

Poster Presentations

Integrated Pest Management

comprising of five and two acres in villages such as 44/15-L and 124/15-L, respectively were selected in the East and Southern sides of Mianchannu city. Ten mango trees from each garden suffering with 70-80 % disease were randomly selected for treatment of disease. Mixture of copper sulphate (grinded) 350 gm, lime 2 kg, rottened wheat straw 10 kg, furadon 350 gm and in these ingredients 20 kg compost was added. This mixture was mixed in the soil with hoeing 2 feet around and irrigation was applied. This practice controlled 80-85 per cent of disease. This practice then adopted in five other districts of Punjab and yielded similar results. These results are discussed in the light of economic impact of sudden death disease control for mango industry.

P IPM 39

Effects of nutritional supplements on seed germination, plant growth and resistance to *Ralstonia solanacearum* causing bacterial wilt disease in tomato

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The cultivated tomato (*Solanum lycopersicum*) is economically important and the second most consumed vegetable crop in the world. To produce high-quality tomato is very important to both breeders and farmers. For this, tomato plants should be healthy during growing season. In addition, diverse diseases in tomato should be well-managed to minimize impacts of diseases in tomato fruit production and quality. The bacterial wilt disease caused by *Ralstonia solanacearum*, a soil-borne pathogen, is one of the most destructive diseases in tomato. Although some tomato varieties have been shown to be resistant to this disease, resistance was easily broken particularly when they were placed in the high temperature and humidity. In this study, we analyzed effects of nutritional supplements on seed germination, growth of tomato roots and shoots, and the degree of resistance to bacterial wilt disease. As nutritional supplements, two commercial products of Cytozyme company, Seed+Extra (liquid) and Soil Max were tested. To examine their efficacy in germination and plant growth, Seed+Extra was applied to tomato seeds, as manufacturers described in the products. Seed+Extra treatment increased both germination rate and plant growth. Next, to examine the effect of Seed+Extra or Soil Max on bacterial wilt disease, 4-week-old tomato seedlings pre-treated with each of two products were transplanted and inoculated with *R. solanacearum* strain SL341 (race1, biovar3) in the controlled growth chamber. Disease severity was measured from one week after inoculation until plants died with rating from 0 (no symptom) to 5 (completely died). As results, Seed+Extra treatment significantly reduced bacterial wilt diseases in tomato, while Soil Max did not. These results indicate that Seed+Extra could make tomato plants healthier and more resistant to certain diseases.

P IPM 40

Antimicrobial activity of *Rosmarinus officinalis* extract on *Magnaporthe oryzae*

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The control of rice blast is mainly accomplished with the application of fungicides, but the indiscriminate use of these products cause environmental and food residues and therefore risks to human health. This leads to the need to develop new control strategies for rice blast, such as the use of plant extracts. The aim of this research was to evaluate the antimicrobial activity of *Rosmarinus officinalis* extract on the germination and apressorium formation of *Magnaporthe oryzae* and its effect in suppressing rice blast severity, in greenhouse conditions. The bioassays were conducted in a completely randomized design. We tested the efficiency of the *R. officinalis* extract at the concentrations (50, 40, 30, 20, 10, 5, 2.5 and 0 mg/mL) for inhibition of conidial germination and apressorium formation; and in the concentrations (150, 100, 50 and 0 mg/mL) for the suppression of rice blast. The concentrations of 40 and 50 mg/mL of the *R. officinalis* extract inhibited conidial germination and apressorium formation at 4, 6 and 24 hours. All tested concentrations of *R. officinalis* extract reduced rice blast severity, especially 150 mg/mL, which suppressed over 90% of the affected leaf area. The *R. officinalis* extract proved to be a potential antimicrobial for *M. oryzae* *in vitro*, and an alternative to control rice blast *in vivo*.