

DETERMINATION OF RESIDUAL PERIOD OF FUNGICIDES FOR THE CONTROL OF *Guignardia citricarpa* ON CITRIC FRUITS

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Citrus plants are affected by several phytopathogenic agents, among which is part of the *Guignardia citricarpa* fungus, which causes citrus black spot (CBS). This disease, in addition to affecting the appearance of the fruit, causes the premature fall, which under favorable conditions, can exceed about 80% of fruit from the plant (1;2). Thus, it has fundamental importance to study the control effective power of currently used fungicides and also the residual period. These aspects are unknown in literature, mainly for the control of this pathogen in specific. Such information can enable the optimization of CBS control, but also the rational use of fungicides. The objectives of this study were: (i) to measure the residues amount of copper oxychloride and pyraclostrobin in 'Valencia' sweet orange fruits after their application; (ii) to evaluate the protective and fungistatic capacity of copper oxychloride and (iii) to evaluate the preventive and curative capacity of pyraclostrobin systemic fungicide for the CBS control. Two experiments were carried out: in the first one, 1.000 fruits were immersed in the fungicides and then inoculated with conidia of *Guignardia citricarpa* at regular intervals of 1, 7, 14, 21, 28 and 35 days for the copper oxychloride and 1, 7, 14, 21, 28, 35, 42, 49 and 56 days for pyraclostrobin. In the second experiment, 1.000 fruits were first inoculated with conidia and then treated by immersion with the fungicides in the same regular intervals as described. Sixteen fruits were used for each period of inoculations and eight fruits per application. For the first experiment, eight fruits were used for analysis of residues and eight fruits were left in the plant until harvesting to evaluate disease incidence and severity. For the second experiment it was evaluated only disease incidence and severity in the harvest. Analysis of residues were performed by Atomic Absorption Spectrometry on the fruits surface for copper oxychloride and by High Performance Liquid Chromatography coupled to the mass/mass detector (HPLC - MS / MS) on the fruits surface, peel and pulp for pyraclostrobin. Under conditions of high inoculum pressure, copper oxychloride showed limited protective capacity and no fungistatic capacity. Residues found on the fruits surface were directly related to the fruits growth. The highest quantity of pyraclostrobin residues was found in the fruit peel. Under high inoculum pressure, this fungicide showed efficient preventive capacity, for at least 35 days. This finding is consistent with the information contained in the literature, since the intervals of systemic fungicides spraying in the field are a maximum of 42 days (3). The observed incidence rate (62% of symptomatic fruits) to 42 days of application, even high, showed low level of severity, with no significant potential for fruit drop (4). The efficient performance of preventive fungicide pyraclostrobin is due to intrinsic characteristics of the active ingredient such as, low water solubility, strong adhesion to the lipophilic layer of plants and low vapor pressure, which allows a continuous release of the active substance for many weeks (5). And for curative capacity, the fungicide pyraclostrobin showed efficient for at last seven days.

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