Leaf petiole and stem blight disease of sweet potato

Alternaria bataticola

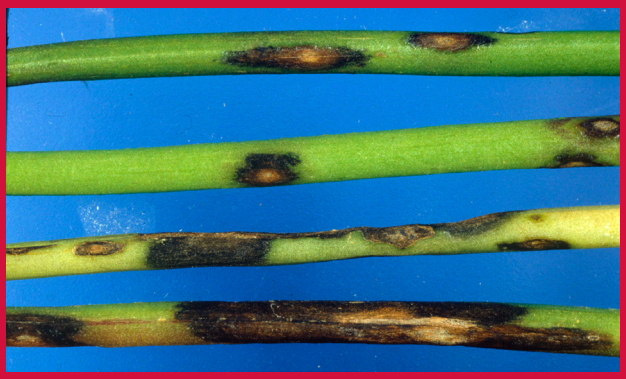

Photo: Carlos Lopes, EMBRAPA

Black sunken spots with grey centres on stems.

Photo: Carlos Lopes, EMBRAPA

Damage to leaves and stems causing a blight.

SUMMARY: Leaf petiole and stem blight disease of sweet potato (also called sweet potato Alternaria blight), is caused by the fungus *Alternaria bataticola*, and results in spots on leaves, petioles (the leaf stalks) and stems, causing leaves to fall and vines to die. It is present in several African countries but is especially serious in the cool, moist environments of central and southwestern Uganda. Management is through the use of varieties selected or bred for resistance or tolerance, careful choice of planting material, and hygiene measures, principally the destruction of vines after harvest.

KEY SIGNS

At first, small dark brown to black oval spots occur on the fully-grown leaves and show a pattern of rings. On the underside of the leaves the veins turn black. The spots grow up to 5 mm in diameter, frequently join together and are often surrounded by yellow halos. Later, the infected leaves turn yellow and fall off. In severe cases they create a carpet of dead blackened leaves over the soil. On petioles and stems the spots are grey at first, later becoming black and sunken. If they grow right around the petiole and stem they will kill them.

MANAGEMENT

Prevention – what to do before signs are seen

Cultural approaches: Leaf petiole and stem blight disease varies among varieties. The selection and breeding of resistant or tolerant varieties is the main method of managing the disease, together with cultural practices of crop hygiene, involving the destruction of the infected crop debris.

Before planting, check the availability of NASPOT[1] varieties released from the Ugandan breeding programme; many of these have been distributed to other countries in sub-Saharan Africa. Apart from high yields and acceptable taste, some have been selected for their orange flesh and also for their resistance to sweet potato virus disease. In 1999, NASPOT varieties 3, 5 and 6 with resistance were released. These were followed by NASPOT 7 to 11. NASPOT 11 is of most interest, a seedling selection from a farmer participatory breeding programme, with acceptable storage root shape, high dry matter, good to excellent consumer acceptance and moderate to high field resistance to sweet potato virus disease and leaf petiole and stem blight. Two orange-fleshed varieties with moderate resistance have been released from the same programme (Kakamega and Ejumula).

Selection of planting material should be done carefully, avoiding any vine cuttings with symptoms on leaves, petioles and stems.

Chemical approaches: Chemical control is not an appropriate method of managing this disease. Although fungicides

[1]Nasmulonge sweetpotato

would be effective, they are too expensive for most smallholders and often they are unavailable. If required in commercial planting, mancozeb or copper compounds would be suitable choices.

CAUSE

The fungus *Alternaria bataticola* is the cause of leaf petiole and stem blight of sweet potato. Although a number of *Alternaria* species (e.g. *A. alternata, A. brassicae* and *A. solani*) have been found causing spots on sweet potato leaves, *A. bataticola* is the only one that attacks the whole vine (leaves, petioles and stems) throughout the crop cycle. Surveys in Uganda, for instance, showed the predominant species were *A. bataticola* (55% of isolates) and *A. alternata* (40%). However, it is not the only fungus that causes similar symptoms. Recent reports from South Africa have shown that a disease similar to leaf petiole and stem blight was mostly associated with another fungus, from the *Phoma* genus. An *Alternaria* was found occasionally, but it was not typical of *A. bataticola. Phoma* is a common soil-borne fungus that causes a pink rot of the storage roots, but had not previously been reported on vines in South Africa.

Leaf petiole and stem blight of sweet potato is also known as *Alternaria anthracnose.* Anthracnose means 'coal disease'; it is a word used to describe diseases caused by fungi that produce dark spots on leaves, petioles, stems and fruits. The disease on sweet potato is also known as *Alternaria* leaf and stem blight.

The disease is spread over short distances by airborne spores and is also carried on wind-driven rain. Over long distances the disease is spread on cuttings used for planting. High relative humidity is required for spore germination, infection and spore formation.

Survival between crops is in plant debris remaining after harvest. Sweet potato is the only known host.

IMPACT

Most work on impact has been carried out in Uganda where yield loss depends on variety, region and cropping season. All commonly grown and preferred varieties are susceptible. The disease is serious in crops at mid and high elevations, those in the cool, moist southwestern highlands (altitude above 1500 masl and annual rainfall 900-1350 mm), and in parts of the central Lake Crescent Region, but less so in the drier regions of eastern and northern Uganda. In places where conditions favour the disease, losses of storage root yield of 50-90% are reported, especially where leaf petiole and stem blight and sweet potato virus disease occur together. Such is the importance of these diseases that they are the focus of breeding programs at the National Crops Resources Research Institute, Namulonge, Uganda, in collaboration with the International Potato Center (CIP), Peru.

DISTRIBUTION

The disease is important in Eastern and Central Africa (Burundi, Ethiopia, Kenya, Rwanda and Uganda) and also in Brazil. It is also reported from Japan and Papua New Guinea.

FURTHER READING

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