



Using Steri-maX Biocide to control Ratoon Stunting Disease in sugarcane

Introduction

Ratoon stunting disease (RSD) was discovered by BSES pathologists in 1944. Since then it has been recognised worldwide as probably the most economically important disease of sugarcane. RSD is found in all districts in eastern Australia. The incidence of the disease is associated with the degree to which control measures are followed. Generally RSD is present in fewer than 5 percent of fields in Australia, but in a few districts RSD incidence is at least 40 percent.



Symptoms

RSD produces no external symptoms other than stunting. Diseased fields often have an "up-and-down" appearance due to differing levels of stunting in adjacent stools. The only visual symptoms are red-orange dots or "commas" in the vascular traces in the nodal tissue, which can be seen when stalks are sliced open with a sharp knife, and a faint pink discolouration of the growing point of young plants. These symptoms are not always present and some varieties can show similar symptoms when not infected. *See illustration below*

Yield loss

RSD causes yield losses from 5-60 percent depending on the susceptibility of the variety and the weather conditions. Yield losses are higher when the cane is suffering moisture stress. Over a range of conditions the average yield losses are 15-20 percent.

Spread

The primary methods of spread of the disease are by planting infected cuttings and by contaminated cutting implements. The bacterium is highly contagious and can be spread for many metres down a row after a planter or harvester cuts a diseased stalk or plant. Any implement that cuts the stalk or comes in contact with the freshly cut end of the sett or billet readily spreads RSD. Some of the more common implements that can spread RSD are cane knives, whole stalk and billet planters, harvesters, cane stripping machines, haul-out vehicles used to transport billets to planters and chain saws used to trim bundles of stalks. On planting machines the recirculating fungicide spray system can carry the bacteria and spread the disease.

An implement can be disinfected by:

- Removing all soil and plant material with water and detergent under high pressure
- Spray cutting surfaces and parts that come in contact with cut surfaces with Agricrop's Steri-maX Biocide, which is the only product approved by the APVMA for the control of RSD. A 1% solution should be left in contact with the implement for 5 minutes before using or rinsing it.

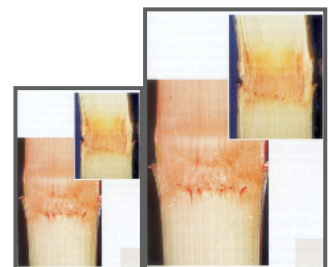
New crops become infected with RSD during the first harvest, if diseased volunteer plants from the previous crop are present. The practice of "ploughout-replant" (when a new crop is planted within a few weeks of ploughing out the previous crop) can result in a sharp increase in the incidence of RSD.

Control

Control has been effective in most districts of the Australian sugar industry. The keys to controlling the disease are planting disease-free (approved) seed and preventing re-infection by disinfecting planting and harvesting equipment. In districts where there is either a high acceptance of approved seed or a high percentage of plant sources are inspected for RSD each year; the disease has been kept at low levels. Some districts with initially high incidence of RSD have steadily reduced the incidence of the disease by promoting approved seed and conducting plant source inspections.

Efficacy Trials

Trials conducted by the BSES concluded that Agricrop Steri-maX is effective in greatly reducing contamination by the bacterium causing ratoon stunting disease (*Leifsonia xyli* subspecies *xyli*) and is often more effective than the treatment the sugarcane industry currently relies on.



Internal nodal markings caused by RSD

STERI-MAX BIOCIDES—CONDENSED DIRECTIONS FOR USE:



SITUATION	RATE	CRITICAL COMMENTS
For control of the spread of sugarcane Ratoon Stunting Disease	100 mL/10L water (1% solution)	Clean equipment of all debris and sugar sap, which will reduce strength of solution. Immerse in solution for a minimum of 5 minutes making sure equipment is completely covered with solution. Dispose of unwanted solution safely – refer to disposal statements as shown on the product label.
General disinfection of growing medium (inert or organic), equipment (such as pruning shears & ploughs), footbaths and hands	100 mL/10L water (1% solution)	Keep wet for over 10 minutes for best results.
General disinfection of cold rooms, packing sheds, tunnels, seed trays & other hard surfaces.	100 mL/100L water (0.1% solution)	First remove all organic matter from surfaces and keep wet with Steri-max solution for over 10 minutes for best results.
Disinfection of irrigation water. (non food crops only)	5-20 mL/1000L water	When dosing for the first few times, the dirt/algae/organic matter will be discharged and may clog your drippers, spitters or sprinklers. Therefore, rinse your irrigation pipes frequently. The cleaner the irrigation water to be treated, the better the results. May be used in fertigated water. Do not apply directly via fertilizer tank
Plant sanitation: Carnations, Chrysanthemums and cut flowers.	100 mL/100L water (0.1% solution)	Growers are advised to check for varietal differences by first treating a small sample. Apply to foliage with first application after transplanting or 6 weeks after planting seed. Apply at 7 day intervals.
Plant sanitation: Roses in green/shade houses.	50 mL/100L water (0.05% solution)	Growers are advised to check for varietal differences by first treating a small sample. Apply to foliage at 10-14 day intervals.
Post-harvest treatment of Cut Flowers in containers	15 mL/10L water	The stock solution may be used for up to 7-10 days if kept clean. Do not keep cut flowers in solution for longer than 48 hours

NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS:

- Effective against a range of fungi and bacteria pathogens.
- Stays active as long as it is in solution (does not oxidize).
- Under heavy agitation, foam may form and a defoaming agent (food grade) may be useful.
- Steri-max has wetting characteristics, so a wetting agent does not need to be added.
- If used in a dipping bath, organic matter will reduce activity.

REGIONAL CONTACTS

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