Smallholder Horticulture in ZIMBABWE

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CROP SCOUTING AND THE USE OF OTHER MANAGEMENT STRATEGIES IN COMBINATION WITH PESTICIDES IN PEST MANAGEMENT BY THE SMALLHOLDER HORTICULTURAL GROWER

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ABSTRACT

Crop scouting is the cornerstone of any successful pest and disease management program but a sadly missed element with most smallholder horticultural growers. In many cases problem pests are only identified after they have reached very high levels and this is exacerbated when pests are incorrectly identified. Pesticides, the most commonly used weapons, are not given a chance of success because of incorrect timing against the incorrect target pest. One solution to such problems is to make the smallholder horticultural growers aware of a fundamental element of pest management called scouting. This can only be achieved by training. From experience, the implementation of scout training among smallholder horticultural growers is easy.

There are other management strategies that the growers can benefit from if used in combination with chemicals for pest management. Crop rotation, cropping patterns, mulching and many other methods can often be used to manage pest populations effectively. Most of our smallholder growers need training for them to be able to implement strategies.

INTRODUCTION

Crop scouting is the basis on which pest control decisions can be made. It involves making regular visits to a field to locate, diagnose and evaluate pests and other problems of a crop. Pest numbers are counted and disease levels scored on individual plants. Many smallholder horticultural growers are not scouting their crops thus losing a lot of yield to the pests. Most of these growers are not aware of this fundamental aspect of pest management while a few have known it from cotton production but failed to implement it on other crops especially on high-value horticultural crops. If scout training is introduced to these growers, pest management practices on their smallholdings would change for the better. While most smallholder growers apply chemicals willy-nilly, they are not aware of other management strategies that they can use together with chemicals to effectively reduce pest populations. They can be trained to be made aware of such practices.

OBJECTIVES OF SCOUTING

Scouting (Stebbins and Mahar (1987), Mills (1993) has not been developed to a high degree in horticultural crops, and thresholds or action levels of most pests and diseases have not been established. In this respect, the smallholder horticultural grower's main objectives of scouting his crops would be:

1. To record the first occurrence of the pest in the crop. It is essential that the pest be noticed and correctly identified as soon after its appearance as possible so that correct measures are taken before much damage is done. An example is that of *Heliothis armigera*, (American bollworm) a pest of peas. If scouting is done and eggs are found in a crop, spraying can then be done immediately so that when eggs hatch, the exposed first instar larvae will come into contact with the chemical already sprayed on the plant. In such cases the chemical will have been given fairly good chances of success, being directed to the most vulnerable stage of the pest.
2. To determine possible or pending outbreaks of pests. The *Heliothis* example will suffice in this case. Eggs found in a crop will be a good indication of a possible outbreak of this pest so precautionary measures against such an outbreak can be carried out immediately.
3. To use reactive sprays in the case of an outbreak. In the case of diseases, preventive sprays can be carried out if the grower is aware of the diseases that normally affect his crop during different times of the year.
4. To check the efficacy of any sprays applied. The results of any spray made can only be assessed by scouting the crop after it has been applied. Resistance to pesticides by the pest can also be checked by scouting.
5. To record the occurrence of new pests. Scouting is essential not only to establish the status of the pest but also to look for beneficial insects and peculiarities in the field such as plant disorders, nutritional problems, water problems and any other abnormalities.

TRAINING

AGRITEX could be responsible for the training of smallholder horticultural growers. Such training should be cheap and simple to execute. Alternatively training could be done at the Cotton Training Centre in Kadoma where several courses in cotton scouting are conducted every year. Such training could be very relevant to smallholder horticultural growers since cotton attracts many insect pests that we get on horticultural crops and the basic principles of scouting are the same for almost all crops. After training at the Cotton Training Centre, a scout could then receive specific training on relevant crops. The Cotton Training Centre in Kadoma has good facilities and experienced personnel for scout training.

Insect pest and disease identification should be a major subject of any training program that the scout undergoes. In many cases growers are able to notice pests in their crops but fail to identify them and may end up using the wrong chemicals.

An example of mistaken identity was when a group of smallholder growers who had problems with red spider mites on their tomato crop saw symptoms of yellowing

and mottling on upper surfaces of leaves but, failing to see the tiny creatures underneath the leaves, they thought their crop was being affected by a terrible disease.

Other useful subjects to be covered in scout training courses include: timing of scouting, scouting frequencies of different crops, scouting pattern, how to examine individual plants and scouting for specific pests.

Practical scouting exercises help in assessing scouts who are undergoing training. It is important that scout training should be conducted in a language that all scouts will understand. Who should be trained? From a smallholding, any literate member can be trained.

OTHER MANAGEMENT STRATEGIES FOR PEST CONTROL

Smallholder growers resort to chemical spraying as the only solution to pest/disease problems. They should be encouraged to use a variety of other crop management practices that help to keep pest populations low so that they can cut down on chemical costs and hazards.

Crop rotations: ideally most horticultural crops should not be planted on the same land from one season to another. Neither should different crops attacked by the same insect pests and diseases follow one another. Good crop rotation helps in reducing pests from building up in a field from one season to another. For most crops a rotation of at least three years should be employed. As an example a visit was made to some irrigation schemes in Mashonaland Central where beans and peas are grown for export. A pea crop that was grown in 1994 after beans suffered severely from nematodes.

Mulching: this can help in weed control and also in the control of some insect pests like thrips in beans. Since thrips feed on the plant but pupate in the soil, pupation can be prevented or interrupted by the mulch.

Cropping patterns: it is also good that one crop is not grown in the same field throughout one growing season to avoid build up of pests and diseases. Where sequential sowings of the same crop are made, they should be scheduled so that the first planting is on the down wind end of the site and subsequent plantings are planted progressively upwind because pests like the tiny red spider mites and disease spores can be carried by the wind. This has helped many pea growers in combating a disease called *Ascochyta*.

Crop hygiene: good crop hygiene practices help in reducing pest populations. Weed control should be properly done as many weeds are alternative hosts or provide shelter for pests.

It was observed at quite a number of smallholdings that weeding was done late because of labour shortage resulting in the crops suffering severely from the weeds and insect pests. Destroying or removing crop residues soon after harvesting helps in breaking pest life cycles. Areas around crops should be cleared to provide a barrier and to eliminate alternative hosts for pests and diseases.

Use of certified or disease free planting material

Because of shortages on the market and the high cost of seeds for most horticultural crops, some smallholder horticultural growers tend to generate their own seed or

material. It is of paramount importance that certified disease free plant material be used all the time when available on the market even if it is expensive.

There are some smallholder horticultural growers who are aware of some of the above mentioned and other cultural practices but have underrated their importance. If current extension work to these growers included teaching them these simple cultural practices, they could be included in their pest management programs.

CONCLUSIONS

The benefits of crop scouting are under-estimated by many smallholder horticultural growers and so the pests reduce yields. Scouting provides a major solution in controlling smallholder growers' pest problems. Extension workers should provide scout training as a routine. The use of cultural practices in combination with chemicals will help the smallholder growers cut down on chemical costs and hazards.

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REFERENCES

MILLS, P., 1993. Paper on "Scouting in Peas" unpublished.

STEBBINS, T. AND MAHAR, T., 1987. Vegetable Pest Scouting. Extension Bulletin E-2067, Cooperative Extension Service, East Lansing, Michigan State University.