

FUSARIUM ROT OF GLADIOLUS

A DRY rot of *Gladiolus* bulbs was observed during storage. Isolations from dried and mummified bulbs invariably yielded *Fusarium solani* (Mart.) App. and Wr. Though the organism has been reported on several hosts it was observed for the first time on *Gladiolus* in India.

Symptoms caused by *Fusarium solani* were similar to those of *F. oxysporum* var. *gladioli* described by Magie² (1953) (vide Fig. 1). Chromatographic analyses of carbohydrates in the healthy and diseased bulbs after one and a half month of infection revealed that maltose and sucrose present in healthy tissues were absent from diseased portions.

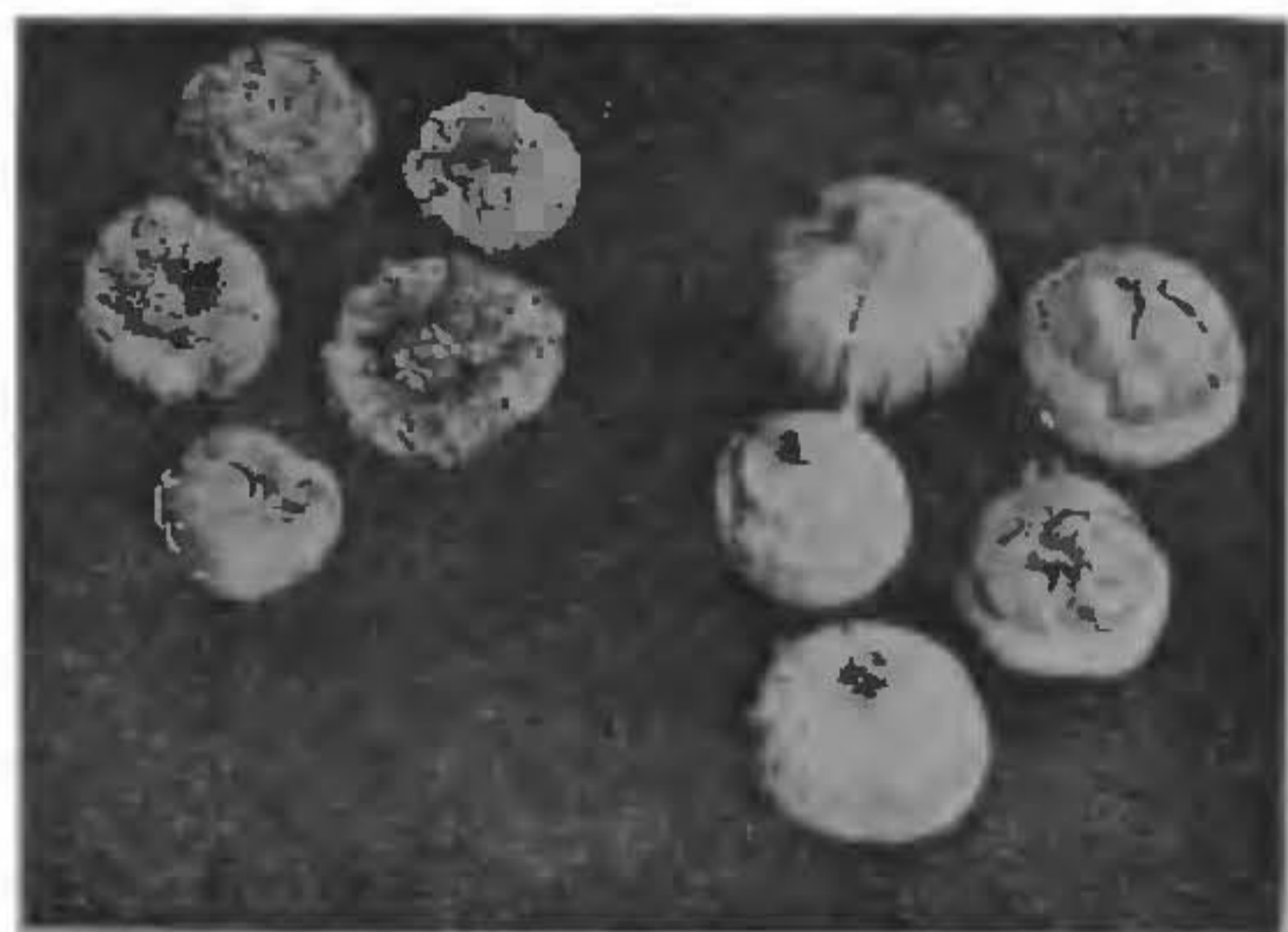


FIG. 1. Showing dry rot of *Gladiolus* bulbs caused by *F. solani* left (diseased) and right (healthy).

Cultural studies were carried out on Asthana and Hawker's medium A.¹ It was observed that the fungus was capable of growing between pH 2.5 and 11.0 but the maximum growth and excellent sporulation were recorded between 5.0 and 5.5. The extract of normal bulbs and leaves showed that their pH was 5.5 and 5.2 respectively. Thus the range was suitable for growth of the fungus. Temperature studies showed that the organism was capable of growing between 10° C. and 36° C. The optimum temperature was 25° C. There was no growth at 6° C. but the organism was not killed as it could survive even after an exposure at this temperature for fifteen days. The thermal death-point was found to be 56° C. Studies on the longevity of fungus showed that the spores could survive in soil culture for more than 2 years while those produced on diseased bulbs were capable of initiating new growth up to a year only.

Pathogenicity was tested by different methods. High percentage of infection was observed when inoculations were made on injured bulbs. Rotting occurred on uninjured bulbs also but

the percentage infection was low (20% only). The maximum rot occurred between 25° C. and 31° C. and it was well established within 3 weeks. Slight rot appeared at 10° C. within six weeks. There was no infection at 6° C. but when such bulbs were transferred to room temperature they developed the rot. Further studies showed that the *Gladiolus* bulbs stored in soil infested with *F. solani* developed the rot. Cross-inoculations showed that it was capable of infecting potato tubers but had no effect on the bulbs of *Allium cepa* L. and *Narcissus*.

Fourteen different fungicides (Kirti copper, Flit-406, Cupramar, Micop W-50, Copper sandoz, Dithane Z-78, Blitox, Cupravit, Zerlate, Phygon, Onyxide 75%, U.N.R. 50%, Isothane Q-15 and Bordeaux mixture 4:4:50) were evaluated in the laboratory and the minimum inhibiting concentrations of effective fungicides were determined. 0.5% Flit-406, used 3 weeks before infection, could check the dry rot of *Gladiolus* bulbs. Besides storage at low temperature, careful harvesting and handling of the bulbs are recommended for the control of the rot.

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