Productivity and Growth in Organic Value Chains (ProGrOV)

ECOLOGICAL INTENSIFICATION FOR MANAGEMENT OF PINEAPPLE MEALYBUGS IN ORGANIC SYSTEM

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Introduction

Pineapple, (*Ananas comosus*) is a perennial fruit crop produced on a commercial basis in tropical and sub-tropical countries. It is the third most produced tropical fruit after bananas and mangoes.

Mealybugs are the most serious pests that affect pineapple crop worldwide, the most important species being Pink pineapple mealybug (*Dysmicoccus brevipes*) and Gray pineapple mealybug (*Dysmicoccus neobrevipes*). Both species are vectors of a virus that causes pineapple mealybug wilt disease (PMWD).

In Uganda, varying incidences and severity of PMWD was reported on farms in 2010 and it was associated with higher densities of mealybugs.

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Approach

A study aimed at identifying what species of pineapple mealybugs occur in Uganda and its infestation behaviour was conducted, and also examined whether farming practices could explain the increasing trend in mealybug infestation and incidence of wilt in Uganda. Mealybug samples were analysed from 150 farms from Kayunga and Luwero districts, the two major pineapple growing districts.

Photo 2: Pineapple fruit infested with pineapple mealybug a) growing fruit on the plant fruit

Findings

Pink Pineapple Mealybug:

Across all farms studied, the pink pineapple mealybugs was the species infesting pineapples, and it was found infesting all parts of pineapple plant with varying population densities in rainy and dry seasons.

Overall, average mealybug infestation was lower in organic farm (an average of 11.5 mealybugs/plant) than the conventional one (56.2 mealybugs/plant).

Photo 2: Pineapple fruit infested with pineapple mealybug b) harvested fruit

Methods used to control the mealybugs:

A diverse cropping system is advocated for in sustainable organic systems as it promotes more stability hence checking pest populations. This was confirmed by the fact that pineapple – banana intercropping systems lowered the mealybug infestation (27.8 mealybugs/plant) compared to sole pineapple crop (81.8 mealybugs per plant). Also, farms that practised fallowing had lower mealybug infestation (an average of 22.7 mealybugs/plant) than farms without fallowing.

Some farms use earthing up, while others use flat beds. Earthing up creates furrow in between the twin crop rows and soil is put on twin rows. It is usually implemented 5 to 6 months after planting. We found that earthing up promoted mealybug infestation (84.1 mealybugs/plant) compared to flat seedbed (31). Earthed up seedbed might have created more favourable environment for mealybug multiplication than flat seedbed.

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In Uganda, pineapple farmers consider application of coffee husks as an essential requirement for pineapple production. Those who use it allow it to decompose in a heap and apply it just before earthing up, so it becomes covered by soil.

We compared this practice with two fertilizer treatments and found that the plants under coffee husks treatment had the least mealybug incidence on the fruit (35.0%) whereas the highest incidence was in a pineapple crop under foliar fertilizer treatment (62.1%). However, coffee husks are very expensive and many farmers cannot afford it.

Conclusion

Only one species of mealybugs infest pineapples in Uganda. It can be managed by intercropping pineapples with bananas in a crop rotation regime where fallowing is included. In addition, as pineapple farmers use coffee husks as source of soil fertility on their farms, they manage mealybugs and reduce the pineapple fruits with mealybugs.

There is need therefore to:
1) establish the optimum banana plant population in a pineapple-banana intercrop that would effectively manage mealybugs without compromising quality of pineapple fruits;
2) promote strategies that would avail coffee husks to pineapple farmers at affordable prices.

Partners
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Further reading:
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