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The Importance of Alternative Host Plants as a Source of Infestation in Kenyan French Bean Production Areas

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Abstract

Western flower thrips (*Frankliniella occidentalis* Pergande 1895) (WFT) is an invasive species that rapidly developed to one of the most important pests of French beans (*Phaseolus vulgaris* L.) in Kenya. Within the context of the BMZ (Federal Ministry for Economic Cooperation and Development, Germany) funded project “Implementation of integrated thrips and tospovirus management strategies in small-holder vegetable cropping systems of Eastern Africa” the importance of alternative host plants for western flower thrips populations, its crop colonisation patterns, and seasonal abundance of WFT within cultivation areas was studied. Results from this work revealed huge regional variation of the importance of WFT and indicated an importance of several weed species and intercrops as source of crop infestation.

In the current pilot study we wanted to corroborate these results using a molecular approach. Therefore thrips samples were collected by hand at seven different field sites in important Kenyan French bean growing regions in the provinces Rift valley and Central. Samples were determined and then genotyped with six polymorphic microsatellite markers. We calculated the amount of dispersal (gene flow) between alternative host plants (weeds and intercrops) and crops and between regions, genetic diversity and checked for migrants using assignment tests.

With the limited data set, we already can show that *F. occidentalis* populations show considerable genetic differentiation between host plants which can partly be explained by low dispersal rates and a possible specialisation on different plant species, indicating that alternative host plants are not important as a source for infestations of French beans in these regions. These promising results are a good starting point for further studies on this topic.

Keywords: Dispersal, host plants, microsatellites, *Phaseolus vulgaris*, specialisation, Thripidae, Thysanoptera