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FRUIT FLY TRAP PREPARATION AND ITS FIELD APPLICATIONS

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Importance of fruit flies:

Fruit flies are the most serious pests of fruits and vegetables at global level. They are distributed throughout Asia, Europe, America, Africa and Australia. The host plants which are attacked include mango, pear, plum, apricot, guava, persimmon, peach, papaya, citrus, litchi, melons, pumpkins, bitter gourd, cucumber and all cucurbits etc. The losses caused vary from 50 – 70%. The problem is very much complex from quarantine point of view as it can proliferate through the export and import of infested fruits or crossing the borders, being a good flying insect.

In order to combat the problem farmers usually used and relied on pesticides which are not only ineffective once the fruit is infested, as the larvae are concealed inside the fruit, but also have resulted in insect resistance, pesticides residues, toxicity, environmental pollution and cost economics problems.

In view of the future prospects of the exports of fruits and vegetables and the WTO requirements for pest and pesticides-free food commodities, the problem is of great prime importance to Pakistan for its foreign exchange earnings and economic stability. Therefore, it is quite imperative and pertinent to devise pest control strategies, which are not only effective and economical, but also environment friendly.

Male annihilation technique is one of the best alternate choices, which has been introduced by NIFA for the first time in NWFP. The sex lures used so far include methyl eugenol, cue-lure and tri-med lure.

Nature of attack of fruit flies:

The semi-ripe or ripe fruit is infested by the female fruit fly. The female after mating with male, starts laying eggs (average 250 eggs/female), through its ovipositor, inside the fruit. The eggs hatch within 36 - 48 hours depending upon the ambient temperature. The larvae start feeding inside the fruit. The damaged fruit eventually falls on the ground and the larvae which are now ready to pupate pop-out from the fruit and pupate in the soil. The pupal stage lasts for 6-10 days after which the adult flies emerge. Thus the entire life cycle is completed in 13 to 22 days, depending upon the climatic conditions. The adult male flies can live

from 60–75 days while female longevity is 70–110 days. This is a routine life cycle in summer, however, during winter the pupae hibernate in the soil until spring (March) and emergence occurs as the environment becomes warm and conducive.

Fruit fly traps preparation and field application:

In this technique, methyl eugenol, cue-lure or tri-med lure is being used as species-specific lures. The present methodology is described for methyl eugenol.

This chemical is a strong and powerful food and sex attractant for Bactocera dorsalis and Bactrocera zonata. Both the species attack mostly guava, mango, peach, pear, loqat, plum, apricot and citrus etc. therefore it can be used for the safety of all these fruit orchards. The chemical is mixed with sugar and an insecticide (Naled, Dipterex, assonate or any other organophos chemical) in the ratio of 85%, 10% and 5% respectively. Five ml of this lure-toxicant mixture is applied to the cotton wick which is held inside the trap in a wire loop attached to 6 cm long and 3 cm dia PVC pipe from open end. The close end of the trap has the similar size and diameter pipe fixed for free entrance of flies. The trap is then suspended with the help of a hook, fixed on the top, in guava tree at about 6 feet height. Due to its strong smell, all the male fruit flies are attracted from a radius of about ½ K.M. enter through both ends of pipe and hence killed inside the trap. In this way, the male population is suppressed significantly and the 1:1 male-female ratio is disturbed. The females are mostly left un-mated and start laying in-fertile eggs which ultimately eliminates its progeny and further reproduction. In response to male annihilation and female infertility, the fruit escape infestation and control targets are achieved. The population is effectively controlled, if 8 traps are installed/acre throughout the cropping season. The fly catch and subsequent fruit sampling can give a clear index about the efficacy of this technique. The fruit fly traps can be replenished and replaced after 2-3 months depending upon the weather conditions.

Specification of trap:

- Green or white colour plastic bottle round shape with lid (1.4 lit capacity)

- Size: length = 17 cm
- Width = 10.5 cm
- PVC Pipe length for both sides entrance = 6 cm each
- PVC pipe dia (entrance) = 4 cm
- Flexible iron wire for hanging trap = 50 cm
- Iron hook for cotton wick inside the trap for pheromone impregnation
- Length = 11 cm
- Cotton wick inside the trap
- Sex pheromone (males attractant)
- Lure toxicant
- Sugar

Precautions in trap preparation and MAT application: -

1. Lure toxicant mixture should not be prepared in the orchard. It should be prepared in close circuit room or laboratory and well ventilated post-operation.
2. Keep the lure toxicant mixture and methyl eugenol chemicals in airtight coloured glass or good quality plastic bottles in a cool and dry place.
3. The bottle must be shaken thoroughly before use so that the toxicant inside should be mixed properly with the mixture for killing the flies.
4. Great care may be exercised so that no lure-toxicant mixture should touch the outsides of the trap, otherwise the flies will not enter the trap and the technique will be no more effective and responsive.
5. Lure toxicant mixture should not drop any where in the field as such on the ground or trees.

6. Used cotton-wick may be buried deep in the soil.

7. Better use rubber gloves while preparing the lure toxicant mixture and trap and wash hands thoroughly with soap after wards.

8. Avoid smoking and eating while handling lure-toxicant mixture and traps preparation.

9. Keep all the mixtures and materials in safe-custody away from edibles, food and reach of children and un-authorized persons.

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