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Abundance and species diversity of predatory arthropods in potato plants with application of botanical pesticides

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Abstract

Potato is one of the most important vegetable commodities and has high economic value and is a plant with great potential as a horticultural crop that can support world food diversification. It is also the fourth leading food commodity in the world after rice, corn and wheat. The need for potatoes continues to increase every year, but potato production has not been able to meet market demand which increases every year. In Indonesia they are generally grown in high altitudes with relatively large rainfall. Therefore the use of pesticides in potato farming is very high. The unwise use of synthetic pesticides can cause losses, such as water and air pollution, poisoning in both humans and livestock, killing natural enemies, pest resurgence, accumulation of pesticide residues, and increased production costs. One alternative that can be applied to replace the use of chemical pesticides is the use of plant-based pesticides, so this research was conducted with the objectives to compare the species diversity and abundance of predatory arthropods in potato plants applied with botanical insecticide and synthetic insecticide. The experiment was carried out in Sembalun Village, East Lombok (Indonesia), which was arranged using Randomised Block Design consisting of 4 treatments namely control, abamectin 0,5 ml, virginia tobacco stem waste pesticide 10 ml and neem botanical pesticide 50 ml. The result showed that 26 species of 18 families of predatory arthropods were found on potato during a planting period. The highest species diversity for spider and predatory insect was found on potato sprayed by neem insecticide. The lowest predator population abundance were found on synthetic pesticide sprayed potato and they were significantly different from those botanical pesticide -potato plots. The most abundant spiders and predatory insect were found on potato plants sprayed with neem insecticide.

Keywords: Botanical insecticide, diversity, potato plant, predatory arthropods