Integrated Management of Bean Aphid *(Homoptera: Aphididae)* on Bean Crop (*Phaseoli Vulgaris)* in Central Rift, Kenya

Alomba[1] O. E., Gohole[2] L., Ngode[3] L
[1]Kalro- Kitale –Food Crop Research Institute, P.O. Box 450-30200 Kitale
[2] Department of Seed, crops and Horticultural Sciences, University of Eldoret, P.O. Box 1125- 30100 Eldoret
[3] Department of Seed, Crops and Horticultural Science, University of Eldoret, P.O. box 1125-30100 Eldoret
Corresponding author; elijahalomba@yahoo.com

Abstract

Bean (*Phaseolus vulgaris*) is the world's most important food as well as cash crop to small scale farming communities in Sub- Saharan Africa. In Kenya, it is the secondmost widely grown food crop after maize as major source of dietary protein. However, its performance and production is hindered by a number of constraints including biotic and abiotic such as insect pests among biotic. *Aphis fabae*causes serious infestation and stunted growth especially in dry seasons leading to low yields hence food insecurity. Few farmers use synthetic insecticides to manage aphids on beans. A study was therefore designed and conducted at the Food Crops Research Centre (FCRI), Njoro for two seasons to determine the efficacy of integrated management on bean aphid infestation on bean . The study consisted of four factors including Fertilizer (0, 50, 75 and 100 kg of TSP), Botanical pesticides (0 and 20% w/v), Seed dresser (Gaucho at 0 and 700 mls/100 kg seed). The experimental design was complete randomized block design (RCBD) in a factorial arrangement. GPL2 was used as the test bean variety with two rates of seed dressing chemical (with and without) using Gaucho (*Imidacloprid)*. Data collected was subjected to analysis of variance (ANOVA) using SAS statistical package general linear (GLM) model. Mean separation was done according to Fisher's protected LSD significant difference test at 5% level of significance. Results showed that aphid population builds up and damage on bean crop was significantly ($P \leq 0.05$) lower when combined application using Imidacloprid at 700 ml/100kg for seed dress before planting, 100 kg/ha of TSP followed by foliar spray of botanical biopesticide (*T. vogelii* Hook) at 20%w/v 30 days after emergence followed by continuous spraying on a weekly basis than other treatments. The application of *T. vogelii at* 20%w/v alone significantly reduced bean aphid infestation better than control and application of seed dress alone. Use of seed dressing alone gave short term control of the aphids during seedling stages only. The integration of TSP fertilizer, seed dresser, and application of foliar spray of Tephrosia leaf extract at 20%w/v greatly reduced *Aphis fabae* infestation and population build in bean crop below damaging levels and resulted in improved bean grain yield. Use of TSP fertilizer alone did not have effect on bean aphid infestation. It is therefore recommended to use integrated control in order to reduce the bean aphid infestation on bean crop and increase performance and production of beans in the field.

Keywords: Field pest, Integrated Pest management (IPM), Botanical biopesticide, bean aphid (Aphid fabae)