Canegrub control – out to four years and still counting!

Australian sugarcane research has identified a canegrub control that protects the crop from several grub species for up to four years.

The industry is a step closer to its goal of maximising sugarcane’s potential to produce economic yields for up to five years, by providing effective, one-off protection from canegrub root damage from planting right through to the third or fourth ratoon.

A submission is before the Australian Pesticide and Veterinary Medicine Authority to register the new product suSCon Maxi Intel for up to three-year protection from Greyback, Negatoria, Bundaberg and Consobrina canegrub (two-year); and up to four-year protection from Childers and Southern one-year canegrub. suSCon Maxi is currently registered at 10–15 kg per hectare for two-year control of Greyback canegrub and four-year control of Childers canegrub; and at 10 kg per hectare for three-year control of Negatoria and Southern one-year canegrub.

With the same 50 g/kg concentration of imidacloprid as Maxi, the new granules release the active ingredient more steadily for longer-lasting grub protection from the lower application rate of 10 kg per hectare.

30 year collaboration

Crop Care and Sugar Research Australia (SRA, formerly BSES) have been collaborating for more than 30 years to develop environmentally safe, long-term control of this major pest.

The development of patented controlled-release suSCon technology in 1981 was a major breakthrough, with the active ingredient bound securely in a granule, and gradually being released over time into the soil surrounding cane roots. 1984 saw the first commercial release of this technology – suSCon Blue granules (containing chlorpyrifos).

In 2004 Crop Care brought suSCon Maxi to the market, containing the active ingredient imidacloprid.

Since then, ongoing research and evaluation by SRA in cooperation with Crop Care has:

- Extended the period of protection and the range of canegrubs species controlled on the suSCon Maxi label;
- Refined application techniques;
- Improved understanding of its activity in different soils and against different grub species; and,
- Adapted application to new farming systems such as minimal tillage and dual-row planting.

Between 2005 and 2012, Crop Care and SRA developed, screened and tested many new controlled-release formulations in north, central and southern Queensland – with the aims of increasing the length of canegrub control, particularly Greyback canegrub in central and north Queensland; broadening the species of canegrubs controlled; and manufacturing improvements.

Formulations showing promise in release-rate and efficacy trials were further evaluated from 2007 in 17 trials around Childers, Bundaberg, Mackay and Gordonvale districts, against a range of canegrub species. From these trials emerged suSCon Maxi Intel.

Trial results

Crop Care technical consultant Glen Tucker said the trials used 10 and 15 kg per hectare of product, applied to conventionally-planted cane in single rows at planting or drill fill-in stages – the same as for the current registration for Maxi. In trials against all species there was little difference in control between the 10 kg and 15 kg per hectare rate of Maxi Intel.

Greyback Canegrub (*Dermolepida albohirtum*) is the most widespread and damaging canegrub in central and north Queensland.

Greg reports that Maxi Intel had significantly reduced Greyback canegrub for three years in plant, first and second ratoons – similar to, or better than Maxi – increasing yield in...
plant, first and second ratoons; increasing primary ratoon shoots; and reducing gaps between shoots.

“The release rate of suSCon Maxi granules was steadier than from suSCon Maxi, resulting in significantly higher levels of imidacloprid in soil around granules 27 months after application.”

Consobrina Canegrub (two year race) (*Lepidiota consobrina*) used to be a major pest in far North Queensland until the introduction of imidacloprid. Now this species is rarely sighted in canefields.

“But one trial in the Gordonvale area had a mixed population of Greyback and Consobrina canegrub, so some data was gathered on this species. Maxi Intel significantly reduced Consobrina canegrub in first ratoons – similar to, or slightly better than the same rates of Maxi.”

Childers Canegrub (*Antitrogus parvulus*), normally with a two-year life cycle, is confined to clay soils (usually red kraznozems) in the Bundaberg and Isis areas of southern Queensland, where it can be very damaging.

“Maxi Intel reduced Childers canegrub for up to five years in young first, second, third and fourth ratoons – particularly on moderate populations in third and fourth ratoon crops. Control was similar to Maxi.

“The release rate of Maxi Intel granules was more controlled than Maxi, with higher levels of imidacloprid in Maxi Intel granules from 9 to 47 months after application, resulting in higher levels of imidacloprid in the soil during the third ratoon.”

Southern one-year Canegrub (*Antitrogus consanguineous*) is a one-year life cycle canegrub inhabiting sands, sandy loams and loams in the southern mill areas of Bundaberg, Isis and Maryborough. The most widespread species in these soils, it can be very damaging, particularly in older ratoons.

“Maxi Intel significantly reduced Southern one-year canegrubs in advanced first, second, third and fourth ratoons. Control was similar to Maxi, and significantly increased cane yields in first, second and third ratoons.”

**Bundaberg Canegrub** (*Lepidiota crinita*) has been a very important pest for some growers on a limited area of red clay loams and gravel loams around Bundaberg and Childers. suSCon Blue is currently the only insecticide registered for controlling this species.

“Maxi Intel significantly reduced Bundaberg canegrub numbers in advanced young first, second and third ratoons – similar to that provided by suSCon Maxi, and significantly increased yield in the first ratoon.”

Negatoria Canegrub (*Lepidiota negatoria*) is an important two-year life cycle canegrub in central and southern cane regions, on loam and clay loam soils.

“A number of trial sites targeted this species, but none were infested. Maxi is registered for three-year control of Negatoria canegrub at 10 kg per hectare. Researchers believe Maxi Intel would provide at least equivalent control – based on granule-release characteristics; concentrations of imidacloprid maintained in soil around granules; and relative activity against other canegrub species.”

**New registration being sought**

On the basis of these long-term trial results, registration of the new generation Maxi Intel is being sought for applications of 10 kg per hectare to:

- Conventionally planted cane in single rows:
  - For up to three years’ protection from root damage by Greyback canegrub, Negatoria canegrub, Bundaberg canegrub and Consobrina canegrub (two-year race).
For up to four years’ protection from root damage by Childers canegrub and Southern one-year canegrub.
Conventionally planted cane in dual rows:
- For up to three years’ protection from root damage by Greyback canegrub.
- For up to four years’ protection from root damage by Childers canegrub.

Double-disc opener planting (cane planted with minimum-tillage planters in single or dual rows):
- For up to two years’ protection from root damage by Greyback canegrub.

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