Annals of Sri Lanka Department of Agriculture 2017. 19 (2): 319 – 320

Poster

EFFICIENT, USER AND ENVIRONMENT FRIENDLY PROTEIN BAIT TRAP TO REPLACE SPOT APPLICATION IN AREA-WIDE MANAGEMENT OF FRUIT FLIES

K. A. N. P. Bandara[1], L.G. Sujeewa Kumari[1], A. S. Pushpa Kumari[2] and M.N.E.Magollage[2]

[1] *Horticulture Crop Research and Development Institute, Peradeniya, Sri Lanka*
[2]*Fruit Research and Development Institute, Horana, Sri Lanka*

ABSTRACT

Sri Lanka is inhabited over 35 recorded species of fruit flies and out of them around seven causes economic damage to horticultural commodities. The diversified agro-ecosystems with small scale staggered cultivations provide food and shelter for their continuous multiplication. The Department of Agriculture in 2009 introduced area-wide integrated fruit fly management package (AW-IFFMP) to manage the problem in which spot application of locally produced protein bait (LakGro Bait®) played a major role. Implementation of the package successfully controlled the damage enabling to produce export standard fruits meet the EU standard and to stop any further export restrictions. However, the fast disappearance of the protein bait residues on leaf surfaces requiring frequent and repeated application is a disadvantage of this commercial product. Therefore, a more efficient bait application technique was developed under this study. Investigations were carried out at Horticulture Crop Research and Development Institute (HORDI) to develop a more efficient protein bait-trap based application against melon fly, *Bactrocera cucurbitae*. Various trap models loaded with mixtures of protein bait (LakGro Bait®) and insecticide Spinosad (Success 2.5 SC®) were evaluated for attractiveness and effective duration. The most efficient trap model was further evaluated in HORDI and Fruit Research and Development Institute (FRDI), Horana against melon fly and fruit fly pests, respectively in three cultivation seasons during the period of 2015 to 2016 and its effectiveness compared with the already recommended spot application. All laboratory and research field experiments were laid down in a Randomized

Complete Block Design (RCBD) with four replicates and data were analyzed using SAS software by CATMOD procedure.

The selected protein bait trap model loaded with un-diluted LakGro Bait® mixed with Success 2.5 SC® at 5 ppm (A.I.) recorded the highest "attract and kill" activity to both melon and fruit fly pests and the activity persisted up to 14 days without significant drop (p=0.05) in outside field conditions. The trap consists a ring of PVC tube (90 mm diameter) with dorsal thickness 60 mm and ventral thickness 40 mm. The ring is hanged in the field with the help of iron cord fixed to the dorsal center of the ring suspending it in horizontal position. A plate cut from a sponge sheet (25 mm thickness) is tightly inserted into the ring. Protein bait (LakGro bait®) mixed with Spinosad (Success 2.5 SC) at 5 ppm (AI) is applied on the sponge plate as a ring with the help of a delivery device (4-5 ml/trap). Comparative field evaluations showed that the selected protein bait trap with 10 to 14 days bait renewal interval and spot application with 5-7 days bait application intervals at the same application rate (1-2 l/ha) were equally effective in controlling the fruit fly pests. The new technique reduced insecticides (Spinosad) usage in AWIFFM from 125-250 µl AI/ha in spot spray application to 5-10 µl AI/ha. Further, the proposed trap can also be successfully used under adverse weather conditions and in in-door applications such as in open fruit stalls. Farmer accessibility studies indicated that farmers prefer the newly introduced protein bait trap over the already recommended spot application due to its cost effectiveness (Rs.8/trap), long effective period, user friendliness and self-assembling capability and re-usability. Therefore, spot application of protein bait in area-wide integrated management of fruit fly pests can be successfully replaced by the protein bait trap with more environmental, health and economic benefits.

Key words: Fruit fly management, Protein bait trap, LakGro Bait®