

BIBLIOGRAPHIC DATA SHEET1. CONTROL NUMBER
PN-AAH-9602. SUBJECT CLASSIFICATION (695)
AF30-0000-G788

3. TITLE AND SUBTITLE (240)

National sorghum and millet crop improvement; annual report, 1976

4. PERSONAL AUTHORS (100)

5. CORPORATE AUTHORS (101)

Ariz. Univ. Dept. of Plant Sciences

6. DOCUMENT DATE (110)

1976

7. NUMBER OF PAGES (120)

6p.

8. ARC NUMBER (170)

YE633.17.S719a-1976

9. REFERENCE ORGANIZATION (130)

Ariz.

10. SUPPLEMENTARY NOTES (500)

11. ABSTRACT (950)

12. DESCRIPTORS (920)

Millet
Plant breeding
Varieties
Pearl milletYield
Hybridization
Maize
Sorghum

13. PROJECT NUMBER (150)

279003000

14. CONTRACT NO.(140)

AID/ne-C-1304

15. CONTRACT
TYPE (140)

16. TYPE OF DOCUMENT (160)

52

PN-AAH-960

YE

633.17

S719a

1976

ANNUAL
RESEARCH REPORT

Number 1

1976

Contract No.

AID/NE-C-1304 Yemen

Distribution:

Contracting Officer (3)
Mission (4)
AID Reference Center (2)
Yemen, Chief-of-Party (2)
Director, International Agriculture
Programs (1)
Head, Department of Plant Sciences (1)
Department Plant Sciences File (4)

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In support of:

National Sorghum and Millet
Crop Improvement
Project No: 279-11-110-030

This project initiated its activities in Yemen in early 1977. It had to build on and go forward with what was available from 1976 regarding personnel, facilities, equipment and supplies, research materials and results of past efforts.

Reports covering detailed information on project research oriented activities not previously reported elsewhere are being submitted to cover individual calendar years.

This Report (Number One) is information regarding the status of 1976 project research oriented data and how they were handled to move forward to 1977 and begin our project activities.

1976

The 1976 cropping season was planned, planted, and harvested by Yemeni employees of the project. There was no expatriot sorghum professional in residence at Sanaa during planting or harvest. The USAID Mission had issued a personal contract with Mr. Paul Christensen, a graduate student starting work on his M.S. at Purdue, to work part of the season in Yemen. Mr. Christensen arrived in-country after planting and departed prior to harvest.

When I arrived in-country on 16 March 1977 it was only a month until sorghum planting should start on or soon after 15 April. A research project that is ready to go should, by a month before planting, have all of the seed up ready for planting and be working on field preparation for the coming season. However, I found that the untabulated and unevaluated data for 1976 was still in the field books. Nothing was ready to go for 1977. I averaged all of the plot data available from the 1976 field books. The local employees of the project said there was bird damage and gaps in the plots but no corrections had been made in the data. It could not be done at that late time because no plot notes had been made as to the degree of damage by birds or the percent stand that actually existed within plots.

The professional staff from the Poultry Project (C19) had observed the threshing of the 1976 grain yield plots before my arrival. A head thresher (single plant thresher) had been used to thresh the yield plots. These types of threshers throw grain out when heads are inserted for threshing and the grain is almost never completely threshed from the heads. Such a thresher is never used for reliable yield trials in the

United States or elsewhere. Its specific use is to obtain a reasonable amount of seed from a single head without considering efficiency of threshing or loss. The machine cleans quickly to prevent genotypic mixtures which is its main attribute as a piece of scientific equipment. The poultry personnel said the "threshing floor was ankle deep in sorghum grain" and that "they did not need to feed their chickens for a couple of days after using the straw for bedding."

This sort of practice certainly detracted from the accuracy of the data, illustrated the need for professional guidance, and the need of proper equipment.

A list of the tests that were grown in 1976 is in Table 1. The entries in a number of these tests were of approximately the same level of advancement through a breeding or selection program but were in separate tests and therefore could not be compared. Entries that I selected from equivalent tests from 1976 were combined into one test in 1977 so that all could be statistically compared with each other.

A general visual inspection of yield data from replicated plots within a test many times showed a range of yield among replications of an entry almost as great as the total range of plot yields within the whole test. This indicated an extreme degree of variability among plots. There were a great number of missing plots. Even a comparison of the data averages of genotypes did not appear to offer any real results. For these reasons the most obviously poor entries were dropped but a goodly number were tested again in 1977. Thus, a major portion of the 1977 testing was a re-evaluation of those materials that had been previously tested in 1976. Some new items were added.

The 1976 field books are not available at the time of this writing. None of the 1976 data were put into tables. It was not necessary to do

SANA, YEMEN 1976 FIELD RESEARCH
EFFORTS ON SORGHUM AND MILLET

Table 1

<u>TEST NO.</u>	<u>TEST TYPE</u>	<u>ROWS PER PLOT</u>	<u>REPS</u>	<u>NO. ENTRIES</u>	<u>ROW PLOTS</u>	<u>COMMENTS</u>
76019	Prop.	8	1	9	72	Off-type hds - 1975
76016	Sel.	1	1	66	66	Head selns. from 75016
76076	Seg. Popn.	4	1	76	304	F ₂ from 1975 Lebanon crosses
76025	Sel.	1	1	55	55	Nutritional Quality Purdue
76015	Sel.	1	1	127	127	F ₃ Sel - F ₄
76027	Y.T. Obs.	6	1	6	36	F ₂ of Hybrids
76013	Sel.	1	1	204	204	From USDA bulks
76055	X Block		1	22	22	Crossing block
76032	Sel.	1	1	47	47	From USDA bulks
76036	Reg. Y.T.	2	3	60	360	Alad Reg. Y.T.
76033	Sel. (Row)	1	1	173	173	Proso & foxtail millet alad reg. nursery
76042	Sel. (Row)	1	1	71	71	From 74002 - 74004
76065	Silage Y.T.	3	4	4	48	Alad reg. Y.T. (silage)
76039		1	1	111	111	?
76018	Y.T.	3	4	5	60	?
76041	UNREP. Y.T.	3	1	13	39	High yielding lines UN replicated
76044	Obs.	5	1	5	25	New crops
76070	Obs.	2	1	10	20	Chick peas
76071	Obs.	2	1	10	20	Broad beans
76073	Obs.	7	1	5	35	Beans
76030	Y.T.	4	4	4	64	Fertilizer trial
76035	Y.T.	1	4	18	72	Selns from 75013
76012	Adv. Y.T.	1	4	15	60	From 75012 - adv. yield trial
76061	Y.T.	4	4	4	64	Pearl millet
76057	} tests dried up and were abandoned	2	4	9	72	Off type hd. selns.
76017		1	4	15	60	Hd. sel. from 75012
76018		3	4	5	60	Reg. Y.T.
76064	Y.T.	4	4	5	80	Pearl Millet
76028	Prel. Y.T.	2	4	26	208	From 75016 Prelim. Y.T.
76029	Adv. Y.T.	1	4	14	56	From 74009 Adv. Y.T.
76021	Obs. yield	1	1	81	81	Obs. + yield
76014	Prel. Y.T.	2	4	23	184	From 75014 Prelim. Y.T.
76018	Reg. Y.T.	3	4	5	60	Regional Y.T.
76056	Prelim. Y.T.	1	4	9	36	Prelim. Y.T.
76031	Reg. Y.T.	4	4	5	80	Alad Regional Y.T.
76020	Y.T.	1	4	14	56	F ₁ vs F ₂ Hybrids in-breeding depression
76060	Nursery	3	1	33	99	Pearl millet
76005	Obs.	1	1	36	36	Sudan grass
Total				1400	3323	

so in order to proceed with the 1977 program. Also, the project did not have the services of two International Volunteer Service Agronomists and an Agricultural Engineer until the end of the 1977 research year and the beginning of 1978. These three people were capable of assisting with the data for 1977, 1978 and 1979. The local project employees were not capable at that time of handling data. The two professionals on the project did not have the time to spend putting data into published tables. We simply extracted the information we needed from the field books or from rough tables of assembled data.