SHORT COMMUNICATION

**SPORISORIUM SMUT PATHOGENS IN THE SULTANATE OF OMAN: THREE NEW REPORTS**

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**SUMMARY**

Smut teliospores were isolated from several species of infected grasses in the Sultanate of Oman. Pathogen identity was confirmed by nuclear ribosomal large subunit DNA sequencing and analysis and consequently three new national reports of smut pathogens of the genus *Sporisorium* isolated from sorghum (*S. sorghi*), sugarcane (*S. scitamineum*), and the native grass *Dichanthium foveolatum* (*S. foveolati*), are presented. Additionally, the identification of the previously reported *S. reilianum*, from sorghum, is confirmed on the basis of nuclear rDNA sequence data. All four reports represent new records for the Arabian Peninsula region.

**Keywords:** Native flora, Arabian Peninsula, Sorghum, Sugarcane, Basidiomycetes, Ustilaginales

Previous reports of smut diseases in Oman are few. Waller and Bridge (1978) reported loose smut (*Ustilago nuda*) on wheat; Moghul (1993) reported *Ustilago nuda* on wheat and barley, *Graphiola phoenicis* on date palm and *Sphacelotheca* (*Sporisorium*) *reilianus* on sorghum. The lack of previous reports of smuts is surprising given the widespread cultivation of cereals and other monocotyledonous crops in the country. No prior reports exist concerning smut pathogens on the native flora of Oman and indeed, no systematic study has been made of the smut fungi in any of the countries of the Arabian Peninsula. Disease specimens from Oman and other Arabian Peninsula countries are lacking in the major world herbaria. Neither the U.S. National Fungus Collections (BPI) nor the Kriebel Herbarium at Purdue University (PUL) contained any smut specimens from Oman prior to the present study.

The current study compiles data for the four species of *Sporisorium* now known for northern Oman, including three new records – *S. sorghi*, *S. foveolati* and *S. scitamineum*. Furthermore, the identity of *S. reilianum* previously reported in northern Oman is confirmed using nuclear rDNA sequence data.

Fresh collections were made across northern Oman including the Hajar Mountains between January 2009 and January 2012. The area (as described in Deadman et al., 2011) is approximately enclosed by the coordinates 24°56’30”N, 56°25’05”E; 21°58’53”N, 55°40’47”E; 22°28’51”N, 59°49’38”E; 21°03’48”N, 58°50’11”E. Field collected specimens were transferred to Sultan Qaboos University for initial identification and then to the Department of Botany and Plant Pathology, Purdue University, USA for detailed examination and molecular characterization. Pathogen identity was confirmed by nuclear ribosomal large subunit (28S) DNA sequencing and analysis, following protocols outlined in Aime (2006) except that primers LSU4-B (Aime and Phillips-Mora, 2005) and LR6 (Vilgalys and Hester, 1990) were used for amplification and sequencing. Voucher sequences were deposited in GenBank (http://www.ncbi.nlm.nih.gov/) and voucher specimens deposited in the Kriebel Herbarium (PUL; Purdue University, Indiana). Authority names are based on Authors of Fungal Names (CABI): http://www.indexfungorum.org/Names/Names.asp.

This report brings together information on the four *Sporisorium* species that are now known to occur in Oman; three of these species are recorded in the country for the first time. Collecting efforts thus far have been largely directed toward the northern agricultural regions of Oman and on hosts of agricultural importance. It is expected that collections made in the southern Dhofar region where climatic conditions are significantly different to those in northern Oman, and collections from the native flora which contains many endemic species (Patzelt, 2008) are likely to yield many additional species.
**Sporisorium foveolati** (Maire) Vánky, Mycotaxon 33: 367 (1988)

Specimens examined. – Sultan Qaboos University, Muscat, on agricultural land, on *Dichanthium foveolatum* (Del.) Roberty (Poaceae), I. Al Mahmooli, May 2010 (GenBank KR014148). Also, at Rustaq, on agricultural land, on *D. foveolatum*, M. Deadman, December 2009.

Hosts and distribution. – This smut species has previously been reported from Eritrea (Vanky, 2005) and Iran (Vanky and Abbasi, 2013) on the same host. This is the first report for this pathogen in the Arabian Peninsula.


Specimens examined. – Emti, Al Dakhliah Region, on agricultural land, on *Sorghum* (*Sorghum bicolor* (L.) Moench (Graminae), M. Deadman, November 2009 (GenBank KR014149). Also, at Burkat Al Mauz, on agricultural land, on sorghum, M. Deadman, October 2010.

Hosts and distribution. – Previously reported as *Sphaelotheca reiliana* in Oman by Moghul (1993), this wide-spread smut species is confirmed in Oman on the basis of nuclear rDNA sequence data.


Specimens examined. – Bahla, Al Dakhliah Region, on agricultural land, on *Saccharum officinarum* L. (Poaceae), M Al Azri, January 2012 (GenBank KR014150).

Hosts and distribution. – Pathogen with apparently limited distribution, restricted to China and Latin America (Farr and Rossman, 2015). This is a new report for Oman, the Arabian Peninsula and the Middle East/North Africa region.

**Sporisorium sorghi** Ehrenb. ex Link, in Willdenow, Sp. pl., Edn 46 (2): 86 (1825)

Specimens examined. - Emti, Al Dakhliah Region, on agricultural land, on *Sorghum* (*Sorghum bicolor* (L.) Moench (Graminae), M. Deadman, November 2009 (GenBank KR014151). Also at Burkat Al Mauz, Al Dakhliah Region, on agricultural land, on sorghum, M. Deadman, October 2010.

Hosts and distribution. – Previously reported from North and South America (Stoll et al., 2005), Australia (Vanky and Shivas, 2008), Europe and North Africa (Vanky, 1994) and South Asia (Vanky, 2007), this wide-spread smut species is reported here for the first time in Oman and the Arabian Peninsula.

**REFERENCES**


