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STUDIES ON THE VIABILITY OF SCLEROTIA OF *CORTICIUM SASAKII* (SHIRAI) MATSUMOTO*

The information available on the effects of various factors on the viability of sclerotia of *Coriticium sasakii*, the incitant of sheath blight of rice, is scanty. So a study was undertaken to test the viability of sclerotia in relation to temperature, type and depth of soil in which they were buried and under submerged conditions and the results are presented in this note.

To study the effect of temperature, ten sclerotia each of same size were stored at laboratory temperature (28-32°C) and in refrigerator (10°C) and their viability was determined at an interval of 20 days. Under laboratory conditions, the viability of sclerotia was completely lost after 140 days; but at lower temperature of 10°C they remained viable for more than 300 days. The results indicated the adverse effects of high temperature on the viability of sclerotia. Nishikado and Hirata (1937) also reported similar results; the viability of sclerotia was decreased as the temperature increased.

The effect of soil types and depths at which they were buried was determined by keeping 10 sclerotia each at depths of 2.5, 5.0, 7.5 and 10.0cm. in different soil types (clay, sand and red loam) and testing their viability. At an interval of 20 days the sclerotia were picked out, surface sterilized, planted on potato-dextrose agar medium and the germination was observed after 48 hours. The results showed that they remained viable for 200-220 days irrespective of the Conditions of treatments. In the treatment where the sclerotia were placed on the surface of the soils, they lost viability after 160 days, thus indicating that the viability of sclerotia was increased when buried in the soil. This may be due to the prevention of desication. Park and Bsrtus (1932 a) reported that the sclerotia of *Rhizoctonia solani* were viable only for 180 days in air-dried soil. However, Endo (1931) found that sclerotia of some sclerotial diseases of rice were viable for nine months in dry soil while sclerotia of others retained viability for 21 months in a desicator. Misra *et al.* (1966) reported that the viability of sclerotia *Sclerotium oryzae* decreased with increase in soil depth; but Kulkarni (1967) observed that sclerotia of *Claviceps microcephala* remained viable for longer time if buried at deeper levels in soils. However, such a variation in the viability of sclerotia at different depths in soil was not observed during this study.

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Sclerotia were kept under submerged conditions in glass cylinders (depths of water columns were 2.5, 5.0, 7.5, 10.0 and 12.5 cm.) and their viability was determined as in the previous experiment. The results showed that they were viable only for less than 80- days in all treatments indicating that the variations in the depths of water columns have not affected the viability of sclerotia. Similar results were recorded by Palo (1926 who found that the sclerotia of Rhizocfonia discease of rice lost viability after 2-3 months when immersed in water. Park and Bertus (1932 a) observed that sclerotia of *R. Solani* were viable for 224 days under tap water. They (1932 b) also reported that sclerotia of *S. oryzae* remained viable for ten and a half months when submerged in water. The variations in the results may be due to the difference in the pH of water used and to the antagonistic action of micro-organisms under submerged conditions. Nishikado and Hirata (1937) found that the viability of sclerotia of *C sasakii* was affected by immersing in sterilized water and keeping at different temperatures; the viability was decreased as the temperature increased.

The studies revealed that temperature affected the longevity of sclerotia. They lost viability after 220 days when buried at various depths in different soil types. The longevity of sclerotia can be reduced to 60 - 80 days when kept under submerged conditions. So flooding the fields can be practised as a method for destroying the sclerotia and thus prevent the recurrence of sheath blight disease of rice to a certain extent in the ensuing season.

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സംഗ്രഹം

നെല്ലിൽ തണ്ടുകരിച്ചിൽ ഉണ്ടാക്കുന്ന കോർട്ടീഷിയം സസാക്കിയെന്ന കുമിളിന്റെ പ്രജനനോപാധിയായ സ്ക്ലീറോഷിയത്തിന്റെ അങ്കുരണശേഷിയെക്കുറിച്ചുള്ള പഠനത്തിൽ, ഉയർന്ന ഊഷ്മാവിൽ ഇവയുടെ അങ്കുരണശേഷി വളരെ വേഗം നഷ്ടപ്പെട്ടുപോകുന്നതായും, പുഞ്ചമായി വെള്ളത്തിനടിയിൽ നിമഗ്നമാക്കിയിട്ടിരുന്നാൽ ഏതാണ്ട് 60 മുതൽ 80 ദിവസംവരെ മാത്രമേ ഇവയ്ക്ക് അങ്കുരണശേഷി അവശേഷിക്കുകയുള്ളുയെന്നും തെളിഞ്ഞു. ഈ രോഗസംക്രമണത്തെ തടയുന്നതിന് വയലിൽ വെള്ളം കയറിയിടുന്നതു വളരെ rarajosoojaomocoj ഒരു ഉപാധിയായി കണക്കാക്കാം.

REFERENCES

Endo, S. 1931. Studies on the Sclerotium disease of rice plant. V. Ability of overwintering of certain important fungi causing Sclerotium diseases of rice plants and their resistance to dry conditions. *Forsch. aus clem Ceb. der Pflanzenkrankh., (Kyoto)* I: 149-167

Kulkarni, U. K. 1967. Viability of sclerotia of *Claviceps microcephala* in relation to their weight and size. *Indian Phytopath.*, **20,** 139-141

Misra, A. Pi, Abu Mohammad and Das, P. K, 1966. Studies on the viability of sclerotia of *Sclerotium oryzae* Catt., the incitant of stem rot of paddy in Bihar. *Indian Phytopath.*, **19**: 14-18.

Nishikado, Y. and Hirata, K. 1937. Studies on the longevity of sclerotia of certain fungi under controlled environmental factors. *Ber. Ohara Inst.*, 7, 535-547.

Palo, M. A. 1926. Rhizoctonia disease of rice. I. A. study of the disease and of the influence of certian conditions upon the viability of the sclerotia bodies of the causal fungus. *Philtpp. Agric.* **15**, 361-375.

Park, M. and Bertus, L. S. 1932 (a). Sclerotial disease of rice in Ceylon. 1. *Rhizoctonia solan* Kuhn. *Ann. Roy. Bot. Gard. Peradeniya.* **II**, 319-331.

Park, M. and Bertus, L. S. 1932 (b). Sclerotial disease of rice in Ceylon. 2. *Sclerotium oryzae* Catt *Ann. Roy. Bot. Gard. Peradeniya,* **II**, 342-359.

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