CONTROL OF PESTICIDAL POLLUTIONS BY UTILIZING SOME IPM TOOLS FOR COMBATING INSECT PESTS ON MAJOR VEGETABLE IN BANGLADESH

Dr. Md. Mizanur Rahman[1]

Extended Summary

The experiments including a socio-technical survey were conducted during March 2009 to August 2009 with the aim at fine tuning of farmers' practices (FPs) into a more effective integrated practice for managing Brinjal Shoot and Fruit Borer (BSFB), *Leucinodes orbonalis*. The survey comprising regular inspection of brinjal plots of a total of 30 brinjal growers for collection of technical and socio-economic data revealed a total of 7 farmers' practices (FPs) comprising chemicals plus other components including sex pheromone, and 1 FP comprising components other than chemicals and pheromone. The study revealed that the use of insecticides dominated in the FPs. In the study areas, generally the brinjal growers used different combinations of insecticides and placed pheromone traps in 8 different positions but received unsatisfactory results. Based on survey findings, the subsequent on-station experiment was conducted. The on-station evaluation of some options and their combinations for managing brinjal shoot and fruit borer (BSFB) *(Leucinodes orbonalis* Guenee) was carried-out at Sher-e-Bangla Agricultural University, Dhaka, Bangladesh during May, 2009 to October, 2009. Among the single options, routine spray of Marshal at 7 days interval (T_7) was better than sole sex pheromone trap placed at plant canopy and in the centre of the plot (T_9), which, however, was better than sole mechanical control (T_2) in all considerations. But among all treatments, T_1 (spraying of Marshal at 2 days interval + Mechanical control + Pheromone trap placed at plant canopy and in the centre of the plot) performed the best in all respects ensuring the lowest shoot infestation (6.27%) and fruit infestation (3.19 % by number and 2.83% by weight, respectively), highest reduction of shoot infestation (79.65%) and fruit infestation (89.03% by number and 90.72% by weight) over control, the highest healthy fruit yield (30.42 tons/ha) and total fruit yield (32.71 tons/ha), and the highest BCR (2.05). This was followed by T_3 that comprised all 3 options of T_1 in common but having 3 days interval of sprays instead of 2 days. The performance of T_8 (schedule spray of Marshal at 7 days interval + mechanical control) was next to T_3

[1] Professor, Dept. of Entomology, Sher-e-Bangla Agricultural University, Dhaka

and T_1 that ensured less shoot infestation (11.12%) and fruit infestation (6.26 % by number and 6.95% by weight respectively), higher reduction of shoot infestation (63.91%) and fruit infestation (78.52% by number and 77.19% by weight) over control, the higher healthy fruit yield (tons/ha by number and 24.34 tons/ha by weight) and higher total fruit yield (28.97 tons/ha by number and tons/ha by weight), and the higher BCR (1.16) than all other treatments except T_1 and T_3. The routine spray of Marshal at 7 days interval (T_7), which required a total of 11 sprays, could render only 58.83% and 66% reduction in shoot and fruit infestation, respectively, and could increase healthy fruit production about 8 tons/ha over control, ultimately resulting in 1.29 BCR. Comparison between T_5 and T_1, and T_8 indicates the superiority of T_1 to T_5 and T_8, and the superiority of T_8 to T_5, in respect of BCR and all of its related contributing factors. But T_1 and T_3 required 33 and 23 number of sprays respectively while T_5 required only 10 sprays, and T_8 required 11 sprays. Thus either T_1 to harvest the highest healthy fruit yield and total fruit yield (30.42 tons and 32.71 tons/ha respectively) would be the best choice from economics point of view, or for consumers' safety either T_8, T_5 or T_9 (only pheromone requiring no spray) at the sacrifice of 6 tons, 8 tons or 10 tons potential healthy yield per ha respectively, may be an alternative choice. In determination of Maximum residue level, the samples were collected at different days after spraying (DAS) till residue was found from both the doses (1.5 ml/L and 3.0 ml/L of water respectively. Carbosulfan residue was detected till 7 DAS and 12 DAS for single and double dose of carbosulfan respectively, and the detected quantity of residue was above MRL up to 3 DAS and up to 10 DAS. The residue degradation rate at early stage was lower (9.41% and 51.87% respectively) than the later stage (91.38% and 99.92% respectively) both in single and double doses of carbosulfan in brinjal.