

TYPHULA BETAE ROSTR. ON WINTER TURNIP RAPE

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Investigations carried out during recent years at the Dept. of Plant Pathology of the Agr. Res. Centre have proved that some fungi of the *Typhula*-genus cause injuries to overwintering plants in Finland. The author has found *Typhula*-fungi on winter turnip rape (*Brassica campestris* L. var. *oleifera* f. *biennis*) at Maaninka 27. 4. 1950 (cf. list on following page).

At Tikkurila in the autumn 1955 fruit bodies of *Typhula* sp. with their sclerotia in the winter turnip rape were collected for the purpose of species identification. The samples were taken from the base of the stalk, from the neck of the main root or from leaves of during winterperiod dead or injured rape plants. With the naked eye it was possible to see that the herbarium material represented the same species. Owing to a complete lack of basidiospores or their small number were discarded a number of samples. The material examined consisted of 17 fruit bodies with their sclerotia. The entire material proved to be of *Typhula betae* Rostr. species.

When fully mature and dry the sclerotia of the species are dark brown or almost black, globose, 0.8—1.8 mm. in size. The rind cuticle is formed by flat cells with gently sloping walls lying on the surface. There is a clear pseudoparenchyma between the rind and the medulla of the sclerotium. In the light coloured medulla the hyphae can be clearly seen, the structure of its hyphae being prosoplectenchymatous. The fruit body is erect, simple and 10—20 mm. long. The stipe is bare or very faintly furred and darker than the clavula. The white or colourless clavula is fusiform, 0.8—4.3 mm. long and approximately 0.5 mm. in diam. The basidia (approx. $5 \times 9 \mu$) have 4 spores. The basidiospores, resembling an ellipse in shape, are $3-4 \times 6-8 \mu$ in size (approximately $3.24 \times 7.14 \mu$) (Figures 1, 2 and 3).

The above description based on the material examined agrees with the earlier definitions of the species. Among these VANG (3) mentions ROSTRUP having discovered that the species has brownish-black sclerotia, 0.5—1.5 mm. in size, each sclerotium producing a light coloured, faintly furry, fusiform fruit body. VANG (3) completes the description with material collected in Denmark observing that the medulla of the sclerotium is prosoplectenchymatous, the fruit body 1.5—2 mm. long, the basidia have 4 spores, the size of the spores being 6—9 × 3—4 μ (approximately 8.1 × 3.3 μ).

In the use of the name of the above species vacillation can be observed in the newest publications. VANG (3) has proposed the name *Typhula brassicae* (Berg.) for the perfect stage of the fungus in accordance with the name *Lycoperdon brassicae* given by BERGIUS to its imperfect stage. ROSTRUP, however, had already earlier used the name *Typhula betae* for the perfect stage of the fungus. As, according to the international regulations concerning the scientific names of fungi, the names of the perfect and imperfect stages are independent of each other, the name given by Rostrup must be considered the correct one. It is on the basis of this that CORNER (1) has approved the name *Typhula betae* Rostr. in his monography on *Clavaria*-fungi.

According to literary sources *Typhula betae* appears on several plants of the *Brassicae*- and *Beta*-genera, e.g. swede, turnip, cabbage, mangold, fodder-beet and sugar-beet (cf. 3).

The following information has been collected to the Dept. of Plant Pathology of the Agr. Res. Centre concerning samples of the *Typhula*-fungus, which, on the basis of the morphological characteristics of the sclerotia, belong to the *Typhula betae* species.¹

- Ab* Aura, 23. 4. 53: M. H., Tenhola, 23. 4. 53: M. H., Turku, 23. 4. 53: M. H., Lieto, 26. 4. 53: M. H., Lohja 26. 5. 55: A. Ylimäki, Halikko, May 53: P. Heino.
N Helsinki country commune Tikkurila, 10. 5. 50: E. A. Jamalainen, 7. 5. 51: M. H., 14. 4. 53: M. H., Hakkila, 18. 5. 53: M. H., Pernaja and Lapinjärvi, 1. 6. 55: A. Ylimäki.
St Loimaa, 23. 4. 53: M. H.
Ta Iitti, 20. 5. 51: J. Mukula.
Sa Mikkeli, 26. 5. 55: E. A. Jamalainen.
Tb Jyväskylä, April 53: A. Hyvönen.
Sb Maaninka, Halola, 27. 4. 50: M. H., 24. 4. 51: Annikki Ryynänen, 22. 5. 53: M. H. and 10. 5. 54: M. H.
Kb Kitee, 25. 5. 51: L. Saloheimo and Nurmes, 23. 5. 53: M. H.
Om Revonlahti, Ruukki, 19. 5. 50: O. Anttinen.
Ob Rovaniemi, Apukka, 17. 5. 55: E. A. Jamalainen.

The foregoing information, as well as observations on the causes of the injuries in the overwintering of winter turnip rape made by the Dept. of Plant Pathology,

¹ The plant geographical countries: *Ab* = Regio aboënsis, *N* = Nylandia, *St* = Satakunta, *Ta* = Tavastia australis, *Sa* = Savonia australis, *Tb* = Tavastia borealis, *Sb* = Savonia borealis, *Kb* = Karelia borealis, *Om* = Ostrobotnia media, *Ob* = Ostrobotnia borealis.

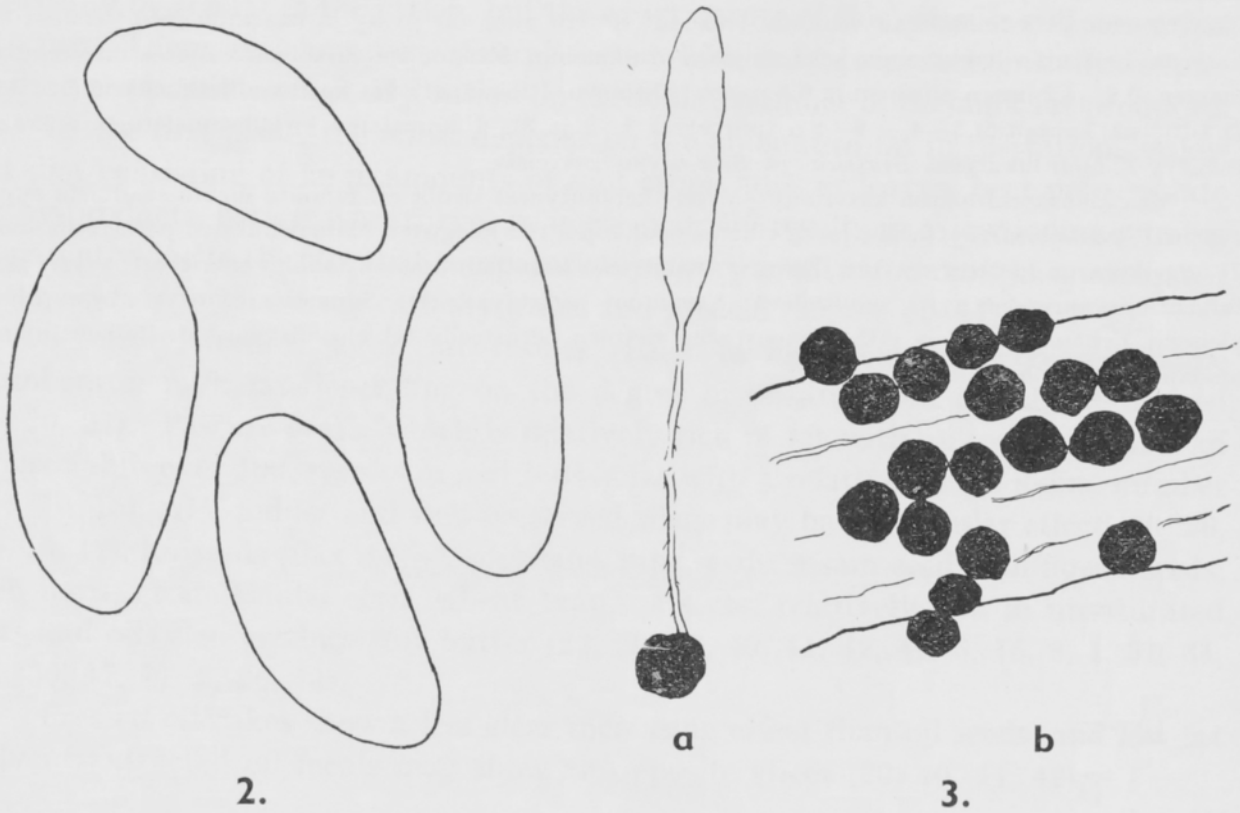
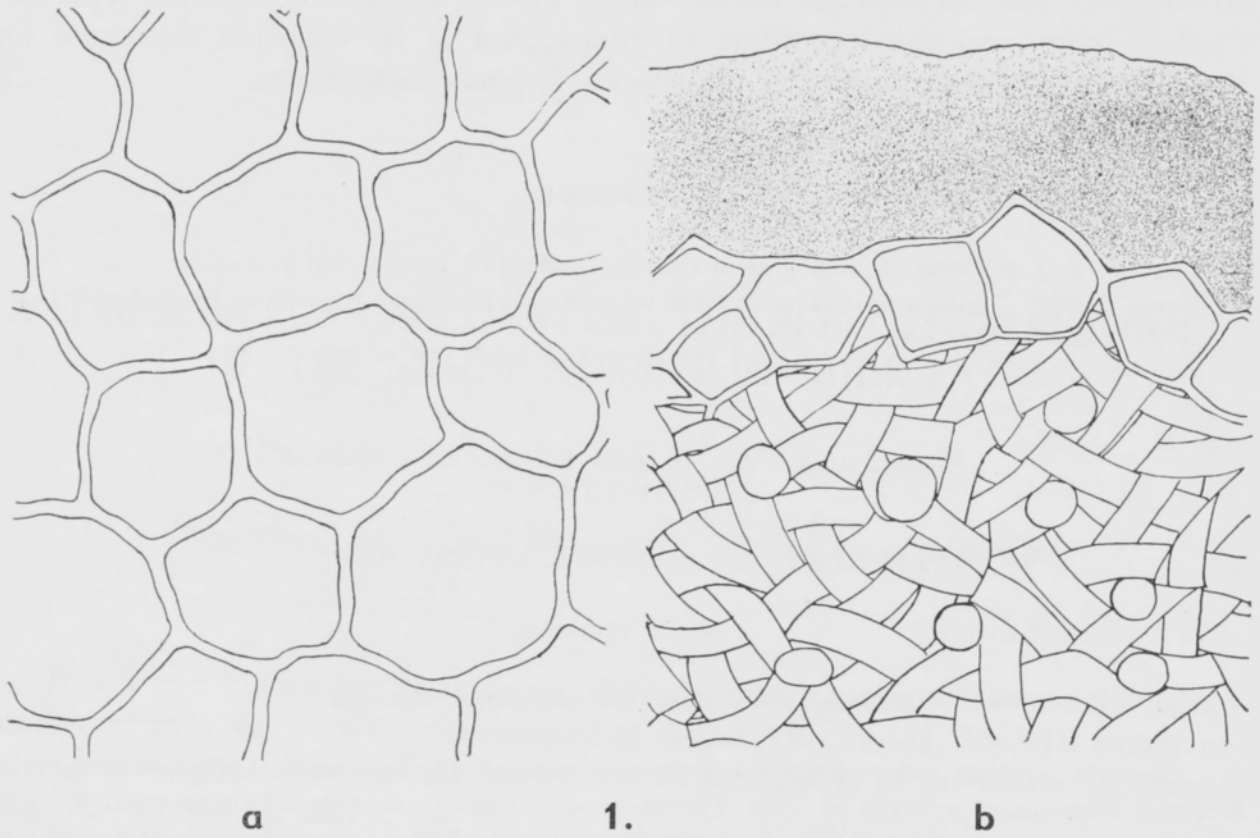


Fig. 1. a) Surface view of a sclerotium $\times 1000$, b) The surface of a sclerotium $\times 1000$.
 Fig 2. Basidiospores $\times 5500$.
 Fig 3. a) Sclerotium with fruit body $\times 5$, b) Leaf-stalk with sclerotia $\times 4$.

go to prove that in Finland winter turnip rape is commonly infected with the *Typhula*-fungi, and that according to information so far collected the cause for the injuries in overwintering is the species *Typhula betae* Rostr.

REFERENCES

- (1) CORNER, E. J. H. 1950. A monograf of Clavaria and allied genera. 740 p. London.
 (2) VANG, J. 1945. Typhula species on agricultural plants in Denmark. K. vet.- og landbohøgsk. Aarskr. 1945: 1—46.

SELOSTUS:

TYPHULA BETAE ROSTR. SYYSRYPSSISSÄ

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Keväällä v. 1950 todettiin eräissä syysrypsinäytteissä *Typhula*-sieniä. Lajimääritystä varten kerättiin Tikkurilassa syksyllä v. 1955 *Typhula*-sienten rihmastopahkoja itiöemineen kuolleista tai osittain kuolleista syysrypsiyksilöistä. Näyteaineisto osoittautui lajiksi *Typhula betae* Rostr. Sen rihmastopahkat ovat täysin kehittyneinä tummanruskeita tai lähes mustia, pyöreähköjä, kuivina kooltaan 0.8—1.8 mm ja ydinosaltaan vaaleita. Itiöemä (10—20 mm) on pysty ja haaraton. Sen varsiosa on kalju tai heikosti villakarvainen sekä nuijaosaa tummempi. Väritön tai valkoinen nuijaosa on sukkulamainen, 0.8—4.3 mm:n pituinen ja 0.5 mm:n paksuinen. Itiökannat ovat kooltaan keskimäärin $5 \times 3 \mu$ ja 4-itiöisiä; kantaitiöt $3-4 \times 6-8 \mu$ (piirroksat 1, 2 ja 3). Ulkomaisten kirjallisuustietojen mukaan esiintyy *T. betae* lukuisissa *Brassica*- ja *Beta*-suvun kasveissa.

Maatalouskoelaitoksen kasvitautiosastolle kerääntyneet tiedot eri tahoilta maata saaduista syysrypsin *Typhula*-sieninäytteistä, jotka rihmastopahkojen morfologisten ominaisuuksien perusteella ovat *T. betae* lajia, on lueteltu siv. 106. Esitetyt tiedot sekä kasvitautiosaston taholta suoritettut, syysrypsin talvehtimisvaurioiden syitä selvittelevät havainnot osoittavat, että Suomessa esiintyy syysrypsissä yleisenä *Typhula*-sieniä, ja että tähänastisten tietojen perusteella talvehtimisvaurioiden aiheuttajana on laji *Typhula betae* Rostr.