

A BACTERIAL DISEASE OF GUATEMALA GRASS

D. Mulder

Introduction

During a preliminary study of mineral deficiency symptoms in Guatemala grass (*Tripsacum laxum* Nash) it seemed that certain longitudinal necrotic stripes in the leaves were not due to any known mineral deficiency or toxicity. Further work on these stripes revealed that this disease is due to a bacterium. It has been found at the Commonwealth Mycological Institute in England that the bacterium is a *Xanthomonas* species, but not identical with *Xanthomonas vasculorum* Cobb (Dowson), which causes a similar disease of sugar cane, called gumming disease.

Symptoms

The first stripes are usually noticed at the tip. From the margin, yellow spots develop parallel to the main vein. Before the stripes turn yellow, a fading of the green colour can be noticed. After some time, a strip of leaf tissue starts to die from the tip of the leaf inward. The colour changes from yellow to grey. Long streaks of dead tissue develop which gradually extend in width, finally covering most of the leaf. Yellow spots may also develop at any other place on the leaf, though more rarely. Finally, dead streaks run along the whole length of the leaf.

So far no symptoms on other parts of the Guatemala grass plant have been found. In the case of the gumming disease of sugar cane, the main damage is done by the bacteria entering the stem.

Causal Organism

When a small yellow part of the leaf is cut out and placed in water under the microscope the bacteria are seen oozing out of the vascular tissue. Although it has been possible to culture the bacterium on a nutrient substrate, no specific name can be attached to it at this stage.

Occurrence

The disease occurs only when Guatemala grass is grown near tea or on tea land shortly after uprooting of old tea, or when Guatemala grass is manured for its own sake. It therefore seems likely that this bacterial disease is strongly linked with a rather high level of nitrogen nutrition or consequently a relatively low level of potash nutrition. Any Guatemala grass that shows the yellow colour of nitrogen deficiency is practically free from necrotic streaks.

The reason why nitrogen is brought in as the decisive factor is that it is well known that plants become more susceptible to various parasitic diseases with a higher level of nitrogen nutrition or a relatively low level of potash. Furthermore,

an edge effect is noticeable; plants along the edge of a field usually show better growth, due to the absence of food competition on one side. More luxuriously growing plants also show a more severe attack by this bacterial disease.

Preventive Measure

The link with the level of nitrogen nutrition provides us with a good preventive weapon against this disease.

Lowering of the quantity of nitrogen fertiliser in comparison with phosphate and potash is likely to create conditions under which the plant shows a higher resistance to this disease. At the moment it cannot be said at what level of nitrogen content the plant loses its resistance.

It is very likely that the lower potash content resulting from abundant nitrogen fertilising causes higher susceptibility to this disease. Therefore increasing the potash fertiliser should have a good effect.

Warning

Special attention should be given to the spread of the disease. Those Superintendents who wish to collect plants for planting out on recently cleared tea land should inspect the mother plants first for the presence of this disease. In case of a severe outbreak it is better to take the cuttings somewhere else, or if necessary wait for a dry spell of weather during which the attack abates and may even disappear. Transport of cuttings from one estate to the other should be avoided.

Request

For the purpose of collecting data on the occurrence of this disease, Superintendents are requested to inform the Pathologist, Tea Research Institute, if this disease is known to occur on the estate.

Conclusion

Guatemala grass has so far been free from any disease of major importance. The chances are, however, that under the present conditions of increased planting in connection with the replanting scheme, more important diseases will appear and spread in the developing monoculture. This bacterial disease may still be at a stage at which it can be held in check by a wise fertiliser policy based on the high potash requirements of this grass.