The BIG 3 insect pests on wheat

ARC-Small Grain receives regular enquiries about wheat pests, sometimes old pests showing up again, sometimes new first timers and then also annually occurring ones.

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Together with regular farm visits, where actual insect outbreaks occur, scientists at the ARC are able to put together a picture of the importance of the different pests in the different wheat production regions. They would therefore like to refresh information on the occurrence and control of the most important insect pests that occur countrywide.

Whole range pest insects
Several insect species are pests of wheat, including aphids, mites, false wireworms, Bagrada bugs, bollworm, leafminer flies and false armyworms (Figure 1). Their importance, however, depends on the wheat production area and climatic conditions under which they can thrive. It is therefore difficult to rank these pests overall on importance countrywide, although three insects or insect groups can be highlighted, which are important in almost every production area of the country.

Number 1: Aphids
Aphids are the most important group of insect pests of wheat and other small grains and they occur in almost every wheat production area. About five prominent species are present in this group and, depending on weather conditions, their importance differ between regions. First is the well-known Russian wheat aphid (Figure 2a) which thrives under dry conditions and water-stressed plants. They are especially important under the dryland production conditions of the Free State and Western Cape.

Although wheat production decreased significantly in the Free State during recent years, this aphid is still present and surviving as four different biotypes, capable of challenging host plant resistance. Should dryland wheat production increase in future, this...
aphid could again reach top pest priority status. It is therefore important that breeding of resistant cultivars continue, employing genes effective against the different biotypes.

The oat aphid (Figure 2b), rose grain aphid (Figure 2c) and brown ear aphid (Figure 2d) are the second most important group. They thrive under humid winter rainfall conditions in the Western Cape, where it occurs annually. They occur sporadically in the Free State during years when rainfall occurs in fall. The humid conditions in irrigated fields are favourable for these three aphids and they appear annually in irrigated fields.

These aphids are not as harmful as the Russian wheat aphid and feeding damage of 12% to 15% may occur during heavy infections. They are however to be good virus vectors, specifically for Barley Yellow Dwarf Virus (BYDV). Some irrigation areas experience regular virus infections, which could cause about 33% yield loss. This virus is only transmissible through aphids and control of aphids is thus very important early in the growing season when wheat is most sensitive for BYDV infections.

**Aphid control:** For Russian wheat aphid, resistant cultivars are still the first option. When the Russian wheat aphid is present in high numbers, chemical control can be considered when 7% of plants are infested at plant growth stage 12.

To prevent feeding damage by the second group (oat-, rose-grain- and brown ear aphid), chemical control should be applied at the flag leaf stage when 25% of tillers are infested with more than 10 aphids per tiller. Irrigated fields in areas where BYDV was previously present, should be treated preventatively. Currently, 12 m high suction traps are being used to monitor aphid migration. The data are displayed weekly on the ARC’s website (http://www.arc.agric.za/arc-sgi/Pages/2017-Aphid-numbers.aspx). These data can help in the decision making with regards to control in the different areas.

**Number 2: African bollworm**

African bollworm (Figure 3) is in the second place of insect pests of wheat and other small grains, as it is a ferocious feeder present in all production areas, although not on a regular basis. This insect is potentially more damaging in irrigated wheat, but considerable infestations sporadically occur under dryland conditions in the Western Cape and Free State. Larvae are known to move into the heads at a very young stage, where they feed on the kernels, leaving them damaged.

**Control:** Chemicals registered for the control of bollworm in the young larval stage, as older larvae are less susceptible to chemical treatment. Under dryland conditions, chemical control may be applied when two to four larvae are present per meter row. In irrigated fields, spraying can be considered on six to seven larvae are present, given the higher seeding rate.

**Number 3: Leafminer**

The grass leafminer fly, *Agromyza oculus* (Figure 4a), emerged as a wheat pest in 2000 on irrigated wheat fields in the Prieska and Douglas areas. This is an indigenous insect, which for unknown reasons started to infest wheat and barley crops.

The pest initially spread in a northern direction along the major rivers to Vaalharts and Bloemhof. During the past two years, it spread suddenly to Lichtenburg and the Brits area. During 2016, it appeared for the first time on dryland wheat in the Western Cape, where one to two lifecycles were completed early in the wheat growing season. Although they are present in the KwaZulu-Natal production areas, they are not a problem, probably due to natural enemy action.

Female flies puncture the leaves (Figure 4b) and lay eggs in some of them while some are used for feeding. After hatching, the larvae burrow inside the leaf and destroy leaf tissue (Figure 4c) as they move. The visible damage caused by the larvae can be quite severe and yield losses are then expected. However, field trials to date could not confirm significant damage caused by the larvae.

**Control:** Since no significant damage to the wheat crop could be determined, clear control measures for this insect could not be determined. For more information on this matter, please contact Dr Goddy Prinsloo at 058 307 3435/082 875 3401 e-mail: prinsloogi@arc.agric.za.

Other insects that can cause damage to the wheat crop occur sporadically in certain areas in the country and information on their control can be obtained from the author.

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