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Short Communication

Status of Grain Smut *Sphacelotheca sorghi* and Long Smut *Tolyposporium ehrenbergii* of Sorghum in Sindh and Balochistan, Pakistan

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Abstract. Survey of various parts of Sindh and Balochistan was conducted to determine the presence and distribution of *Sphacelotheca sorghi,* the causal organism of grain smut of sorghum. The percentage of disease in different localities of Sindh was 2% in Dadu, 0.5% in Piyaro Goth, 3% in Mehar, 3% in Nasirabad, 4% in Larkana, 8% in Kamber, 4% in Shahdadkot, 5% in Jacobabad, 5% in Thull, 6% in Kandhkot, 7% in Lakhi, 7.5% in Jehan Khan, 8.3% in Sukkur, 20% in Rohri, 15% in Ghotki, 15% in Mirpurmathelo, 15% in Ubaro, 20% in Daherki, 20.5% in Khairpur (Mir) and 17.1% in Karoondhi, and in localities of Balochistan was 7% in Nasirabad and in 7% Usta Mohammad. The incidence of long smut, *Tolyposporium ehrenbergii,* in Sindh was recorded at 0.2% in Dadu, 0.1% in Piyaro Goth, 0.5% in Mehar, 0.03% in Nasirabad, 0.6% in Larkana, 0.3% in Kamber, 1% in Shahdadkot, 1.2% in Jacobabad, 1.5% in Thull, 1.1% in Kandhkot, 1% in Lakhi, 1.3% in Jehan Khan, 1.5% in Sukkur, 3.5% in Rohri, 5% in Ghotki, 8.1% in Mirpurmathelo, 7.5% in Ubaro, 8.9% in Daherki, 9.1% in Khairpur (Mir) and 8% in Kroondhi, and in Balochistan was1.3% in Nasirabad and 1.4% in Usta Mohammad.

Keywords: grain smut, *Sphacelotheca sorghi*, long smut, *Tolyposporium ehrenbergii*, sorghum

Sorghum (*Sorghum vulgare*) is cultivated for grain, forage and juice in the drier climate regions of Pakistan, on limited acreage because of its low yield and susceptibility to diseases. Davies (1978) reported that sorghum is grown in 55% semi-arid tropical countries of the world. Sorghum crop in Pakistan occupies a major position in Rawalpindi, Sargodha, Multan, Bahawalpur, D.I. Khan, Sukkur, Hyderabad and Sibi Divisions (Hafiz, 1986). Sattar and Hafiz (1952) reported that the grain smut *Sphacelotheca sorghi* and the long smut *Tolyposporium ehrenbrgii* cause considerable loss in the production of sorghum in all sorghum growing areas of Pakistan. Reed (1923) recorded grain smut in USA and other sorghum growing countries. Hafiz (1958) reported that the long smut disease of sorghum caused appreciable loss in the districts D.G. Khan, Muzaffargarh, Sukkur, Jacobabad, Larkana, Nawabshah and Khairpur. Kamal and Mughal (1968) and Hakro *et al.* (1990) reported that grain smut is more prevalent in all sorghum growing areas of Sindh. In Sindh and Balochistan provinces of Pakistan the old/susceptible varieties are still being grown for grain and fodder. An extensive survey of sorghum crop was thus carried out to determine the latest position of the prevalence and distribution of the sorghum smut diseases (grain smut and long smut) in Sindh and Balochistan as no recent studies had been conducted in these two provinces.

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An extensive survey was carried out during 2002 to determine the incidence and distribution of sorghum smut diseases in Sindh and Balochistan. The prevalence of grain smut and long smut, in the farmers' fields in the two provinces, was recorded for their incidence and intensity on the head count basis according to the procedure of Rodenhiser and Holton (1945). Diseased and healthy heads were counted at three random localities of each field in one square metre area. It was observed that the grain smut and long smut were prevalent in all sorghum growing areas of Sindh and Balochistan. Sorghum grain smut and long smut data and the infection level at individual sites are presented in Table 1.

Out of the 22 sites of sorghum crop fields visited, the lowest grain smut (0.5%) was recorded at Piyaro Goth and the highest (20.5%) was recorded at Khairpur. In the remaining 20 sites, i.e., Dadu, Mehar, Nasirabad, Larkana, Kamber, Shahdadkot, Jacobabad, Thall, Kandhkot, Lakhi, Jehan Khan, Sukkur, Rohri, Ghotki, Mirpurmathelo, Ubaro, Daherki, and Karoondhi in Sindh, and Nasirabad and Usta Mohammad in Balochistan, grain smut was recorded from 2 to 20%. The lowest (0.1%) and highest (8.9%) infections of long smut were recorded at Piyaro Goth and Daherki, respectively. The long smut infection ranged from 0.2 to 8.1% at Dadu, Mehar, Nasirabad, Larkana, Kamber, Shahdadkot, Jacobabad, Thull, Kandhkot, Lakhi, Jehan Khan, Sukkur, Rohri, Mirpurmathelo, Ubaro, Khairpur and Karoondhi in Sindh, and Nasirabad and Usta Mohammad in Balochistan. These results are comparable with the earlier reports (Hakro *et al.,* 1990; Hafiz, 1986;

Table 1. Grain smut and long smut of sorghum in Sindh and Balochistan

Locality	District (Province)	Grain smut (%)	Long smut (%)
Dadu	Dadu (Sindh)	2.0	0.2
Piyaro Goth	Dadu (Sindh)	0.5	0.1
Mehar	Dadu (Sindh)	3.0	0.5
Nasirabad	Larkana (Sindh)	3.0	0.3
Larkana	Larkana (Sindh)	4.0	0.6
Kamber	Larkana (Sindh)	8.0	0.3
Shahdadkot	Larkana (Sindh)	4.0	1.0
Jacobabad	Jacababad (Sindh)	5.0	1.2
Thull	Jacobabad (Sindh)	5.0	1.5
Kandhkot	Shikarpur (Sindh)	6.0	1.1
Lakhi	Shikarpur (Sindh)	7.0	1.0
Jehan Khan	Sukkur (Sindh)	7.5	1.3
Sukkur	Sukkur (Sindh)	8.3	1.5
Rohri	Sukkur (Sindh)	20.0	3.5
Ghotki	Ghotki (Sindh)	15.0	5.0
Mirpurmathelo	Ghotki (Sindh)	15.0	8.1
Ubaro	Ghotki (Sindh)	15.0	7.5
Daherki	Ghotki (Sindh)	20.0	8.9
Khairpur	Khairpur (Sindh)	20.5	7.1
Karoondhi	Khairpur (Sindh)	17.1	8.0
Nasirabad	Nasirabad (Balochistan)	7.0	1.3
Usta Mohammad	Nasirabad (Balochistan)	7.0	1.4

Kamal and Mughal, 1968). From these observations it is concluded that there is a dire need to provide high yielding and disease resistant varieties to the farmers of Sindh and Balochistan for enhancing the yield of sorghum as proposed already (Hakro *et al.,* 1990; Hafiz, 1986).

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