

THE QUARTERLY BULLETIN OF THE (STATE) PLANT BOARD OF MISSISSIPPI

VOL. 8

JULY, 1928

NO. 2

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PUBLISHED BY
STATE PLANT BOARD OF MISSISSIPPI
A. & M. COLLEGE, MISSISSIPPI

Entered as second-class matter July 9, 1921, at the post office at
A. & M. College, Mississippi under the Act of June 6, 1900.

Cabbage Yellows In Mississippi

By H. H. Wedgworth.

Yellows is one of the most important diseases of cabbage in the United States. It causes the greatest losses in a territory extending from South Wisconsin to Kansas on the west and eastward to Pennsylvania and Virginia. It has been reported from practically every State in this country except the New England States. Yellows is known to occur in many parts of Mississippi, and in some cases it has caused rather serious damage to cabbage, collards and kale.

Symptoms. When a plant becomes infected with yellows in the seedling stage, the cotyledons wilt and turn yellow and the whole plant dies. Later infections usually cause the plant to have a sickly yellow, dwarfed appearance. The lower leaves usually drop one by one, beginning at the lower part of the stem and extending up the stalk (Fig. 1).

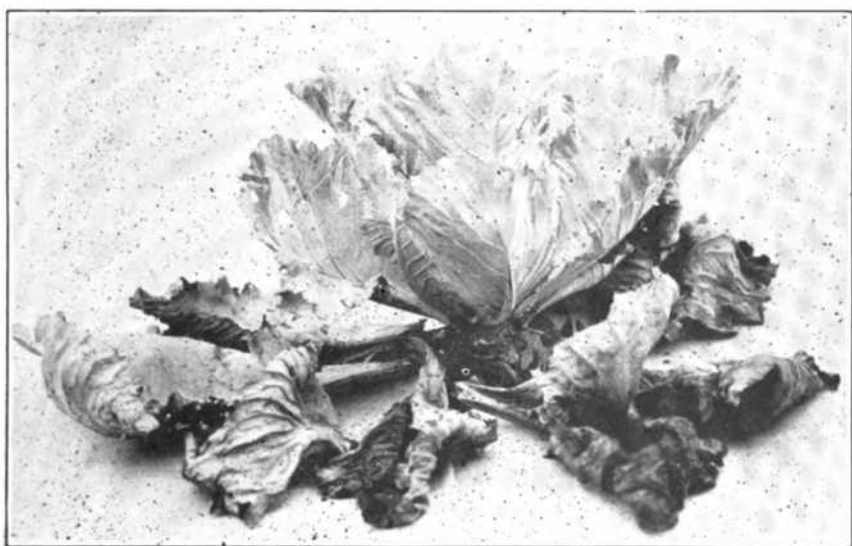


Fig. 1. A cabbage plant infected with yellows, showing the shedding of the leaves.

When the stem of an infected plant is cut lengthwise, the vascular or water-conducting tissues appear as dark-brown

streaks extending into the leaf petioles (Fig. 2). After the water-conducting tissues become diseased the water supply may be cut off from a portion of the leaves, causing the tissues to become yellow and later turn brown (Fig. 3). Occasionally, the disease may affect only one side of the host, producing a deformed, lop-sided plant. Many of the roots of infected plants become rotted, making the plant easy to pull from the soil. The symptoms of the disease may be confused with those of black-rot, because the symptoms are very similar. The discolorations of the vascular tissues in the stems and leaves are nearly jet black in the case of black-rot, whereas they are a dark brown in the case of yellows.

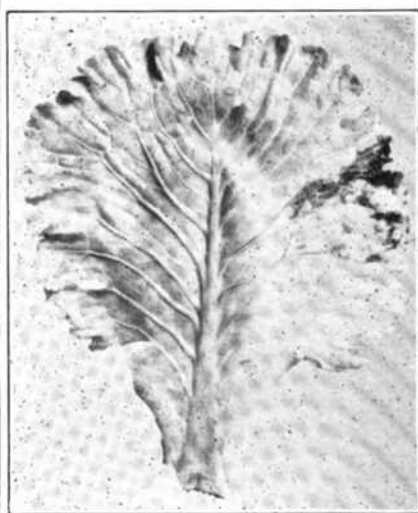
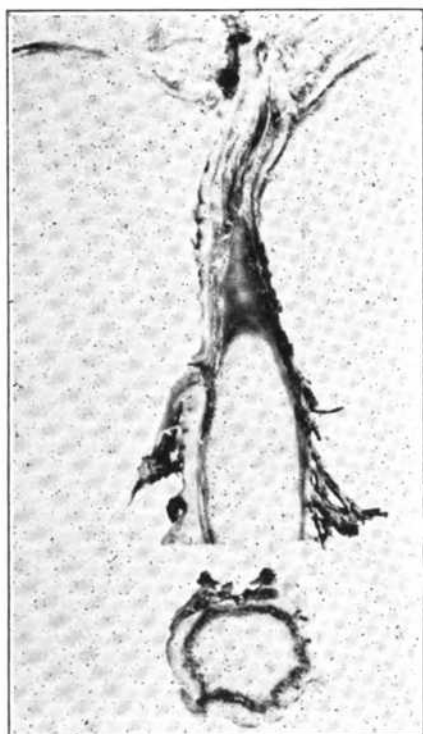


Fig. 2. Sections through a cabbage plant infected with yellows, showing the typical discoloration of the water-conducting tissues.

Fig. 3. A cabbage leaf showing an early stage of yellows.

Cause and Contributing Factors. Cabbage yellows is caused by the fungus *Fusarium conglomerans*. The minute fungous threads or hyphae grow from the infested soil into the root hairs and, after penetrating to the water ducts, extend upward through the stem until nearly all or all of the plant is invaded. After the plant dies, the fungus produces spores or seeds within or on the surface of the stem, which find their way back into the soil to attack any succeeding crop of cabbage, collards, etc. These spores may be readily carried from one plant to another, or from one field to another, by washing water or in any way in which infested soil particles may be conveyed from one place to another. The fungus may live saprophytically in the soil for several years when it is once introduced. The fungus develops most abundantly at a temperature between 80 and 90 degrees F., which explains the severity of the disease in a certain zone of this country.

Control. Such control measures as crop rotation, seed treatment, and discarding infested manure and infected cabbage refuse, should be practiced to prevent the further dissemination of this disease. After the soil has become infested, these recommendations give little or no relief, and the only satisfactory control measure is the use of strains of cabbage which are resistant to this disease. Fortunately, strains of cabbage resistant to yellows have been or are being selected from most of the leading commercial varieties. The Mississippi Experiment Station has just completed a test of several of these strains, in which the Marion Market, All Head Select, Wisconsin All Seasons, and Wisconsin Brunswick, which are selections from Copenhagen Market, All Head Early, All Seasons, and Brunswick, respectively, were the most promising. These strains are selections made by the plant pathologists of the Wisconsin Agricultural Experiment Station. These varieties mature at about the same season and produce about the same type and quality of cabbage as the varieties from which they were selected. Selections are being made from the Jersey and Charleston Wakefield varieties, and seed of some of these selections will probably be on the market within a few years.