

## THE SMUT OF NACHANI OR RAGI (*ELEUSINE CORACANA* GAERTN.)

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(With 2 Text-figures.)

THIS smut was first observed by the writer in 1918 at Malkapur in the Kolhapur State. Later it was collected in the districts of Surat, Nashik, and Ratnagiri in the Bombay Presidency.

The disease is visible only in scattered grains in the head, the majority of grains developing normally. Sometimes the affected grains are single, sometimes grouped in patches of varying size, frequently confined to one side or towards the base or apex of the head.

The sori occur in the ovary as round or occasionally elongated bodies. These project beyond the glumes and they may be from one to six times the diameter of the normal grains (Fig. 1), being often 3-8 mm. in diameter when round, and 4-15 mm. in length when elongated. When fresh their colour is green, occasionally pinkish, but they turn chocolate-brown or dirty black on drying. The colour is due to the membrane, the spore mass being always deep brown to black. On rupture of the membrane the inside is found to contain a powdery black spore mass. The spores are round, 6.6-12.10 $\mu$  in diameter, dark brown, and have spiny walls.

Germination of the spores occurs easily in nutritive solutions (e.g. tomato broth). The spore puts forth a thick, colourless, septate pro-mycelium, and forms spindle shaped sporidia which bud very freely (Fig. 2).

The life-history of the fungus was studied in order to determine whether the disease was seed-borne. A small quantity of Nachani seed was infected with the spores of the smut and was divided into two lots, one lot being then treated with 2 per cent. copper sulphate solution for 10 minutes. The two lots were then sown in separate plots. Smut appeared on a few plants in the plot raised from the infected seed, while in the treated plot all the plants were free from the smut. It appears therefore that the smut is seed-borne and is amenable to copper sulphate seed treatment.

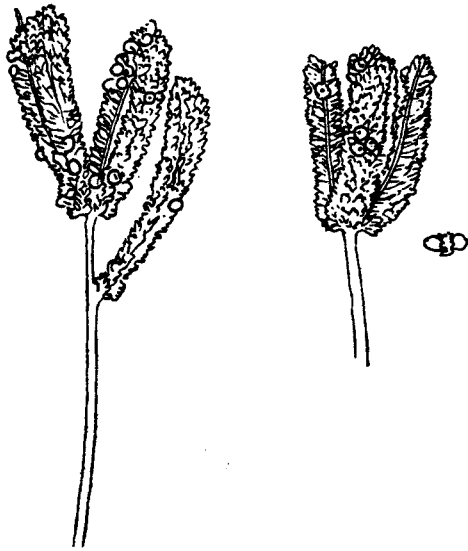


Fig. 1.

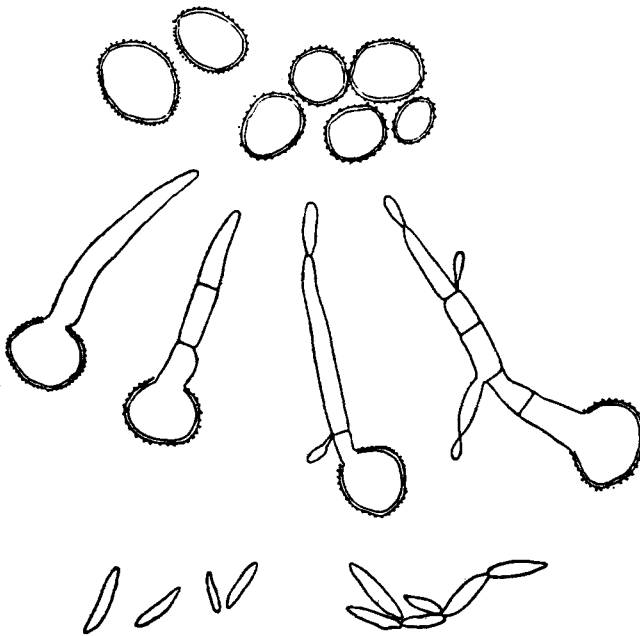


Fig. 2.

The study of the germination of the spores of the smut shows it to be a species of *Ustilago*, and as no smut of Nachani has been recorded the name *Ustilago Eleusinis* has been proposed, and the following description is given both in English and Latin.

*Ustilago Eleusinis* nov. sp.

Sori scattered, green or pinkish at first, later becoming darker. Spore mass powdery. Spores round, 6.6–12.10  $\mu$  in diameter and spiny. Promycelium hyaline, septate, giving rise to many spindle-shaped sporidia.

Habitat: on *Eleusine coracana* at Malkapur in October 1918 in the Bombay Presidency, India.

*Ustilago Eleusinis* nov. sp.

Sori sparsis, primum viridibus vel roseis, dein fuscescentibus; sporarum massa pulveracea; sporis globosis, 6.6–12.10  $\mu$  diam. echinulatis; promycelio hyalino septato, sporidiola numerosa fusiformia emittente.

Hab. in ovaris *Eleusinis coracanae* ad Malkapur, in provincia Bombayensi Indiae, Oct. 1918.

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