

پایگاه اطلاع رسانی حشره شناسی ایران

عنوان پایان نامه	بررسی کاربرد انتخابی حشره کش ها در کنترل سن گندم
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نام دانشگاه:	آزاداسلامی واحد علوم و تحقیقات تهران
سال دفاع:	۱۳۷۹
اساتید راهنما:	دکتر خلیل طالبی و دکتر علی اصغر پور میرزا
اساتید مشاور:	دکتر جعفر خلقانی و دکتر غلامرضا رحیمی

The sunn pest (*Eurygaster integriceps* Put.) is the major insect problem of cereals, especially wheat and barley in Iran. one of the reasons for repeated outbreaks of sunn pest during recent decades is attributed to the vast application of fenitrothion, the only insecticide used to control sunn pest for three decades.

The purposes of this project were to evaluate the selective application strategies for insecticides in order to reduce their adverse effects and to study rational application of combined other control measures in an IPM programme.

Nine insecticides were tested in laboratory, semi field and field conditions. Studies were carried out to determine the effects of the insecticides on developmental stages of sunn pest and egg parasitoid (*Trissolcus grandis* Thom.) and other natural enemies in Varamin.

Bioassay tests of sunn pest for nine insecticides showed that deltamethrin and lambda-cyhalothrine with LD₅₀ 0.01 and 0.09 µg/overwintered sunn pest were the most and phosalone with LD₅₀ 1µg/ overwintered sunn pest was the least toxic insecticide. Based on the LD₅₀'s value, deltamethrin, Lambda- cyhalothrine and esfenvalerate were the most effective on overwintered sunn pest.

The LC₅₀ of fenitrothion was 28- 89 PPM for overwintered sunn pest and so had the lowest LC₅₀ among the used OP's insecticides. Among the tested developmental stages of sunn pest (4th and 5th instar nymphs and overwintered), the 4th instar nymph has been found to be the most susceptible, while the overwintered females were the most resistant to insecticides.

To determining the potential of reduced concentration of insecticides, the RPRC index (Relative Potential Reduced Concentration) was applied. This index is also used to predict efficacy of insecticides in the field. The experiment have shown that fenitrothion, trichlorphon and synthetic pyrethroids had the RPRC>10. Therefore these insecticides can be used in concentration. Lower than the recommended concentration, but phosalone and primicarb with RPRC<1 had no potential for concentration reduction. Besides, these two insecticides did not get acceptable level of sunn pest control in the field.

Toxicity of insecticides on developmental stages of *T. grandis* showed that adult wasp was the most susceptible stage to insecticides. Parasitized eggs were dipped in insecticide

solution in different developmental stages. The results indicated that diazinon- treated eggs had the lowest emergence percentage (0.09%) and those treated with phosalone and primicarb had the highest emergence percentage (80%<). (For 3 and 5 days old treated eggs, emergence percentage of parasitoids was 5-10% more than the other one. Parasitism percentage for 3days old Parasitized eggs was 10-20% more than the others.

Persistence toxicity time tests on the adult of *T.grandis* showed that trichlorphon with PTT₅₀¹ 7.18 days and lambda – cyhalothrine with PTT₅₀ 19.8 days had minimum and maximum durability among the 9 tested insecticides.

Moreover, it was determined that pyrethroids were repellent to adult parasitoids, in the other word, these wasps had behavioral resistance to pyrethroids. Negative impacts of OP's insecticides on the egg parasitoids were limited to first 10 days after application, but it was more than 15 days for pyrethroids after spraying.

Studies on effects of insecticides application against overwintered sunn pest revealed that sprayings had no significant effects in reducing punctured and damaged kernels rate and density of nymphs.

However, to reduce the side effects of insecticides on natural enemies the results recommended that in emergency statue, trichlorphon should be used against adult overwintered sunn pest after the earing stage of wheat. Lambda- cyhalothrine, deltamethrin, esfenvalerate, fenvalerate and trichlorphon were found to be effective on sunn pest in nymphal stage. Among these insecticides, trichlorphon had the selective effect (esp. on Coccinellidae) and deltamethrin and lambda-cyhalothrine had moderate effects on natural enemies, except Araneae however deltamethrin and lambda-cyhalothrine were more toxic to sunn pest nymphs. Insecticides application against sunn pest nymphs in 3rd instar stage was not only effective in reducing punctured and damaged kernels rate , but also conserved natural enemies by reducing their mortality percentage before leaving the field.

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