

Tank dilutions between Bordeaux mixture and lime sulfur could reduce copper without impair the vineyard protection against downy mildew

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In recent years, the subject 'tank mixtures' has not been addressed without being surrounded by controversies, difficulties and doubts. Indeed, the food safety policies in worldwide have becoming more restrictive to formulations with pesticides, carriers or adjuvants, in terms of physical and chemical incompatibilities between themselves. Despite of the legislation constraints, research is able to search for suitable combinations between substances with fungicide properties, if they appear to be compatible and useful for increasing protection and reducing on doses of copper, sprayings and costs. In this context, field trials were carried out in order to test different dilutions Cu:Ca of the Bordeaux mixture (BM) with and without addition of Lime sulfur. The treatments were: 1) BM with Cu:Ca dilution ratio 0.5:0.5 from standard BM (CB0505); 2) BM with Cu:Ca dilution ratio 0.5:1.0 (CB0510); 3) BM with Cu:Ca dilution ratio 0.5:2.0 (CB0520) and 4) BM with Cu:Ca dilution ratio 0.25:0.25 (CB0505) + 0.4% lime sulfur (CBS025). The treatments were applied following the same spraying schedule. The completely experimental design was used with five 'Isabel' grapevines per each experimental plot separated by a border row with five plants. Thirty leaves and five bunches were evaluated each plant, and downy mildew symptoms were recorded according a graphic scale from Azevedo (1998). Notes were converted to % Disease Index (DI) through an arcsine data transformation (Czermainisky, 1999). Plots with non-treated plants were considered as the unprotected controls (Ctrl). Evaluations were performed weekly along 120 days. At the end of the experimental period, significant drops in AUDPC from leaves sprayed by tested treatments, with % protection ranging 72% (CB0505) to 82% (CBS025) were observed. Regarding to the downy mildew dry berries, the protection did range between 62% (CBS025) to near 80% (CB0520). Despite of no tank incompatibilities (i.e. formation of sludge) and no phytotoxicity events have been observed, further tests with such dilutions must be done to satisfy legislation before could be recommended to growers. However, the present results display a potential way to reduce copper from mixtures with no loss of their protective effects, encouraging further researches.

Theme: Phytosanitary measures (Fitossanidade)

Area: Viticulture

Support: CNPq/SEG-Embrapa