EFFECT OF SOME CHEMICAL ADDITIVES ON THE POTENCY OF *BACILLUS THURINGIENSIS* AGAINST THE COTTON LEAFWORM, *SPODOPTERA LITTORALIS*

MOHAMED, E. M.[1], HANAN. F. ABDEL – HAFEZ[2] AND MAHASEN A. ABDL- AZIZ[1]

1. *Sids Agric. Res. Station, Plant Protection Res. Institute , ARC, Giza*
2. *Cotton Pesticides Bioassay Dept, Plant Protection Res. Institute, ARC, Giza*

(Manuscript received 3 December 2009)

Abstract

Field experiments were conducted to investigate the effect of inorganic salts, zinc sulphate ($ZnSO_4$), Calcium carbonate ($Ca\ CO_3$) and Calcium oxide (Ca O) on potentiation of *Bacillus thuringiensis* (*Bt)* formulations against the 2nd instar larvae of *Spodoptera littoralis*. Physico-chemical properties, suspensibility, surface tension and pH were also studied under field dilution rate (200 L water/ fed.).

The results indicated that the tested inorganic salts decreased surface tension and increased PH value of candidate *B.t.* The initial and residual activity of the tested *B.t,* Dipel 2X, Protecto and Agerin can be markedly increased by using $ZnSO_4$, $CaCO_3$ and Ca O at 0.1% in combination with their full recommended rates. Zinc sulphate was the most effective salt in increasing both initial and residual effect of Dipel 2X, Protecto and Agerin,. Zinc sulphate ($ZnSO_4$) also increased the residual half life value (RL50) of Diple 2X, Protecto and Agerin from 4.5, 3.6 and 3.2 days to 6.25, 7.0 and 7.0 days, respectively. The population of *Spodoptera littoralis* larvae were also reduced after 7 days after application.

The addition of such salts decrease surface tension of *Bt* preparations, then increase their wettability and spreading on treated plant leaves, and increase their initial and residual activity. Also, to change pH of the gut, being more alkaline and thus enhancing the endotoxin breakdown and release of toxic fragments.