Fifth Article: Shared with others inside the specialization - Published in SpecializedInternational Journal

Article Title	Field study to evaluate the joint action of certain insecticides, IGR's and baculoviruses against *Spodopteralittoralis* (Bosid.)
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SUMMARY: As a selective biological insecticide, spinosad has been widely used for the control of pests including*Spodopteralittoralis*. It was studied very well in the laboratory last decade but there is a lake inknowledge in both field evaluations, lethal and sublethal effects to obtain a complete analysis of spinosadimpact. This study attempts to evaluate the lethal and sublethal effects of spinosad on this pest byrecording and analyzing various toxicological and physiological parameters. The toxicity of spinosadagainst *S. littoralis* was determined under Egyptian field conditions on Tomato plants in FayoumGovernorate in the period extended from June to July of 2014 conditions by oral exposure of late second-instar larvae to the compounds. The LC_{50} values of spinosad to *S. littoralis* tested at 24, 48, 72, 96,120, 144 and 168 h after treatment were 37.580, 19.050, 9. 028, 7.019, 5.0182, 4.0181 and 2.0109 mg x kg(-1 ،(respectively. Spinosad at sublethal concentrations significantly extended the developmental period ofsurvivor larvae, and reduced larval wet weight. These doses were significantly reduced when Spinosadtested in combination with *Spli*NPV trend at 1x 10^3PIB's /ml to reach 17. 3583, 8.5878. 4.1247, 2.1474 ،0.1241, 1.220 and 0.0147 mg x kg (-1) the same trend was obtained when Flufenoxuron wasdetermined.

However these data were compared with the recommended pesticide Diazinon. Somebiological aspects were investigated and it was found that the effect of combination of Flufenoxuron withthe NPV was the best in the field application followed by Spinosad in combination with the NPV virus .Also, the tested insecticides at LC_{50} concentration reduced food consumption, larval growth rate ،efficiency of converting ingested and digested food into body tissue. This work concluded thatcombination of both bio-rational pesticides Flufenoxuron and Spinosad with virus is recommended infield.