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CONTROL OF IRISH POTATO PESTS

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INTRODUCTION

Irish potato is attacked by many pests at all stages of its growth and during storage. In Jamaica the pests include cutworm caterpillars (Anicta (Lycophotia) infecta, Prodenia ornithogalli and Xylomiges sunia), leaf caterpillars (Trichoplusia ni and Agrotis sp.), aphids (Aphis maidis and Macrosiphum pisi), leaf beetles (Diabrotica balteata and Epilachna sp.), fiddler beetle grubs (Exothalmus vittatus and Pachnaeus citri), white grub (Lachnosterna spp.), leaf hopper (Empoasca fabae), sucking bugs (Nezara viridula, and Leptoglossus sp.), and slugs (Veronicella spp.).

The main spring-planted crop is more prone to damage than the fall crop, and damage varies from negligible to about 60%. Pest control was neglected for a long time but continued losses and the dramatic successes in the control of potato diseases with chemicals led to increased demands for methods of pest control. During the past five years several chemical control trials have been conducted (Antilles 1970, Suah 1972, Suah 1974). At present most of the pests are controllable, but efforts are continuing to improve methods of control, and a close watch is kept for changes in the pest complex and populations and for signs of pesticide resistance. Within the past decade only one new species (D. balteata) was added to the list of pests but there have been reports of suspected resistance to the chlorinated hydrocarbon group of pesticides mainly chlorade and dieldrin.

CROP ROTATION

Several pests may be carried over from a previous crop to damage the planted seed tubers. Chief among these are cutworms and beetle larvae. Cutworms are always present feeding on cultivated crops, grasses and weeds and as Edwards (1936) stated "destruction of crops by this pest is always more severe in plots surrounded by grasslands or in fields brought into cultivation after they have been left to fallow for some time." These are the conditions existing in most of the potato growing areas. White grubs feed mostly on decaying wood in the soild provided by yam stakes and roots of trees and shrubs. Fiddler beetle grubs feed on many tubers but mostly sweet potato, and the roots of plants like avocado, citrus and pimento. Those pests that survive the brief starvation period during land preparation, exposure to the sun, or being eaten by birds or mammals, attack the newly planted crop. Small tubers may be completely destroyed and damage to larger ones provide infection court for disease.

Control is by rotation, with crops such as corn or beans proceeding potato, avoidance of planting potatoes under or near to known hosts of the fiddler beetle, and, where high populations occur, the use of soil applied pesticide such as chlordane, diazinon, dieldrin and heptachlor. These are incorporated in the soil to the planting depth.

SPROUTING STAGE

Newly emerged potato sprouts are damaged by cutworms, crickets and slugs. Where there is only one bud on a tiber and the resulting sprout is chewed off at ground level the plant is lost. If it is cut above a few lateral buds, these may grow to produce the plant. If there is more than one bud, the next in order of apical dominance may sprout and grow, but in both instances later of weak plants are produced.

Proper precautions to control insect pests at the time of planting and the use of a poison bait for the slugs should provide adequate protection at this stage. Where no control measure was adopted at planting, a pesticide soil-drench is recommended for the cutworms and baits for crickets and slugs. Severe damage reduces the size of the plants, the number of tubers set and tuber development. The crop can be easily destroyed at this stage. However the chewing insects are easily controlled added a stomach poison or contact insecticide to the fungicide. Several insecticides are recommended for this treatment including Basudin, Dipterex, Malathion and Sevin. Malathion is most widely used, as apart from its low mammalian toxicity it also controls sucking insects. Rogor 40 and Perfekthion are recommended for sucking insects.

Good weed control and field sanitation will remove the alternate host and harborage of several of the pests. The crop is usually moulded at this stage and if done to cover the tubers to a depth of about three inches this will protect the tubers from cutworms which live and feed near the soil surface.

MATURED TUBER STAGE

Matured tubers are prone to attack by all those pests that will damage the seeds at planting time. If no attempt was made to control beetle larvae earlier, it will be difficult to control them at this stage as they will be feeding on the lowermost tubers. In order to kill them one would have to use a soil drench which could leave harmful residues on the tuber. The cutworms are easier to control because they feed near the surface. If the tubers were not deeply covered by moulding, then the exposed tubers and those near the soil surface will be chewed. To control the pests at this stage it is recommended to cover the tubers with about 2 inches of soil and apply a pesticide as a spray or a bait. In most instances where a pesticide spray is not effective against the caterpillars a bait can give excellent control. If the damaged tubers are not separated and discarded but are stored with the good ones some of the grubs and caterpillars may be carried with them and these will continue to feed and damage more tubers until they pupate. As mentioned before the damaged areas will admit disease pathogens and so encourage tuber rot.

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