EFFECTS OF STREPTOMYCIN ON FIRE BLIGHT OF APPLES

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The efficacy of three spray timings of streptomycin for control of fire blight and the effects of the antibiotic on growth of *Erwinia amylovora* was investigated in the orchard. Streptomycin was sprayed at 60 g a.i./ha onto apple blossoms at 3, 2 and 1 days before they were inoculated with *E. amylovora* ICMP strain number 8865nr. The bacterial strain was marked with dual antibiotic resistance to nalidixic acid and rifampicin and applied at approximately 10^7 CFU/ml. The bacterial populations on the flowers were monitored daily after inoculation. Pistils were dissected from the flowers and the floral parts were washed separately in sterile phosphate buffered saline for determination of bacterial populations. An aliquot (0.1 ml) of the washing was spread on King's medium B amended with the two antibiotics. The number of infected flowers was assessed three weeks after inoculation. Streptomycin treatments resulted in 23 - 32 mean numbers of infected flowers, which were significantly lower than 85 mean number of infected flowers from the untreated trees. There was no significant difference between the 3 streptomycin spray timings. After inoculation, *E. amylovora* populations on flowers treated with streptomycin declined, whilst the bacterial populations on the untreated flowers increased.

INHIBITORY ACTIVITIES OF ESSENTIAL OILS AGAINST PLANT PATHOGENIC BACTERIA

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The inhibitory activities of fifty-nine essential oils were screened against three strains of each of three major plant pathogenic bacteria: *Pseudomonas viridiflava* ICMP strain number 3272 and 2848 plus one wild strain, *P. syringae* pv. *syringae* ICMP strain number 3023 plus two wild strains and *Erwinia amylovora* ICMP strain number 8865 plus two wild strains. Bacteria were spread on minimal media at 1×10^6 CFU/ml and allowed to dry. Three 6 mm diameter filter paper discs, each impregnated with 5 μ l of the essential oils, were placed on the agar. After two days incubation at 27⁰ C, the average radius of the inhibition zone, was measured. Fourteen of the oils produced an average inhibition zone of at least 5 mm to one or more bacterial strains. ICMP strains were more sensitive (0.5 - 9.5 mm) to the oils than the wild strains. Cinnamon oil was consistently inhibitory against all bacterial strains (10 - 40 mm) and had the greatest effect against *E. amylovora*. Eleven other oils produced inhibition zones of ≥ 5 mm against *P. viridiflava*; seven oils behaved similarly against *E. amylovora* strains. To assess the role essential oils might play in the management of plant pathogenic bacteria, future research will investigate the efficacy of essential oils in controlling bacterial diseases in the field, and possible phytotoxic effects on plant surfaces.