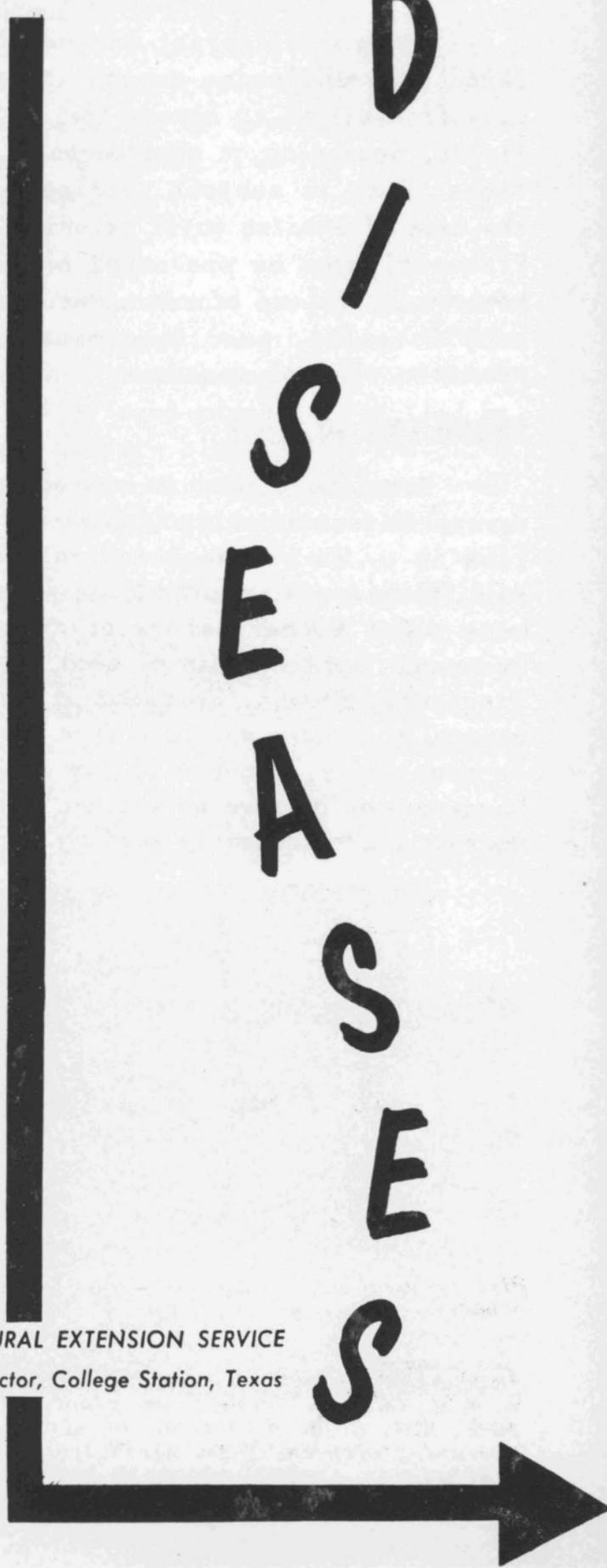


RICE

DISEASES

TEXAS AGRICULTURAL EXTENSION SERVICE
G. G. Gibson, Director, College Station, Texas



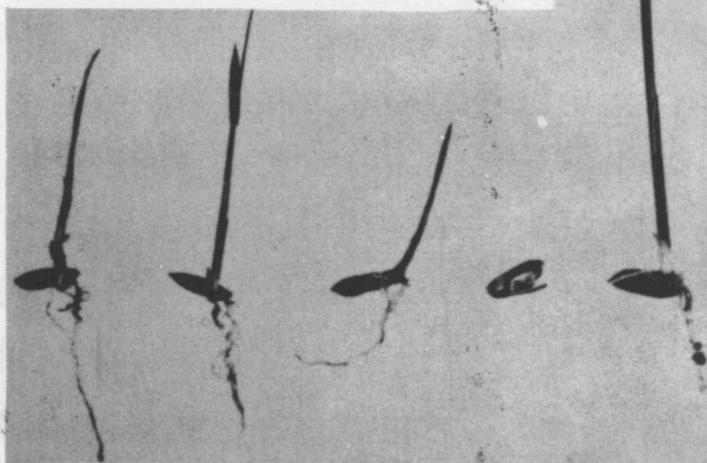
RICE DISEASES

HARLAN E. SMITH and JOHN G. ATKINS*

Several different diseases attack Texas rice and cause annual losses that vary from slight to severe for individual fields, depending on environmental conditions. Rice is subject to diseases from the time of seeding until maturity. Losses frequently can be prevented or reduced, however, by the use of resistant varieties, crop rotation, seed treatment or other specific control measures.

SEEDLING BLIGHT

Seedling blight is caused by several different molds (fungi) carried in or on the seed and in the soil. These organisms attack the young rice plant either before or after emergence, and the grain of seed rice frequently decays. Seedling blight generally is more severe on rice that is sown early, because of low soil temperatures or adverse weather conditions following early seeding.



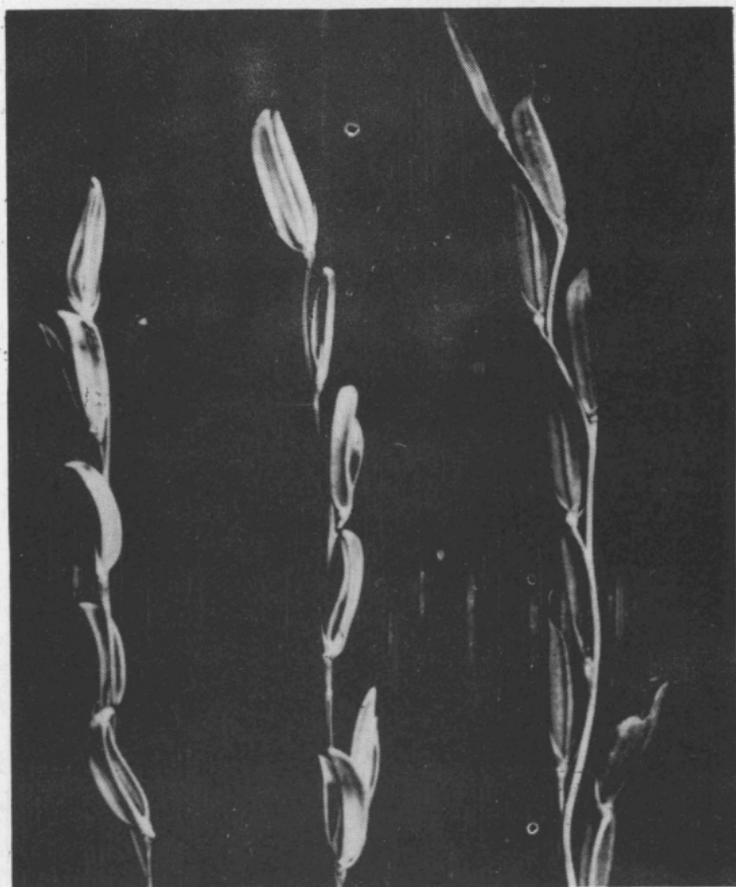
Plants damaged by seedling blight on the left; a healthy plant on the right.

*Respectively, extension plant pathologist, Texas A. & M. College System; and plant pathologist, FCRB, ARS, U. S. Department of Agriculture, cooperating with the Texas Agricultural Experiment Station.

CONTROL.--The use of fungicides as seed treatments improves stands and gives healthier plants. The fungicides found to be most effective are Arasan SFX, Ceresan M, Agrox, Phygon XL, Panogen 15 and MEMA, used as directed by the manufacturer. Very early plantings should be avoided since poor stands are likely to result. Only good-quality rice seed should be used.

STRAIGHTHEAD

Straighthead results from prolonged flooding of the soil in fields of growing rice. As far as is known, neither fungi nor other organisms cause straighthead, but the exact cause is unknown. At maturity the heads remain in an upright position due to insufficient grain development to bend them over in a normal manner -- hence, the common name of "straighthead." The glumes or hulls are distorted into a "parrot beak" or "half moon" shape.

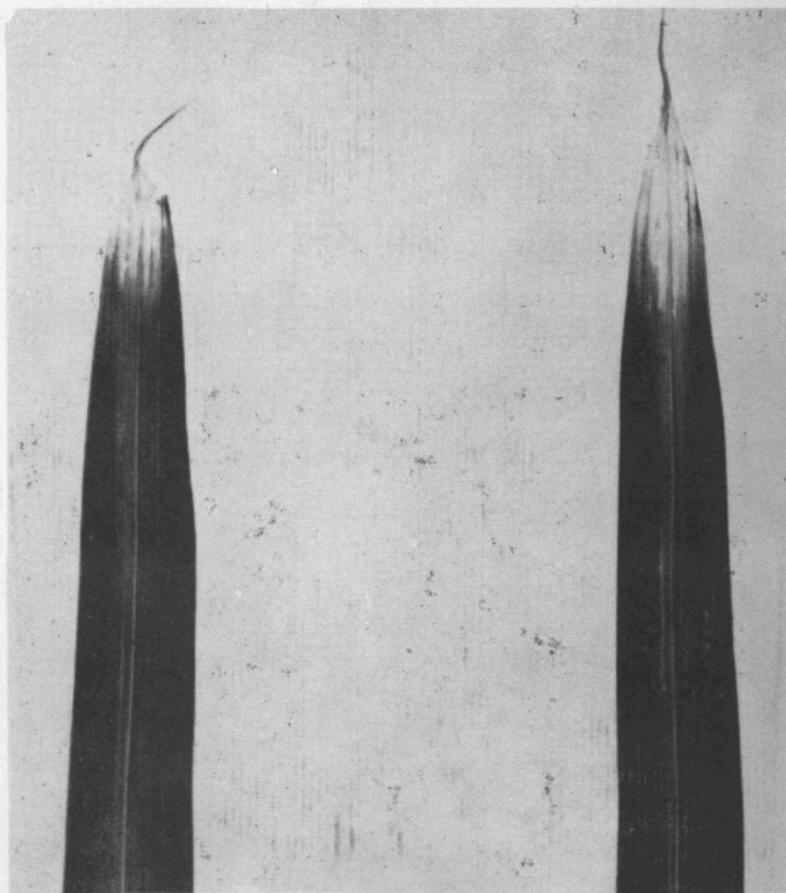


Heads showing straighthead symptoms.

CONTROL. --In Texas, straighthead generally is more severe on sandy soil types. When susceptible varieties are grown on land subject to straighthead, the water should be drained from the field just prior to the stem-elongation or jointing stage of growth (approximately 55 days after emergence in the case of Century Patna 231). The field should not be flooded again until the soil is dry enough to crack and the rice plants show a slight yellowing. Bluebonnet 50, Toro and Texas Patna are resistant to moderately resistant.

WHITE TIP

White tip is caused by a microscopic worm of the nematode class. The nematodes are carried from one season to the next on the seed rather than in the soil. They feed on the young leaves in the interior of the rice plant. The symptoms consist of white leaf tips, twisted flag leaves and small, distorted heads.



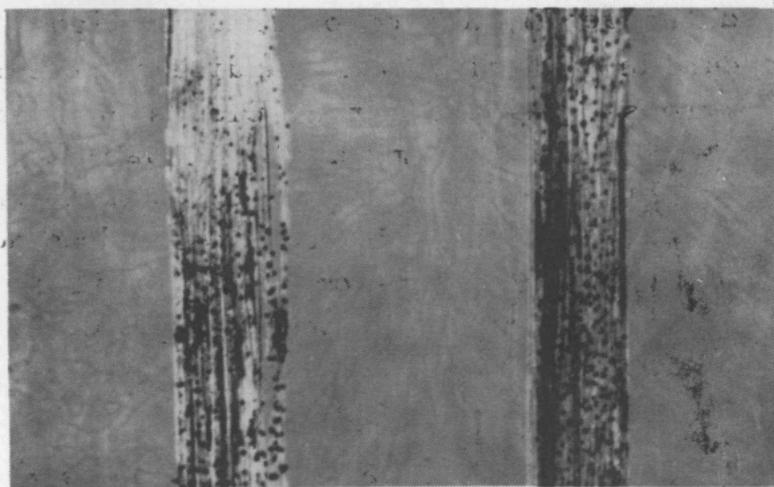
Leaves showing white tip symptoms.

CONTROL.--The leading Texas varieties -- Bluebonnet 50, Improved Bluebonnet, Century Patna 231, Texas Patna, TP49, Rexoro and Sunbonnet -- are resistant. Susceptible varieties are Zenith, Magnolia, Arkrose, Blue Rose and Nato. If a susceptible variety is selected for planting, either obtain disease-free seed from a field which did not show white tip or obtain seed graded "certified" or better from one of the experiment stations.

STEM ROT

Stem rot is caused by a fungus which lives from one year to the next in the soil. The sheaths and culms near the "water line" of older rice plants are killed by the fungus and are black. When the culms or stems are split open, a grayish mold along with small black bodies is visible. Diseased plants lodge and produce little grain because they usually die before maturity.

CONTROL.--In Texas, stem rot is a minor disease and causes little loss. Control measures probably are not necessary. Improved Bluebonnet is somewhat more susceptible than other varieties. The use of balanced fertilizers along with rotation probably serves to keep down losses from stem rot.



Stems at soil line cut longitudinally to show black bodies of stem rot fungus.



Leaves showing symptoms of brown leaf spot.

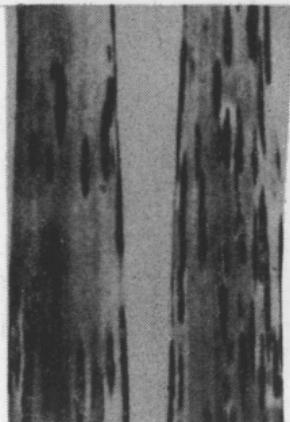
BROWN LEAF SPOT

Brown spot or *Helminthosporium* leaf spot is caused by a fungus which frequently is seedborne. The spots on the leaves and hulls are dark and oval-to-round in shape. The same fungus also causes seedling blight.

CONTROL.--Although this is a prevalent disease, losses probably are not too heavy. None of the rice varieties are resistant. Bluebonnet 50, TP49 and Texas Patna are probably more susceptible than the others. Proper fertilization and keeping the rice plants in a vigorous growing condition serve to reduce losses.

NARROW BROWN LEAF SPOT

Cercospora leaf spot (narrow brown leaf spot), caused by a fungus, is characterized by narrow or linear, light to dark-brown leaf spots. The disease becomes more severe as the rice plants approach maturity. Losses from this disease probably are limited since it does not become heavy until late in the growing season.



Leaves displaying narrow brown leaf spot symptoms.

CONTROL.--Varieties differ in resistance to this disease, Texas Patna, Rexoro and Bluebonnet 50 are more susceptible than most other leading varieties, TP49, Toro and Century Patna 231, along with certain other varieties, generally show less of the disease but are not highly resistant in all years or locations. The short-season varieties generally escape the disease when seeded early.

LEAF SMUT

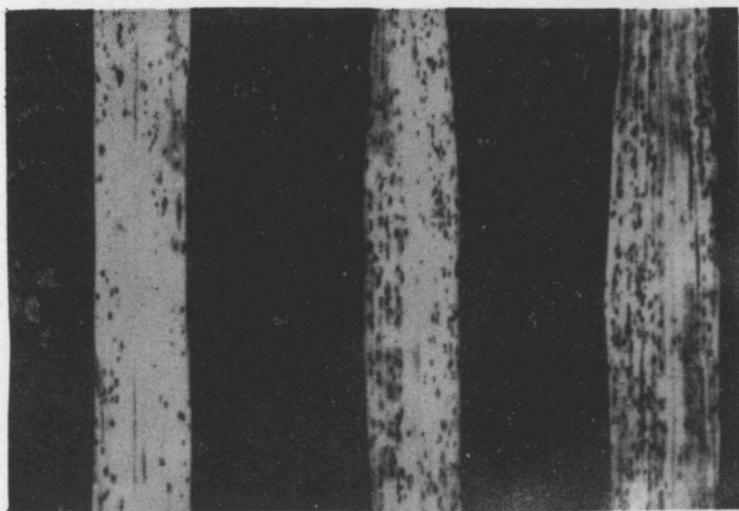
Leaf smut, caused by a fungus, is one of the minor foliage diseases of rice. Numerous small black bodies are visible on the leaves. Prevalence of this disease varies from year to year.

CONTROL.--There are no known methods of control, but the disease ordinarily causes little, if any, loss in yield.

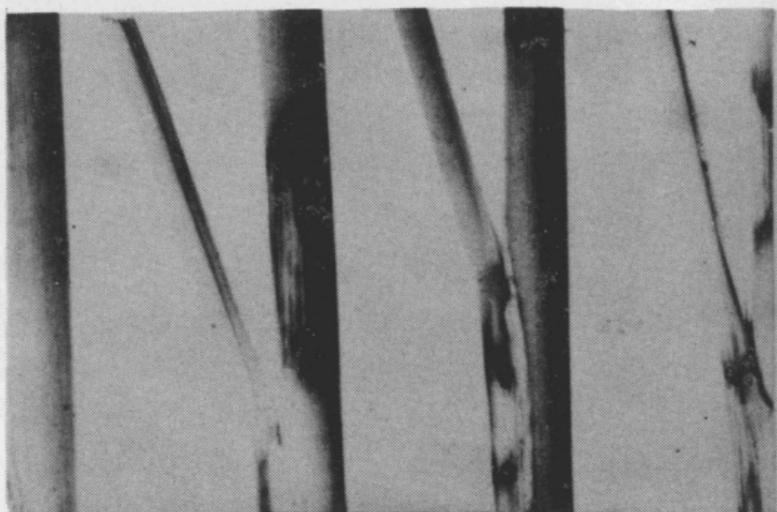
SHEATH SPOT

Sheath spot is caused by a soil fungus. Large brownish-red areas of the sheath just above the water level are killed during warm, moist weather. The disease is most frequently observed in thick stands of vigorous rice or in areas containing excessive grass, which also may be affected.

CONTROL.--No control measures are known or needed for this minor disease. Losses are negligible.



Leaf smut on leaves.



Sheath spot symptoms on stems.

OTHER DISEASES

Other diseases that may affect rice include kernel smut and root rots (other than on rice seedlings). They are generally less prevalent than others.

DISORDERS THAT RESEMBLE DISEASES

A number of other troubles, not generally considered as diseases, frequently cause injury or death to rice plants. These include such things as damage from 2,4-D or other herbicides, salt water damage, frost or cold damage, damage from too deep a flood on very young rice, excessive sterility resulting from low humidity and wind, lodging, insect damage and poor growth due to lack of fertilizer.

Some control over such conditions can be effected by care in application of herbicides, water and fertilizer and by planting at the proper time.

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