Evaluation of Various French bean Cultivars for their Susceptibility to Thrips and the Effect of Nitrogen Fertilizer and Natural Enemies on Population Dynamics of Thrips

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A thesis submitted in partial fulfillment for the Degree of Masters of Science in Zoology of Jomo Kenyatta University of Agriculture and Technology

2009

ABSTRACT

Western flower thrips; *Frankliniella occidentalis* (Pergande) and *Megalurothrips sjostedti* (Trybom) (Thysanoptera: Thripidae) are among the most important pests of French beans, (*Phaseolus vulgaris)* in Kenya. Attack by thrips leads to flower malformation, distortion, and discoloration while in severe infestations, flower buds do not open and may abort prematurely, hence, the need for urgent and effective alternative intervention strategies. The study was aimed at evaluating various French bean cultivars for their susceptibility to thrips and the effect of nitrogen fertilizer and natural enemies on population dynamics of thrips and hence come up with innovative integrated pest management (IPM) strategies for management of thrips in French beans. This was done through a study of changes in the population of flower thrips based on different French bean cultivars: Paulista, Army Star, Julia, Samantha and Alexandra, grown under varied top dressing nitrogenous fertilizer regimes. This was done between August 2007 and January 2008 in, JKUAT farm and KARI Mwea. The experiment was laid in a Randomized Block Design with two treatments and four replications. Ten flowers and leaves were sampled at random from each of the experimental plots and taken to the laboratory for counting of thrips and Natural enemies. There was significant difference in the mean number of both *F. occidentalis* and *M. sjostedti* population among the six French bean cultivars. Results from this study demonstrated that some French bean cultivars were more resistant to flower thrips. Julia had the highest overall mean while Paulista had the least number of thrips. This suggests that the most susceptible variety among the six cultivars was Julia and Paulista was the least susceptible both species of thrips viz:

F. occidentalis and M. sjostedti. Assessment of Trichome densities per square cm for each cultivar showed that Paulista had a higher density while Julia had a lower density. This could be a reason for thrips resistance in Paulista. This study concluded that resistance to thrips is cultivar dependant in French bean c. Further studies are, however, recommended on assessment of yield effect by quantification of damage on the pods, since a particular cultivar could have high thrips count but less pod damage, an indication that the cultivar might be thrips tolerant though susceptible. An evaluation of trichome on these cultivars is also recommended to identify the types and their phytochemical components and their effect on thrips. *Orius* spp. were the only natural enemies encountered, and had no effect on population of thrips. Increasing the level of nitrogen fertilizer on French beans did not affect the abundance of thrips in each of the varieties and therefore, the different Fertilizer levels had no effect on the overall number of thrips