



Safer Crops, Safer Future: Reducing Pesticide Risks in Agriculture

Working in partnership for a safe and sustainable future

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ICAR- Indian Agricultural Research Institute, New Delhi, India

Pesticide Residues Regulation in India

Consumer Safety



**Ministry of Health &
Family Welfare**

Food Safety and Standards
Authority of India (FSSAI)

Promoting safe agricultural practices



**Ministry of Agriculture &
Farmer's welfare**

Central Insecticide Board and
Registration committee
(CIB&RC)

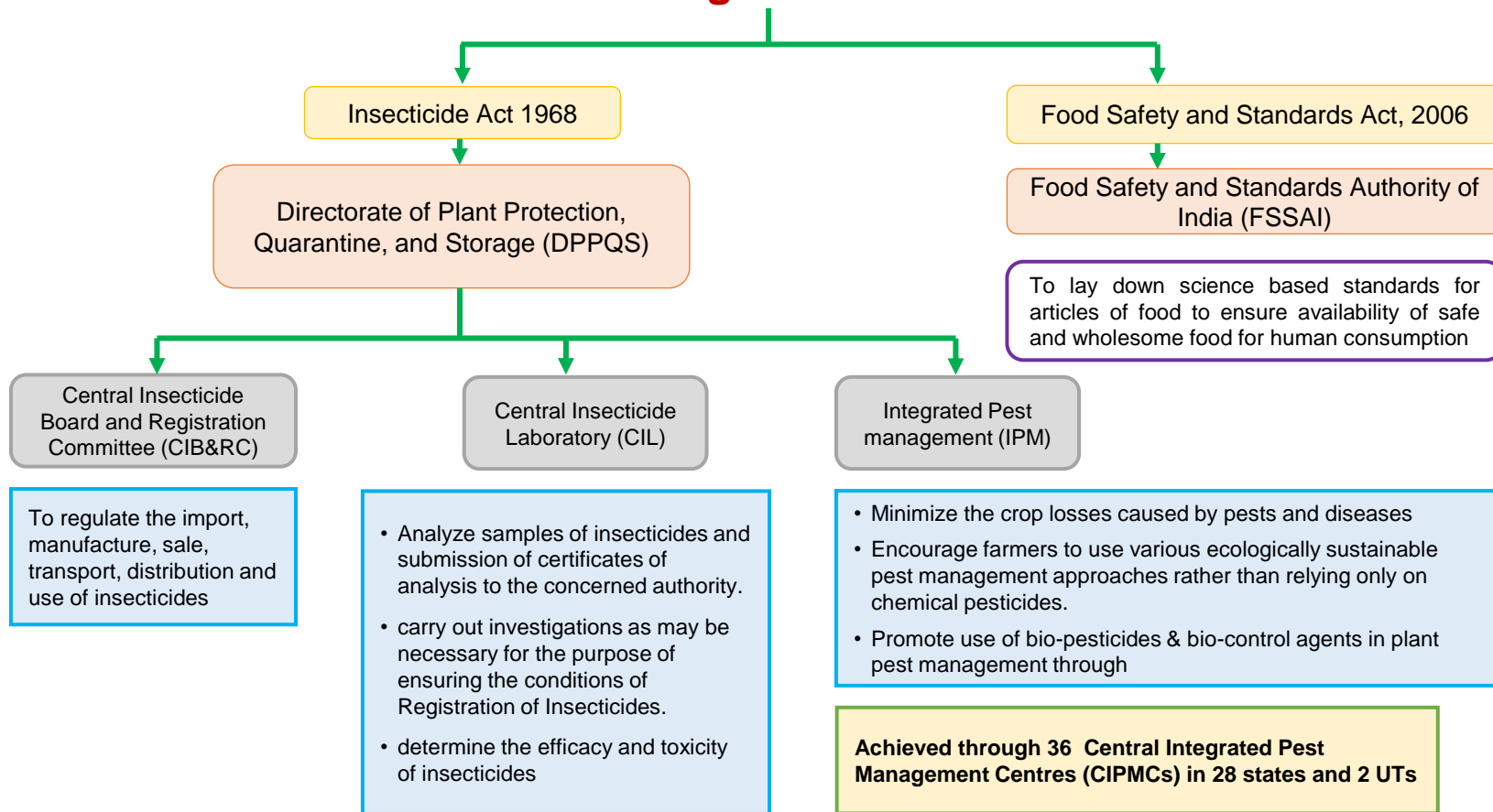
Trade



Ministry of Commerce

- APEDA
- EIC
- Spices Board India
- Tea Board India

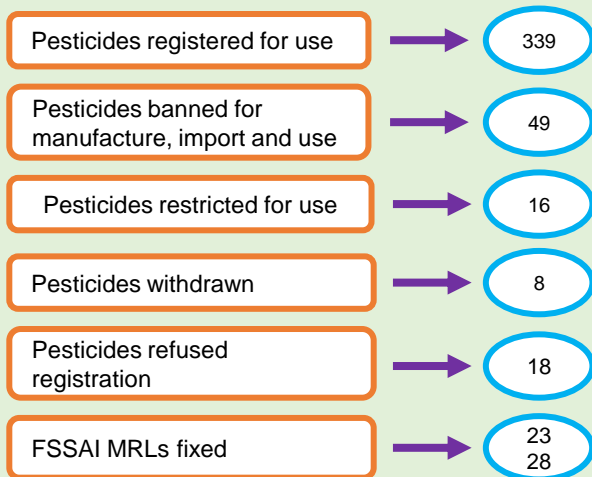
Pesticide Regulations in India



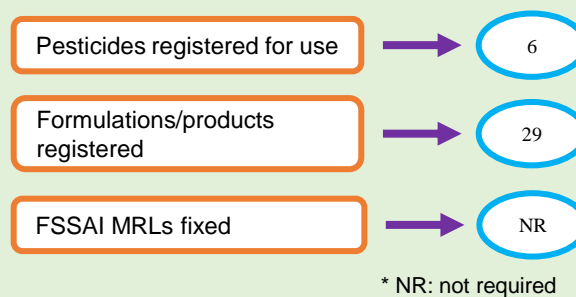
Regulatory Requirements for Pesticides in India

Type	Type of Data Requirement				
	Chemistry	Bio-efficacy	Residue	Toxicity	Packaging
Chemical pesticide	✓	✓	✓	✓	✓
Bio-pesticide	✓	✓	x	✓	✓

Current Status of Chemical Pesticides in India



Current Status of Bio-Pesticides in India



Organic Certification in India



National Programme for Organic Production (NPOP)

APEDA, Ministry of Commerce

Export Market

Third Party Certification

Implementing Agency

Focus

Certification Process

Participatory Guarantee Programme (PGS)

NCOF, Ministry of Agriculture and Farmers Welfare

Domestic Market

Farmer groups



- The Food Safety and Standards Authority of India (FSSAI) in December 2017, introduced the Jaivik Bharat logo to help customers identify authentic organic food.
- Any Product with the Jaivik Bharat Logo claims to meet all the norms and requirements of organic farming.



Policies of Government of India to reduce pesticide use

Paramparagat Krishi Vikas Yojna (PKVY)

- An elaborated component of Soil Health Management (SHM) of major project National Mission of Sustainable Agriculture (NMSA).
- Organic farming is promoted through adoption of organic village by cluster approach and PGS certification
- Provides end-to-end support to organic farmers i.e. from production to processing, certification and marketing in cluster-based approach.
- Financial assistance for 3 years to states/UTs/farmers for on-farm and off-farm organic inputs, marketing, packaging, branding, value addition, certification and residue analysis & training and capacity building

National Mission on Natural Farming (NMNF)/Bhartiya Prakratik Krishi Paddhati (BPKP)

- Chemical free farming system based on livestock and locally available resources and rooted in Indian tradition
- promote alternative system of farming for freedom from external purchased inputs, cost reduction and thereby increasing income of farmers
- Financial assistance of Rs 12200/ha for 3 years provided to farmers for cluster formation, capacity building and continuous handholding by trained personnel, certification and residue analysis

Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)

- Implemented in of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura
- Development of certified organic production in a value chain mode to link growers with consumers
- Support the development of entire value chain starting from inputs, seeds, certification, to the creation of facilities for collection, aggregation, processing, marketing and brand building initiative.
- One time Financial assistance to farmers for on-farm input production infrastructure such as liquid manure tanks, NADEP compost tanks, botanical extracts; procurement of biofertilizers, biopesticides and neem cake.

ICAR- Success stories on biological control research

Classical biological control of invasive cassava mealybug restores cassava production in India



Management exotic invasive whiteflies of coconut and oil palm through biological control



Biocontrol Bears Fruit: Saving Papaya from Mealybug



Problem: Damage caused by Papaya mealybug

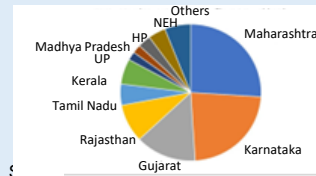
Outcome: Post release of exotic parasitoids to tackle papaya mealybug

Farmers' participation in procurement and release of parasitoids

Greentech of entomopathogenic nematodes (EPN) for securing crop health



Commercial products available in the market

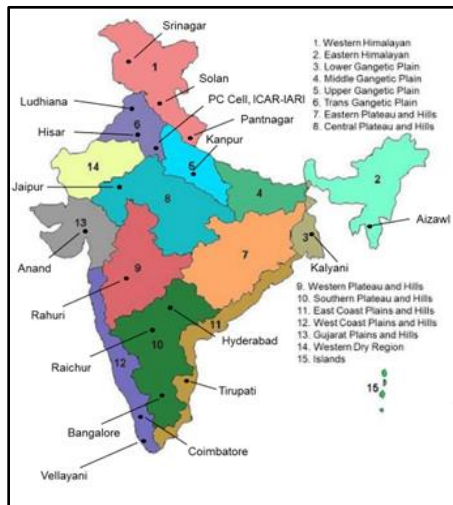


across the country (%) (2022)

Biopesticides registered with CIB & RC by ICAR-NBAIR

- 1) Shatpada Terminator: An incredible biopesticide of *Bacillus thuringiensis* var. *kurstaki* strain NBAIR BtG4 for effective management of lepidopteran pests
- 2) Shatpada Grubicide: *Metarhizium anisopliae* 2%W.P (Cfu Count: 1×10^8 / gm Min.), (Bio-pesticide) Strain name: ICAR-NBAIR Ma4, Accession No. NAIMCC-F-01296 for the management of white grub

GAP Data Generation for Registration of Pesticides



Indian Council of Agricultural Research (ICAR)-

All India Network Project (AINP) on Pesticide Residues & Contaminants

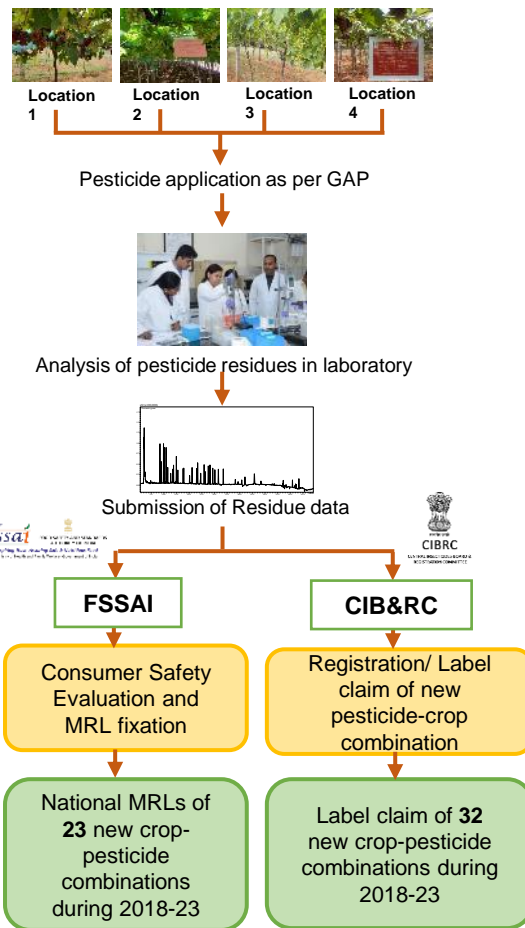
- Established in 1984 by ICAR
- 18 Coordinated centres representing 11 different agroclimatic zones of India
- Centres located at ICAR Institutes and State Agriculture Universities

Approval of Label Claim

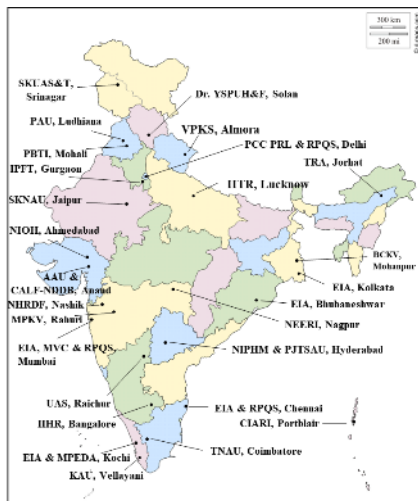
- Pesticide
- Formulation
- Crop
- Pest/Disease
- Recommended Dose
- Waiting period

Objective:

- To study **persistence /dissipation of pesticides** in crops through multi-location supervised field trials in **different agro climates** following GAP to work out the safe waiting period, approval of label claim and fixation of MRL
- To develop and validate simple, sensitive and cost effective analytical methodology for quantification of pesticide residues



Monitoring of Pesticide Residues in food commodities



Sponsored by
Department of Agriculture and
Farmers Welfare (DA&FW),
MoA&FW

Monitoring of
Pesticide Residues
at National Level

Implemented by
ICAR All India Network Project on
Pesticide Residues (AIPN-PR)

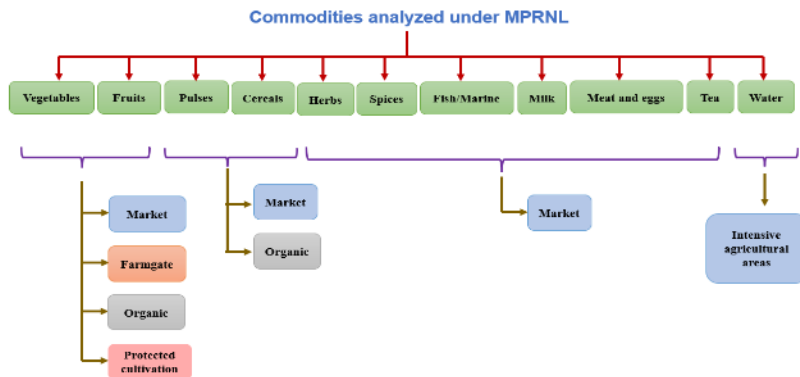
Objectives:

- Test pesticide residues in food commodities and environmental samples like soil and water
- Identify crops and regions having preponderance of pesticide residues
- Promote Good Agricultural Practices among farmers and implementation of Integrated Pest Management (IPM).

35 Laboratories

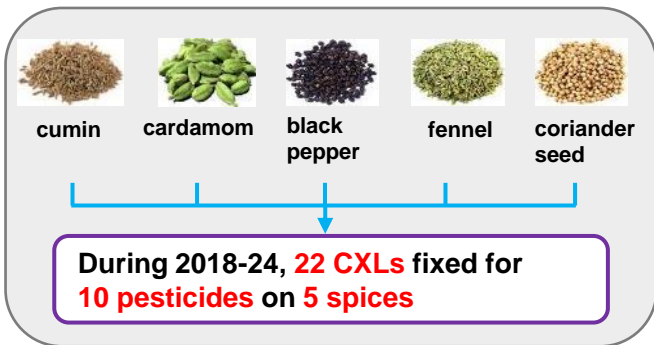
- 25 testing labs (ISO/IEC 17025)
- 10 collection labs

- Ministry of Agriculture and Farmers Welfare
- Indian Council of Agricultural Research
- Council of Scientific and Industrial Research
- Ministry of Health & Family Welfare
- Ministry of Chemicals and Fertilizers
- Ministry of Commerce
- State Agriculture Universities
- Export Inspection Council

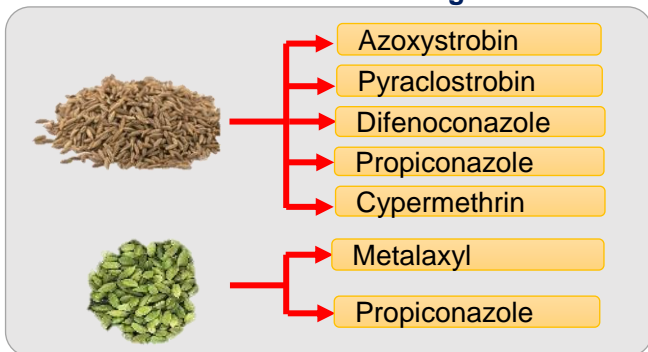


Fixation of Codex MRLs (CXLs) on Spices by India

Based on the monitoring data generated under MPRNL submitted by India to JMPR for evaluation, Codex MRLs of various pesticides have been fixed for spices

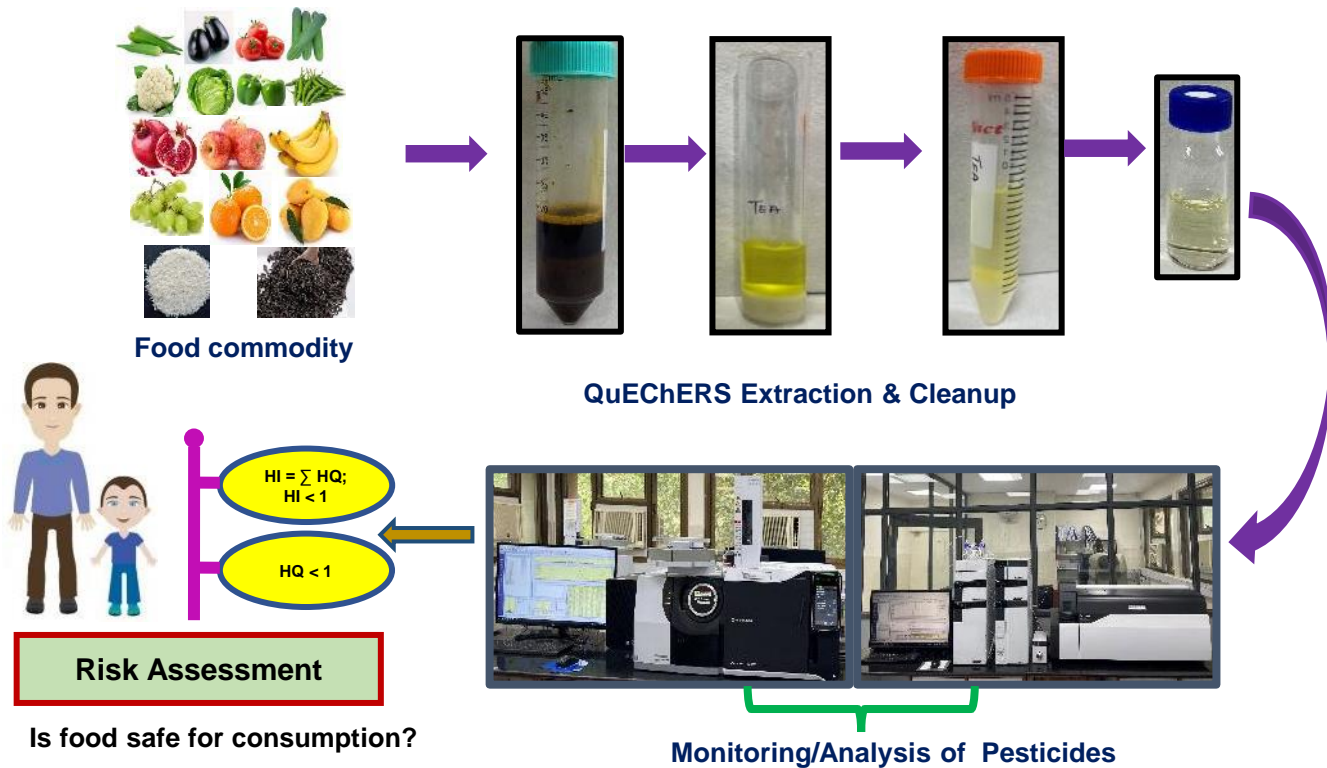


Upcoming JMPR evaluation for fixation of CXL based on Indian monitoring data



Commodity	Pesticide	Codex MRL (mg/kg)	EU MRL (mg/kg)
Black Pepper	Dithiocarbamates	0.1	0.1
	Acetamiprid	0.1	0.1
Cardamom	Acetamiprid	0.1 (at step 5/8)	0.1
	Dithiocarbamates	0.1	0.1
	Cypermethrin	3	3
	Triazophos	4	4
	Cyhalothrin-L	2	2
	Profenophos	3	3
Coriander seed	Dithiocarbamates	0.1	0.1
	Phorate	0.1	0.5
	Triazophos	0.1	0.1
	Profenophos	0.1	0.1
Cumin	Dithiocarbamates	10	0.1
	Profenophos	5	5
	Acetamiprid (extrapolated to subgroup of spices, seeds)	2	0.05
	Carbendazim (extrapolated to subgroup of spices, seeds)	5	0.1
	Thiamethoxam	1	0.05*
	Clothianidin	1	0.05*
	Dithiocarbamates	0.1	0.1
Fennel	Phorate	0.1	0.5
	Triazophos	0.1	0.1
	Profenofos	0.1	0.1

Risk Assessment based on Monitoring Data



Risk Assessment in Brinjal

Period of Monitoring study: 2013-20

Sample Collection: Market samples from Delhi

Parameters used for risk assessment: Estimated daily intake (EDI), Hazard Quotient (HQ), Hazard Index (HI)

Pesticides monitored: 155

No. of samples analysed	Samples detected with pesticide residues (%)	No. of pesticides detected
448	36.6	17

Hazard Indices (HI)

Adult		Child	
LB Scenario	UB Scenario	LB Scenario	UB Scenario
0.0036	0.0162	0.0086	0.0388

HI<1 indicated that the pesticide residue levels in brinjal samples were within safe limits and their consumption will not pose any dietary risk to the consumers.

Acknowledgements

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Department of Agriculture and Farmers Welfare, New Delhi



धन्यवाद



Thank You!



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch