GK 05/19: DEVELOPMENT OF A CONTROL STRATEGY FOR *AGROMYZA OCULARIS* PROGRESS REPORT APRIL 2010-MARCH 2011

Summary

Number: GK05/19
Title: Development of a control strategy for *Agromyza ocularis*
Project leader: Dr GJ Prinsloo
Status: Continuing
Duration: 2010 – 2014

The wheat leaf miner fly (*Agromyza ocularis*), which occurs in the irrigation areas of the Northern Cape Province is spreading northwards along the Vaal River. Serious infestations occurred in isolated fields during 2010 in the Vaalharts and Bloemhof areas. The presence and spread of the fly was mapped for the first time and will be monitored during the next three years.

This insect has several mysterious characteristics that must be unravelled. The conditions under which it survives in the field are one of them. One attempt in the glasshouse to rear the fly succeeded, but the same method failed in a second generation and it seems that very specific conditions in terms of plant growth stage, plant density and humidity is needed.

Since rearing failed in the glasshouse, a damage potential trial in the glasshouse where the flag leaf and the second leaf was cut during flowering, was conducted. The results indicated that grain mass per head was reduced by 15.3% when the flag leaf was cut, while 29% was lost when both the flag and second leaf were lost. This corresponds with figures from literature and indicates that serious crop losses could be inflicted if these leaves are under heavy attack by leaf miners.

A barley and wheat trial was conducted in the Douglas region. Between 70% and 100% of barley tillers and between 40% and 70% of the wheat tillers was damaged. Between 30% and 50% of the leaf surface of each damaged leaf was destroyed. However, if the overall leaf area loss per tiller is calculated, it varies between 5% and 25%, which is less dramatic. It was also found that female flies tend to lay eggs on the lower leaves and that the flag- and second leaves are not severely attacked. With all this in mind, it is clear why there was no differences found in yield or yield components between chemical treatment and control in both trials. If the flag and second leaves are critically injured serious yield loss can be expected and the damage potential of the insect must not be ignored

At the barley trial site a suction trap, which trapped flying insects from the end of July to the end of October revealed that small numbers of flies was active during July and that four leaf miner fly population peaks could be identified with approximate 30 day intervals. If these peaks are indicative of generations, it is not certain where these flies are coming from, especially if the absence of green grass during July is kept in mind.

Where flies are not causing extensive damage to the wheat crop a logic step in the control would be to keep them out of the field, which is also a method being tested for aphids. One aphid repelling compound was tested in the laboratory against flies and seems to be repellent. When it was tested in the field it, however did not have an effect. Possible reasons could be that the formulation is not keeping the volatile substance long enough to be repellent.

In conclusion: When leaf miner flies are able to damage the flag and second leaves of wheat and barley they will have an economic impact. Although heavy infestations occurred during the past season, the overall leaf area per tiller destroyed was too small to reduce yield.