RELATIVE EFFICIENCY OF VARIOUS CONTROL STRATEGIES ON CHILLI (*Capsicum annuum* L.) ROOT KNOT NEMATODES (*Meloidogyne incognita*)

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ABSTRACT

Chilli is one of the major cash crops grown in Sri Lanka. There are number of pests and diseases identified on chilli crop. Thus, there is a need to suggest efficient way to control these pests and diseases. Chilli leaf curl complex is the major disease on chilli caused by virus and transmitted by various vector insect pests. Other than leaf curl complex, chilli root knot disease caused by root knot nematodes (*Meloidogyne incognita*) is one of the diseases which affect chilli plant. Farmers in the Batticaloa district are mainly engaged in rice and chilli cultivation. In the past few years, chilli cultivation in the Batticaloa area was affected by the root knot nematodes and caused root knot disease. Few acres of cultivatable chilli lands were abandoned in Kaluthawalai area due to root knot disease which is the main area cultivating chilli in the Batticaloa district. This experiment was conducted in three different locations of the Batticaloa district, namely (1) Crop Farm of the Eastern University, Sri Lanka (2) Kaluthawalai chilli cultivation fields and (3) Agricultural Training Centre at Chathurukondan. Studies were carried out to find out the relative efficiency of various control strategies on chilli root knot nematodes. PC-1 chilli variety was selected for the experiment as farmers in this area mainly cultivate this variety. Treatments were started after two weeks of transplanting of chilli seedlings. This experiment was laid out in the Randomized Complete Block Design with seven treatments and four blocks. Treatments were imposed for the selected chilli cultivar at fortnight intervals. The control plants were left as conventional chilli cultivation (no treatments were applied).

There were significant ($p<0.05$) differences between treatments in the number of wilted plants in each plot and block. The lowest number of wilted plants were observed in the plots treated with compost (0±0 plants at 4th week after transplanting, 0±0 plants at 6th week after transplanting, 0.25±0 plants at 8th week after transplanting, 0.75±0.09 plants

at 10th week after transplanting and 0.5±0.11 plants at 12th week after transplanting) and bio fertilizer (0±0 plants at 4th week after transplanting, 0.25±0.09 plants at 6th week after transplanting, 0.5±0.09 plants at 8th week after transplanting, 0.75±0.09 plants at 10th week after transplanting and 0.75±0.11 plants at 12th week after transplanting). The highest number of wilted plants was observed in the plots treated with citronella oil (2±0 plants at 4th week after transplanting, 1.5±0.11 plants at 6th week after transplanting, 1.75±0.11 plants at 8th week after transplanting, 1.75±0.09 plants at 10th week after transplanting and 2±0 plants at 12th week after transplanting) and chicken litter (1.25±0.09 plants at 4th week after transplanting, 1.0±0 plants at 6th week after transplanting, 1.5±0 plants at 8th week after transplanting, 1.0±0 plants at 10th week after transplanting and 2±0 plants at 12th week after transplanting).

The study showed that there were no significant ($p>0.05$) differences among treatments in the numbers of pest-infested plants. The treatments failed in controlling insect pests fed on shoots of chilli crop. The number of pest-infested plants in treated plots was similar to that of untreated control treatment.

There were significant ($p<0.05$) differences between treatments in the yield of chilli plants in each treatment of each block. The highest yield was obtained from plots with nematicide/ Diazenol 5% (309±12.1g at 6th week after transplanting, 335.3±14.2g at 8th week after transplanting and 248.7±15.6g at 10th week after transplanting) followed by the plots treated with 10ml of bio fertilizer, compost 5kg/10m^2 and neem seed extract 50 l per acre. The lowest yield was obtained from the plots treated with essential oil/ citronella (72.8±6.1g at 6th week after transplanting, 93.1±8.7g at 8th week after transplanting and 55.1±5.09g at 10th week after transplanting) and from the untreated control plots (66.8±3.1g at 6th week after transplanting, 78.8±3.8g at 8th week after transplanting and 53.4±3.8g at 10th week after transplanting).

Though the bio-fertilizer, compost and neem seed extract gave second higher yield in chilli cultivation by comparing to the side effect to environment these can be recommended to chilli plants. Bio-fertilizers are easily affordable nowadays and small quantity is quite enough to treat large number of seedlings.

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