

POPULATION DYNAMICS OF WHITEFLY IN RELATION TO CLIMATIC FACTORS ON CULTIVATED SELECTED CROPS AND DEVELOPMENT OF ITS ECO-FRIENDLY MANAGEMENT TECHNIQUES

Dr. Md. Abdul Latif¹

Extended Summary

The cotton whitefly (*Bemisia tabaci* Gennadius) (Hemiptera: Aleyrodidae) is one of the most important sucking insect pest of cultivated crops like cotton, mungbean, soybean, okra, tomato, brinjal etc. Both nymphs and adults of whitefly suck the cell sap from different parts of the plant causing loss of plant vigour and reduces crop yield. Population dynamics of whitefly was studied on bushbean, okra, and soybean growing at the farm of the Sher-e-Bangla Agricultural University. Crops were cultivated during February-April 2011 (bushbean), May-August 2011 (okra) and February-May 2012 (soybean). Population of whitefly was counted from unsprayed plot at 7 days interval throughout the cultivation period of the crops. Five plants were selected randomly from each plot and the number of adult and nymph of whitefly was counted from upper, middle and lower leaves of each selected plant at 6.00 a.m. Temperature, humidity and rainfall data were also recorded. In bushbean and soybean, population of whitefly was increased with environmental temperature and relative humidity. However, it was declined after certain period of the crop growth although temperature and humidity was increased. In okra, population of whitefly was also increased with plant age and declined after certain period but the environmental temperature and humidity was not varied significantly during the growing season. The number of whitefly per plant was higher in bushbean and soybean than okra due to rainfall during the cultivation period of the okra.

For the management of whitefly chemical insecticides were applied on bushbean and soybean as schedule spray at 10 days interval. Bamper (imidacloprid) 20SL, Shobicron 425EC, Actara (Thiamethoxam) 25WG, Chlorpyrifos 20EC, Sinothrin (cypermethrin) 10EC and Fortap (cartap) 50SP were sprayed on bush bean. Marshal (carbosulfan) 20EC, Semcap (fenthoate) 20EC, Dursban (chlorpyrifos) 20EC, Fiter (lambda-cyhalothrin) 2.5 EC, Shobicron 425EC and Actara 25WG were sprayed on soybean. Seven plant extracts such as 5% tamarind fruit (*Tamarindus indica*), 10% extract of neem leaf (*Azadirachta indica*), bullock's heart leaf (*Annona reticulata*),

¹ Principal Investigator & Professor, Dept. of Entomology, Sher-e-Bangla Agricultural University, Dhaka-1207

dodder (*Casputa reflexa*), oleander leaf (*Nerium oleander*) dhutra leaf (*Datura metel*) and dholkolmi leaf (*Ipomoea carnea*), and ripcord (cypermethrin) 10EC were sprayed on okra as schedule spray at the same interval with the help of knapsack sprayer. Only water was applied in untreated control plot. Experiments were laid out in randomized complete block design (RCBD) with three replications for soybean and okra, and four replications for bushbean. The number of adult and nymph of whitefly were recorded from five plants randomly selected from each treated and control plot at 6.0 a.m. Population of whitefly was counted from upper, middle and lower leaves of each plant at 7 days interval. Weight of fresh fruit of okra and bushbean were recorded separately from each plot after each harvest and the grain yield of soybean was taken from each plot separately after threshing. All the chemical insecticides reduced the population of whitefly in bushbean and soybean, and increased their yield. In bushbean, imidacloprid showed the best performance by reducing 64.13% population of whitefly and increasing 66.00% yield of fresh fruits. Thiamethoxam also showed the similar performance by reducing 61.65% population of whitefly on soybean and increased 42.11% grain yield. The lowest population of whitefly (4.88/plant) and the highest fruit yield (4.92 t/ha) were obtained by application of oleander leaf extract on okra. Dhutra leaf extract also gave the similar results against whitefly attacking okra. Both plant extracts showed better performance than cypermethrin 10EC in reducing population of whitefly and increasing fruit yield of okra. Considering the health hazards and environmental safety point of view oleander and dhutra leaf extracts may be used for the management of whitefly in field crops.