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Comparative Effectiveness of Kupramine® against Copper Sulphate

Copper Sulphate ("blue stone") has been used in Australia for many decades to combat algae and snails in dam water and rice fields. With the development of Kupramine®, the use of copper sulphate has been prohibited by the National Registration Authority (NRA) and the State Environmental Protection Agencies (EPA).

The effectiveness and benefits of Kupramine® over copper sulphate are overwhelming, as demonstrated by the following properties:

1. Copper Concentration

Kupramine® has been proven in controlled laboratory tests with blue-green algae to be an effective algicide at 0.2mg/L copper compared to copper sulphate at 1.0mg/L.

2. Compatibility with Pesticides

Kupramine® is compatible in tank mixes with all of the approved herbicides and insecticides applied by aerial spray in rice fields.

3. Aerial Spraying

Kupramine® is a liquid, completely miscible in water and can be readily applied by aerial spray in standard tank mixes, in combination with approved herbicides. Copper sulphate crystals are difficult to apply and are slow to dissolve in water.

4. Snails

Kupramine® has been demonstrated to be effective in controlling the common rice field snail (Isidorella) at 1.0mg/L copper (equivalent to 10 litres per hectare). Copper sulphate requires the use of at least 3.0mg/L copper.

5. Environmentally Acceptable

Kupramine® contains a copper chelate which stabilises copper in solution, preventing precipitation of copper hydroxy salts in alkaline, hard water.

Copper sulphate is readily precipitated in these waters, reducing the Algicidal effectiveness. Because of the chelate structure in Kupramine®, it is rapidly and specifically absorbed by algal cells, which are inactivated within 12 – 24 hours. Copper sulphate does not have this specific mode of activity towards algae, but is toxic to fish and aquatic invertebrates. Kupramine® adds only 20% of the copper load to the environment, compared to copper sulphate.

6. NRA Registration

Kupramine® has been approved and registered by the NRA for use as an algicide in rice fields. Copper sulphate is not registered and therefore should not be used for treating natural water bodies. The State EPA's have also banned the use of copper sulphate, since it is not controlled and regulated for this application in the natural environment.

7. Cost Effectiveness

Kupramine® has been proven to be an effective algicide in rice fields at an application rate of 5 litres per hectare. This rate is very favourable compared to copper sulphate, which has to be applied at the rate of 6-12 kg per hectare, with all the attendant difficulties in application and dissolution.

Based on all of the above considerations and proven field trials in rice fields, it has now been demonstrated that Kupramine® is superior in every respect compared to copper sulphate in treating algae and snails.

AGMIN CHELATES PTY LTD
(A.C.N. 006 413 458) (A.B.N. 30 006 413 458)
32 Wattlepark Avenue, MOOLAP, VIC. 3224
Phone: (03) 5248 3828 (03) 5248 2602 Fax: (03) 5248 1603
Email: service@agmin.com.au Website: www.agmin.com.au