Some foliicolous fungi on grasses in North Iceland

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ABSTRACT: A number of fungi were identified from leaves of grasses collected in North Iceland in 1973-79 and from herbarium specimens collected in 1960-66. Nine species of the parasites and ten of the saprophytes reported are new records for the country. New host species are recorded for two parasites previously known from Iceland.

Leaf pathogens occurring on grasses in Iceland have not been the subject of specific surveys, although a number of fungi have been recorded from native and cultivated grasses (ROSTRUP 1903; LARSEN 1932; JØRSTAD 1952, 1963; URBAN 1958; HAGEN 1959). In the humid climate of Iceland leaf fungi become rather apparent on grasses, especially in late summer and fall. This is the case with powdery mildew and rusts. Certain leaf spot fungi seem to be very widespread on some grasses, the genera *Alopecurus* and *Agrostis* appearing to be the most susceptible ones. It is quite obvious that these attacks can reduce both yield and quality of the grasses. This report deals with fungi identified from grass leaves collected in North Iceland during 1960-1979.

MATERIALS AND METHODS

In 1973-77 samples of grass species showing leaf-spot symptoms were collected during the growing season at different locations in North Iceland. Most samples were collected from cultivated fields, but some from noncultivated grasslands. All samples were air dried before storage. During the 1978 and 1979 seasons all these samples were examined microscopically and some were taken from the field and plated directly on sterile, moist filter paper in petri dishes. Samples of grasses that had been collected during 1960-66, and deposited in the herbarium of the Akureyri Museum of Natural History, were also examined. Most of the parasitic and saprophytic fungi on the dried grasses were identified by Dr. Kaiho Mäkelä, Institute of Plant Pathology, Agricultural Research Centre, Vanta, Finland. Rusts were identified by
RESULTS

Parasitic and saprophytic fungi were identified on 45 of the 69 grass samples examined (Table 1). The fungi are listed here together with notes on previous records of the pathogens in Iceland. The location, at which each specimen was found, is indicated by the collection number (Table 1) in parenthesis.

A. Leaf-spot fungi.

TELIMENELLA GANGRAENA (Fr.) Petr.
Recorded from Iceland by LARSEN (1932) as *Phyllachora poae* on *Poa nemoralis*. Recorded by JORSTAD (1963) on *P. nemoralis* and *P. glauca*.

Found on *Alopecurus pratensis* (32) and *Festuca rubra* (29).

SELENOPHOMA DONACIS (Pass.) Sprague & A.G. Johnson

Previous record from Iceland by JORSTAD (1963) on *Deschampsia caespitosa*, *Hordeum vulgare*, and *Poa trivialis*.

Found on *Deschampsia caespitosa* (19). The spores (2) were 3.4 x 24.0 μm, aseptate; in size these specimens are closer to the main form of the fungus than to *S. donacis* var. *stomaticola*. The material from JORSTAD (1963) was placed under *S. donacis* var. *stomaticola*.

SEPTORIA NODORUM (Berk.) Berk. & Br.

New to Iceland.

Found on *Poa pratensis* (44).

SEPTOGLOEUM OXYSPORUM Bomm., Rouss & Sacc.

Recorded by LARSEN (1932) as *Phyllachora graminis* on *Agrostis tenuis*; *Cheilaria agrostidis* Lib. recorded by JORSTAD (1963) on *A. tenuis*.

Found on *Agrostis tenuis* (40, 55, 63). The conidia (3) were 6.7 x 29.0 μm, mostly 2-septate.

MASTIGOSPORIUM ALBUM Riess

Previous record from Iceland by LARSEN (1932) on *Agrostis tenuis* and *Hierochloë odorata*.

Found on *Alopecurus pratensis* (32). According to SPRAGUE (1950) and MÄXELÄ (1970), *M. album* should be restricted to the genus *Alopecurus*. The material from LARSEN (1932) could rather belong to *M. rubricosum*, which is common on the genus *Agrostis*,...
but which has not been found on *H. odorata*.

**MASTIGOSPORIUM DESCHAMPSIAE** Jörstad

New to Iceland.
   Found on *Deschampsia caespitosa* (42).

**MASTIGOSPORIUM RUBRICOSUM** (Dearn. & Barth.) Nannf.

New to Iceland.
   Found on *Alopecurus pratensis* (30) and on *Phleum commutatum* (21). As noted above, the record of *M. album* by Larsen (1932) may be *M. rubricosum*. According to Mäkelä (1970) *M. rubricosum* is found on *A. pratensis* and *Phleum pratense*, but has not been found on *Phleum commutatum*.

**RHYNCHOSPORIUM ORTHOSPORUM** Caldwell

New to Iceland.
   Found on *Alopecurus pratensis* (11, 13, 30, 32, 57, 58, 62, 68), *Dactylis glomerata* (37, 51), and *Agrostis tenuis* (40). The conidia (4) were 3.6 x 16.5 μm and 1-septate.

**SPERMOSPORA CILIATA** (Sprague) Deighton

New to Iceland.
   Found on *Festuca rubra* (47) and *Poa alpina* (49). According to Mäkelä (1972b) this fungus attacks a large number of hosts, among them *F. rubra* and *P. trivialis*, but it has not been found on *P. alpina*.

**HELMINTHOSPORIUM VAGANS** Drechs1.

New to Iceland.
   Found on *Poa pratensis* (12, 16, 41, 43, 44, 54, 56, 64, 67, 69). Conidia (15) were 19.2 x 83.2 μm and mainly 7-septate.

**HELMINTHOSPORIUM PHLEI** (Graham) Scharif.

New to Iceland.
   Found on *Phleum pratense* (52, 59).

**HETEROSPORIUM PHLEI** Gregory

New to Iceland.
   Found on *Alopecurus pratensis* (30, 58, 62, 68), *Phleum pratense* (35, 59, 65), and *Deschampsia caespitosa* (39). According to Sprague (1950) and O’Rourke (1976) *Heterosporium phlei* is restricted to the genus *Phleum*. In spite of that Mäkelä (1972a) found *H. phlei* on many grasses including *Phleum pratense* and *Alopecurus pratensis*. On the other hand, Sundheim & Årvold (1969) failed to infect other grass species with inoculum from *Phleum pratense*. This could depend on the host specificity of the fungus. Conidia (5) were 9.6 x 22.6 μm, 1-3-septate.
HADROTRICHUM VIRESCENS Sacc. et Roum.

Recorded by Larsen (1932) as Phyllachora graminis (Pers.) Fuck. on Agrostis tenuissima and A. canina. Recorded by Jörstad (1963) as conidial stage of Scothria agrostis (Fuck.) Wint. on A. stolonifera and A. tenuiis.

Found on Agrostis tenuissima (40). Conidiophores (3) were 6.2 x 24.5 μm, septate, and the conidia were 13.8 μm in diameter.

B. Rusts.

PUCCINIA FESTUCAE Plowr.

New to Iceland.

Identified (II and III) on Festuca rubra (7). Jörstad (1951) mentions that Uredo festucae DC. could be identical with Puccinia festucae, but that without teliospores (III) it must be classified as Uredo festucae (Gjerum, 1974). In the present sample both uredial (II) and telial (III) stages were found.

PUCCINIA POAE-NEMORALIS Otth.

Previous records from Iceland by Larsen (1932), Jörstad (1951), and Hagen (1958), on a wide range of hosts. Identified (II) on Poa pratensis (15, 17, 46, 60), Anthoxanthum odoratum (1) and Trisetum spicatum (50).

UREDO FESTUCAE DC.

Previous record from Iceland by Larsen (1932) on Festuca rubra and by Jörstad (1951) on F. rubra and F. vivipara.

Identified on Festuca rubra (48).

C. Saprophytes.

PHAEOSPHERIA VAGANS (Niessl) O. Erikss. on Festuca rubra (47).

PHAEOSPHERIA MICROSCOPICA (P.Karst.) O.Erikss. s.lat. on Festuca rubra (47).

PHAEOSPHERIA HERPOTRICHOIDES (De Not.) L. Holm on Daitylis glomerata (37) and Phleum pratense (52).

LOPHODERMIUM ARUNDINACEUM (Schrad. ex Fr.) Chev. on Festuca rubra (7), Elymus arenarius (6) and Calamagrostis neglecta (3).

DARLUCA FILUM (Biv.-Bern. ex Fr.) Cast. on Anthoxanthum odoratum (1) and Poa pratensis (17).

HENDERSONIA CRASTOPHILA Sacc. on Poa pratensis (44).

HENDERSONIA CULMICOLA Sacc. on Agrostis tenuiis (55).

PHAEOSEPTORIA POAE Sprague on Alopeurus pratensis (58) and Poa pratensis (44).

OVULARIA PUSILLA (Ung.) Sacc. & D. Sacc. on Deschampsia cespitosa (45).
TRICELLULA AQUATICA Webster on Agrostis tenuis (40) and Phleum pratense (59).

VOLUCRISPORA GRAMINEA (Haskins) Ingold, McDonald & Dann. on Phleum pratense (59).

PERICONIA DIGITATA (Cooke) Sacc. on Deschampsia caespitosa (42).

Apart from Lophodermium arundinaceum and Darluca filum, which both are reported by Larsen (1932), these saprophytes are new records for Iceland.

D. Other fungi.


DISCUSSION

This investigation was not intended to be a complete study of the parasitic fungi of grasses in North Iceland. The samples were not taken systematically and most of the fungi were identified from dry plant materials. The fungi most frequently identified, therefore, are those that have produced spores that are preserved on dried leaves and are not necessarily those that are most common in the field. Nevertheless, the most common fungi on these samples were Rhynchosporium orthosporum, Helminthosporium vagans, Heterosporium phlei and Puccinia poae-nemoralis.

Some of the fungi mentioned in this article have been found before by Larsen (1932) and Jörstad (1951, 1963). The following parasites are new records for Iceland:

Septoria nodorum on Poa pratensis.
Mastigosporium deschampsiae on Deschampsia caespitosa.
Mastigosporium rubroceum on Alopecurus pratensis and Phleum commutatum.
Rhynchosporium orthosporum on Alopecurus pratensis, Agrostis tenuis and Daetlyia glomerata.
Spermospora ciliata on Festuca rubra and Poa alpina.
Helminthosporium phlei on Phleum pratense.
Helminthosporium vagans on Poa pratensis
Heterosporium phlei on Alopecurus pratensis and Phleum pratense.
Puccinia festucae on Festuca rubra.

Some of the saprophytic fungi reported here are often regarded as parasites (Sprague 1950, Mäkelä 1976, 1977), although none of them are strong or important pathogens. This is the case with Hendersonia orastophila on Poa pratensis, H. caulicola on Agrostis tenuis, and Ovularia pusilla on Deschampsia caespitosa, all of which are new to Iceland.
TABLE 1. Collection data for grass species affected by fungal pathogens and saprophytes.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Species</th>
<th>Location</th>
<th>District*</th>
<th>Collector*</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>20.7.60</td>
<td>Anthoxanthum odoratum</td>
<td>Gröðrarstöðin</td>
<td>Byjaf.</td>
<td>HHg</td>
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<td>2.</td>
<td>2.7.60</td>
<td>Calamagrostis neglecta</td>
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<td>Byjaf.</td>
<td>HHg</td>
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<td>6.</td>
<td>2.8.60</td>
<td>Elymus arenarius</td>
<td>Akureyri</td>
<td>Byjaf.</td>
<td>HHg</td>
</tr>
<tr>
<td>7.</td>
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<td>Mýrkárðalsmenni</td>
<td>Byjaf.</td>
<td>HHg</td>
</tr>
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<td>Byjaf.</td>
<td>BEG</td>
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<tr>
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<td>N.-Ping.</td>
<td>BEG</td>
</tr>
<tr>
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<td>15.9.75</td>
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<td>Lystigarðurinn</td>
<td>Byjaf.</td>
<td>BEG&amp;HKr</td>
</tr>
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<td>15.</td>
<td>15.9.75</td>
<td>Poa pratensis</td>
<td>Lystigarðurinn</td>
<td>Byjaf.</td>
<td>BEG&amp;HKr</td>
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<td>Byjaf.</td>
<td>BEG&amp;HKr</td>
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<td>Byjaf.</td>
<td>BEG&amp;HKr</td>
</tr>
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<td>Byjaf.</td>
<td>BEG&amp;HKr</td>
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<td>BEG&amp;HKr</td>
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<td>Byjaf.</td>
<td>BEG&amp;HKr</td>
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<td>Skag.</td>
<td>BEG</td>
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<td>Bergland</td>
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<td>V.-Hún.</td>
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<td>Byjaf.</td>
<td>BEG</td>
</tr>
</tbody>
</table>

*) Abbreviations: Byjaf.: Byjafjarðarsýsla. N.-Ping.: Norður-pingeyjar­

sýsla. Skag.: Skagafjarðarsýsla. V.-Hún.: Vestur-Húnavatnssýsla. S.-Ping.: Suður-pingeyjar­

sýsla. HHg: Helgi Hallgrímsson. BEG: Bjarni E. Guðleifsson.

HKr: Hörður Kristinsson.
Telimenella gangraena was found on Alopecurus pratensis and *Festuca rubra*; Larsen (1932) and Jørstad (1963) reported this fungus on *Poa glauca* and *Poa nemoralis*.

*Mastigosporium album* was reported by Larsen (1962) on *Agrostis tenuis* and *Hierochloe odorata*. However if the fungus should belong to *M. rubricosum*, the specimen of *M. album* reported here on *Alopecurus pratensis* is also a new record for Iceland.

The collections of *Selenophoma donacis* on *Dactylis glomerata* seem to belong to the main form (*S. donacis* var. *donacis*) rather than to *S. donacis* var. *stomaticola* as reported by Jørstad (1963).

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**references**


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