

SCREENING OF SORGHUM VARIETIES AGAINST GRAIN SMUT OF SORGHUM

A. A. HAKRO, S. A. JAMIL KHAN AND S. A. H. JAFFRY

*Crop Diseases Research Institute,
Pakistan Agricultural Research Council
Karachi University Campus, Karachi-75270, Pakistan*

Abstract

Seeds of eight varieties of sorghum viz., Acchokartuho, Depar, Ghotki, Redjanpur, Rehmani, Sarakartuho, T3 and T5 collected from the ARI, Dadu were inoculated with fresh inoculum of grain smut (*Sphacelotheca sorghi*) and planted at CDRI field during the year 2000. Sorghum varieties varied significantly in their resistance to the disease. T3 with 10% infected heads was the most resistant whereas Rehmani with 32.6% head infection appeared to be the most susceptible followed by Sarakartuho (25.7%), Acchokartuho (21.1%), Ghotki (18.1%), Depar (12%), T5 (11.5%) and Redjanpur (11.1%). There is need to evolve high yielding disease resistant sorghum varieties for increasing sorghum grain production.

Introduction

Sorghum (*Sorghum vulgare*) is an important cereal crop throughout the world. It is grown in semi arid tropical and subtropical regions of Pakistan, central and northern India, China, some countries of Africa and some parts of Europe. Davies (1978) reported that 55% of the world production of sorghum is grown in semiarid tropical countries. The sorghum grain is produced in the United States and Australia for live stock feeding rather than human food.

The average yield of the crop in Pakistan is 484 kg/ha which is much lower than that of India and other sorghum producing countries. It is known to suffer from a number of diseases such as smuts, red leaf blight and virus diseases. However, smut diseases and leaf blight are the most serious problems of the area.

Sattar & Hafiz (1952) reported grain smut caused by *Sphacelotheca sorghi* Link and long smut caused by *Tolyposporium ehrenbergi* Kuhn from Pakistan. Cramer (1967) reported that grain smut caused heavy losses in the grain yield. According to Kamal *et al.*, (1968) and Hakro *et al.*, (1990) grain smut is found to be more prevalent in Sindh province of Pakistan. In Sindh old varieties are generally grown which are very susceptible to the grain smut. Therefore this varietal trial was carried out to determine the resistance of different varieties against grain smut of sorghum.

Materials and Methods

Eight sorghum varieties viz., Acchokartuho, Depar, Ghotki, Redjanpur, Rehmani, Sarakartuho, T3 and T5 collected from ARI Dadu were used. Seeds were inoculated with the spores of grain smut collected from the previous year crop. Before inoculation the viability of the inoculum was checked and was found about 66%. About 0.001 gram inoculum was poured in a conical flask with required seed of each variety and shaken thoroughly so that the seeds were uniformly coated with the spores of grain smut. The

inoculated seed were sown in plots measuring 2 x 2 meters. Six rows of each variety were sown at 40 cm distance between rows and 25 cm from plant to plant. The trial was laid out in randomized complete block design (RCBD) with three replications

Results and Discussion

Healthy and diseased ear heads were counted separately and grain smut percentage in each variety and treatment was then calculated (Table 1). The varieties were classified according to the scale used by Rodenhizer & Holton (1945) as resistant (0-10%) intermediate (11-40%) and susceptible (41-100%).

Table 1. Screening of sorghum varieties against grain smut of sorghum.

S. No.	Name of variety	Grain smut infection percentage	Grain smut reaction
1	Aechokartuho	21.1	I
2	Depar	12	I
3	Ghotki	18.1	I
4	Redjanpur	11.1	I
5	Rehman	32.6	I
6	Sarakartuho	25.7	I
7	T3	11.5	I
8	T5	10	R

I = Intermediate R = Resistant

Out of eight sorghum cultivars, only one cultivars T5 (10%) was found resistant and all the remaining cultivars were found intermediate. Further genetic investigations should help reveal the nature of this resistance. There is an urgent need to evolve high yielding and resistant sorghum varieties for increasing sorghum grain production.

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(Received for publication 20 November 2001)