

## A New Oat Disease

**I**n the October issue of *Farm Science*, published jointly by the Iowa Agricultural Experiment Station and the Extension Division, Dr. H. C. Murphy, in charge of oat breeding at Ames, discusses a new disease of oats. This disease, causing root rot and blight, is identified by the name *Helminthosporium*; the scientific name for a large group of fungi responsible for somewhat similar diseases in a number of our crops.

In the past the oat crop has been considered relatively free from this type of disease, and it was not until the fall of 1944 that it was observed or recognized as a problem in Iowa. The disease causes a chocolate-brown spotting of the leaves. When present on the stem the nodes are dark and the stem tends to break over at the joints. As a root-rot it may cause the destruction of the young plant before it can emerge, resulting in unsatisfactory stands. In the less severe and more usual cases, however, the rot organism causes a rotting of the roots and stunting of the top growth. Results are fewer stools develop, the plant ripens prematurely, produces fewer kernels of lighter weight, adding up to a disappointing yield. Dr. Murphy points out that in many Iowa fields in 1946 the stands were thin, plants filled poorly and failed to yield up to expectations, some yielding only about half of what the stand promised earlier. This disease has also been reported from some other states but so far North Dakota pathologists say, it has not been observed in North Dakota.

### Resistant Varieties

Since the disease was observed in Iowa, Dr. Murphy and associates have tested a large number of varieties to determine what differences there may be in their resistance to this disease. The results of these tests are encouraging. Many of the older varieties and some of the newer ones are relatively resistant. This resistance, so common in the older varieties, is believed to account for the fact that the disease was not previously regarded as a problem. The introduction and general use of the rust resistant varieties Boone, Tama, Control, Vicland, Cedar, Vikota, all derived from crosses with Victoria, a crown rust re-

sistant South American oat, are susceptible to this disease and their general use now in Iowa and many other states is believed to be responsible for the large build up in the disease. Fortunately Dr. Murphy's tests show that the newer varieties, derived from crosses with Bond, such as Clinton, Benton, Bonda and Mindo, developed for superior rust resistance, are also relatively resistant to *Helminthosporium*. As soon as the seed supply of these newer varieties can be built up it is expected they will come into general use, especially in areas where the rusts and the new disease may be a problem.

Dr. Murphy recommends for

Iowa that until the seed supply of Clinton and Benton is adequate, Marion be used more extensively, replacing Boone, Tama, Control and Vicland in areas where the *Helminthosporium* disease was severe. The varieties which he mentions, including Bonda and Mindo, all early ripening varieties, may also be used in North Dakota, especially the southeastern section of our State. However, based on observations to date their advantages under our conditions are not likely to be as great here as in the central states.

Marion, moderately resistant to crown rust, as well as resistant to this blight disease, has generally yielded satisfactorily under our conditions. Other varieties which have continued to yield well in North Dakota include Rainbow, an early mid-season oat with fairly good resistance to rust. Ajax an early ripening variety, resistant to stem rust, has yielded well when not too severely infected with crown rust. This is also true of Vanguard, a later ripening oat. The later ripening varieties, however, are suited mainly to the northern areas of the State. Gopher lacks in resistance to both the rusts and altho capable of yielding satisfactorily, can not be recommended except for areas where rust is not a problem.

### Seed Treatment

The organism responsible for this disease is borne on the seed, but also lives over in the soil. Dr. Murphy found seed treatment with Ceresan was effective in controlling the organism carried on the seed, helping the plant get thru the seedling stage,

resulting in a fuller stand, stronger plants and better yield. It can not of course control the soil borne organisms, so the use of resistant varieties is important. Some of the recommendations which he makes for Iowa are generally applicable also to North Dakota, altho so far the disease is not recognized as a problem in our State.

1. Change to *Helminthosporium* resistant varieties as soon as the seed supply permits. Preferably they should also be resistant to rust.
2. Clean all seed well to remove light weight diseased kernels, chaffs, etc.
3. Test all seed for germination.
4. Treat with New Improved Ceresan.
5. Sow early.

Dr. Murphy points out that it is not known exactly what weather and soil conditions are most favorable for the disease. While serious crop damage did result in many Iowa fields in 1946—an average season—he assumes that warm seasons will favor the disease more than cool growing season. It can probably be assumed too that, like other root-rots, seasons and areas of high rainfall will favor the development and spread of the disease.

W. E. Brentzel, plant pathologist, North Dakota Experiment Station, strongly recommends seed treatment, pointing out the further desirability of treating seed which may be shipped in this year or next year from *Helminthosporium* infected areas.—(T. E. Stoa, Agronomist).