

005a - Impact of some insecticide applications on wheat insect pests and their associated natural enemies in winter wheat

Feldstudie zum Nachweis und zur Regulation von Weizenschädlingen und natürlichen Antagonisten

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Pests can cause great damage during the heading and flowering phases of wheat. Wheat productivity is seriously affected by wheat ear insects. Wheat aphids are considered one of most destructive insects in wheat. Thrips cause evident damage to winter wheat, both adults and larvae impact winter wheat development, and incomplete grain filling (Gaafar *et al.* 2011). Leafhoppers include about 160 genera comprising almost 2000 leafhopper species distributed world-wide. The majority of leafhoppers (*Javesella pellucida*, *Macrosteles laevis*, *Psammotettix alienus*) found on cereals; the later is considered a biological vector for viruses. We hypothesize that, following insecticide application on winter wheat, both wheat insect pests and natural enemy populations will be partially depleted in the treated plots. This study aimed to study the impact of insecticides on insects and predators and parasitoids in winter wheat.

Wheat insect pests and the beneficial arthropod populations were assessed using sweep net across a large scale winter wheat fields in Germany before and after insecticide applications. The insecticides used were Karate (pyrethroid), Biscaya (neonicotinoid) and NeemAzal T/S (botanical insecticide). The dose of these insecticides resulted in reductions of wheat insect and natural enemy populations and this reduction was corrected based on Abbott equation. The results showed that Karate is correlated with the highest percentage reduction (79.5%) to wheat insect pests. Karate use also resulted in a percentage reduction to natural enemies (30-60%). Biscaya and NeemAzal T/S is correlated with an equivalent mortality percents (50-65%) to wheat insect pests and resulted in a smaller percentage reduction of natural enemies (10-40%) compared to Karate. Thrips and cereal bugs were more affected than leafhoppers. Lacewings and dance flies were more susceptible; while spider, syrphids and parasitoid wasps were more tolerant.

The results showed that Karate caused more mortality to wheat insect pests than both Biscaya and NeemAzal T/S. Side effect of Karate was harmful to the natural enemies than other two materials (El-Wakeil *et al.* 2013). On the other hand, NeemAzal T/S treatments were safer to the natural enemies. The sampling plan with sweep net was used and described in this research to provide an integrated method for less wheat insect pests. This may be given a reliable base for decision making to manage of wheat insect pests. Opportunity to use Biscaya or NeemAzal T/S compatible with parasitoids and predators to control wheat insect pests is tremendously required (Freier *et al.* 2007). Thus, according to their short persistence, Neem formulations or Biscaya with adequate concentrations could be considered the promising active ingredients to use in IPM programs. Sustainable control of wheat insects requires careful monitoring and integration of cultural practices and biological controls.

References

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