

## **SCLEROTINIA SCLEROTIUM, THE CAUSE OF SAFFLOWER WILT IN PAKISTAN**

**M. SIDDIQUE MIRZA, YASMIN AHMAD AND M. ASLAM**

*National Agricultural Research Centre,  
Park Road, Islamabad - 45500, Pakistan.*

In March 1983, a spineless variety "Thori-78" of Safflower (*Carthamus tinctorius* L.) growing at the experimental plot of National Agricultural Research Centre, Islamabad showed symptoms of wilting. Base of the stem was covered with white cottony mycelium associated with 2-10 mm large black sclerotia round to irregular in shape. Sclerotia were only observed in severely affected plants having shredded stems. Incidence of the disease ranged from 2-25%. The fungus was identified as *Sclerotinia sclerotiorum* (Lib.) de Bary [Syn. *Whetzelinia sclerotiorum* (Lib.) Dork & Dumont] after reference to Willetts & Wong (1980).

Epidermal tissue from stem lesion, 3 mm., disinfected in 1% solution of sodium hypochlorite (NaOCl) for 1 min., when plated on 9 cm diam., Petri plates containing potato-dextrose agar, amended with 250 µg streptomycin sulphate ml<sup>-1</sup> and incubated at 25°C produced white cottony mycelium with 2-6 mm large black sclerotia of spherical to irregular shape in concentric rings within 5-7 days. The sclerotia were silvery white in the initial stages and then turned black in colour. Six weeks old safflower plants cv. "Thori-78" when artificially inoculated with mycelial culture of the pathogen produced soft rot symptoms within 7-10 days resulting in death of the plants within 2 weeks.

Sclerotia of *S. sclerotiorum* after 35 days of cold conditioning at 4°C, germinated carpogenically producing cream coloured stalked apothecia, 2-10 mm in diam., after 10-15 days of shifting to field conditions at 15-20°C with 12 h photoperiod. A single sclerotium produced 1-10 apothecia. Asci developed on the upper surface of the apothecium were narrow cylindrical, hyaline 85-135x7-10.2 µ. Ascospores were one-celled hyaline, ellipsoid, binucleate and eight per ascus arranged in single row, 9.5-13.5 x 4.5-7.0 µ in size.

*S. sclerotiorum* has been reported in Pakistan on *Brassica* spp., (Mirza & Yasmin, 1984), flax (Mirza & Ilyas, 1984) and sunflower (Mirza & Yasmin, 1984). The disease on safflower has previously been reported from Bihar and UP in India (Joshi, 1924) Argentina (Marchionatto, 1934), Australia (Horowitz & Kleinig, 1958), Canada (Sackston, 1960), USSR (Antokolskaya, 1932), Turkey (Yildiz, 1973) and the USA (Zimmer *et al.*, 1963). This appears to be the first report of the occurrence on safflower from Pakistan.

### **References**

- Antokolskaya, M.P. 1932. The races of *Sclerotinia libertiana* FeKl. on the sunflower and other plants. (Abstr.). *Rev. Appl. Mycol.*, 11: 651.
- Horowitz, B. and C.R. Kleinig. 1958. Safflower trials in Australia. Tech. Pap. 11 Div. Plant Ind.<sup>1</sup> CSIRO, 19.

- Joshi, S.D. 1924. The wilt disease of safflower. *Mem. Dept. Agri., India. Bot.*, 14: 39.
- Kohn, L.M. 1979. Delimitation of the economically important plant pathogenic *Sclerotinia* species. *Phytopathology*, 68: 881-886.
- Marchionatto, J.B. 1934. Notes on some species of *Sclerotium* parasitic on economic plants. (Abstr.) *Rev. Appl. Mycol.*, 13: 327.
- Mirza, M.S. and M.B. Ilyas. 1984. *Sclerotinia* stem rot of flax in Pakistan. *Pak. J. Agric. Sci.*, 21: 246-247.
- Mirza, M.S. and A. Yasmin. 1984. Outbreaks and New Records: *Sclerotinia* stalk and head rot of sunflower. *FAO Plant Prot. Bull.*, 32: 147.
- Mirza, M.S. and A. Yasmin. 1984. Studies on *Sclerotinia* stem blight of oilseed crops. (Abstr.) *Proc. 2nd Nat. Conf. Plant Scientist*, p.53.
- Sackston, W.E. 1960. *Botrytis cinerea* and *Sclerotinia sclerotiorum* in seed of safflower. *Plant Dis. Rep.*, 44: 664.
- Willett, H.J. and A.L. Wong. 1980. The biology of *Sclerotinia sclerotiorum*, *S. trifoliorum* and *S. minor* with emphasis on specific nomenclature. *Bot. Rev.*, 46: 101-165.
- Yildiz, M. 1973. First record of safflower collar disease caused by *Sclerotinia sclerotiorum* (Lib.) de Bary in Turkey. *J. Turk. Phytopathol.*, 2: 93.
- Zimmer, D.E., J.M. Klisiewicz and C.A. Thomas. 1963. *Alternaria* leaf spot and other diseases of safflower in 1962. *Plant Dis. Rep.*, 47: 643.

(Received for Publication 5 October, 1995)