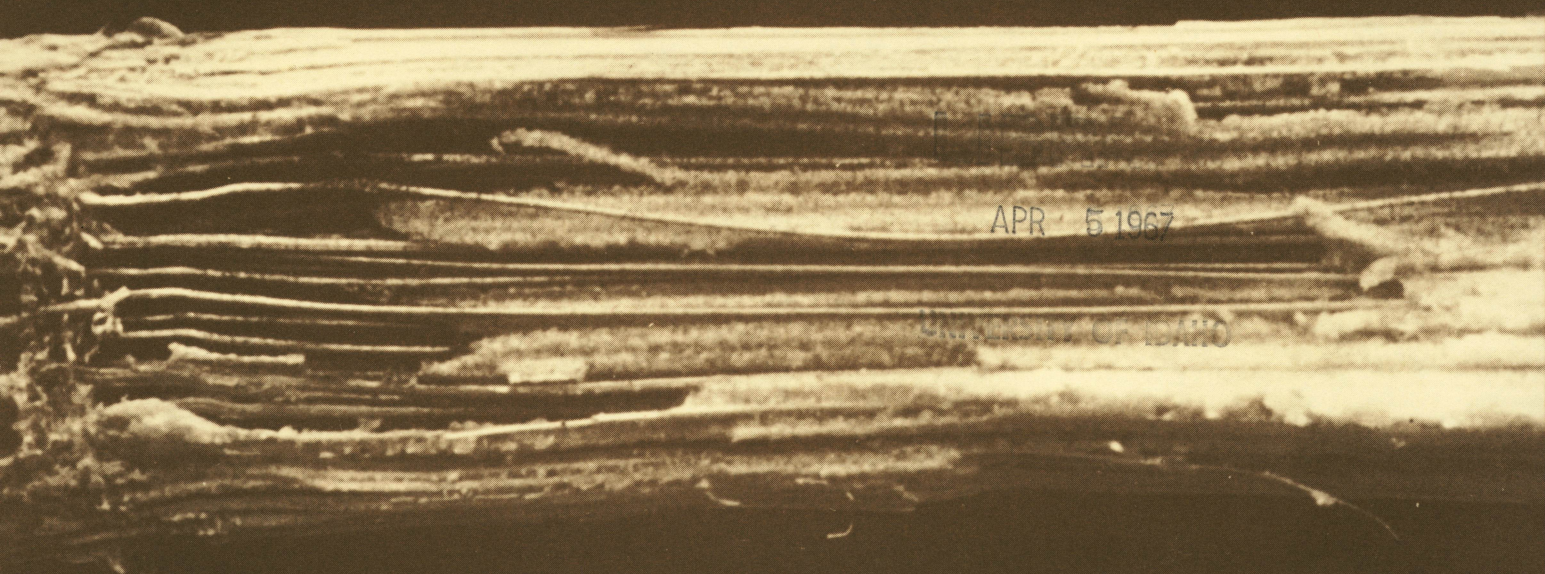




STALK ROT OF CORN

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Stalk rot is responsible for substantial losses in Idaho corn yields and is widespread throughout south-west Idaho. The disease may cause seedling blight, ear rot, and stalk rot.

Premature dying, resulting from the disease, causes light, shriveled kernels and chaffy ears. Most lodging can be attributed to this disease. The lodged stalks are difficult to harvest with mechanical equipment. During moist seasons, ears in contact with the soil soon spoil.

Stalk rot and seedling blight have been present in minor proportions in Idaho for a number of years. Gradually, but persistently, they have become more serious. Losses from this disease in 1962 and 1963 were of economic proportions. Losses in 1964, 1965, and 1966 were even more devastating.

Damage to the crop is influenced by several factors: weather conditions, inoculum carried over from the previous year, cultural operations, and the corn varieties planted.

Fortunately research has shown there are cultural practices that can be adopted that will help control this costly disease.

Cultivation should be shallow. Research results indicate that damage to the roots, caused by deep

cultivation, encourages development of the stalk rot disease. Consequently deep cultivation should be avoided, since it increases the severity of the stalk rot disease.

Avoid late sidedress applications of fertilizer. Again, research has shown that late sidedress applications of fertilizer increases the severity of the disease. Also root sizes are smaller in the late sidedress treatments.

Symptoms and Effects

SEEDLING: Seedling blight of corn is characteristically a water-soaked rotting of the outer or surface tissues of the plant. Brown water-soaked lesions on the below-ground stem and roots are characteristic symptoms of the diseased seedling. The blight may occur before emergence or when the seedlings are in the first- to third-leaf stage.

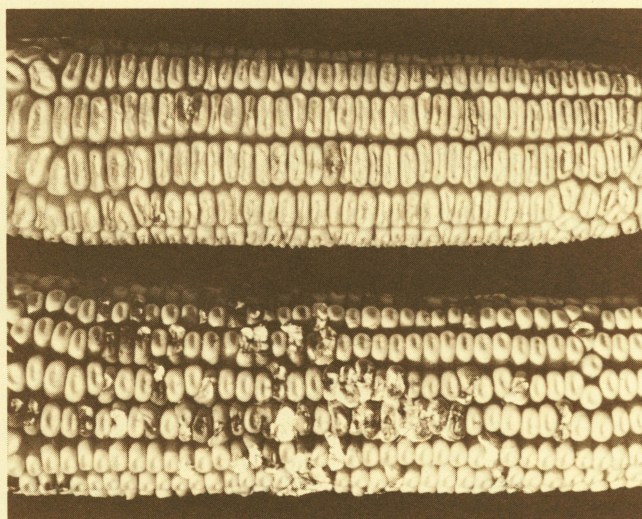
STALK ROT: The stalk rots are commonly associated with the roots, crown, and lower nodes of the stalk. They may start as a root rot or as small lesions in the subcrown area and progress upward. Frequently localized sheath and node lesions, pinkish brown in color, occur with stalk rotting.

Diseased plants may die suddenly in various places within a field. The upper leaves die first and take on a dull grayish-green cast similar to that caused by frost damage. As mentioned before, this premature dying reduces kernel size and results in chaffy kernels and poor filling of ears at the tips.

The greatest loss, however, is due to the breaking of diseased stalks. Broken stalks make mechanical corn harvesting difficult and promote rot development of ears where they touch the ground.

EAR ROT: The symptoms of the ear rot vary with the severity of attack. The rotted kernels are usually pink to reddish-brown and can be found as single infected kernels on an ear, or as several kernels infected in groups.

Other damaged kernels may have a lusterless seed coat and a shrunken, sometimes brown, area over the embryo. However, many kernels infected with this fungus show no external symptoms.



Upper ear with minor kernel rot and lower with severe kernel rot. Damaged kernels are evident by a lusterless seed coat and reduced size.

Experimental Results

Two fields with a history of corn and known to be infected with stalk rot were selected in Canyon county. In preparation, forty pounds of ammonium sulfate were broadcast and plowed under with the corn stalks in the fall.

The fields were divided into 24 equal plots, each 300 feet long. Six different fertilizer treatments were applied. Each treatment was repeated on four different plot locations within the field. Four of the plots had no additional nitrogen and served as check plots. Four of the plots had 80 pounds of ammonium sulfate broadcast prior to planting and then worked into the soil.

The other treatments were applied as anhydrous ammonia side-dressed at the rate of 80 pounds per acre. Results of this work are seen in the following table.

Effect of Fertilizer and Type of Application on the Stalk Rot Disease of Sweet Corn.

Treatment	Field 1	Field 2	Diameter root-soil clump (in.)
	August 19 % stalk rot	August 20 % stalk rot	
Check . . . no additional N*	3.4	14.2	9.6
Preplant broadcast 80 N	7.1	17.4	9.4
Plants 6" high, 80 N 6-8" deep, 6" from plant	14.3	22.5	9.2
Plants 6" high, 80 N 6-8" deep, center of row	7.6	20.8	9.7
Plants 24" high, 80 N 6-8" deep, 6" from plant	59.3	87.3	4.4
Plants 24" high, 80 N 6-8" deep, center of row	36.7	62.8	6.8

*Previous crop was corn with 40 pounds of N plowed under in the fall.

Two fields with a history of stalk rot disease were selected in Canyon county. Both fields received 100 pounds of ammonium sulfate broadcast in the spring. One treatment received no cultivation and was hand weeded. Two other treatments were cultivated four times each before lay-by-time. The effect of these treatments on the incidence of stalk rot of corn is presented in the following table.

Effect of cultivation on the stalk rot disease of corn.

Treatment	Field 3	Field 4
	% stalk rot	% stalk rot
No cultivation, hand weeded	5.5	9.4
Shallow cultivation (Less than 2 inches)	7.5	12.3
Deep Cultivation (3-6 inches)	47.7	53.8

Each treatment involved four rows of corn and the treatments were each repeated four times.

Several organisms have been isolated from the stalk rot complex in Idaho. The fungus, *Fusarium moniliforme* is most frequently associated with stalk rot in Idaho.

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