

Using fungicides to control Alternaria leaf blight in sunflower

Sunflower (*Helianthus annuus* L.) is an important oilseed crop in South Africa that can be economically produced in low-input farming operations and under marginal cropping conditions. Sunflower is a crop that can achieve reasonable yields under drought conditions and, as it tolerates a wide planting window, is an attractive option for dryland producers, especially in more arid regions.

There are many diseases that can cause problems for sunflower producers. Some of these diseases are prevalent in every season and will affect plantings to a greater or lesser extent, depending on temperature, humidity and rainfall.

Sunflower disease threats

Alternaria leaf blight is a major fungal disease threat to sunflower production in South Africa. It presents as circular, dark brown to black lesions with concentric rings on leaves (Photo 1), stems and heads. Each lesion has a chlorotic circuit that grows increasingly larger until the lesions coalesce, causing extensive necrosed areas.

Alternaria symptoms can be confused with Septoria leaf blight and bacterial leaf spot, neither of which are generally economically damaging. In contrast, Alternaria leaf blight significantly reduces the head diameter and number of seeds produced per head. It can cause plants to defoliate prematurely, which affects seed set and seed fill, leading to seed and oil yield losses of up to 80% and 33%, respectively (Kgatle *et al.*, 2017).



Alternaria leaf blight on sunflower leaf and stem.



On the left is sunflower treated with preventative control AMISTAR®. On the right is untreated sunflower with no fungicide applications.

Alternaria species generally overwinter on diseased stalks in sunflower fields, but can also be seedborne, causing germination losses and infecting seedlings. The disease usually starts when plants are flowering and reaches maximum intensity during senescence, or plant aging. It can also proliferate when the sunflower plant is subjected to any form of stress.

The Alternaria fungus develops optimally at temperatures of between 25°C and 30°C with high levels of humidity. Extended periods of wet weather or heavy dew are needed to start the infection. The pathogen can re-infect plants until harvesting, whenever environmental conditions are favourable for disease development.

Disease control

Cultivation practices such as crop rotation, destruction of crop debris, and deep tillage can be used to control Alternaria. The planting of more resistant or tolerant cultivars can also help to manage the disease. However, chemical control, either as a seed treatment or in a spray programme, remains the most effective way to combat the disease. The use of fungicides to manage Alternaria leaf blight in sunflower has become inevitable and is worth the investment.

Given the cost of high-quality products, fuel, labour and the environmental impact, it is vital that growers get as much benefit from a fungicide application as possible. Applied correctly and under the

right conditions, the cost of fungicides is worthwhile, especially when seen in the context of the benefits of effective crop protection and increased yields.

Time applications correctly

Syngenta's AMISTAR® is a registered fungicide that provides preventative control of Alternaria leaf blight on sunflower (Photo 2). With AMISTAR®, as with all fungicides, timing is the most important application consideration. If the fungicide application misses the window during which the plant can be protected against disease, yield will be lost.

The first application in a sunflower field can be done at the R1 stage, 46 days after planting when the bud forms. Depending on disease pressure, a follow-up application will be needed approximately 45 days before harvest, at the R6 stage when flowering is complete.

To make the right decision about appropriate disease management strategies, it is important to recognise the environmental conditions conducive to disease development, to know when the crop is most susceptible, and to identify disease symptoms correctly. Add to this appropriately timed applications of the correct fungicide, and the grower's sunflower yield is virtually guaranteed.

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