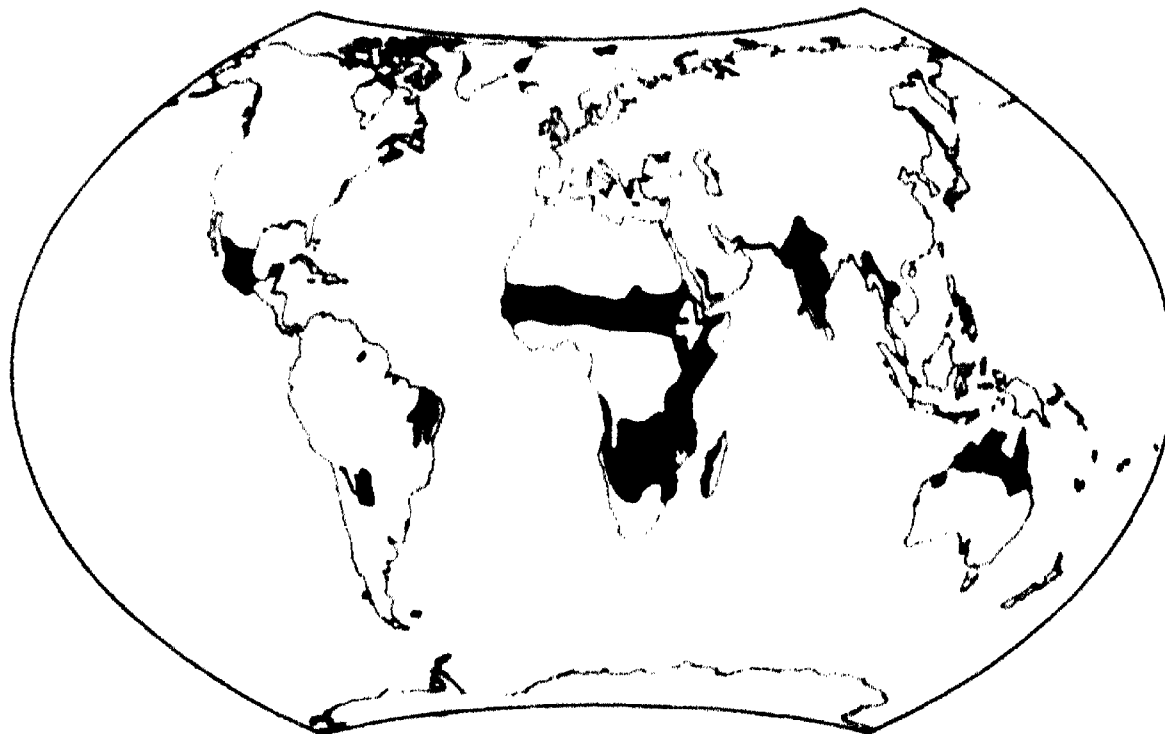


RP 01470

**INTERNATIONAL SORGHUM DISEASE RESISTANCE TESTING PROGRAM
(ISDRTP)**

Progress Report: SPM 7901



**REPORT OF
THE 1978 INTERNATIONAL SORGHUM GRAIN MOULD NURSERY
(ISGMN)**



ICRISAT

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INTRODUCTION

The International Sorghum Grain Mold Nursery (ISGMN) was initiated in 1976 with the following objectives:

- to identify sources of stable grain mold resistance
- to obtain information on the variability of the grain mold pathogens
- to distribute grain mold resistant genotypes to scientists in national programs
- to promote the development of a communicating cooperating international network of scientists working on sorghum grain molds.

There has been an excellent response to the 1976 and 1977 ISGMN and a cooperative network has become well established. In this report we present the results of the 1978 ISGMN.

COOPERATORS AND LOCATIONS

The basic requirement of cooperators is that they should be able to expose the ISGMN test entries to sufficient grain mold pressure to adequately test the reactions of the entries to grain molds. Sets of the 1978 ISGMN, consisting of 28 test entries and two known high-susceptible checks, were sent to 19 cooperators in 11 countries. Cooperators and test locations in the 1978 ISGMN from whom data had been received on February 15, 1979 are listed in Table 1.

SELECTION OF ISGMN TEST ENTRIES

The test entries included in the 1976 and 1977 ISGMN trials were those identified as relatively less susceptible (RLS) to grain molds in the ICRISAT field screening program. A significant feature of 1978 test entries was the inclusion of promising progeny of crosses among the RLS lines and between them and elite grain quality lines. Two known high susceptible-checks, PP₂Bx and IS 9991x were included to act as indicators of grain mold pressure.

OPERATION OF THE 1978 ISGMN PROGRAM

The seeds of test entries were assembled and multiplied at ICRISAT Center, Hyderabad. All cooperators received seed from the same seed lot for each entry. This is important if erroneous information on pathogen variability is to be avoided.

Cooperators received a set of seed material and a book which included information on the objectives of the trial, suggestions on planting, fertilization, inoculum provision, time and method of scoring, and triplicate data record sheets for climatic data and plant reaction data. Cooperators were requested to return one copy of the data sheets to ICRISAT as soon as possible after completion of the trial. At the time of writing this report, cooperators have returned the data sheets from 12 locations.

PERFORMANCE OF THE TEST ENTRIES

The field mold ratings (on a 1 to 5 scale), the laboratory

ranking of threshed grain, and estimates of percent molded surface of threshed grain, are presented in Tables 3 to 8. The entry performance is discussed below for individual locations.

Khon-Kaen, Thailand

Grain mold pressure was greatest at this location. Most entries received a field rating of 5 (trial mean 4.7). Notable exceptions were IS 9225 (2 and 1), IS 2261 (4 and 3), IS 2327 (3 and 4) and E 35-1 (1 in Rep. 1 but strangely 5 in Rep.2) (Table 3).

The best five entries based on the lab ranking (Table 5) were IS 9225, IS 2327, IS 2328, IS 2261 and E 35-1.

On the basis of percent molded surface (Table 7) IS 2327 (10%), IS 9225 (10%), IS 2261 (23%), IS 2328 (23%) and E 35-1 (35%) were far superior to the other entries.

Samaru, Nigeria

At Samaru, field ratings averaged 4.6. IS 14332 and E 35-1 had field ratings of \leq 2 in both replications (Table 3). Some entries (IS 2327, IS 2435, IS 2328) had major differences in field ratings between replications.

On the basis of the lab ranking, IS 14332, IS 2327 and IS 9225 were the best entries (Table 5). There are discrepancies between field ratings and lab ranking, e.g. IS 9225 was given field ratings of 5 and 4 (on the 1 to 5 scale) and yet was ranked third best in both replications; IS 2327 was given field ratings of 5 and 2 and yet in the lab

ranking was 2nd in replication 1 and best in replication 2. As the lab ranking is made on the threshed grain, it probably gives a more accurate assessment of the *grain mold* as opposed to *head mold*. The head can look quite molded if glumes and rachis branches etc. are moldy, while the grain may or may not be molded.

Farakoba, Upper Volta

Nine entries have field ratings of ≤ 2 and IS 9225 had field ratings of 1 in both replications. Ten entries had field ratings ≥ 4 and the location mean was 3.2 (Table 3).

There appears to have been some mix-up in seed prior to lab ranking and lab mold assessment. Some entries with low field ratings have high rank values, and there are some major discrepancies between replications e.g. IS 2328 ranked 24th in replication 1 was ranked 1 in replication 2 (with field ratings of 1 and 2 in replications 1 and 2 respectively (Table 5).

Replication discrepancies also occur in the percent molded surface ratings, e.g. IS 2328 has a score of 60 percent in replication 1 and 5 percent in replication 2, M 36619 has no mold in replication 1 and 58 percent molded surface in replication 2 (Table 7).

Sotuba, Mali

Three entries -- IS 14332, IS 9225 and IS 2261 -- had field ratings of 1 in both replications, and 7 other entries (E 35-1, IS 2327, M 3604, IS 2328, IS 2435, M 36284 and M 36285) had maximum field ratings of 2 (Table 3).

Based on lab ranking, IS 14332, IS 2261, IS 2435, E 35-1 and IS 2327 were the best five entries (Table 5).

Seven entries averaged < 10 percent molded surface and of these IS 2327, IS 2328 and E 35-1 had < 5 percent in both replications (Table 7).

Arsinegele, Ethiopia

Grain mold pressure was generally lower at this location (location mean of 2.7) and only 2 entries had scores of 5 (Table 3). Seven entries had field ratings of no more than 2. The best two lines were M 36284 and M 36471.

No data were provided on lab ranking or percent molded surface of threshed grain.

Tarna, Niger

Only field rating data were provided, and from only one replication. Five entries IS 14332, IS 9225, M 36284, IS 2435 and CS 3541 had field ratings of 2. Location mean was 3.3 and only one entry had a field rating of 5 (Table 3).

ICRISAT Center, India

The trial was planted towards the end of June and sprinkler irrigation was provided on rain-free days during the flowering and grain-filling periods. Entries were inoculated with mixtures of *Curvularia lunata*, *Fusarium moniliforme* and *F. semitectum*, and heads were covered with brown paper bags for two weeks following inoculation.

