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ON THE OCCURRENCE OF THE WILT DISEASE OF SESAME IN JAPAN

BY

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In August, 1932, the writer's attention was drawn to a number of wilted sesame plants (*Sesamum indicum* L.) in the Experimental Field of the Faculty of Agriculture, Hokkaido Imperial University in Sapporo. After careful research, it was ascertained that this disease was due to a Fusarium. As far as the writer is aware, the Fusarium wilt of sesame has never previously been reported from Japan and even in India where the disease has been known since 1926 it has not been thoroughly studied. Accordingly the writer carried on an investigation of the morphology and physiology of the causal fungus. Since a full account of the study was given in the Journal of Plant Protection Vol. XX, No. 11, 1933, only its outlines will be presented in this paper.

Symptoms. The symptoms of the disease are those of a typical wilt. The affected plants suddenly begin to wilt and the leaves become irregularly wrinkled and droop, turning blackish brown in color. The stem also assumes a blackish brown color and may be covered with numerous pink-colored sporodochia of hemispherical shape, 0.5 mm. in diameter. The roots turn from gray to blackish. The entire plant eventually dies.

Morphology of the causal fungus. Vegetative hyphae hyaline, septate, profusely ramifying and $1.5-5.2\ \mu$ in width. Conidiophores branching; microconidia produced in a head, one-celled, rarely septate, ovoidal to ellipsoidal, sometimes slightly curved, hyaline and $5-23.5 \times 2.5-5.5\ \mu$; macroconidia lunulate, 3-5 septate, 3-septate spores $20.8-44.2 \times 2.6-4.5\ \mu$, 4-septate ones $36.4-49.4 \times 3-5\ \mu$, 5-septate ones $41.6-52.0 \times 4-5\ \mu$, cinnamon buff colored in mass; chlamydospores apical or intercalary.

Cultural characters of the causal fungus. The fungus grows vigorously on onion-, potato-, malt-, rice-, and oat-decoction agar while the mycelial growth is meagre on apricot decoction agar. The aerial mycelia are abundant

on onion-, and potato-decoction agar. The conidia are produced on these two culture media and likewise on malt decoction agar.

Temperature relations. The fungus in question made a most vigorous growth at a temperature of 23-30°C and it is likely that the optimum lies around 30°C. The mycelial growth was remarkably suppressed at 34°C.

Pathogenicity of the fungus. Young sesame plants 2-3 cm. high were inoculated with the fungus from a pure culture on their leaves and stems with or without wounds. Some of these plants wilted showing manifestations similar to those of plants affected under natural conditions. Some other plants exhibited only discolored areas at the points of inoculation, remaining otherwise healthy. In such discolored portions, however, the mycelium could be revealed.

Taxonomy of the fungus. According to BUTLER (1926) *Fusarium vasinfectum* ATK. causes a wilt disease of the sesame plant in India. NARASIMHAN (1929) also reports that the same fungus affects sesame and Bengal gram (*Cicer arctinum*). The fungus under consideration is also regarded as identical with *Fusarium vasinfectum* ATK., although there is a slight difference in size of macroconidia of these fungi.

In conclusion, the writer wishes to express his sincere thanks to Profs. S. ITO and Y. TOCHINAI for their kind advices.

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