

TELEPHONE: (263-24) 2575 289
TELEFAX: (263-24) 2575 288
TELEGRAMS: "TOBRES"
E-MAIL: tobres@kutsaga.co.zw
www.kutsaga.co.zw

P.O. BOX 1909
HARARE
ZIMBABWE

*Please address all
correspondence to
the Chief Executive Officer*

CONTROL OF MAJOR FOLIAR DISEASES OF TOBACCO

C.C. Chinheya, S. Dimbi and M Marunda

FOLIAR DISEASE CONTROL IN TOBACCO FIELDS

The currently registered Kutsaga tobacco varieties have a yield potential ranging from three and a half to five (3½-5) tonnes per hectare. However, the national average yield remains just below two tonnes per hectare. Optimal tobacco production to enable the attainment of the variety's yield potential, is dependent on best management practices including timeous and effective management of pests and diseases.

When not properly managed pests and diseases can drastically reduce yield and quality of tobacco. There are three key foliar diseases that are of major concern in Zimbabwe; Angular Leaf Spot, Frogeye, and Alternaria Leaf Spot.

Angular Leaf Spot

Angular leaf spot, is a bacterial leaf disease caused by the pathogen *Pseudomonas syringae* pv. Tabaci. This disease can be a serious problem in flue and air cured tobacco especially in wet seasons and has a detrimental effect on the quality of the tobacco leaf.

Symptoms of angular leaf spot appear as irregular, necrotic brown lesions, often angular in form (Fig 1) that enlarge and coalesce to form large areas of dead tissue.

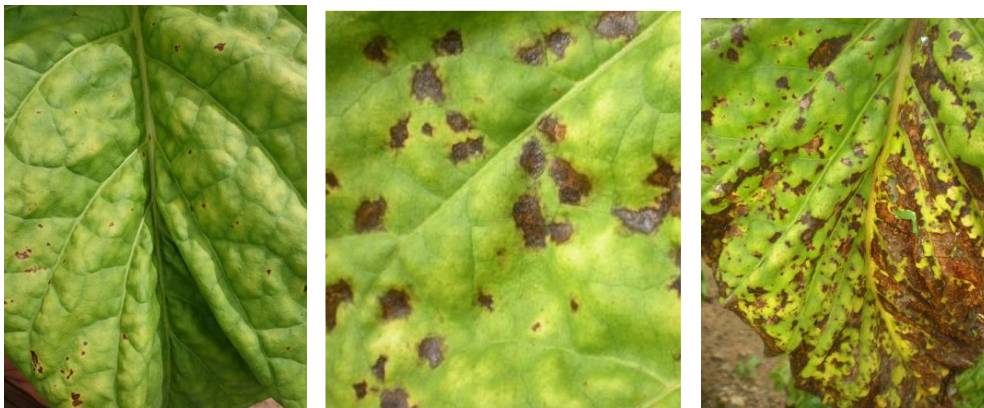


Fig 1: Angular Leaf Spot Severity (From left to right: Early Stages, Mild, Severe)

There are two strains of the same bacterium, *P. syringae* pv. *tabaci* Tox- and Tox+. The Tox- strain does not produce a toxin and causes angular leaf spot symptoms. The Tox+ strain on the other hand produces tab-toxin and is responsible for wildfire symptoms in which small lesions surrounded by a pale green halo appear on the leaves. In older lesions, the brown center is surrounded by a yellow halo which in most cases disappears if conditions become humid (Fig 2).



Fig 2: Angular Leaf Spot (Lesions with surrounding yellow halo)

Cool to warm wet weather favours the spread of the disease. In the past 5-10 years, angular leaf spot incidence has been low in most tobacco growing regions. However, in this current season (2021-22), there have been several reports of high angular leaf spot damage countrywide. This may be attributed to high moisture conditions currently prevailing in most tobacco growing areas. Furthermore, this disease is favoured by excessive fertility, particularly with high nitrogen (N) and low potassium (K) fertilisation. The use of excessive amounts of lime, which interferes with K uptake, can also increase disease severity. Furthermore, hail storm damage injures tobacco leaves creating entry points for the bacteria which leads to the disease increasing in severity.

Management of angular leaf spot

For the management of angular leaf spot in tobacco fields, two foliar sprays of acibenzolar-S-methyl (Bion 50 WG), which is a plant immune booster, are recommended. The product is to be applied at 5-6 and 8-9 weeks after planting at the rate of 60 g product in 200 L of water per hectare. For maximum benefit, it is important to apply Bion preventatively on actively growing plants at these recommended times. However, in case of an outbreak of the disease, in the field a Bion spray on, already topped plants may assist in arresting the spread of the disease but will not necessarily cure already affected leaves.

Frogeye and Alternaria Leaf Spot

Frogeye and Alternaria leaf spot (Fig 3) are foliar fungal diseases affecting tobacco in the seedbed as well as lands. In Zimbabwe, benomyl and iprodione fungicides were previously used in alternating spray programs

for the management of frog-eye whilst tebuconazole and iprodione were used for the control of Alternaria leaf spot. However, benomyl has since been withdrawn from the list of products recommended for use on tobacco because of its adverse effects on human health. Therefore, intensive research was initiated by the Tobacco Research Board (TRB) to find effective alternatives for the management of these two foliar diseases. This research yielded positive results in that a group of fungicides collectively known as strobilurins were found to be effective against both Frog-eye and Alternaria leaf spot diseases.



Fig 3: Frog-eye (Extreme left) and Alternaria Leaf Spot (Middle and Right)

The strobilurin fungicides were launched commercially in the 1990s, and comprise fungicides such as azoxystrobin, trifloxystrobin, kresoxim-methyl, picoxystrobin, fluoxastrobin, oryzastrobin, dimoxystrobin, and pyraclostrobin. However, in Zimbabwe, only four strobilurins, kresoxim-methyl, azoxystrobin, fluoxastrobin and trifloxystrobin are currently registered for use on tobacco. Tables 1 below show the recommended rates and instructions on how to use the strobilurins and other recommended fungicides, in the field.

Fungicide	Pathogen/disease	Rate (in 200 L water)	Instructions
Azoxystrobin	Alternaria & Frog-eye	500 ml/ha	Apply the strobilurin at 8 & 10 weeks after planting (WAP), and then apply iprodione at 12 & 14 WAP.
Kresoxim-methyl		500 g/ha	Apply at 8, 10, 12, 14 WAP
Azoxystrobin + difenoconazole		500 ml/ha	
Trifloxystrobin + tebuconazole		600 ml/ha	
Fluoxastrobin + tebuconazole		300 ml/ha	
Iprodione		2 L	Apply at 12 and 14 WAP
Propineb		2 kg	Apply at 8, 10, 12, 14 WAP

Growers are encouraged to report any atypical behaviors in pests, diseases or varieties to the Tobacco Research Board, P.O. Box 1909, Harare; WhatsApp (0714980980), telephone (263 - 24) 2575 289/94, VOIP (0868 800 2604) and Email (tobres@kutsaga.co.zw).