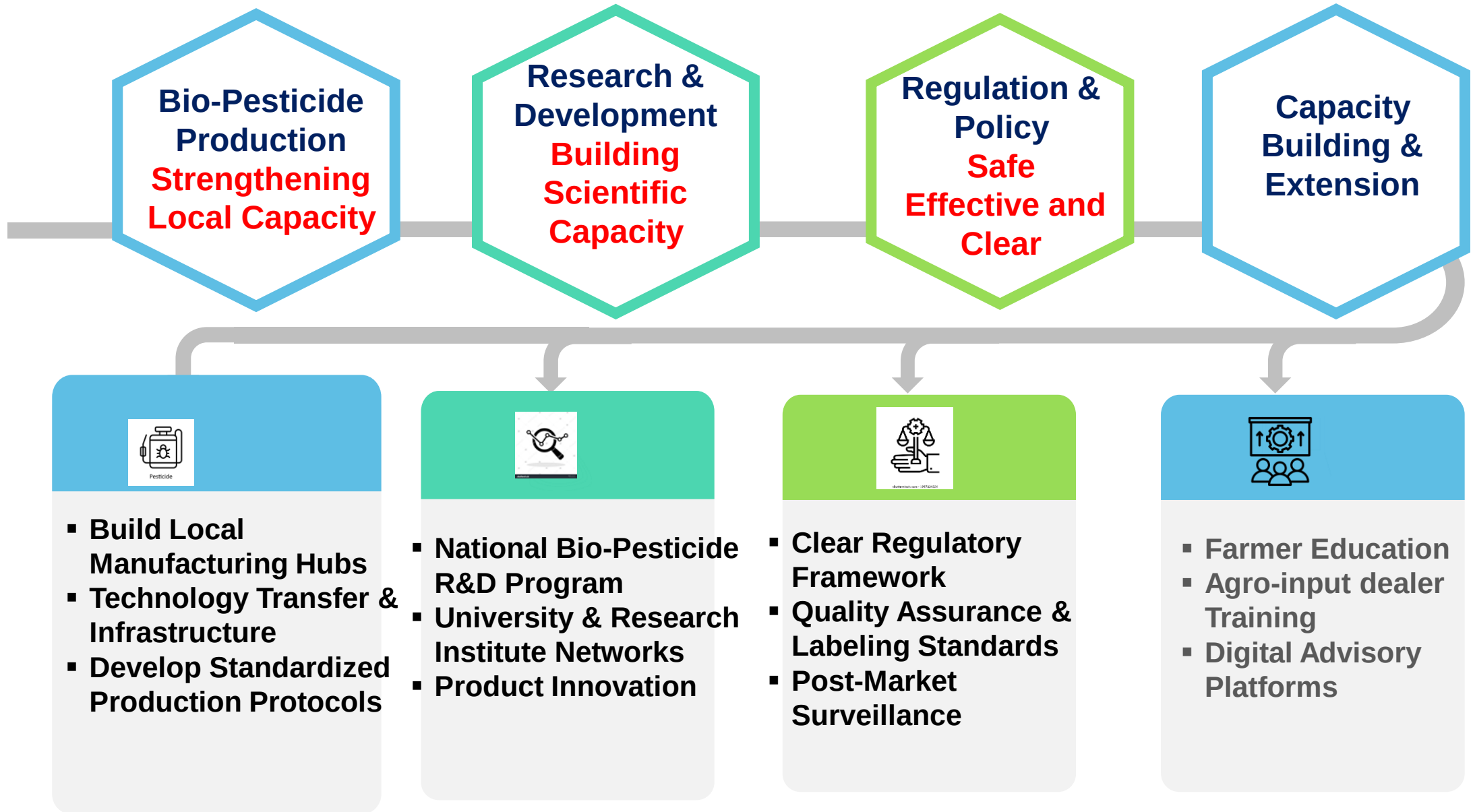


Challengers

- Novel technology
- Need technical Know how
- Practiced to use synthetic pesticides
- Uncertainty of pest control



Recommendations





THANK YOU

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