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REDUCING CHEMICAL INPUTS FOR SUSTAINABLE PROTECTION OF STRAWBERRY

Prodorutti D., Profaizer D., Conci S., Grassi A., Pantezzi T., Angeli G.

Center for Technology Transfer, Fondazione Edmund Mach, Via Mach 1, 38010 San Michele all'Adige (TN) Italy

daniele.prodorutti@fmach.it

In Trentino region strawberries (*Fragaria* x *ananassa*) are grown under tunnel with soilless cultivation system. This growing method allows to reduce grey mould (*Botrytis cinerea*) incidence but creates conditions for powdery mildew (*Podosphaera aphanis*) development.
Starting from 2013, experimental trials with the aim to reduce chemical treatments on strawberry have been carried out. Some fungicides authorized in organic production have been recently registered on strawberry in Italy: among them there are commercial products based on potassium bicarbonate with specific activity against powdery mildew and very short pre-harvest intervals, moreover they are exempt from MRL. Semi-field and field trials were carried out to evaluate the efficacy of potassium bicarbonate against powdery mildew on strawberry. In the semi-field trials, potted plants were kept in a glasshouse and inoculated by shaking infected leaves over the plants. Treatments were: potassium bicarbonate, sulphur, bupirimate and untreated control. Four and five weekly applications were applied in the first and second trial, respectively. In the field trial (tunnel and soilless cultivation) a conventional spray program was compared with bicarbonate applications and the untreated control. Incidence and severity on leaves and fruits were assessed in these trials.
In the glasshouse trials, the spray applications with potassium bicarbonate significantly reduced the incidence and severity of powdery mildew compared with untreated control. Efficacy of bicarbonate was similar to sulphur but was lower compared with the chemical reference. In the field trial, the untreated plots showed a high incidence of the disease while a very low incidence was observed both in conventional and bicarbonate treatments. In conclusion, our results showed that repeated applications of potassium bicarbonate were effective against powdery mildew and no phytotoxic effects were observed. Therefore this active ingredient can be included in IPM programs of strawberry, allowing a reduction of pesticide residues.

Key words: powdery mildew, potassium bicarbonate, integrated management, strawberry