Pioxaniliprole: India's first indigenous insecticide molecule gets CIBRC approval

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Prelims: agriculture

November 2026: PI Industries' **Pioxaniliprole** has received approval from the Central Insecticides Board and Registration Committee (CIBRC). It is **India's first indigenously discovered insecticide molecule**; the company unveiled it on 29 October 2026 - a major Make-in-India milestone for the country's chemical industry.

What is Pioxaniliprole?

- **Introduction:** An insecticidal active ingredient developed by PI Industries Ltd, belonging to the **anthranilic diamide** class of insecticides.
- **Chemical composition:** A carboxamide compound containing chlorine, nitrogen, oxygen and sulphur atoms.
- **Target pests:** Yellow stem borer, leaf folder, fall armyworm, tobacco cutworm, fruit borer and pod borer.

Mechanism of action

- **Ryanodine receptors:** It targets **ryanodine receptors (RyRs)** - specialised protein channels in insect muscle cells that regulate the release of calcium ions from intracellular stores.
- **Effect:** Activation triggers uncontrolled calcium release, disrupting muscle function - the insect stops feeding, becomes lethargic, suffers muscle paralysis and eventually dies.

CIBRC: the regulatory angle

- **CIBRC:** The Central Insecticides Board and Registration Committee, set up under the Insecticides Act, 1968; it approves the registration of any insecticide before import, manufacture or sale in India. Approval of a home-grown molecule confirms domestic research capability.

Quiz: Test your knowledge

> **Q1: Consider the following statements about Pioxaniliprole: 1. It is India's first indigenously discovered insecticide molecule. 2. It was developed by PI Industries. 3. It is a herbicide. How many of the above statements are correct?**
>
> (a) Only one
> (b) Only two
> (c) All three
> (d) None
>
> Answer and explanation: (b) Statements 1 and 2 are correct. Statement 3 is wrong - it is an insecticide, not a herbicide.

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> **Q2: Through which target structure does Pioxaniliprole act on insects?**
>
> (a) Chlorophyll synthesis pathway
> (b) Ryanodine receptors (RyRs)
> (c) Acetylcholinesterase enzyme
> (d) Chitin synthesis pathway
>
> Answer and explanation: (b) It activates ryanodine receptors, causing uncontrolled calcium release, feeding cessation, paralysis and death.

Frequently Asked Questions (FAQ)

In short: Pioxaniliprole is India's first indigenously discovered insecticide molecule, developed by PI Industries and approved by the CIBRC; it acts on ryanodine receptors.

Question: Which class of insecticide is Pioxaniliprole?

The anthranilic diamide class; chemically it is a carboxamide compound.

Question: Which pests is it effective against?

Yellow stem borer, leaf folder, fall armyworm, tobacco cutworm, fruit borer and pod borer.

Question: What is the CIBRC?

The Central Insecticides Board and Registration Committee, set up under the Insecticides Act, 1968 - the regulator that approves insecticide registration.

Sources:

- Indian Express: PI Industries unveils India's first indigenously discovered insecticide molecule (29 October 2026)
- Indian Express UPSC Essentials: Pioxaniliprole - India's indigenous insecticide and its regulation (11 November 2026)

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