

THREE ALFALFA DISEASES NEW TO ILLINOIS

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The belief has been prevalent that alfalfa, in Illinois, suffers from the attack of but one serious leaf disease, the leaf-spot caused by *Pseudopeziza medicaginis* (Lib.) Sacc. The plant disease survey of our state, which has been under way for four years, reveals that while this is the most important disease there are at least three others of considerable significance.

MOLD-SPOT

The most common and most destructive of the three is the mold-spot, which is caused by a fungus known as *Macrosporium medicaginis* Cugini. It appears first as a small, yellow, discolored spot, which rapidly enlarges and becomes dead and brown. The infection may begin at any place on the leaf, but usually starts at the edge. Diseased spots enlarge rapidly, and those near each other may grow together, causing the destruction of a large part of the leaf. As they grow old they become wrinkled and almost black and the fungus grows out upon the surface so that its threads and spores give the spot a molded, sooty aspect.

No account of this disease has ever been published in America, although it is known in Europe. It was first found in Illinois July 14, 1922, in Shelby County. Another instance of the disease was found July 16 of the following year in Bond County. In 1924 many alfalfa fields were seen in which the disease was abundant. It is evident that the mold-spot is prevalent throughout the northern two thirds of the state, its seriousness becoming greater northward.

Like other alfalfa leaf-diseases, this one does its chief damage by destroying the leaflets and reducing the harvestable crop. The attack is general in infected fields, and the damage done is generally in proportion to the number of diseased leaflets. During the summer of 1924 the mold-spot was found on 20 per cent of the leaves on the plants examined in diseased fields.

BROWN LEAF-SPOT

The brown leaf-spot is known as a serious disease in many states, but has been found only recently in Illinois. It is caused by the attack of a fungus known as *Pleosphaerulina brisosiana* Poll. The spots are round or oval. They vary from less than the size of a pin-head to nearly a quarter of an inch across, and may be either at the edge or on the interior of the leaf blade. At the margin is a black ring which definitely marks the limits of the spot. The central part is dead, and varies from light tan to very dark brown. The number of spots on a leaflet is often large. The injury done to the leaf not only reduces its food value, but often results in a premature and severe leaf-fall, thus reducing the harvested crop.

The brown leaf-spot was first found in Illinois during 1923. Two diseased fields were seen, one in Macon, the other in Bond County. During the summer of 1924 it was found in many fields, so distributed as to make it certain that the disease is widespread within the state. Diseased fields were seen in the extreme south in Alexander County, and in three counties along the northern border. Other diseased fields seen in seven widely separated counties indicate its prevalence in the interior of the state.

In diseased fields the infection is usually quite general, practically all plants being infected. The amount of disease varies somewhat within the fields, according to moisture conditions influenced by soil and air. During the summer of 1924 infection was present on from 5 to 100 per cent of the leaves on the plants examined in diseased fields. The average of infected leaves in all the diseased fields reached 40 per cent.

DOWNY MILDEW

Previous to the summer of 1924, the downy mildew of alfalfa, caused by the fungus *Peronospora trifoliorum* DeBary, had never been known to occur in Illinois. During that season, however, it appeared generally and in considerable abundance throughout the extreme north of the state, and in the Illinois valley as far south as Mason County.

The character of the disease is such that it cannot be pictured easily. Infected leaves assume a yellow-gray, or slightly purple, water-soaked appearance. Diseased parts of the leaves are relatively extensive, and on their under sides one may find a coat of downy, violet fuzz. Infected leaves are not conspicuous; hence the disease may be prevalent in considerable quantities and yet escape notice. In 1924 the plants examined in diseased fields had an average of over 1 per cent of their leaves diseased. The extensive character of diseased spots, however, makes this disease more serious than the amount of infection indicates.

The value of the alfalfa crop is great. Because it is a legume, it fills a need in our system of rotation not readily satisfied by any other crop. The total acreage of the state amounted to 77,000 acres in 1924, and the average yield per acre reached 2.85 tons, giving a total yield for the state of 504,000 tons worth in the neighborhood of \$7,812,000. Diseases tending to reduce either harvestable crop or the food value of the crop when it is harvested are not matters of light concern.

While there is definite need for experiment leading toward a satisfactory means of preventing these diseases, it appears probable that cutting the crop as soon as is safe after the diseases become prevalent will serve to keep them reasonably under control.