

Panthip Kanwichai 2012: *In Vitro* Production of Root-knot Nematode Tolerant Guava Seedlings 'Paen Sithong' with King Bolete Culture (*Boletus colossus* Heim.). Master of Science (Agriculture), Major Filed: Horticulture, Department of Horticulture. Thesis Advisor: Associate Professor Prapaporn Tangkijchote, Ph.D. 74 pages.

In vitro production of guava seedlings 'Paen Sithong' with king bolete culture as well as the seedling growth and tolerance to root-knot nematodes (*Meloidogyne incognita*) were studied.

The guava seeds were surface sterilized with sodium hypochlorite solution (Clorox[®]) at the concentration of 10 15 and 20 percentage. The results showed that the contamination was not found in all concentrations of Clorox[®] used, and the seed germination was 60-67 percentage.

The study of an appropriated medium for *in vitro* propagation of 'Paen Sithong' was done by culturing the explants (shoot and node) on MS medium supplemented with BA at the concentration of 0 (control) 1 2 3 and 4 milligrams/liter. The results indicated that the shoot cultured on MS medium plus BA 4 milligrams/liter, and the shoot and node cultured on the control medium had the maximum average shoot numbers and shoot length of 4.2 shoots/explant and 3.82 centimeters, respectively. The suitable medium for rooting was ½ MS medium plus NAA 0 (control) 0.1 0.15 and 0.2 milligrams/liter which did not promote rooting differently with an average of 2.25 roots/explant. Moreover, when the concentration of NAA increased, the root length decreased.

In vitro inoculation of king bolete culture to the guava seedlings 'Paen Sithong' was studied. The results showed that the roots of those guava seedlings increased more branching. The root pattern was monopodial-pinnate with short roots and dark brown color. The vegetative growth and biomass of those seedlings inoculated with king bolete culture were higher than the control (uninoculated), and were significantly different from the fourth month until the end of experiment. Moreover, the leaf area ratio (LAR), and the specific leaf area (SLA) were different only for the first two months whereas the leaf area index (LAI), the relative growth rate (RGR), the crop growth rate (CGR) and the net assimilation rate (NAR) were not different throughout the experiment.

The root-knot nematode tolerance of 'Paen Sithong' guava seedlings was determined. The results indicated that king bolete culture had efficiency in controlling root-knot nematodes. Those culture inoculated seedlings had lower gall numbers and egg masses, about 25 galls and 10 egg masses, respectively, which resulted in the decreased disease and the plant root tolerated root-knot nematode at a moderate level.

Student's signature

Thesis Advisor's signature