

## VARIATION IN SUSCEPTIBILITY BETWEEN WHITE FLY AND COTTON APHID INSECTS TO THE TOXIC EFFECT OF NEONICOTINOID INSECTICIDES

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### Abstract

Field Strains of the sweet potato white fly *Bemisia tabaci* (Genn.) and the cotton aphid , *Aphis gossypii* ( Glover ) from Beni-Suef, Menofia, Gharbia and Behera Governorates were tested with four neonicotinoides; three different formulations of Imidacloprid (Imidor 20%EC, Confidor 20% SL and Best 25%WP) and Thiamethoxam (Actara 25%WG) and three recommended insecticides; Carbosulfan (Marshal 25%WP) Diafenthiuron, (Polo 50%SC ) and Buprofezin (Applaud 25%SC). The four neonicotinoids were highly toxic to *B. tabaci* than *A. gossypii* collected from four Governorates. Cotton aphid was more susceptible to the effect of three other insecticides than white fly. The adult stage of whitefly was more susceptible to the toxic effect of all tested pesticides than the last nymphal instar. The total Protein content was highly concentrated in tissues of white fly than aphid tissues from the same localities. The electrophoretic separation of non specific esterases isozymes revealed A high activity of enzyme zones with  $\alpha$ -naphthyl acetate substrate in two pests tissues. The esterase isozymes of Aphid were classified as cholin and carboxylesterases so that the insect was susceptible to the effect of recommended insecticides. White fly esterases classified as cholin, carboxyl and arylesterase this may be illustrate the tolerant response of insect to the recommended insecticides

Key words: *Bemisia tabaci*, *Aphis gossypii*, neonicotinoid insecticides,proteins, nonspecific esterases

### INTRODUCTION

The White fly is a highly polyphagous insect, observed on more than 300 plant species, with a predilection for cotton, beans, sunflowers, aubergine, potato, capsicum, tobacco, tomato, citrus and ornamental plants (Greathead, 1986) Throughout tropical and subtropical regions of the world (Cock, 1986). *Bemisia tabaci* (Genn.) attacks many high value plant hosts of several different families in Egypt (Abd-Rabou, 1997). The Cotton aphid *Aphis gossypii* (Glover) constitutes one of the major and important economic pests of cotton plants in Egypt and it causes heavy losses in many years (Hassanein *et al.*, 1971). Whitefly and aphid have piercing-sucking type mouth parts, which they use to suck sap from the host plant. When the two insects populations are high the loss of sap can significantly affect plant growth and development, resulting in stunted plants. Because plant sap has a very high