

AGMIN NEWSLETTER No. 226

Cupricide® used as a Molluscicide for the Control of Rice Snails

Background

The native planorbid snail *Isidorella newcombi* is one of the most important pests of irrigated rice in the Murray and Murrumbidgee Valleys of southern New South Wales. Snails attack the root systems of developing plants, causing delayed crop growth, and sometimes seedling death. Whilst the crop is vulnerable until the late tillering stage, the most serious damage occurs during crop establishment, since intensive land preparation and establishment weed control limit the availability of alternative food sources.

Isidorella newcombi, in common with several other planorbids, has the ability to aestivate (dormant in summer) when conditions become unfavourable. When rice bays are drained prior to harvest, a significant proportion of mature *Isidorella* burrow into the soil, and survival until the following rice season can be in excess of 45%. By limiting rice cultivation on individual paddocks to every second season, aestivating populations can be eliminated, and the majority of serious infestations avoided. Due to economic factors, some farmers are unwilling to implement the crop rotations necessary to eradicate aestivating *Isidorella*. These growers continue to rely on chemical control.

Copper sulphate was the only chemical available for *Isidorella* control in rice, and was applied at rates of up to 12Kg/Ha (3ppm copper in treated water). The level of control achieved with copper sulphate is highly variable, and is influenced by water chemistry, organic matter, and turbidity. In addition, aqueous copper rapidly precipitates and accumulates in the soil, and can be assimilated by pasture plants that form an important part of crop rotations.

An alternative to copper sulphate is urgently required by growers unable to control *Isidorella* through the use of suitable crop rotations. A study was conducted in order to identify effective molluscicides for use against *Isidorella*, and to quantify their toxicity and short-term residual activity under conditions that approximate those found in commercial rice crops.

Out of twenty-seven pesticides evaluated for their toxicity to mature *Isidorella*, only three organic compounds were found to be effective at concentrations in the range 0.2 – 0.5 mg/L. None of these compounds is currently registered for use in Australia. However, Cupricide® was found to be effective at a concentration of 1.0 mg/L as active copper.

Field trials with Cupricide® in rice fields of the Murray Valley Irrigation Districts have confirmed the superior performance of this product as both an algicide and molluscicide. A controlled trial on 40 Hectares of planted ricefield (3 week old seedlings) was aerially sprayed with 400 Litres of Cupricide®; the water depth was 10-15 cm. After 7 days, all of the slime had been dislodged from the rice seedlings and was floating on the water surface, inactivated by Cupricide®. More than 80% of the snail population was moribund and was suspended in the water layer, without attaching to the seedlings.

This trial confirms the practical benefits of using Cupricide® as both an algicide (5 Lt/Ha) or a combined algicide-molluscicide (10 Lt/Ha). Cupricide® can be tank-mixed with all the approved herbicides and insecticides commonly applied to rice-fields by aerial spray.



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