B-71: A comparison of growth rates of earthworms in soil fertilized with different levels of rabbit manure and cow-dung

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There are many forms of vermiculture. This may be a small scale leisure activity or a large scale enterprise. Although composite organic refuse making is a labour intensive exercise, it can be used to rear worms, which provide a high grade protein source for fish (64.86% dry wt.) It appears that by replacing part of the fish meal in the diet by worm meal, growth rate of the fish can be increased.

This study was carried out to find the rate of decomposition of rabbit manure and the suitable level of rabbit manure and cow dung as a medium for earthworm culture.

This experiment was conducted in the Animal Science Department during January-May 1995. Rabbit manure, cow dung and top soil mixed in different ratios (1:1:2, 1:2:1, 1:2:2, 2:1:1, 2:1:1:, 2:1:2) respectively, were used for vermiculture. Cowdung and rabbit manure were incorporated after air drying for one week.

Initial and final pH of each treatment was measured by using a soil tester and throughout the experiment the soil moisture was maintained at field capacity level. Ten earthworms were introduced to each treatment and growth rates were measured by determining the weight gain and length increase once a month. At harvesting, population of young worms was counted. Appearance of the rabbit manure was observed once a week.

There was high growth rate of earthworms within 3 months in all the treatments. Significantly high ($p < 0.05$) growth rate of worms was indicated in the 1:2:1 ratio treatment. The soil having a composition in 2:2:2 ratio indicated the lowest growth rate.

Use of rabbit mauure in fish ponds is problematic since it does not decompose easily. It was observed that earthworm decomposed rabbit manure within a period of 3 weeks, thus making it suitable to add as an organic fertilizer to fish ponds.

In addition to the weight gain of the earthworms, highest young earthworm population was also collected from the soil containing, rabbit manure : cowdung : soil in 1:2:1 ratio. Lowest population was obtained from 2:1:1 treatment which consisted of highest amount of rabbit manure. The change in pH during the experiment indicates the complex interaction which would have taken place in different treatments ($5.48 \pm 2 - 6.8 \pm 0.2$)

Rabbit manure can be used to rear worms up to a limited extent when mixed with cow dung and top soil. Results showed that pH of the medium increases with the growth of earthworms. Rabbit manure could be used for fish ponds 3 weeks after culturing earthworms.

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