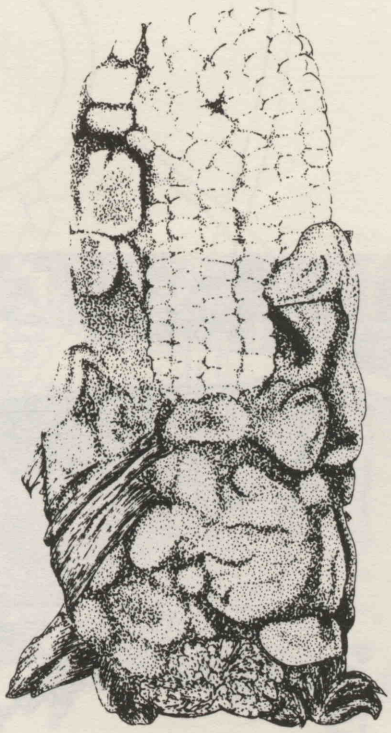
PLANT PATHOLOGY NOTES:
NO. 1 BLISTER SMUT OF MAIZE

Blister smut of maize occurs all over the world when maize is grown in warm and moderately dry areas. The disease causes serious damage especially to susceptible varieties of this crop and reduces yields by forming galls (blisters) on the above-ground parts of the plants. Losses from the disease vary greatly from one area to another and may range from a very small amount up to 100% in any one field.

The disease is caused by a fungus called *Ustilago maydis* which was recorded for the first time in Papua New Guinea at Madang in 1963. Since then it has spread to many maize growing parts of the country. It is believed that the fungus entered Papua New Guinea on seeds brought in from overseas.

SYMPTOMS

All parts of the plant above the ground may be attacked at any time in the early stages of their development. Seedlings which are infected may be severely stunted or may be killed. On older plants, infections occur on the young meristematic (actively growing) tissues. The disease can be easily recognized by the presence of galls which are commonly seen on the ears, the tassels and the nodes. These are formed when the fungus invades the maize cells causing them to divide and enlarge. The galls are covered with a silvery-white membrane (skin) which becomes dry and brittle after maturity.



Blister smut on maize ear

When the membrane breaks open, the black, powdery spores which have been developing inside are released. Some of the spores may land on young, meristematic maize tissues and start new infections, but most of them fall on the ground. The spores are able to remain viable (infectious) in crop waste and in the soil for several years.

CONTROL

The use of maize varieties or hybrids with some resistance to the blister smut fungus seems to be effective although none of those available at present are completely resistant to this pathogen. Control of the disease through crop rotation and through sanitation methods such as the burning of all infected plants is also recommended. Burning should be done before the blisters burst so that they cannot release their spores into the soil.

Control by crop rotation and by burning of diseased plants can be successfully carried out when maize is grown on small, isolated gardens, but becomes impossible when the crop is grown on a large scale. The effect of these control measures is to restrict the number of spores in the soil (innoculum level) and to keep the number of plants attacked at a low level.