Science and Innovation

**CHALLENGES**

Finding innovative solutions to tackle the increasing pressure on agriculture

- By 2050 the growing world population will require 100% more food.
- The world has lost a third of its arable land in the past 40 years.
- 90% of the growth in crop production is projected to come from higher yields and increased cropping intensity.
- The introduction of new solutions per year has halved in the last 20 years.
- The European crop protection toolbox is shrinking from 1000 to 400 actives.
- Sap feeding insects are among the most destructive insect pests, annually causing significant economic losses in all crops.
- Food crops compete with 30,000 species of weeds, 3,000 species of nematodes and 10,000 species of plant-eating insects.

**BENEFITS**

Unique mode of action to tackle pests

**SAP**

- Highly effective against a wide range of important sap-feeding pests.
- A new class of chemistry with significant structural and physiological differences compared to existing chemistries that drive its unique mode of action and environmental properties.
- Exhibits complex and unique interactions with the insect nicotinic acetylcholine receptors, which are distinct from those observed with neonicotinoids, butenolides and mesoionics.
- Enhances insect resistance management (IRM) strategies. Shows a robust lack of cross-resistance with existing insecticides, including the neonicotinoids, pyrethroids, and organophosphates.
- Rapidly degrades and has low residual toxicity making risks to honey bees manageable when following all label directions.

**IRM**

- Belongs to a new chemical class of insecticides—sulfoximines.
- Discovered by and proprietary to Dow AgroSciences.
- Controls economically important sap-feeding insects such as aphids, mealybugs and scale insects in key fruit, vegetable, citrus, potato, oilseed rape and cereal crops.
- Helps address the challenges stemming from the increasing strain on arable land.

**ISOCLAST™ ACTIVE – DID YOU KNOW?**

- Approved in the EU by European authorities and registered in more than 40 countries in the world.
- Not classified as carcinogenic, mutagenic or reprotox by European authorities.
- The broad lack of cross-resistance between isoclast and neonicotinoids is due primarily to differences in metabolism by monoxygenase enzymes, which are the predominant mechanism of insecticide resistance in the field.
- Has been used in millions of hectares worldwide over several growing seasons without reported harm to honey bees, even in flowering crops, or other non-target species.

**Isoclast™ Active**

is a two-time award winning product, including the R&D 100 Award and the AGROW Award.

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