The development of organic liquid fertilizers possessing bio-control function of *Plutella xylostella*

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Abstract

Some isolates possessing proteolytic ability were got from decayed organic materials. Among them No.3 and B163 isolates, No.3 and B6 isolates, and B6-3 and B163 isolates could ferment soybean powder, peanut powder and meat-bone powder liquids to produce higher concentrations of available nitrogen and phosphate respectively.

The available nutrient concentrations of fermented solutions were increased with the quantities of soybean cake, peanut cake and meat-bone powders in the solutions. The solution containing peanut meal powder added with B163 solid and liquid inoculants at ratios of 1:100 and 1:1000 had greater available nitrogen concentrations than those of added with different ratios respectively. The solution containing soybean meal powder added with No.3 solid and liquid inoculants at ratios of 1:100 and 1:500 had greater available nitrogen concentrations than those of added with different ratios respectively. The solution containing meat-bone powder added with B163 solid and liquid inoculants at a ratio of 1:100 had greater available nitrogen concentrations than those of added with different ratios respectively.

The aqueous solutions containing soybean and peanut meal powders, inoculated with B145 isolate and fermented 2 weeks, diluted to 1/100 and applied

to cabbage leaves had 100% lethal effect on 3 aged larva of *Plutella xylostella* 72 hours after the experiment was carried out in the laboratory.

The organic liquid fertilizers produced from aqueous solutions containing soybean and peanut meal powders, inoculated with B163, No.3 and B163 isolate respectively and fermented 3 weeks, diluted to 1/100 concentration and applied to pot cultured cabbage in the green house. The fresh and dry weights of cabbage applied with organic liquid fertilizers were not significantly different from those of cabbage applied with chemistry fertilizers possessed the same quantities of available nutrients to the organic liquid fertilizers 39 days after the experiment was carried out. Aqueous solutions containing soybean meal powders, inoculated with B145 and fermented 2 weeks, diluted to 1/100 and 1/200 concentrations and sprayed on cabbage leaves could significantly subdued the damage of cabbage caused by *Plutella xylostella* got heavier fresh and dry shoot weights in the green house experiment.

Key words： organic liquid fertilizer, *Plutella xylostella*, inoculant.