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Contract No. AID/NE-C-1304 (Yemen)

Project No: 279-11-110-030

Contract For: National Sorghum and Millet Crop Improvement

Contents consist of a substantive and administrative
report in accordance with General Provisions, paragraph
12, AID1420-23C (7-1-76)

Period of Report: March 16, 1978 through September
15, 1978.

Previous Reports: January 15, 1977 through September
15, 1977. The first key personnel
arrived in Yemen March 16, 1977.

September 16, 1977 through March 15,
1978.

Prepared by: University of Arizona,
Department of Plant Sciences

Copy to:

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

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Substantive Report

Status of work and progress under the contract.

The following reports submitted by Dr. Robert L. Voigt, Yemen Chief-of-Party, and Dr. Donald Stewart, Agronomist in Yemen, portray actual activity on a bi-weekly basis and very adequately describe this subject.

Sana (ID)
Department of State
Washington, D.C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report #22 - March 16-31, 1978

PROGRESS:

1. Continued processing data from 1977 prior to putting up seed for 1978. Seed from nearly all potentially useful 1977 plots (entries) had to be kept until it was determined which to continue and which to discard based on performance data.
2. Threshing of some yield plots and other non-yield plot materials was continued.
3. Started putting up seed for the Yemen National Regional Yield Tests and Observation Plots. Only 2 sorghum entries from USAID in the yield tests. Five sorghums in the observation plots. One millet in the observation plots.
4. Spent considerable time picking up and moving plant materials from place to place to stay out of the way of other USAID Agriculture Division people and project support people not involved with breeding or agronomy but moving about the laboratory areas.
5. Plowed and prepared "new" land for some research plots just west of the laboratories, to be irrigated from a new well next to the laboratory.
6. Mr. Mused Attic, a technician type of employee started work on March 18, 1978, on a 6-day work week basis. He came from Ethiopia where he had two years of agricultural technical training. He can speak, read and write English and speak Arabic.
7. Additional supplies by surface from Hodeidah consisted of office equipment, an oversized dirt mover (apparently too large for use here), small garden or lawn tractors, and miscellaneous other items ordered about 2 years ago. Most were not for use in actual research work on sorghum, millet or horticulture but were for support personnel.
8. Mr. Yahya Shuga finally given clearance to attend the University of Arizona with the goal of a BS degree in Plant Science. He will attend CESL (Center for English as a Second Language) at the University of Arizona for 2 sessions to perfect his English before enrolling in August for academic course work. He left Yemen on Wednesday, March 29 at 1600 on Yemen Air to Bahrain. Scheduled into Tucson on Thursday, March 30 at 1419 on TWA 319.

PROBLEMS:

1. Electrical power supply problems occur on a daily basis. There may be complete power failure, or one phase out of 3 will be out, or very low voltage causing electric motors to barely run. This can burn out the motors. We have to go day after day sometimes not being able to thresh, clean seed, or weigh on the small electrical scales we now have.

Organized efficient plans for work for 6 or more people is next to impossible under these circumstances.

Part of our laboratory spaces has no windows thus is nearly unusable with no lights (no electricity).

PLANS:

1. Develop details of field research tests for 1978 based on data on genetic materials from 1977 that are considered suitable for continuing. Most of these were inherited from past years.
2. Go through "cardboard" boxes of mice and insect damaged sorghum and millet seed packages from past years. Most had been dumped in boxes in a random manner. Many have no labels as to year or test.
3. Assemble identifiable and potentially useful sorghum and millet seeds from past years into newly purchased metal seed storage boxes and treat for insects.
4. Develop details of on-farm tests with prominent growers in selected areas within 1 day's drive from Sana'a.
5. Prepare 1978 field research plot areas in an improved manner as developed from work and suggestions of short term consultants and from 1977 experiences.

Robert L. Taylor
Chief of Party
6 May 1978

Sana (ID)
Department of State
Washington, D.C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report #23 - April 1-15, 1978

PROGRESS:

1. Continued threshing when electrical power was available. At times only a few hours a week would power be available to run the thresher and cleaner.
2. Farm labor used to thresh some materials with sticks. It still had to be cleaned through an electrical power piece of equipment.
3. Four boxes of air freight came on April 2 with 4 hand planters, seed cleaner (blower table), and subsoiler.
4. The subsoiler was installed on a tractor immediately upon being uncrated and taken to the field. Several fields were subsoiled in the next few days. It shattered the hard pan soil only 6 to 12 inches each way and not 12 to 24 inches as per the instruction manual. Maximum actual attainable depth was 18 to 20 inches.
5. Two truckloads of surface freight from Hodeidah came in April 3. Farm equipment, etc. More equipment and supplies came on April 8. Most had been ordered 18 months ago. Items for Poultry, Horticulture, and Sorghum & Millet.
6. Made two trips to Taiz on April 7-8 and April 15-16 to visit with Dr. El-Lakany and Dr. Talat of the UNDP. Returned a British "plot" thresher which didn't work. Made plans for the Yemen Sorghum Collection, exchange of equipment and supplies, worked out borrowing furrowing equipment, picked up soil and water sample results, checked on balance of order of irrigation pipe from the plastic factory.
7. Dr. W. G. Matlock and Mr. O. Fred French arrived on April 12 for an administrative visit and a short term consultant visit on irrigation and field plot system development, respectively.
8. Began assembling seed for planting of plant-row materials for evaluation and selection purposes.
9. Plans developed for 16 on-farm tests. Four in each cardinal direction from Sana'a.
10. Work continuing on development of the Tihama Agricultural Experiment Farm.

PROBLEMS:

1. Electrical power supply problems continued to hinder project activities.
2. Lack of adequate and proper field equipment is delaying and preventing adequate preparation of field research plot areas in an improved manner. No word on furrow openers ordered last fall and sent air freight. It would be better if we had some intermediate weight tractor for some field operations to reduce soil compaction problems.

PLANS:

1. Prepare research plot areas and assemble tests in time to plant after the middle of April. The short, cool temperatures and growing season at this elevation mandates a planting date as soon as possible for maximum physiological development. A date-of-planting test in 1977 indicated plantings of both sorghum and millet showed a continuous reduction in potential from mid-April on. By the first of June there was a very considerable drop in plant (and plot) production.

Robert L. Vayd
Chief-of-Party
13 May 1978

Sana (ID)
Department of State
Washington, D.C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report #24 - April 16-30, 1978

PROGRESS:

1. All 1978 tests were finished during this period. Some tests were ready for planting right after the middle of the month which was the scheduled time to begin planting. A part of the project worked 6 and 7 days a week to accomplish this.
2. Chiseled to an 18" to 22" depth on fields A and B. This was as deep as the machine would go. Chiseled at 24 inch spacing instead of recommended 48 inch spacing because of narrow soil shattering to the side.
3. Furrowed out fields A and B with a borrowed furrow opener from UNDP which we are supposed to return in a few days.
4. Made two overnight trips to Taiz to check with Dr. El-Lakany on the Yemen collection, 2 threshers and seed, and visited the plastic pipe factory to check on undelivered irrigation pipe.
5. Visited Mr. Mawley on April 27 and 30, of the British Agricultural efforts at Dahmar relative to land for growing the Yemen Sorghum Collection. He has a little less than .5 hectare available which isn't quite enough. We need .6 hectare. We will use it anyway and put the balance at Sana'a. They have no motorized farm equipment at all. We will drive our own tractor down (85 km.) on the highway.
6. Dr. Stewart has been working full time visiting local farmers to arrange for small on-farm tests. About 4 tests were arranged for about 29 to 50 km in each of the 4 cardinal directions from Sana'a. We plan to put 4 sorghum entries in each of these on-farm tests. Two potential new varieties from USAID, one American hybrid and the farmers own local. Planting practices to be as per farmers usual procedure. Next year we plan to branch out into fertilizer and possibly other procedures.
7. Dr. Stewart made a special trip about the Sadah region to the north of Sana'a on April 24 and 25, at the request of the local sheik to set up a local test in addition to our others. Little work had been done in this area in the past for political reasons.
8. Obtained information from the German Farm on treatment for stem borers in sorghum. The soil cannot be treated pre-plant. We plan to distribute bait after planting and also spray if this becomes necessary.

Activities Report #24 - April 16-30, 1978

9. Mr. French is working out a new procedure to furrow out the fields and pre-irrigate for planting in moisture in hills on the side of the ridges. With the soil chiseling done earlier we hope to get better plant growth with less variation and thus produce more reliable biological data.
10. More farm equipment and supplies arrived which had been ordered surface a year to two years ago. Harrows, farm wagons, mowers, etc.
11. Developed statistical design, plot planting procedures and equipment for on-farm tests.
12. Direct drive installed on irrigation well to improve efficiency over old belt drive which tended to slip.
13. Interior work on laboratory and office space continuing.
14. On-job research training progressing for 5 Yemeni and 3 IVS.

PROBLEMS:

1. Electrical power unavailable for days at a time. There would be either no power at all, too low a voltage to run motors, or one phase out of 3 would be out. Unable to operate electric scales for rapid filling of seed envelopes at times or thresh or clean some things needed for 1978 tests.
2. Spent a week furrowing out Field B which would have taken only 4 or 5 hours if everything worked. The shanks bent every other round. No suitable metal for stronger shanks could be found in Sana'a. Finally took some "extra pieces" from newly arrived farm equipment and fabricated them into shanks. It took 3 days to get a little welding done and 12 holes drilled.
3. Our furrow openers ordered air freight from the U.S. last fall have not arrived. We have had to impose on the UNDP at Taiz to borrow theirs which they can ill afford to loan out very long. Also irrigation valves sent air pouch from Arizona in early February had not arrived 3 months later. Normal time enroute is 4 to 6 weeks. Little or no equipment or supplies have arrived in nearly two months. Many packages have been mailed from Arizona according to memos received.
4. Land plane on order for about two years still not here to level up fields to improve the irrigation.
5. Mused (technician) working full time as translator for on-farm tests and generally unavailable to assist with project research work.

Activities Report #24 - April 16-30, 1978

6. Research plot sizes were generally reduced and tests reduced in scope from original plans due to lack of suitable irrigated land. At this time we do not plan to use Field E since all research tests were lost there in 1977 due to irrigation and soil problems. Hopefully this field can be levelled and developed for 1979.

PLANS:

1. Prepare land area for research plantings as soon as possible. The seed is all ready awaiting land preparation. We should have started planting soon after the middle of April so we are already nearly two weeks late.



Robert L. Voigt
Chief-of-Party
May 8, 1978

Sana (ID)
Department of State
Washington, D.C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report #25 - May 1-15, 1978

PROGRESS:

1. Balance of minor research tests all prepared for planting by May 1.
2. Dr. Stewart made repeat visit to outreach farm test locations to determine more exact proposed planting dates. First 3 outreach tests were planted on May 13 and 14.
3. Rains were received in the Sana'a area the first few days of May. This was beneficial for outreach tests which depend on rainfall. Some few areas did not receive any rain this period.
4. On May 2 picked up seed of the Yemen Sorghum Collection to plant for increase just south of Mabar. Received about 10 seed each of about 4,200 entries. Rainfall of over an inch at the test site the first week of May added additional moisture to the pre-irrigated field. The soil was still too wet for planting by the end of this reporting period.
5. The new direct drive on the new irrigation pump was finally in full operation on May 3. The plastic irrigation pipe was laid out and assembled. The pump was started up on May 7. Irrigation began on May 8 after numerous repairs of leaks.
6. Pre-irrigated the west 32 rows of field A on May 8-10. Planted these 32 rows to plots in hills by hand on May 14 and 15. The system seems to be working.
7. Moved into new offices on May 13. Some interior finishing still needs to be completed.
8. Stewart developing an insecticide bait for cutworms only (if they should be a problem--which they haven't before). Our serious annual problem of stem borers will have to be solved by a spray program.
9. Mr. French visited the Tihama area and the al-Jarouba Experiment Farm on May 11-12 to become acquainted with agriculture in this area.

PROBLEMS:

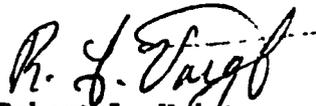
1. Rains in early May delayed planting of the Yemen Sorghum Collection at Mabar about 2 weeks. The soil has become compacted necessitating further cultivation prior to furrowing out. The border ridges became too hard to knock down by hand. All of this means long distance hauling of equipment from Sana'a to do these operations.

Activities Report #25 - May 1-15, 1978

2. The new well at the Sana'a farm is putting out less than 100 gallons per minute. It was hoped it would produce near 150 gal./min. The plastic irrigation pipe joints leak more than anticipated in spite of different procedures to seal them. The plastic shrinks and expands so readily from temperature variation that each morning the pipe will be completely pulled apart at several joints.
3. Very little equipment or supplies shipped via pouch after the first of February have been received here. Several months of pouch package mail seems to be accumulating somewhere.
4. Have received seed for several tests of sorghum, millet and maize from FAO-UNDP and offers of seed from other international organizations. Our research plot area is inadequate in size for our own needs let alone cooperating with other organizations.
5. Development of the al-Jarouba Experiment Farm in the Tihama is not progressing. Presently there is no estimated date of completion to the point of being able to plant research plots.
6. Problems and delays in field research plot preparation at the Sana'a Experiment Farm is delaying planting from the optimum period of April 15-30 to the period of May 14-30. This months delay can have very serious deleterious effects on the final research result for 1978.

PLANS:

1. Continue pre-irrigating on the Sana'a research farm as rapidly as the irrigation well and equipment will permit.
2. Proceed with planting of outreach tests as natural rainfall permits.


Robert L. Vojgt
Chief-of-Party
May 19, 1978

Sana (ID)
Department of State
Washington, D.C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report #26 - May 16-31, 1978

PROGRESS:

1. Pre-irrigated Field A in sections of 30 to 50 rows each to accommodate certain field tests as to size and to concentrate irrigation and planting efforts. Planting of Field A completed on May 31. Started pre-irrigation of Field B on May 27. Pre-irrigation of Field A was completed on May 25.
2. Seed was being dug from the hills of newly planted tests. It was uncertain at first whether it was birds or rats. A rodent control expert from the German Farm visited our plots at our invitation. He did not catch any rats in a couple of night visits. Some rat bait was put out on May 29 and 30. We started a bird-watching crew to keep the birds (sparrows) out, on May 27. Cutworm bait put out on newly emerging plantings but hot, dry high winds dry out moist bait to a hard mass in minutes which is questionable in effect on control of cutworms. This bait control method is as recommended by the German Farm but based on the bait remaining moist for effect. Cut worms work at night.
3. Planted about 2800 entries of the approximately 4200 entries in the Yemen Sorghum Collection at Maber on May 21, 22, and 23. Rain and wet soil delayed this planting from the first week of May. The soil was very hard and compacted when furrowed out. This gave a poor seed bed. The ridges were very cloddy. The soil was not very friable. High, hot and dry winds further hurt the planting conditions as the planting progressed. The outlook for this planting is not good.

There was less land actually assigned for this planting than had originally been promised so the entire collection could not be planted. Last minute unforeseen political problems arose about getting various Government agencies' permission for interchange of cooperative research plantings.

4. An additional five on-farm tests were established during this report's period. Most are under rainfed conditions so exact planting dates are of necessity a last minute determination from weather and soil moisture. Additional farmer advice and help was given relative to vegetables, wheat, weed control, insect and disease control, rodent control, and a potential new tree for firewood and forage.
5. Mr. O. Fred French departed Sana'a on May 17.

Activities Report #26
May 16-31, 1978

PROBLEMS:

1. An oil seal on the new irrigation pump developed a leak on May 15. About 3 days were spent making repairs since replacement parts were not available.
2. Abnormal hot, dry, high winds prevailed nearly every day for this whole reporting period. Research planting stopped at times since seed and envelopes could not be handled in the high winds. These winds quickly dried out the holes being made for hill plantings even though efforts were made to minimize the time the soil was exposed. The winds vary from 20 to over 30 mph with gusts to over 40 mph. These conditions are very adverse to our research plantings and are not experienced by research stations at other locations like Taiz or Zabid.

So far there are no local farmer planted sorghum fields in the vicinity of our research farm as a further indication of the adverse weather conditions prevailing this year. In fact much of the surrounding land is idle.

3. The research plantings for 1978 are all about one month to 5 weeks late. If there is a near normal or early killing frost many of the tests could be ruined at the end of the season.
4. Other problems are presented with activities listed under "Progress."

PLANS:

1. Hopefully all plantings will be completed in the first 10 days or so of June.
2. A special report on the planting method used, results, and recommendations for next year is planned as soon as we see the actual field results.

R. L. Vandy
14 June 1978

Sanaa (ID)
Department of State
Washington, D. C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report No. 27 - June 1 - 15, 1978

PROGRESS:

1. Fields B and D pre-irrigated and planted during this reporting period. A few rows in field D were planted dry and high on the ridge to see if seed could be irrigated up. The only remaining area to be planted is a small area near the laboratory and office buildings. Irrigation pipe needs to be run to this area yet. The time interval between pre-irrigation has been about 4 or 5 days depending on severity of the winds.
2. Emergence of plantings takes about 6 to 10 days for first emergence with some hills taking 2 weeks to emerge. Great variation in time for emergence within plots and among plots. This could be expected with the soil and moisture variation and planting variation observed.
3. Began dumping up seed of 1977 plots now that final selections for testing in 1978 have been made and the tests are planted.
4. Made a trip to Taiz on June 11 and obtained some seed of each of the 4200 odd sorghum items in the Yemen sorghum collection. This will be repackaged and mailed to the Plant Introduction Office in Washington for inclusion in the world sorghum collection as soon as possible. The National Seed Storage Laboratory (NSSL) at Fort Collins, Colorado, has been designated by the International Board of Plant Genetic Resources (IBPGR) at Rome as the official repository of the world collection of sorghum.
5. Three more on-farm tests were established during this reporting period bringing the total to 12.
6. The outreach program performed many extension type public relations type of activities such as spraying for weeds and insects and advising on disease and rodent problems.
7. Chemical control measures were taken on the Sanaa Research Farm for rats using Racumin mixed with ground corn as recommended by the German farm. Chemical control measures were continued for cutworms using the bait with Dipterex S. P. 80.

Activities Report No. 27

June 1 - 15, 1978

PROBLEMS:

1. The first planting of 32 rows in Field A made on May 14 and 15 had very low emergence--probably only about 10 percent. We had thought the procedure and moisture conditions were excellent but apparently it was slightly too wet. The soil dried over the hills and became extremely hard preventing emergence. This area contained the Elite Yield Test from which would have come new high yielding genotypes for testing in the on-farm tests in 1979. At this time it appears there will be no potential sorghum variety releases in 1978 for 1979. This area has been re-irrigated twice with no apparent success. Subsequent plantings are showing more success and promise as our methods and procedures were modified and improved with practice and experience.
2. Hot, high winds of 20 to 30 m.p.h. with gusts up to 40 m.p.h. have prevailed almost daily throughout this reporting period. These daily conditions started in mid-May just as we started planting and have now been with us a month. These are abnormally windy conditions. The nights are cool and almost cold by dawn. The temperature gets down to the low 50's at times making a coat necessary. The young sorghum seedlings that are emerging have shown pronounced purpling which can be a sign of cold stress. There are no fields of sorghum planted by farmers anywhere in the vicinity of our Research Farm. In fact, much of the land is idle reflecting the poor agricultural conditions existing this year.
3. We were a month late in starting to plant our research tests this year. We started on May 15 instead of April 15. We were about 5 weeks late in finishing. We should have finished around May 7 instead of June 12 or later. This late planting jeopardizes the crop in that it may be destroyed by a normal or early frost in the fall. Had the plantings been exactly on schedule and finished in the first weeks of May, we would have avoided the hot, drying winds on the new plantings when surface moisture was extremely important. This late planting was due to lack of equipment (no furrow openers) and the irrigation system was not operational until mid-May. We started as soon as water was available.
4. Lack of equipment for leveling the land properly for pre-irrigation produced high and low water levels in the furrows which in turn gave wetter and drier areas. The high water sections of the rows produced compacted soil conditions. The variation in soil moisture and soil conditions created variation in the seed beds which produced variation in emergence and stand. There are a lot of agronomic problems to overcome.

Activities Report No. 27

June 1 - 15, 1978

PROBLEMS: (Cont.)

5. The planting of the Yemen Sorghum Collection at Maber had a low emergence due to poor planting conditions as reported previously. The farm personnel at this British facility tore up the tops of all the beds upon which we had planted our seeds supposedly in preparation for irrigation.
6. The Yemen Government has notified USAID that the site of the present Sanaa Experiment Farm will soon be used for Government buildings. There are active plans to use the present research land for other purposes but no plans that we know of to provide new agricultural research land or facilities.

PLANS:

1. Finish planting the final sorghum and millet population on the land by the laboratory and offices when the irrigation facilities are installed for pre-irrigation.
2. Make up field maps and data books for all tests planted, both research farm and on-farm tests.
3. Dump up seed of discarded lines from 1977.
4. Prepare and store remnant seed of all lines planted in 1978.
5. Process Yemen Sorghum Collection of 4200 or more lines for shipment to the U. S.
6. Continue with planting of some on-farm tests and care of those already planted.

Ph. L. Vargo
Chief of Party
16 July 1978

Sanaa (ID)
Department of State
Washington, D. C. 20520

Contract No. AID/NE-C-1304 Yemen

Activities Report No. 28 - June 16 - 30, 1978

PROGRESS:

1. Re-irrigated most of fields A and B on the Sanaa Research Farm throughout this reporting period. This was necessary to try to germinate or assist with emergence of seed not yet up. These re-irrigations did not appear to result in much of any new seedlings. It is important to be sure of sufficient pre-irrigation to see the seedlings through about three weeks.
2. A chemical spray program was initiated for stem borer tentatively identified as Sesamia cretica. Thiodan 35 was used which has a longer lasting effect than Dipterex S,P,80 which had been used in past years. It is planned to spray every two weeks to prevent a build up of the pest population. Field A was sprayed this period.
3. Another on-farm test was established during this reporting period. Two on-farm tests were sprayed with Thiodan 35 for control of stem bores. One on-farm test was sprayed for a moderate infestation of aphids.
4. It was determined that birds were responsible for digging up seed and newly emerged seedlings rather than rodents.
5. Aphids were noted on some weeds surrounding the Sanaa research plots. These weeds were pulled by farm labor and the edges of the field sprayed with Thiodan 35 to prevent any aphid population increase on the sorghum.
6. The farm labor have begun hand weeding of the Sanaa research farm. None of the herbicides mailed by pouch on March 10 have arrived.
7. Thinning of hills in plots was begun on June 24.
8. Remnant seeds from the 1978 planting were packaged, labeled, treated with insecticide (Sevin), and stored in boxes. Seed and grain from 1977 no longer needed was dumped up and delivered to poultry for feed. This activity will continue for several months.

Activities Report No. 28

June 16 - 30, 1978

PROGRESS: (Cont.)

9. Germination tests are being run on many entries planted in 1978 tests to determine the viability of the seed.
10. Typist services have been arranged for in down town Sanaa since the secretarial services of the mission are not adequate for this contract in addition to the needs of the Agricultural Division of USAID.
11. Mr. Marshall Bear from the IVS offices in Washington, D. C. was in country for several days. Voigt conferred with him to some extent on the 14th and 16th of June. All IVS personnel joined in the June 16 conference. A tour of the field plots in Sanaa was also included. The objective of these conferences was to develop realistic objectives and work activities for IVS personnel in-country commensurate with the program of the University of Arizona.
12. President Al-Ghashmi of the Yemen Arab Republic was assassinated on June 24. All Americans were instructed not to report for work for two days.

PROBLEMS:

1. The Maber grow out of about 2/3 of the Yemen sorghum collection has only an estimated 30% of hills showing any emergence. Perhaps 30% of the hills were destroyed by the farm personnel in the flattening of ridges for irrigation across the ridges. The stand may improve with rain.
2. During this reporting period it was noted that field B seemed to dry up sooner than field A had. This was evidenced by moisture stress of the new seedlings. Re-irrigation is not desirable so soon because this crusts the soil over so hard that any seedlings not yet emerged are not as likely to be able to emerge after re-irrigation. The reason for this early depletion of soil moisture was due to careless irrigation in that the prescribed amount of water was not applied. The prescribed amount may take 3 or 4 irrigations of the rows to get it all on. The pre-irrigation of field B consisted of only 2 or 3 sets of water. Even then the farm superintendent had to personally apply some of it himself. There was not enough subsoil moisture to hold 3 weeks.

Activities Report No. 28

June 16 - 30, 1978

PLANS:

1. Continue thinning as plants become large enough.
2. Continue hand weeding by farm labor as necessary.
3. Continue stem borer chemical control measures.
4. Continue processing seed for long term storage in the laboratory.

R. L. Vinyard
Chief - up - Party
16 July 1978

SANAA (ID)
DEPARTMENT OF STATE
WASHINGTON, D. C. 20520

Contract No. AID/NE-C-1304 Yemen
Activities Report No. 29 - July 1 - 15, 1978

PROGRESS:

1. The rest of field A was thinned to 2 plants per hill with 3 being left if an adjoining hill was blank. Plants are 10 to 30 cm in height.
2. A continuous hand weeding program is under way on the Sanaa research plots. None of the herbicides mailed by pouch on March 10, 1978, have arrived yet.
3. Field B was sprayed for stem borer on 2, 5, 8, and 9 July. The few corn plots were sprayed on July 2 for a foliar feeding insect causing some slight damage similar to that from army worms. Thiodan 35 was used in both cases.
4. Re-irrigated all of field A on July 3-4 and the east quarter of field B on July 6.
5. One more on-farm test was planted on July 3 NE of Sanaa. Two other tests scheduled for this area did not materialize due to other plans by the cooperators.
6. Remnant seed from 1977 and from 1978 plantings were continued to be processed, treated, labeled, and stored with discarded items being dumped up for poultry feed.
7. Rat bait was put out in the lab in an effort to reduce the rat population in the laboratory spaces. We are investigating the availability of a fumigant to affect both insects and rats.
8. Project personnel met in training sessions about every other day during the July 9 - 15 rainy period.
9. An "Education and Training Committee" was appointed with Tasawer Hussain, Chairman, and Mohamed Bather, Mused Attic; and Ahmed Ismail as members. This committee is to ascertain the training desires and needs of the various project personnel and advise on a training program to meet these needs.
10. A rainy spell started on the evening of July 9 and continued intermittently through July 15. Variable amounts of rainfall was received with a minimum of around 1 inch at the mission and farm with several inches in downtown Sanaa and the south side of Sanaa. The sorghum plants look much better after some natural rainfall and cool weather with higher humidity.

Activities Report No. 29

July 1 - 15, 1978

PROBLEMS:

1. The west 32 rows of Field A are, for all practical purposes, a total loss. This area contains the Elite Yield Test which would have produced new high-yielding lines for on-farm trials in 1979. There is only about a 5% stand. The seed used was of good germination. The problem revolved around development of suitable techniques to plant in this particular problem soil.
2. No irrigation pipe has been obtained to run irrigation water to the small plot of land near the laboratory. By the end of this reporting period it is too late in the season to plant the random mating population planned for a part of this area.
3. On July 1, 1978, the Yemen Government started construction of an earthen drainage way with a road atop each bank, through the middle of Field E. We had not used this field this year as we were waiting to level it so that it could be irrigated properly. An estimated half of the field can still be used since we can get irrigation water to the south half. We cannot irrigate the part of the field north of the new drainage way.

PLANS:

1. Continue hand weeding of fields.
2. Process seed in storage.
3. Process Yemen Sorghum Collection for transfer into the World Sorghum Collection at the National Seed Storage Laboratory at Fort Collins, Colorado.

R. L. Varg
Chief of Party
18 July 1978

Sanaa (ID)
Department of State
Washington, D. C. 20520

Contract No. AID/NE - C - 1304 Yemen
Activities Report No. 30 - July 16 - 31, 1978

PROGRESS:

1. Started a new technician employee, Mr. Mohamed Ali Nasser, as an Agricultural Assistant.
2. A German Farm expert on fumigation for pest control, Mr. Pollin, visited our facilities on 17 July and made various recommendations on fumigation. Our construction has so many open spaces that total fumigation is not feasible so plastic covering of selected areas will likely be used.
3. Rains continued in the Sanaa area about every other day throughout this reporting period. The test plots in general continue to look good with these continued showers. No irrigation during this period.
4. Very few volunteer plants from the 1977 crop have been found in the fields.
5. Hand weeding continued throughout this reporting period.
6. Began spraying field A a second time for stem borers using Thiodan 35. We seem to have minimal damage or infestation to date.
7. Several old sprayers were located on the mission premises and are being reconditioned as much as possible for use by cleaning. Parts are not available here for most sprayers.
8. Started spreading some 2 to 3 year-old well decomposed manure on the test plots. This will be worked into the soil as the fields are hand cultivated. This is the typical Yemen method.
9. Three outreach tests were visited in this reporting period and sprayed for stem borer.

Activities Report No. 30

July 16 - 31, 1978

PROGRESS: (Cont.)

10. Labeled and weighed seed packets of Yemen Sorghum Collection. Data of this collection is being typed up to make up a catalogue for the collection.
11. Considerable time was spent in inventorying and checking in over 50 boxes of miscellaneous supplies and equipment which came by surface pouch. Some packages had been enroute since early February.
12. Worked on insect collection.
13. On 30 July conferred with Mr. Martin T. Billings and Mr. John Nelson of the Regional Economic Development Support Organization (REDSO) of the Africa Bureau with headquarters at Nairobi. They were interested in sorghum and millet research at low elevation in the Tihama. Their problem area is in Djibouti which is just across the Red Sea from Yemen. We had little to offer to solve their immediate problem since our Tihama Research Station is still in the physical development stage.
14. Formal training sessions continued for project personnel with current research activities as the topics.
15. Several dead rats appear daily in the laboratory spaces as a result of our bait program. Some die behind shelving causing some odor about the premises.

PROBLEMS:

1. One planned outreach trial northwest of Sadah was too wet to plant and due to the lateness of the season will not be planted. Total outreach tests for 1978 now number 13 which is a very respectable number.

PLANS:

1. Continue hand weeding.
2. Thin field B.
3. Spread balance of manure.

Activities Report No. 30
July 16 - 31, 1978

PLANS: (Cont.)

4. Hand cultivate research areas.
5. Finish spraying field B a second time for stem borers.
6. Continue processing seed and data of Yemen Sorghum Collection.

R. L. Taylor
Chief of Party
6 Aug. 1978

Sanaa (ID)
Department of State
Washington, D. C. 20520



Contract No. AID/NE - C - 1304 Yemen

Activities Report No. 31, August 1 - 15, 1978

PROGRESS:

1. No rain on Sanaa research plots during this period. Some irrigation as necessary after moderate moisture stress of the plots.
2. Hand weeding and hand cultivation of Sanaa research plots were continued by the farm labor crew.
3. Began taking bloom notes in Sanaa research plots.
4. Inventoried and put some supplies and equipment away. Cleaned laboratory spaces.
5. Visited 10 outreach tests during this period. Sprayed 4 of these with Thiodan 35 for stem borers.
5. Began collecting soil samples of the outreach tests as they are visited.

PLANS:

1. Continue collecting field data such as bloom notes.
2. Hand weed, hand cultivate, and irrigate Sanaa research plots as necessary.
3. Continue collecting soil samples in outreach tests.

R. Y. Wang
Chief of Party
17 Oct. 1978

Sanaa (ID)
Department of State
Washington, D. C. 20520

Contract No. AID/NE - C - 1304 Yemen

Activities Report No. 32, August 16 - 31, 1978

PROGRESS:

1. No rain on Sanaa research plots during this period. Some irrigation as necessary after moderate moisture stress of plots.
2. Hand weeding and hand cultivation of Sanaa research plots were continued by the farm labor crew.
3. Recorded bloom notes.
4. Began taking stand or population data within plots by counting hills. Our new improved planting procedure also gives us a set number of hills per plot which can be counted for precise population data. Personal estimation errors of the past are largely eliminated.
5. Dr. R. P. Upchurch arrived on 23 August for an administrative visit. He departed on 30 August. He visited with contract personnel, IVS personnel, USAID officials, Sanaa University personnel, and made two survey trips of the current agricultural situation in Yemen and observed some of the Outreach trials.
6. Eight Outreach trials were visited during this period. Continued spraying for stem borers and collecting soil samples as needed.
7. 2,4-D amine proved very effective in control of the common mustard type weed on a farmer's field who was having a great problem.
8. Thiordan 35 was applied to one Outreach trial for control of pink stem borer at this late date.
9. The grow-out planting at Damar of a part of the Yemen Sorghum germplasm collection is in various stages of physiological development from pre-boot to mature. Some entries will probably never mature at this location.

Activities Report No. 32, August 16 - 31, 1978

PROBLEMS:

1. Most plots of the Yemen Sorghum Collection growout at Damar will never be able to be correctly identified due to some drastic field agronomic practices performed during irrigation. These practices destroyed some plots completely, destroyed the field beds upon which the plantings had been made, and made it impossible to identify many of the plots remaining. These actions were without the direction of the British or USAID supervisory personnel involved. Local Yemeni field workers did this on their own and such actions were not deemed necessary by the British farm supervisors. This experiment station is about 65 miles from central headquarters where daily professional supervision is not possible.
2. Necessary equipment and supplies coming through the pouch are being sent by steamer diplomatic pouch (surface) and taking from 3 to 6 months enroute. This is cheap but eliminates any solution of rather immediate problems needing equipment or supplies from out of Yemen. Ordering time of 2 to 3 months on top of the enroute time makes any equipment or supplies ordered only usable a year later in the agricultural cycle.

PLANS:

1. Continue taking bloom notes and other field data.
2. Hand weed, hand cultivate, and irrigate Sanaa research plots as necessary.
3. Continue collecting soil samples in Outreach tests.

R. S. Young
Chief of Party
21 Oct. 1978

Sanaa (ID)
Department of State
Washington, D. C. 20520



Contract No. AID/NE - C - 1304 Yemen

Activities Report No. 33, September 1 - 15, 1978

PROGRESS:

1. Continued taking bloom notes and stand counts within plots at Sanaa Research Station.
2. Five Outreach tests were visited to obtain soil samples, observe the progress of the physiological development of the various entries and to record appropriate data and notes.

PROBLEMS:

1. The local Eid-el-Fitr religious holidays of nine days (31 August through 8 September) were observed with no one at all except an IVS man working from USAID (American or Yemen). The bird-watching crew, on overtime, dwindled in number to the point of allowing considerable bird damage to the research plots at Sanaa. This holiday just following nearly a month of Ramadan, when the Yemeni only worked about half days, illustrates the sometimes very low level work output that can exist for long periods of time.

PLANS:

1. Continue taking field data such as bloom notes, stand counts and plant heights.
2. Weed and irrigate certain tests as necessary.
3. Prepare equipment for harvest.
4. Begin making visual selections of "plant rows" to be entered in preliminary yield tests next year.

M. S. Fungt
Chief - N. T. T. T.
17 Oct. 1978

June 3, 1978

Weekly Report for Period May 27 - June 2, 1978

R. L. Voigt, Chief-of-Party

FROM: Donald M. Stewart, Agronomist

Recent sorghum sowings at the Bir al-Ghoun Farm have shown evidence of bird and/or rat damage. Seed has been dug up and eaten by the "culprits" soon after sowing and parts of furrows have no seed remaining. One observation was made of a bird scratching up sorghum seed but no rat observations have as yet been made. On May 27, Mr. Jan-Uwe Heckel, rodent specialist at the German Farm, Sana'a, accompanied me on a survey of the al-Ghoun Farm and environs for evidence of rats. Many burrows were found in ditch banks, underneath piles of sorghum stalks, and under buildings. Bait was placed in 11 plastic pipes 10-12 cm. in diameter and about 50 cm. in length and distributed in furrows of recently sown sorghum. The bait used was Racumin (active ingredient 0.75% coumatetralyl) placed in a ground corn mix-Bayer Leverkusen product.

1. Dubre Sunhan (24 kms. south of Sana'a on Taiz Road)

On May 29, established a sorghum yield plot on the farm of Hussen Salah Zaid near the above mentioned village.

2. Khamir-Bilsin

Conferred with Sheikh Mijaid at his home in Khamir on May 30 relative to establishment of a sorghum plot on his land near Bilsin. We were served a sumptuous Yemeni dinner as guests in the Sheikh's home together with 10 Egyptian school teachers who were soon leaving Khamir for Egypt to spend the school vacation period in their home country. After dinner, we continued our trip to Bilsin located about 38 kms. northeast of Laydah where the Sheikh has a large "hide-away" residence on an old extensive lava flow between limestone mountains--driving time 1½ hours. The following day we established a large sorghum yield plot at War War at the intersection of two wadis--1¾ hr. driving time (northeast of Bilsin).

3. Vadi Khywan (northeast of Huth)

On June 1, a sorghum plot was established on a government-owned piece of land managed by a local farmer, Muhssin Derhim Semin. This farmer also has trials of a sorghum cultivar from Tihana and

a local indigenous millet cultivar. We examined an earlier sowing of sorghum, about 10 inches ht., and found evidence of stem borer damage and collected two larvae specimens from a single plant.

Met with two German scientists (Bonn) through pre-arranged appointment with Dr. J. Zschintzsch, Head of the Plant Protection, German Faru, Sana'a. Professor Dr. F. Klingauf, Entomologist, and Dr. R. Sikora, Nematologist, and I discussed plant protection activities in Yemen at the Rawda Hotel on June 2, 1978.

In Review:

After eight weeks, beginning April 8, the sorghum outreach program has been received with enthusiasm among most farmers contacted and the acceptance could be considered a "break through" for this activity. To date, plots have now been established on 10 farms extending 20 kms. south of Sana'a to Sa Dah, 242 kms. to the north. Farmers are very appreciative of our assistance and ask questions relative to their weed, pest, disease and rodent problems. On our return trips we will try to help them with these problems.

cc: Mr. J. Young
Dr. W. G. Matlock
Dr. R. P. Upchurch

June 10, 1978

Weekly Report for Period of June 3-8, 1978

R. L. Voigt, Chief-of-Party

ROM: D. M. Stewart, Agronomist

Checked recent sorghum-millet sowings at the Bir al-Ghoun Farm for bird or rodent damage of hill sowings. It has been concluded that digging up and disappearance of sown seed have been caused by small sparrow-sized birds probably early in the morning before "bird watchers" are on their alert. Spotted damage is currently evident particularly at the ends of the row near the outside fence enclosure. The 11 baited traps for rats were checked and no treated grain was found disturbed. Therefore, the traps were removed and will be used in the "outreach" program at locations where rats are reportedly a problem.

A baited grain mixture of Dipterex S.P. 80, sugar, and water producing a crumbly mass was spread on recently sown sorghum-millet beds at the Bir al-Ghoun Farm for control of cut worms and other soil inhabiting insects. However, the effectiveness of this treatment was questioned since recent high temperatures and persistent winds soon dried the bait into hard baked masses. It is doubtful if the bait was attractive to the larvae in this desiccated state. A test will be made on the effectiveness of a spray mixture of water and Dipterex X.P. 80 (systemic) when applied to recently emerged seedlings in the sown beds.

Made a trip to Hūth, 124 kms. north of Sana, to establish a sorghum yield plot trial on June 6. Pre-arrangements had been made to have a plot of ground pre-irrigated preparatory to sowing on the above mentioned date. Because of lack of soil moisture--drying up of wells and no rainfall during the past month--no pre-irrigation had been performed on the field we had previously selected for sowing. Mr. Mohammed Hady Tawaff, a director of the Hūth school and a member of the rural development committee, accompanied us to a new area located near an operating well. This piece of land, large enough for establishment of a small plot, will be pre-irrigated and ready for sowing on June 10.

Dr. Mohamed A. El-Lakany, FAO sorghum breeder from Taiz, visited me on June 8 at my home in Sana. Lakany appeared to be upset regarding the plots at Ma'Bar where seed of sorghum genotypes from his Yemeni collection were being increased. According to his recent inspection of the plots only an estimated 1/3 of the sown seed had emerged.

I promised to assist him in collecting his passport from the Netherlands Embassy on June 10 and also visas from the West German and British Embassies preparatory to his departure from Taiz next week. He is reporting subsequently to the FAO Rome Headquarters for a new assignment to an African country of which there are four posts available at present.

cc: Dr. Katlock
Dr. Upchurch

June 14, 1978

Weekly Report for Period of June 10-14, 1978

R. L. Veigt, Chief-of-Party

FROM: D. M. Stewart, Agronomist

1. Sa Dah

Traveled to Sa Dah on June 11 to inspect a sorghum plot on the property of Sheikh Hussen Mohamed Al Surhbi after 18 days (est. on 5/24/78), emergence of seedlings was observed in all hill sowings. In adjacent property, near a pump house and well, we established a test plot on Bermuda grass using Dowpon M grass killer. Bermuda grass is a major problem in the Sheikh's vegetable, vinyard and orchard plots located on the outskirts of Sa Dah.

2. Hūth

We established a small sorghum yield plot trial (12 x 8 meters) on the farm of Ali Agag, near Hūth. The field had been pre-irrigated two days previously and had dried sufficiently by the time of sowing on June 11. A nearby well will provide irrigation for the duration of the trial. Assistance in the establishment of this plot was provided by Mohamed Hady Tawaff, Director of the Hūth public school and Vice Chairman of the local Agriculture Development Committee.

3. Al Asha

We continued our trip west of Hūth to Al Asha where we were met by Sheikh Abdala Al Frishi at his farm house location at Battana where he administers law and order for about 10,000 people living in the Al Asha valley. The sheikh accompanied us to our large trial plot (36 x 12 meters) established on May 23. A 100% emergence was observed in the hill sowings of May 23 and plants were 30 cm or more in height. However, many plants had been attacked by the stem borer (Sesamia cretica) and we plan to return there next week to apply the Dipterex S.P. 80 spray for controlling this pest. The May 23rd herbicide treatment with 2,4-D amine on the worst weed in that region and Taiz known in Arabic as "bakhreba" (Flaveria repanda-compositae) was almost 100% effective on the weeds whereas mixtures of wild forage grasses were unaffected to the delight of the local people

as animal forage during the summer months is usually in short supply. This weed is particularly prevalent along the borders of sorghum fields in Al Asha. Several rows of recently emerged sorghum at Bir al-Ghoum were sprayed with a 0.15 conc. of Dipterex S.P. 80. Although no evidence of damage has been observed we wished to test an early spray to make certain no plant injury would occur following the spray application.

cc: Dr. Matlock
Dr. Upchurch

memorandum

DATE: June 23, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: Weekly Report for Period of June 17-21, 1978

TO: R. L. Voigt, Chief of Party

On June 17, I was accompanied by Museid Attic and Ahmed Abdulla to the German Farm, a 14 hectare piece of land in the Al-Minjda area near Ray'dah, north of Sana'a. With the assistance of Konrad Engleberger and his crew of farm workers, we established a large sorghum yield plot trial, adjacent to his own sorghum trials.

Traveled to Sa'dah on June 18 where Museid Attic and I checked and sprayed a large sorghum yield plot trial on the property of Sheikh Hussein Mohammed Al Surbhi. Although the infestation of stem borer was light, the plants showed evidence of drought stress. There has been no rain for the past month or more, although wadi irrigation was used prior to sowing.

At the time of our arrival in Sa'dah, the leading sheikhs in northern Yemen were holding a meeting in the home of Sheikh Hussein under the chairmanship of Sheikh Majaid. They invited me into the meeting room and was introduced to the group. One of the members, Sheikh Abdulla Hamis Alaojani, invited me to visit his place and establish a plot on his land located in Wadi Nashor, northwest of Sa'dah.

On June 19, traveled to the village of Batfan in the Al Asba Valley, where we sprayed a large plot for an infestation of the stem borer using Thiodan 35. According to Dr. Gasset, Pesticide Specialist at the German Farm in Sana'a, this chemical is more effective and gives a longer period of protection against this insect than Dipterex S.F. 80.

1. Hexachlorobicycloheptene - bisoxymethylene - sulphite manufactured by Hoechst Ag., Frankfurt, Germany.

A farmer's plot at Wadi Khaywan infested with stem borer was also sprayed with the same insecticide. Evidence of porcupine damage was also observed on this plot. The farmer had recently obtained a large trap to attempt to eliminate this mammal pest.

Checked Bir Al Gahoam plots for stem borer and bird damage, although the sorghum was mostly in the early seeding stage, no evidence of stem borer damage was observed. Recent bird damage to seedlings in hill sowings was observed in some parts of the farm.



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OPTIONAL FORM NO. 10
(REV. 7-78)
GSA FPMR (41 CFR) 101-11.6
5010-112

memorandum

DATE: June 23, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: weekly Report for Period of June 17-21, 1978

TO: R. L. Voigt, Chief of Party

Page 2

On June 23, checked earlier established plots on the Hodeidah Road. Two small plots were free of pests but a large plot on a mountain terrace was moderately infested with aphids and was sprayed with an insecticide.

CC: W. G. Matlock
R. P. Upchurch



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OPTIONAL FORM NO. 10
(REV. 7-78)
GSA FPMR (41 CFR) 101-11.6
5010-112

June 30, 1978

R. L. Voigt, Chief-of-Party

Weekly Report for the Period of June 24-29, 1978

From: D. M. Stewart, Agronomist

The major activities during this period were spent at the Bir Al Gahoam Farm on pest control activities - insects and rodents. It was recently observed that a heavy infestation of aphids was present on a perennial weed (Peganum harmala) bordering the sorghum-millet plots in the nursery. The aphids had already spread to young sorghum plants. Although they were not in damaging amounts they were a potential threat. We used Thiodan solution to control both aphids and stem borer (Sesamia cretica) on the sorghum plants. At the end of the week, the spraying had been completed in Field A. Spraying will be resumed in Field B next week and thereafter every two weeks until later this summer. On June 28, workers at the Farm eradicated the above mentioned weed near the plots by hand pulling and grubbing with hoes.

We recently learned that our poison bait traps placed in a pump house on the Farm had produced results from the evidence of rat carcasses found in a locked room. Another trap was placed in the same location on June 28. Although the culprits responsible for digging up sown seed and seedlings in the nursery are small birds the reduction in the rat population will reduce potential damage to the sorghum crop.

On July 1, our "Outreach" group will visit three farmers in the Bany Hoshysh Region who previously agreed to cooperate in our program to establish sorghum yield trial plots on their land.

The past week was interrupted by the assassination of President Al Ghashomy (North Yemen) on June 24. We were instructed to return to our respective homes and remain there during the crisis. We returned to work again at 1230 June 26.

July 11, 1978

Weekly Report for Period of July 1-6, 1978

E. L. Voigt, Chief-of-Party

FROM: D. M. Stewart, Agronomist

On July 1, I was accompanied to Bany Hoshysh (40 kms. N.E. of Sana'a) by Hussein Attia, Interpreter-Extension Specialist and Tesawar Hussain, IVS Volunteer-Agronomist. Although Bany Hoshysh is well known for its excellent table grapes, small corn are scattered throughout the main canyon. Irrigation water originates from about 420 privately-owned wells pumped from an underground sandstone formation.

Last April 1978, our "Outreach Group" made tentative arrangements for three farmers in the Bany Hoshysh area to cooperate with us in establishing sorghum yield plot trials on their land. The sowing target date was given as July 1 or shortly thereafter. On our return on July 1, one farmer had left to take up construction work and another farmer decided to sow barley instead of sorghum. The third farmer, Al Nagib Ali Salah Khaled, agreed to prepare a piece of land for a sorghum plot to be ready for sowing on July 3 near the village of Hedran and we returned on that date.

I supervised the spraying of sorghum in Field B with Thiodan 35 for controlling the pink stem borer, Sesamia cretica. A check of Field A sprayed two weeks earlier showed good control of this insect. Recent observations of 18 rows of corn sown as a block planting among sorghum genotypes had 44% of the hill plantings with one or more plants infested with the pink stem borer. (1) The infested corn was sprayed with Thiodan 35 on July 2.

July 6 was spent in my Sana'a home garden fertilizing and irrigating eight sweet potato vines produced at the Tuskegee Institute. Volunteered to assist Mr. Jeff Lee, Horticulturist, who is currently on an R&R to the USA. Upon his return these vines will be used as cuttings for propagation at the Bir al-Shaif Farm.

- (1) According to ISSA, the pink stem borer, Sesamia cretica Led., is common throughout Egypt and attacks corn, sugar-cane, and several graminous weeds. ("Major insect pests of certain cereal crops in Egypt" by Abdel Latif Issa. First FAO/SIDA Seminar on Improvement and Production of field food crops for plant scientists from Africa and the Near East, Food and Agriculture Organization of the United Nations, Rome, 1974.)

cc: Dr. W. G. Hatlock
Dr. R. P. Upchurch

Mr. J. J. Young

July 15, 1978

Weekly Report for Period of July 6-12, 1978

R. L. Voigt, Chief-of-Party

FROM: D. M. Stewart, Agronomist

Activities on July 8-9 included the supervision of spraying an insecticide on sorghum and corn for the control of the pink stem borer at the Bir al-Ghoum Farm. Preparations for a field trip to northern Yemen beginning July 10 were made the day previous to departure.

At Sadah, Museid Attic and I checked the sorghum plot on the property of Sheik Hussein Al Swihbi which showed a moderate infestation of the pink stem borer and a recent invasion of Bermuda grass throughout the planted rows. The plants were sprayed with "Thiodan 35" for the stem borers while the Bermuda grass was subsequently treated with a herbicide (Dowpon N "Grass Killer") to control this persistent and most troublesome grass in the agricultural areas of Yemen.

Sheik Hussein Al Surhbi assigned an armed guard and acting guide to accompany us to Wadi Nashor located about 25 kms northwest of Sadah. The land in this wadi is owned by Sheik Abdulla Hamis Al Ajjari and his family. Since the Sheik was attending a series of political meetings in Sana'a, his brother Shyee was acting head of the family land. He took us on a trip to observe and survey the agricultural land in Wadi Nashor. Many fields had not yet been sown because of the long dry spell which was broken by a two-day rain on July 9-10. Shyee was interested in establishing a sorghum yield plot trial and suggested we select a field not yet planted for the establishment of a plot. A field near the family home was selected and a target date of July 25-26 for sowing was tentatively set. The fields were so wet from the recent rains that two weeks or more will be required before the soil is dry enough for sowing. The Wadi Nashor plot will be the 14th and last sorghum plot to be established in the "outreach program" in 1978.

At Huth, we checked the plot established in June in the company of Nasser Mablut Al Ahmer, cousin of Sheik Al Ahmer (No. 1 Sheik in Yemen) and manager of the Sheik's land in the Huth area. A wadi northwest of Huth was surveyed with Nasser comprising mostly sorghum. Many fields were lush, well-stocked and 50 cm. or more in height.

cc: Dr. E. G. Matlock
Dr. R. P. Upchurch

memorandum

DATE: July 22, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: Weekly Report for Period of July 15 - 19, 1978

TO: R. I. Voigt, Chief-of-Party

The sorghum plot near the village of May Moon, located about 35 kms N. W. of Sana'a on the Amran Road was checked the first of the week. Only about one-half of the stand survived due to the mortality from the summer drought. Many of the remaining plants were infested with the pink stem borer and all plants were sprayed with "Thiodan 35". About six farmers from neighboring fields gathered at our plot to observe and inquire about our activities. They were all familiar with the stem borer damage and seemed interested to learn about a control measure.

Dr. Voigt recently inquired about the feasibility of fumigating the seed stocks in the lab to control storage insects and rats. On July 17, I visited the German Farm on the outskirts of Sana'a and conferred with Dr. Gassert, Pathologist, and Mr. Pollin, Expert on Fumigation. Mr. Pollin accompanied me to our AID facilities and surveyed the physical construction of the lab. There are so many open spaces along the corrugated roof overhand that it would be a major task to "plug up" all openings preparatory to fumigating the entire lab. Therefore, he recommended the rise of a large plastic sheet for covering the seed stocks and using "Phostoxin" tablets as a fumigant. 1) A three-day period will be required for fumigation until the fumes have been "dissipated" enough to be safe for humans. A later date will be scheduled over a holiday period to avoid tying up the lab during the regular work period.

A training class was held on July 19 for the sorghum personnel comprising three I. V. S. people and six other field employees including one counterpart. I presented a talk on the life cycle and control of the pink stem borer with the aid of our microscope and larval specimens of the insect.

- 1) 56% aluminumphosphid
28% ammoniumcarbamate
3% paraffin

cc: Dr. W. G. Matlock
Dr. R. P. Upchurch



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

memorandum

DATE: July 29, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: Weekly Report for Period of July 22 - 26, 1978

TO: R. L. Voigt



I spent the first part of the week on our insect collection and received valuable assistance in the identification of the specimens from Tony Kerzmann, Entomologist, German Plant Protection Farm, Sana'a. An unusual type of praying mantis with a mottled green coloration could not be identified. Kerzmann had never seen this insect before and could not find it in the German Farm collection. Most of our grasshoppers were identified as the migratory grasshopper (Locusta migratoria). No desert locusts were found so far in 1978, although there were earlier reports of "swarms" in the Tihama Region that reportedly came across the Red Sea from Ethiopia where there was extensive damage caused by this insect.

Attic, Tacadao, I. V. S. Agronomist, and I visited two sorghum plots on the Taiz road and sprayed "Thiodan 35" to control a moderate infestation of the pink stem borer. At the Dubre Sunhan plot, a group of five farmers and about twenty-five young school-age children sat on the sidelines and observed the spraying operation. I showed them larvae of the insect taken from the plot and they seemed interested in seeing the insect specimens. One of the farmers in the group spoke up and reported that his nearby sorghum crop looked better than the plants in our plot. I agreed with him but emphasized that the season is still too early to make a final evaluation. Before leaving the area, the same farmer came up and handed me a peach picked from his orchard.

On July 25, our group traveled to Wadi Nashor, 25 kms N. W. of Sadah to fulfill a previous commitment to establish a sorghum yield plot on the property of Sheik Abdullah Al Ajari. Because of the recent heavy rains, the soil in the field reserved for our plot was too wet to sow. Because of the advanced season and the time required for the soil to dry enough for sowing at Wadi Nashor, it was decided to cancel the sorghum plot this year. Thus the total number of sorghum "Outreach" plots for 1978 is 13.

- 1) Sheik Al Aojari gave me a sample of the locally-grown sorghum seed for our Yemen-wide sorghum collection.



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memorandum

DATE: August 5, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: Weekly Report for Period of July 29 - August 2, 1978

TO: R. L. Voigt

Tacadao, I. V. S. Agronomist, Ahmed Abdella Ismail, and I visited two farms on the Hodeidah Road on July 30 where we sprayed the sorghum yield trials with Thiodan 35 to control a moderate infestation of the pink stem borer. One of the locations owned by Al Aubadi, near the village of Mafual, had been previously sprayed on June 23 with Drawin 7-55 (Butocarboxin) which effectively controlled a heavy infestation of aphids.

On July 31, our group made a trip to the Al Nagib Ali Sahah Khaled farm near the village of Hedran (Wadi Bany Hoshysh) where we sprayed for control of the pink stem borer. Although the plants were small (sown July 3) the "stocking" appeared satisfactory.

On August 1 - 2, a group of four of us including the driver visited properties in the Wadi War War and Al Asha. Due to recent tribal disturbances we were accompanied by a Yemeni armed guard to Wadi War War, 42 kms from the main Sana'a-Sadah Highway. The trials at this location were sprayed with Thiodan 35 to combat a moderate infestation of the pink stem borer. The soil on the plots was a silty-silt clay, encrusted, and more heavily compacted than the Bir Al Gahoum trials. In fact, it was too heavily compacted to collect an adequate composite soil sample.

The Al Asha trials, west of Huth, were outstanding in growth development. Sana 1, Sana 7, and the local cultivar ranged from 3-4 meters in height and some plants were beginning to head. All plants of the American hybrid, Pioneer 894, were headed and mostly in the soft dough stage at 70 days after sowing. The height ranged from 70 - 100 cms. We also visited the nearby Chinese sorghum trials at the Batina Agricultural Research Station. The plots appeared to be well planned and maintained, and were equal in the stage of development to our trials. The Chinese row width is one meter and plant spacing 70 cm.

cc: Dr. W. G. Matlock
Dr. R. P. Upchurch



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

memorandum

DATE: August 12, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: Weekly Report for period August 5 - 9, 1978 (Incl.)

TO: R. L. Voigt

The first part of the week was spent in the AID Office bringing the test reports of the "Outreach" program up to date. Due to the advance plant growth, no further pesticide spraying is anticipated for controlling the stem borer. Tony Kerzmann, Entomologist with the German Plant Protection Farm, Sana'a, informed me that he has not yet been able to culture adult moths of the pink stem borer. Although he has several pupae in culture, no emergence of adults has been observed. A positive identification of the adult moth is needed to determine the species.

Our poison bait method for killing rats in the laboratory has proven to be effective. The poison grain is placed in plastic sewer pipes 10 cm in diameter X 50 cm long and distributed at various locations in the lab. To date, a total of 13 rats (8 adults and 5 young) have been killed according to carcass count.

On August 9 a trip was made to Huth and vicinity in northern Yemen to check on two of our tests. Test number 8 has been written off. The local farmer reported that the chickens ate the young sorghum sprouts at emergence time and he replanted the small field where the test was located with wheat about two weeks ago.

An attempt was made to visit our test at Wadi Khaywan. We drove about half way to the test from the Sana'a-Sadah Hiway, but due to recent heavy rains the road was impassable.

D. R. P. Upchurch



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

memorandum

DATE August 19, 1978

REPLY TO: D. M. Stewart, Agronomist
ATTN OF:

SUBJECT: Weekly Report for Period August 12 - 16, 1978 (Incl.)

TO: R. L. Voigt



I visited the German Farm near Raydah known as the Al Boun Project on August 13 and contacted Konrad Engleberger who is in charge of operations. We visited our sorghum location no. 12 on the farm and found a moderate infestation of stem borers on most plots. Since Engleberger is currently short of technical assistance and laborers, it was decided that I would return the following day (August 14) with four of our sorghum crew from AID to assist with pesticide spraying, thinning, cultivation, weeding, and taking soil samples on our sorghum location.

On August 15, Attic, Ahmed, Saad, and I traveled to location no. 5 (near village of Mafyal on Hodeidah Road) where we collected samples for a composite soil test. We observed a moderate infection of head smut on the local sorghum growing adjacent to our sorghum location. Porcupine damage was found on our sorghum location and several plants had been chewed off on the main stem about 70 cm. above the ground line.

We traveled to location no. 6 on the Hodeidah Road on August 15 to collect soil samples but due to recent rains the soil was too wet to make collections.

Location nos. 3 and 4 on the Taiz Road south of Sana'a were visited on August 16 where we checked plant development and collected soil samples. On location no. 3 (near the village of Hizyez) the local farmer was thinning the plots and using the refuse to feed his animals. The plants on location no. 4 near the village of Sunhan showed a slight yellow discoloration probably due to nitrogen deficiency.

cc: Dr. W. G. Matlock
Dr. R. P. Upchurch

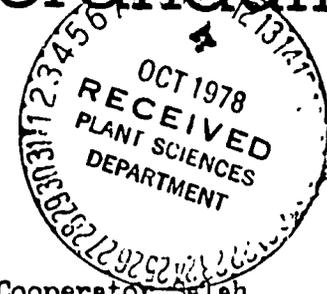
RV/bg



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memorandum

DATE: August 24, 1978
 REPLY TO: D. M. Stewart, Agronomist
 ATTN OF:
 SUBJECT: Weekly Report for Period August, 19 - 23, 1978 (Incl.)
 TO: R. L. Voigt, Chief of Party



I was accompanied by Museid Attic to location number 6 (Cooperator Salah Nagi) on the Hodeidah Road to collect soil samples for subsequent analysis. Due to recent local showers, as observed by standing water in nearby fields, it was not possible to collect representative samples on this date (August 20).

On a previous visit to a location near the village of Maf-Dan, we were contacted by a farmer (Haje Shamy) who reported a serious weed problem on his land nearby and wanted to know if we could help him. He was an older man and had to hire labor for his field work which he found very costly. His field was heavily "over run" with young plants of the weed locally called "Helgub" or "Shager" belonging to the mustard family (Diploaxis eruroides L.), the same weed that has been troublesome at the Bir Al Gahoum farm for the past two seasons. On our return visit to this area on August 20, we laid out a small demonstration plot on Mr. Shamy's land and sprayed it with the herbicide 2,4-D amine. The results on the effectiveness of this herbicide will be checked after the Eid-el-Fitr holidays.

The Bany Hoshysh location number 1, was visited on August 21 where a second application of "Thiodan 35" was applied on the test area for control of the pink stem borer. This location was the latest planting of the 1978 locations and the sorghum plants ranged between 10 - 15 cm in height. The residual pesticide in the spray tank was applied to an adjacent field of barley attacked by the small grain lady bug beetle (Epilachna similis). This insect consumes leaf tissues of the barley or other cereals similar to that caused by skeletonizers or leaf miners. The entomologists at the German Farm in Sanaa reported damage as high as 25% of the leaf surface of barley caused by this insect in the Sanaa area. Messrs. Kerzmann and Pollin assisted with the identification and related characteristics of this insect. During the past three years in Yemen, this is Kerzmann's first experience with this insect.

I accompanied Dr. Voigt to the Sanaa Airport on August 23 to meet Dr. R. P. Upchurch from the University of Arizona. Subsequently we attended a conference in the USAID Agriculture Office with Stickney, Upchurch, and Uphaus.

cc: Dr. W. G. Matlock
 Dr. R. P. Upchurch



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memorandum

DATE: August 31, 1978

REPLY TO
ATTN OF: D. M. Stewart, Agronomist

SUBJECT: Weekly Report for Period August 24 - 30, 1978 (Incl.)

TO: R. L. Voigt, Chief of Party



I accompanied Voigt and Upchurch to the Bir Al Gahoum Farm on August 24 where we observed the sorghum and millet plots. Difficulties in the land preparation, leveling, sowing, and irrigation and methods used in correcting these deficiencies were narrated by Voigt.

On August 25, Upchurch, Voigt, Little Yahya, and I visited two Outreach locations south of Sanaa on the Taiz Road. These locations included location number 4 at the village of Dubre Sunhan and location number 3 near the village of Hiz Yez. Neither of the cooperators were present at the time of our visit probably because of the Muslim month of Ramadan religious observance.

A trip was arranged for August 26 - 27 to visit the northern part of Yemen. Our group comprised Upchurch, Voigt, Attic (interpreter), Abdella (driver), and Stewart. Our first stop was at Al Asha, a large mountain valley located 22 km west of Huth which is about 148 km north of Sanaa on the Sadah Hiway.

We visited one of our large test areas (12 m X 36 m) at Al Asha planted with 4 cultivars comprising 16 plots of 4 rows each with 4 replications. The American hybrid A 53 A (Ferry Morse Seed Company) had matured at 70 days but subsequently, the birds had stripped the seed from all the plants since they were attracted to the early maturing cultivar whereas the surrounding cultivars were still in the early heading stage. Due to recent local rains in the Al Asha Valley, there were deep mud holes in the middle of the roads and were impassable, so it was necessary to cancel our visit to the Batina Agriculture Experiment Station operated by the Chinese. At the small village of Battan we conferred with Sheikh Abella Faishi regarding our observations at Al Asha before our departure from the valley. Our trip was resumed northward to Sadah where we found lodging in the Crescent Hotel within the walled city. The next morning at 0700 we visited the sorghum site a few km south of Sadah, location number 9, Sheikh Hussen Al Surabi, cooperator. Because of the Ramadan season no one at the Sheikh residence was available so we guided ourselves to the test area behind the residence. We also checked a herbicide demonstration plot on the same property where Bermuda grass had been treated with "Dowpon M". No living Bermuda grass was observed on the plot. Before leaving we collected a composite soil sample from the test area and resumed our return trip to Sanaa the same day.

I spent August 28 - 30 in the AID Headquarters where private discussions were held with Upchurch and others. On August 30, I accompanied Upchurch to the Sanaa Airport where he departed at 1600 for the U. S. A.

cc: Dr. W. G. Matlock
Dr. R. P. Upchurch

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memorandum

DATE: September 17, 1978
 REPLY TO: D. M. Stewart, Agronomist
 ATTN OF:
 SUBJECT: Weekly Report for Period September 9 - 15, 1978

Page 2

TO: R. L. Voigt, Chief of Party

Ali Abd Alwahed Damaj
 Director of Field Crops,
 Yemen Ministry of Agriculture

Nabil Abdul Karim Alansi
 Plant Pathologist
 Ministry of Agriculture

Mohammed Morshid Thab
 Yemeni counterpart at Battan

Wang Shin Tu
 Director of Battan Station

Kuang Youin Lon,
 Interpreter

Li Ming-Yuan
 Plant Pathologist

(Three other Chinese men were in the group, but their names were not obtained.)

Wadi War War (elevation 1500 feet) was visited on September 14, as per advance arrangements made by Sheikh Mijiad. His farm manager was very helpful and cooperative during our visit. This location was particularly interesting when comparing development of certain cultivars. Sana 1 and 7 were both taller and earlier in development than the local cultivar which showed less than 50% in the heading stage. An interesting side-light was elaborated on by the farm manager. In certain years when drought is severe, the local farmers plant a drought resistant cultivar which is shorter and an open-head type compared to the currently grown variety with a compact head. The seed is available only to local farmers. At present, seed is in storage in a Medfan (underground) until needed for planting in a drought year. The present seed supply has been in the Medfan storage facility for the past 4 years. (The name of this local variety was not obtained.)

On September 15 and 16 we were accompanied by Sheikh Abdella Al Faishi to sorghum location number 7 near Battan. The heads of the American hybrid Ferry Morse A 53 A had all been stripped of seed by birds. We discussed and observed the serious weed problems in the Battan, German, and Al Qaflah village areas. The three most important weeds that are critical to sorghum culture are:

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memorandum

DATE: September 17, 1978

REPLY TO
ATTN OF:

D. M. Stewart, Agronomist

SUBJECT:

Weekly Report for Period September 9 - 15, 1978

Page 3

TO: R. L. Voigt, Chief of Party

1. Zoheyra (local name)
(Flaveria repanda Lag.)
2. Edar (local name)
(Striga hermonthica) Benth.
3. Se-ed (local name)
Cyperus species (Cyperaceae family)

In herbicide tests in May 1978, the effectiveness of 2,4-D amine was demonstrated at Al Asha. A concentration of 22 cc of the herbicide in 16 liters of water gave control of the most troublesome weed, Zoheyra, (Flaveria repanda). Sheikhs Al Ahamar and Al Faishi were pleased with the demonstration and are anxious to purchase the herbicide and sprayers for the Al Asha area. Unfortunately, there is no local source of herbicides in Yemen and it is extremely important that a local firm be located that would take on a dealership.

During a survey of the sorghum areas in the Al Asha Valley with Sheikh Al Faishi, it was observed that the lower leaves of all sorghum areas were being removed and used for feeding animals. However, only dead, dying, and diseased (foliage blight) leaves were being pruned whereas all green leaves at the upper 1/3 of the stalks were left intact. The Sheikh related to us that seven local varieties are grown currently although some selections have been grown for 200 years or more. Ten percent of each year's crop is stored in Medfans (underground) in the nearby mountains. There is sufficient sorghum in storage at present to carry the Al Asha population for a period of five years in event of a drought or other disaster. The following local varieties were observed on our tour of the Al Asha Valley:

1. Bahry (red) loose head (resistant to Striga.)
2. Sahul (red) compact head
3. Shahi (white and red) loose head
4. Taimy (white) compact head
5. Amary (white) loose head
6. Harity (white) compact head (resistant to lodging)
7. Maysi (yellow) loose head

CC: Dr. W. G. Matlock
Dr. R. P. Upchurch

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OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

PLANS FOR ENSUING PERIOD

This plan of work for the period of March 16, 1978 through March 30, 1979 is based on the assumption that the following things have been accomplished by March 16, 1978.

1. 1977 data has all been tabulated and analyzed.
2. Genotypes to be grown in 1978 have been identified.
3. New motor mount and drive are on new well at Sanaa.
4. Furrow openers on hand.
5. Chisel on hand.
6. Land plane on hand.
7. Moved into new laboratory and office spaces with all genetic materials inventoried and saved for use as appropriate.
8. Plans for outreach tests for 1978 have been developed.
9. All irrigation equipment and supplies have been received from the U.S.
10. One half-time project secretary on board.

The months of the year are used for the major grouping of all activities that might logically occur at that time.

16-31 March 1978

Field Research:

- Plow research fields.
- Plane or level research fields.

Outreach Tests:

- Develop plans for 1978.

Laboratory:

- Develop tests and field designs for 1978 tests.
- Put up seed for 1978 tests.

Training:

- Formal and on-job training for laborers and technicians.

Facility Development:

- Develop well, buildings and land at Al Jarubah.

Equipment and Supplies

- Develop orders for needed equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.
- Search on local market for certain equipment and supplies.

Administration:

- Administrative reports.
- Answer correspondence.
- Loan vehicle (furnish transportation), drive for, spend time with short-term consultants.
- Assemble data and write up 1977 research results.

Other

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

April 1978

Field Research:

- Furrow out all fields by 10 April.
- Finalize field tests and plans from number/and lengths of furrows obtained.
- Start pre-irrigation by 15 April in sequence on predetermined sections of fields.
- Start planting tests about 20 April.

Outreach Tests:

- Arrange for test-site location and grower-operators.

Laboratory:

- Determine priority of tests to be conducted or not (dependent on research land area available).

- Finish putting up seed for 1978 tests.
- Check seed in and out, equipment, supplies, etc. as planting proceeds from day to day.
- Prepare, repair, reorganize planting plans, equipment and supplies as needed from day to day.
- Construct own shelving in laboratory.

Training:

- Formal on the job training for laborers and technicians.

Facility Development:

- Proceed with development of Al Jarubah Agricultural Experiment Farm.

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search on local market for certain equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.

Administration:

- Administrative Report.
- Answer correspondence.
- Loan vehicle (furnish transportation), drive for, spend time with short-term consultants.
- Assemble data, write up 1977 research results.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive

May 1978

Field Research:

- Finish planting research plots at Sanaa in first week of May.
- Apply bait to all plots at emergence for cutworms.
- Start weed control as necessary by spray or hand weeding.

- Begin stem borer control as necessary.
- Stake and label field research plots.
- Take notes that may be appropriate on emergence and early seedling development.
- Irrigate plots as necessary upon depletion of soil moisture.
- Fertilize plots as necessary.
- Thin plots or fill in gaps as necessary.

Outreach Tests:

- Plant outreach tests.
- Visit outreach tests and operators about twice per month.

Yemen Collection:

- Plant Yemen Collection near Mabar for grow out.

Laboratory:

- Make up field data books.
- Make up data sheets for outreach tests.
- Go through past year's seed and discard lines of inferior performance which were dropped.
- Proceed and treat for storage remnant seed of current year's planting.

Training:

- Formal and on the job training of laborers and technicians.

Facility Development:

- Develop well, buildings and land at Al Jarubah.

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.
- Search in local market for same equipment and supplies.

Administration:

- Administrative reports.
- Answer correspondence.
- Summarize data and write report for 1977.
- Furnish transportation, drive for, spend time with short-term consultants.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

June 1978

Field Research:

- Weed control of research plots as necessary.
- Stem borer control as necessary.
- Irrigation of plots as necessary.
- Fertilization of plots as necessary.
- Take appropriate field notes.
- Inspect all plots every second or third day.

Outreach:

- Visit outreach plots every two weeks.
- Take a soil sample from each outreach test.
- Insect control if appropriate.

Yemen Collection:

- Visit plots at Mabar twice a week to observe and plan for irrigation, weed control, insect control.

Laboratory:

- Discard discontinued stocks in germplasm storage.
- Organize seed stocks to be saved.
- Make up field data books.
- Make up field data sheets for Yemen Collection plots.

Training:

- Formal training and on job training for laborers and technicians.

Facility Development

- Develop Al Jarubah Experiment Farm.
- Develop Weather Station at Sanaa.
- Purchase and install additional shelving in laboratory seed storage spaces.

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search on local market for certain equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment

Administration:

- Administrative report.
- Answer correspondence.
- Write up report and data summary of past years.
- Take soil samples to Taiz and arrange analysis.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

July 1978

Field Research:

- Inspect plots daily for collection of appropriate data, (seven days per week).
- Self heads of appropriate genotypes.
- Bag sterile and make crosses
- Weed control as necessary.
- Stem borer control as necessary.
- Irrigation as necessary.
- Start bird watcher crew.

Outreach:

- Visit outreach tests every two weeks.
- Record appropriate field data.

Yemen Collection:

- Two (all-day) trips to Mabar twice a week to self genotypes and record data.

Laboratory:

- Organize seed stocks in storage room.
- Clean up and organize supplies and equipment from planting.

Training:

- Formal training and on job training for laborers and technicians.

Facility Development:

- Develop Al Jarubah Experiment Farm.
- Develop Weather Station at Sanaa.
- Build and install laboratory benches and shelving in laboratory.

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search on local market for certain equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment

Administration:

- Administrative reports.
- Answer correspondence.
- Write up report and data summary of past years.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive

August 1978

Field Research:

- Inspect plots daily (7 days per week) for collection of appropriate data and performance of breeding procedures (selfing appropriate genotypes and bagging steriles and making crosses).

- Weed control as necessary.
- Irrigation as necessary.
- Supervise bird watching crew from sunrise to sunset.

Outreach:

- Visit outreach tests every two weeks and record appropriate data.

Yemen Collection:

- Two (all-day) trips to Mabar twice a week to self genotypes and record data.
- Harvest earliest maturity genotypes.

Laboratory:

- Thresh early maturity Yemen Collection genotypes.

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

- Dependent on past progress at this time, and needs for the future.

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search in local market for certain equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.

Administration:

- Administrative reports.
- Answer correspondence.
- Write up report and data summary of past years.
- Prepare 6 month USAID required report.
- Prepare for project review by USAID.

Other:

- Spend 10 to 20% working hour time taking care of items necessary to survive.

September 1978

Field Research:

- Inspect plots daily for collection of appropriate data and performance of breeding procedures (selfing appropriate genotypes and bagging steriles and making crosses).
- Weed control as necessary.
- Irrigation as necessary.
- Supervise bird watching crew from sunrise to sunset.
- Prepare land for planting at Al Jarubah.

Outreach:

- Visit outreach tests every two weeks and record appropriate data.

Yemen Collection:

- Two (all-day) trips to Mabar twice a week to self genotypes and record data.
- Harvest maturing genotypes.

Laboratory:

- Thresh harvested Yemen Collection genotypes.

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search on local market for certain equipment and supplies.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.

Administration:

- Administration Reports.
- Answer correspondence.
- Prepare 6 month contract report.
- Project review by USAID.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

October 1978

Field Research:

- Inspect plots daily for collection of appropriate data and performance of breeding procedures.
- Harvest early maturing materials.
- Irrigation as necessary.
- Enforce bird watching activities from sunrise to sunset.
- Prepare planting plans for Al Jarubah.

Outreach:

- Visit outreach test every two weeks.
- Harvest outreach plots as appropriate.

Yemen Collection:

- Two all-day trips to Mabar twice weekly to record data and harvest maturing genotypes.

Laboratory:

- Thresh Yemen Collection Genotypes.
- Process and store Yemen Collection items.
- Begin tabulation of plot data.

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search on local market for certain equipment and supplies.

Equipment and Supplies continued

- Unpack, inventory, assemble, repair as necessary and calibrate new equipment.
- Inventory expendable supplies and reorder as needs indicate.

Administration:

- Administrative reports.
- Answer correspondence.
- Submit 6-month contract report.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

November 1978

Field Research:

- Inspect plots daily for collection of appropriate data.
- Harvest matured items.
- Enforce bird watching activities from sunrise to sunset.

Outreach:

- Harvest outreach tests.

Yemen Collection:

- Harvest mature genotypes and record needed data.

Laboratory:

- Thresh Yemen Collection items.
- Thresh field plot items.
- Weigh and process threshed items.
- Tabulate plot data.
- Prepare seed for Al Jarubah

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

Equipment and Supplies:

- Develop orders for needed equipment and supplies.
- Search local market for certain equipment and supplies.
- Unpack, inventory, assemble, repair as necessary and calibrate new equipment.
- Repair and service equipment being used.
- Inventory expendable supplies and reorder as needs indicate.

Administration:

- Administrative reports.
- Answer correspondence.
- Begin summary of 1978 results.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

December 1978:

Field Research:

- Finish field harvests.
- Pull up stakes.
- Plant at Al Jarubah.

Outreach:

- Complete field harvests.
- Make tentative arrangements for 1979 tests.

Yemen Collection:

- Complete harvest from field of mature genotypes.

Laboratory:

- Thresh, weigh and process research test plot material.
- Thresh, weigh and process outreach plot material.
- Thresh and process Yemen Collection.
- Tabulate data from research plots, outreach plots, and Yemen Collection.
- Prepare field plans and seed for Al Jarubah.

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

- Develop seed processing and long term seed storage area.

Equipment and Supplies:

- Develop orders for needed new equipment and supplies.
- Develop orders for resupply of expendable items.
- Unpack, inventory, assemble, repair as necessary and calibrate new equipment.
- Repair and service equipment being used.

Administration:

- Administration reports.
- Answer correspondence.
- Summary of 1978 results.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.

January 1979:

Field Research:

- Chop stalks in fields and plan laboratory work.
- Laboratory work.
- Finish planting at Al Jarubah.

Outreach:

- Laboratory work

Yemen Collection:

- Laboratory work.
- Begin shipping collection to USA via pouch.

Laboratory:

- Finish threshing, weighing, and processing of field research, outreach, and Yemen collection materials.
- Tabulate and process data from field research, outreach and Yemen Collection plots.

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

- Develop long term seed storage area.

Equipment and Supplies:

- Develop orders for needed new equipment and supplies and for resupply of expendable items.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.
- Service and repair equipment being used.

Administration:

- Administrative reports.
- Answer correspondence.
- Summarize 1978 results and write report.
- Begin 6-month summary report for Sept. 15, to March 15.
- Begin final contract report.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive.
- Make plans and determine procedures to move to U.S.

February 1979

Field Research:

- Level all fields to be planted in 1979.
- Care for field research planting at Al Jarubah.

Outreach:

- Identify farmers for 1979 outreach tests.

Yemen Collection:

- Ship collection to U.S.A. via pouch.

Laboratory:

- Develop field research tests and field planting plans for 1979.
- Select genotypes to be tested in 1979 from 1978 seed stocks.
- Process data from field research, outreach and Yemen Collection plots

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

Equipment and Supplies:

- Develop orders for needed new equipment and supplies and for resupply of expendable items.
- Unpack, inventory, assemble, repair as necessary, and calibrate new equipment.

Administration:

- Administrative reports.
- Answer correspondence.
- Write 1978 summary report.
- Write 6-month summary report for period ending March 16.
- Write final contract report.

Other:

- Spend 10 to 20% of working hour time taking care of items necessary to survive
- Begin moving to U.S.

March 1979

Field Research

- Furrow and fields preparatory to preirrigation
- Collect data and care for plots at Al Jarubah - irrigation, fertilizer, weed control.

Outreach:

- Identify farmers for 1979 tests.

Yemen Collection:

- Complete shipment of Yemen Collection to U.S.

Laboratory:

- Put up seed for 1979 tests.
- Complete data processing of field research, outreach and Yemen Collection plots.

Training:

- Formal and on job training for laborers and technicians.

Facility Development:

- As necessary at Sanaa and Al Jarubah
- Make plans for an intermediate environment (elevation) research station

Equipment and Supplies:

- Develop orders for needed new equipment and supplies and for resupply of expendable items.
- Unpack, inventory, assemble, repair, as necessary and calibrate new equipment.

Administration:

- Administrative reports.
- Answer correspondence.
- Complete 1978 summary report.
- Complete 6-month summary report for period ending March 16.
- Complete final contract report.

Other:

- Spend 30% of working hour time getting moved to U.S.

Second Year - 1979 - 80

- Get Al Jarubah fully operational
- Identify a 3rd Experiment Station Site intermediate in elevation (& enviro
- Begin to build and develop seed production and seed increase buildings and land facilities and order necessary equipment
- Redrill the old irrigation well at Bir al Gohume to a deeper depth to increase its capacity thereby expanding the field research capacity of the project.
- Continue essentially same cycle of field and laboratory activities in the time frame as presented for 1977-78.

Recommendations covering current needs in field of activity.

1. **Supplies and equipment procured for the project continue to encounter serious delays while enroute from the University of Arizona to Sanaa. Expediated delivery would enhance the overall project.**
2. **Continue to develop experiment stations at locations other than Sanaa. Progress has been made in the development of the Al Jarubuh Experiment Farm. It would be desirable to have stations which could provide research data for a cross section of the country. Stations at a low, medium and high elevation could serve this purpose.**
3. **An operational weather station at Sanaa is needed. Progress has been made toward this objective.**
4. **An assistant for the Yemen Chief-of-Party would ease the workload of the many required time consuming tasks. Approval to hire this individual has been obtained from the Agency of International Development. The assistant should be in place in Yemen by the first of December, 1979.**

Additional information pertaining to this contract:

- a. Communications: The use of telegrams and the telephone was continued to shorten the usual two-month mail exchange communication time lapse. Due to the unreliability of timely mail delivery, an improved correspondence log was initiated by the Department of Plant Sciences to track correspondence sent to and received from the Chief-of-Party.

- b. Unexpected delays on supply and equipment items after entry into the pouch or air freight shipment system: Our previous semi-annual report cited excessive delays in delivery of air freight and surface freight and praised the pouch mail system as being the most dependable and fastest method of delivery. During the time period of this report, even pouch mail encountered excessive delays. The case of thirty six irrigation valves illustrates this point. The valves were procured, individually wrapped for the pouch and mailed February 6, 1978. A normal enroute time of 4 to 6 weeks was expected. When the valves had not arrived in Yemen by April, it was obvious something was wrong. Frequent follow-up with the Agency for International Development backstop officer and contract office failed to locate the valves or prove they had actually been delivered to the Department of State mail room. A tracer, initiated by the Department of Plant Sciences with the United States Post Office, also failed to determine their location, and in effect, determined they could not be traced when insured with University insurance. With approval from the Agency for International Development backstop officer, a claim for the lost valves was initiated and it was decided that United States Post Office insurance would be used on all future pouch shipments to insure traceability. The contracting officer gave authority to duplicate the order for the thirty-six irrigation valves and gave the University of Arizona instructions to send the second order via certified mail. The second order was procured and thirty-six individual packages were sent via certified mail on July 7, 1978. We received word in August that some irrigation valves had arrived in Sanaa. Telegram confirmation was obtained via the Chief-of-Party on the status of both orders. The first order arrived in Sanaa via surface transportation, July 25, 1978. As of the close-out date of this report, the University of Arizona had not received any indication the second shipment had arrived in Yemen. Action was taken to terminate the insurance claim on the original order. Air freight continued to encounter excessive delays. For example: furrow openers sent via air on February 17, 1978 arrived in Sana August 5, 1978. Another example is Dr. Voigt's second food shipment which was sent via air in February and arrived in July 1978. Tracing of and follow-up action was taken by the Office of International Programs and the Department of Plant Sciences on examples listed, as well as other items shipped or mailed to Yemen. These actions alone consumed many more man hours and telegram responses than anticipated. Short-term personnel were utilized to hand carry small items to Yemen. Herbicide, a vehicle ball hitch, and a small crescent wrench are examples of items handcarried.

- c. On-campus backup activity occurred in the following major areas:
- (1) Equipment and supply orders 21 through 24 were received. Action was taken for procurement. Items from these and previous orders were repacked and shipped upon receipt at the University of Arizona. Orders ranged from books and tools to welding and research equipment.
 - (2) One short-term specialist position was requested and filled during the reporting period. Two administrative visits were also completed. Normal administrative processes to support these visits were conducted. End of tour reports, where applicable, were reviewed and individuals interviewed to determine if the University of Arizona should take any action to enhance the project.
 - (3) Library research continued on availability and pricing data for book orders 18 and 24.
 - (4) Recognized DDT control experts and chemical companies were contacted to obtain current information on possible ways to destroy DDT. Results of this research were forwarded to Yemen.
 - (5) The International Programs Office continued to provide logistical support for travel arrangements of short term and administrative visit personnel. Dr. Matlock, Director of International Programs, made a brief stop in Yemen the first week in April 1978. His visit provided an update on internal revenue service provisions and a chance to note administrative problems on a "first-hand" basis. This office also provided support in the preparation of requisitions for payment of equipment shipments. The office sent correspondence to appropriate legislators requesting their support to repeal or reduce the unfair tax burden imposed on United States personnel working abroad. Arizona Senators Barry Goldwater and Dennis DeConcini, plus Arizona Congressmen Mo Udall were contacted in this regard. This office also served as the focal point for contract negotiations. Amendment 1 to the contract was approved during this time period. This amendment basically redistributed budget priorities based on actual contract experience and provided for the inclusion of "Sunday-differential" pay for regular employees.
 - (6) Xerox copies of all Crop Science journal articles pertaining to sorghum and millet for a 15-year period were shipped to Yemen.
 - (7) Recruitment of a technician assistant for the Yemen Chief-of-Party was finalized in June 1978. Initially a person was selected, accepted the offer, but decided not to go just as we were mailing the proposal to Washington. A second individual was nominated but did not meet the minimum qualifications for the position. On our third recruitment effort, a spring of 1978 Plant Science graduate was selected. As of September 15, 1978 we were waiting for final clearance for him to proceed.
 - (8) Information from the Internal Revenue Service, Tucson tax consultants, plus applicable articles from newspapers/magazines was forwarded to University of Arizona personnel residing in Yemen. Their concern is the fact that benefits for which no money is received end up as reportable and taxable.

(9) Due to the previously mentioned pouch delay problems and the sudden over abundance of conflicting data on pouch size, address, weight etc; a thorough review of the different ways and cost to send pouch package equipment to Yemen was conducted during June of 1978. This review was conducted by the Department of Plant Sciences and discussed at length with the Agency for International Development Backstop Officer. We obtained immediate and decisive guidance on the problem. Our guidance basically stated: the pouch size to be no larger in any dimension than 10 x 12 x 14 inches; items larger than this size would be shipped international air freight. Mr. Young's address would be used for equipment orders.

(10) Dr. R. P. Upchurch, Head, Department of Plant Sciences, conducted an administrative visit to Sanaa August 23-30, 1978. Dr. Upchurch also serves as Campus Technical Director for this project. His trip report is included.

d. We wish to acknowledge and give special thanks to the mission and Agency for International Development personnel for providing outstanding support to the University of Arizona in fulfilling contract obligations.

Administrative Report

This segment of the semi-annual report covers expenditures and personnel employed under the contract. A report on foreign national trainees is not applicable since the contract does not include any provisions for participant training. A detailed account is presented of the actions the University of Arizona took to enhance the training and well being of Mr. Yahya Ismail Shuga'a. Mr. Shuga'a, Dr. Voigt's Yemen counterpart, spent the majority of this reporting period attending the Center for English as a Secondary Language at the University of Arizona.

Expenditures

This item received more attention as the contract obligations were fulfilled. A review of expenditures based on actual contract experience resulted in Amendment 1 being negotiated and approved. Significant changes in the budget occurred in the following line items:

- a. Salaries, Short term, reduce from \$105,000 to \$60,000
- b. Allowances, reduce from \$88,062 to \$81,000
- c. Insurance, delete from \$36,427 to zero. Insurance paid as a part of University fringe benefits.
- d. Overhead, reduce from \$105,977 to \$92,280
- e. Equipment, increase from \$55,000 to \$105,000

Equipment orders 21 through 24 were received from Yemen and action taken for procurement. As items from previous orders arrived, the encumbrances were changed to expenditures. The cost of shipping equipment and supply orders increased as the reporting period progressed. The University College of Agriculture assigned Ms. Jane Bregman, an accountant, to track various project expenses of which the Yemen project is only one of many such projects. This person's assistance has been invaluable in applying the University's computerized accounting system to determine contract budget line item status. As the end of this reporting period approached, it became obvious the contract would require additional funds for campus salaries, other direct costs and overhead, if the same high level of support were to be maintained. Appropriate justification for initiating these changes was forwarded to the Office of International Agriculture Programs for negotiations with the Agency for International Development Contracting Officer. Inflation continued to eat away the contract dollar. For example, the original cost in December 1977 for 36 irrigation valves was \$3,100.88. This order was duplicated in June 1978, and cost \$3,877.80. The latest inception to date computerized report dated September 30, 1978 is attached. This report is generated by the University of Arizona computerized accounting system, which is called CORE. This report can be used to determine overall expenditures from inception of contract through September 30, 1978.

REPORT NO. GA3204
 ACCOUNT NO: 867381
 ACCOUNTANT: J COOK & C PRYBYLA
 NEXT LEVEL: C50G11

UNIVERSITY OF ARIZONA
 ITD RESPONSIBILITY REPORT
 FOR MONTH ENDING 09-30-78
 YEMEN SUPPORT 5010410120

PAGE NO 1
 RUN DATE 10-05-78

W G MATLOCK
 036AGI

AGENCY: MDOS GRANT NUMBER: AID NE C 1304

AWARD AMOUNT: 000000000 TERMINATION DATE: 03/30/79

***** CURRENT MONTH *****
 BUDGET CHANGES EXPENDITURES ENCUMBRANCES

***** INCEPTION TO DATE *****
 BUDGET EXPENDED ENCUMBERED AVAILABLE

***** CURRENT MONTH *****			***** INCEPTION TO DATE *****			
BUDGET CHANGES	EXPENDITURES	ENCUMBRANCES	BUDGET	EXPENDED	ENCUMBERED	AVAILABLE
104,062.00-			PERSONAL SERVICES & ERE	300,499		
	7,687.14	1,353.72	SALARIES			
	-----	-----	SALARIES	151,471	31,427	182,898-
	7,687.14	1,353.72	CLASS TOTAL	151,471	31,427	
	-----	-----		-----	-----	
	436.00		WAGES			
	-----		REGULAR WAGES	12,884	13,909	26,793-
	436.00		CLASS TOTAL	12,884	13,909	
	-----			-----	-----	
			ADJ TO SAL &/OR WAGES			
			ADJ TO SAL &/OR WAGES	318		318-
			ADJUSTMENTS TO ERE	40		40-
			CLASS TOTAL	358		
				-----	-----	
	59.52		EMPLOYEE RELATED EXPEND			
			WORKMEN'S COMP INSURANCE	452		452-
	26.38		UNEMPLOYMENT INSURANCE	197		197-
	339.62		FICA TAX	6,117		6,117-
	114.60		RETIREMENT CONTRIBUTION	7,784		7,784-
	-----		GROUP HEALTH INSUR PREM	2,459		2,459-
	540.12		CLASS TOTAL	17,009		
	-----			-----	-----	
104,062.00-	8,663.26	1,353.72	CATEGORY TOTAL	300,499	45,336	73,441
-----	-----	-----		-----	-----	-----
56,573.00			OPERATING EXPENDITURES	97,700		
	686.44		OUTSIDE AND PROFESSIONAL			
	-----		OTHER OUTSIDE + PROFESS	687		687-
			SUSPENSE ACCOUNT	331		331-
	686.44		CLASS TOTAL	1,018		
	-----			-----	-----	

REPORT NO. GA3204
 ACCOUNT NO: 867381
 ACCOUNTANT: J COOK & C PRYBYLA
 NEXT LEVEL: 050011

UNIVERSITY OF ARIZONA
 ITD RESPONSIBILITY REPORT
 FOR MONTH ENDING 09-30-78
 YEMEN SUPPORT 5010410120

PAGE NO 2
 RUN DATE 10-09-78

AGENCY: MDDS

GRANT NUMBER: AID NE C 1304

AWARD AMOUNT: 000000000

TERMINATION DATE: 03/30/79

W G MATLOCK
 036AGI

***** CURRENT MONTH *****
 BUDGET CHANGES EXPENDITURES ENCUMBRANCES

***** INCEPTION TO DATE *****
 BUDGET EXPENDED ENCUMBERED AVAILABLE

		OFFICE SUPP. AND POSTAGE		
		OFFICE SUPPLIES	283	283-
17.73		PRINTED FORMS	140	140-
8.27		STAMPS STMPD ENV & CARDS	1,148	1,148-
		POSTAGE- OTHER	8	8-
26.00		CLASS TOTAL	1,579	
		OPERATING SUPPLIES & SVC		
5,763.47	1,500.65	RESEARCH SUPPLIES	19,405	24,811-
		EDUCATIONAL SUP - OTHER	144	144-
		ANALYSIS SHOPS	10	10-
		SUSPENSE ACCOUNT	95	95-
5,763.47	1,500.65	CLASS TOTAL	19,654	5,406
		MAINTENANCE AND REPAIRS		
4.41		OTHER EQUIPMENT	6	6-
		VEHICLE REPAIRS	5	5-
		REPAIRS + MAINT - OTHER	37	37-
4.41		CLASS TOTAL	48	
		TELEPHONE		
		TEL EQUIPMENT CHARGES	96	96-
		LONG DISTANCE CHARGES	1,460	1,460-
197.59		WIDE AREA TEL SERVICE	62	62-
		TELEGRAPH	370	370-
		SUSPENSE ACCOUNT	38	38-
197.59		CLASS TOTAL	2,026	

REPORT NO. GA3204
 ACCOUNT NO: 867381
 ACCOUNTANT: J COOK & C PRYBYLA
 NEXT LEVEL: 050011

UNIVERSITY OF ARIZONA
 ITD RESPONSIBILITY REPORT
 FOR MONTH ENDING 09-30-78
 YEMEN SUPPORT 5010410120

PAGE NO 3
 RUN DATE 10-05-78

AGENCY: MOOS GRANT NUMBER: AID NE C 1304

AWARD AMOUNT: 000000000 W G MATLOCK
 036AGI TERMINATION DATE: 03/30/79

***** CURRENT MONTH *****
 BUDGET CHANGES EXPENDITURES ENCUMBRANCES
 ***** INCEPTION TO DATE *****
 BUDGET EXPENDED ENCUMBERED AVAILABLE

11.50	PRINTING AND PHOTOGRAPHY PRINTING - OTHER	130	130-
11.50	CLASS TOTAL	130	

	RENT LEASE + RENTAL - OTHER	696	696-
	CLASS TOTAL	696	

92.50	MISC AND OTHER COSTS PHOTOCOPY SVC CENTER CHG	9	9-
	FREIGHT OUT	13,227	14,192-
	TECH AND REFERENCE BOOKS	50	50-
	OTHER EXPENSES	1,978	4,003-
	SUSPENSE ACCOUNT	11,141	11,141-
92.50	CLASS TOTAL	26,405	2,950

56,573.00	6,781.91	1,500.65	CATEGORY TOTAL	97,700	51,556	8,396	37,748
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59,679.00- TRAVEL 44,521

66.75	IN-STATE TRAVEL IN-ST MILGE+VEH ST VEH	217	217-
	IN-STATE SUBSISTENCE	28	28-
	IN-ST REG FEE-CONFERENCE	10	10-
	IN-ST OTHER TRAVEL EXP	64	64-
66.75	CLASS TOTAL	319	

	OUT-STATE TRAVL-DOMESTIC OUT/DOH SUBSISTENCE	8,722	8,722-
	OUT/DOH PUBLIC TRANS	2,038	2,038-

REPORT NO. GA3204
ACCOUNT NO: 867381
ACCOUNTANT: J COOK & C PRYBYLA
NEXT LEVEL: 050011

UNIVERSITY OF ARIZONA
ITD RESPONSIBILITY REPORT
FOR MONTH ENDING 09-30-78
YEMEN SUPPDRY 5010410120

PAGE NO 4
RUN DATE 10-05-78

AGENCY: MDOS GRANT NUMBER: AID NE C 1304

AWARD AMOUNT: 000000000 W. G. MATLOCK
036AGI TERMINATION DATE: 03/30/79

**** CURRENT MONTH ****
BUDGET CHANGES EXPENDITURES ENCUMBRANCES

**** INCEPTION TO DATE ****
BUDGET EXPENDED ENCUMBERED AVAILABLE

		BUDGET	EXPENDED	ENCUMBERED	AVAILABLE
	OUT/ODM OTHER TRAVEL EXP		3,442		3,442-
	CLASS TOTAL		14,202		
	OUT-STATE TRAVEL-FOREIGN				
	OUT/FRN MILGE+VEH PRIVAT		78		78-
124.00	OUT/FOREIGN SUBSISTENCE		1,663	162	1,825-
1,941.65	OUT/FOREIGN PUBLIC TRANS		13,728	3,067	16,795-
	OUT/FOREIGN REG FEE-CONF		60		60-
	OUT/FOREIGN OTHER TRAVEL		618		618-
	CLASS TOTAL		16,147	3,229	
59,679.00-	CATEGORY TOTAL	44,521	30,668	3,229	10,624

		BUDGET	EXPENDED	ENCUMBERED	AVAILABLE
	CAPITAL		55,000		
	EQUIPMENT				
	RESEARCH, TEST, OTHER TECH		12,022	5,882	17,904-
85.10	INVENTORY EXEMPT		803		803-
4,519.42	EQUIP - OTHER TITLE		9,056		9,056-
	CLASS TOTAL		21,881	5,882	
4,604.52	CATEGORY TOTAL	55,000	21,881	5,882	27,237

		BUDGET	EXPENDED	ENCUMBERED	AVAILABLE
	INTERNAL CHGS AND ALLOCA				
	DIRECT INTERNAL CHARGES				
	COST OF EDUC ALLOWANCE		2,407		2,407-
	CLASS TOTAL		2,407		2,407-

J COOK & C PRYBYLA867381

01220124 6120

REPORT NO. GA3204
ACCOUNT NO: 867381
ACCOUNTANT: J COOK & C PRYBYLA
NEXT LEVEL: 090011

UNIVERSITY OF ARIZONA
ITD RESPONSIBILITY REPORT
FOR MONTH ENDING 09-30-78
YEMEN SUPPORT 5010410120

PAGE NO 5
RUN DATE 10-05-78

AGENCY: MDOS

GRANT NUMBER: AID NE C 1304

AWARD AMOUNT: 000000000
TERMINATION DATE: 03/30/79
W G MATLOCK
036AGI

***** CURRENT MONTH *****
BUDGET CHANGES EXPENDITURES ENCUMBRANCES

***** INCEPTION TO DATE *****
BUDGET EXPENDED ENCUMBERED AVAILABLE

INDIRECT COSTS
IND COSTS - APPLIED

CLASS TOTAL

CATEGORY TOTAL

ACCOUNT TOTAL

BUDGET CHANGES	EXPENDITURES	ENCUMBRANCES	BUDGET	EXPENDED	ENCUMBERED	AVAILABLE
13,697.00-	2,834.91		92,280	42,615	49,665	
13,697.00-	2,834.91		92,280	42,615	49,665	
13,697.00-	2,834.91		92,280	45,022	49,665	2,407-
120,865.00-	25,517.00	2,854.37	590,000	330,849	112,508	146,643

Personnel Employed Under the Contract

Dr. Robert L. Voigt, Chief-of-Party in Yemen, full time.

Dr. Donald M. Stewart, Agronomist in Yemen, full time.

Dr. Robert Phillip Upchurch, Head, Department of Plant Sciences, spent 15% of his time as Campus Technical Director for the Contractor.

Dr. William Gerald Matlock, Coordinator for International Agriculture Programs, spent 7% of his time through June 30, 1978 performing duties as Campus Coordinator.

Dr. Melvin H. Schonhorst, Department of Plant Sciences, spent 30% of his time as overall coordinator for on campus technical support.

Mr. Dale E. McDonald, Department of Plant Sciences, spent 80% of his time performing duties as a Research Assistant.

Ms. Anna M. Fisk, Department of Plant Sciences, spent 35% of her time performing secretarial duties associated with the contract.

Mr. Orrin F. French, served on a short-term basis as an Irrigation Specialist in Yemen from April 12, 1978 to May 17, 1978.

Foreign Country National Training

As previously stated, there are no provisions for participant training in this contract. Our previous semi-annual report described the planning actions which had been taken by the University of Arizona to provide future training for Mr. Yahya Ismail Shuga. This section will describe the action taken to enhance Mr. Shuga's training and well being after his arrival.

Mr. Shuga arrived Tucson International Airport March 30, 1978 on Trans-World Airways flight 319 at 11:27 pm. He was met by Mr. Dale McDonald, Department of Plant Sciences, Ms. Betsy Adams, former Yemen acquaintance of Mr. Shuga, and Mr. Shamiri Ayash, a Yemen student enrolled at the University of Arizona. Mr. Shuga checked into the International Plaza Hotel for interim quarters. This hotel is located immediately adjacent to the campus.

The following day he was escorted through various University offices to complete his enrollment in the Center for English as a Second Language (CESL). Housing and food cost were reviewed, books obtained and Ms. Juanita Bland, his Agency for International Development (AID) advisor in Washington contacted. She was updated on Mr. Shuga's arrival and current status. Copies of CESL brochures and class schedules were forwarded to AID per her request.

On April 3, 1978, Mr. Shuga was escorted to CESL where he undertook various examinations on grammar, composition and English. In the course of this day, Ms. Bland was contacted via phone to obtain the procedure AID would use to provide payment for tuition and Mr. Shuga's monthly living expenses. His Project Implementation Order/Participant stated, "The \$18,500 subobligated by this document provides funding for language training, OJT and one year academic study". Mr. Shuga requested clarification on how these funds were to be used. We were advised: (1) A Task Order would soon be forwarded to the University which explained the billing procedure for his tuition, campus health service and lab fees. (2) He would receive a monthly maintenance allowance of \$412 for living expenses, ie., quarters, food, clothing, etc. (3) He would receive \$240 per year for books. (4) His monthly maintenance checks would be forwarded from AID/Washington to his address once housing was obtained.

He subsequently moved into a small one-bedroom apartment located close to the University. The obvious advantages of these quarters included: capability to prepare his own meals; no transportation cost would be required as he could walk to all required functions; privacy to study. There were waiting lists to obtain quarters in the majority of the apartments checked, dorms were full, and he was fortunate to obtain housing close to the University. His apartment was not lavish by any means.

By April 10, 1978 he was well settled in the academic routine and very conscientiously completing CESL homework and studies. He had received an orientation package from AID which confirmed previous telephone

conversations reference his monthly maintenance allowance. He expressed concern in that he thought \$500 per month would be received when he departed Yemen and did not believe he could get by on the \$412. Ms. Bland was called on the situation, plus Mr. Shuga forwarded a letter to her explaining his monthly living expenses. Mr. Shuga was advised via phone and later in writing that \$412/month was what had been allotted to all academic AID participants attending the University of Arizona by The Institute of International Education. It was further explained that \$425/month is the maximum any participant receives, but with proper documentation this amount could be authorized.

He continued the CESL program with frequent personal contact being maintained with the Department of Plant Sciences and the Office of International Agriculture Programs.

The first session of CESL was completed by Mr. Shuga in late May. A special program was arranged for him during the break of summer classes. Attachment one portrays the events which occurred in this special program.

He continued in the summer CESL program with a class start date of June 12, 1978. Frequent contact was maintained with him. He continued to study and worked very hard on the CESL program.

The Department of Plant Sciences was contacted July 28, 1978 by Mr. Eugene C. Doll, United States Department of Agriculture, International Training Office, Washington D.C. He stated he was responsible for Mr. Shuga's program and the Bachelor of Science program as outlined in the PIOP was approved. Subsequent contact in August revealed that the responsibility for Mr. Shuga's program had changed back to Ms. Bland and Mr. William Parker of the Agency for International Development, Programs Division, Office of International Training. This office was contacted and Mr. Parker advised us he was Mr. Shuga's Development Training Specialist. This office continued to give excellent support and response on questions concerning Mr. Shuga.

August 6, 1978 also brought the news via telegram that Mr. Shuga had a son born 4 or 5 August and that mother and son were both fine. Dr. Upchurch, Campus Technical Director and Head, Department of Plant Sciences, personally delivered this information to Mr. Shuga.

The second CESL session was completed August 5, 1978 by Mr. Shuga. The results of his CESL training and desires of Mr. Shuga concerning his future are included as attachment two.

During the break between classes Mr. Shuga attempted to find a cheaper apartment within walking distance of the University. Department of Plant Sciences personnel helped him in this endeavor. Local newspapers and University housing sources were scanned and likely housing plotted on a city map to give Mr. Shuga an idea of location prior to looking at the

housing. Two full days were then spent looking at selected apartments. The end result was: he felt he was better off remaining in his present apartment, even though rent was going to increase and the landlord wanted a new 9-month lease with first and last months rent paid in advance. Time was spent with Mr. Carl Schmalzel, Dr. Voigt's assistant at the University of Arizona, observing sorghum plots in the local area and at the Marana experiment station. Equipment in the Marana farm machinery shed was visited. Herbicide was purchased to be handcarried to Yemen by Dr. Upchurch. Mr. Shuga also met with Dr. Upchurch and Dr. Schonhorst to discuss his status and future training. He had a photograph taken, which Dr. Upchurch delivered to Mr. Shuga's wife on his Yemen trip during the last of August.

His third CESL session started August 26, 1978. Attachment three explains his feelings about expenses and training as of August 29, 1978. Upon Dr. Upchurch's return from Yemen, he met with Mr. Shuga, Dr. Schonhorst and Mr. McDonald concerning his trip and presented Mr. Shuga with letters which had been handcarried. Mr. Shuga still desired to visit Yemen and to obtain specialized agricultural training in lieu of obtaining a degree at the University of Arizona. Options which could be considered would take AID approval. These options were explained to Mr. Shuga: (1) Design a 2-year specialized program for him at the University of Arizona, (2) Amend present contract to include provisions to expend resources to accomplish option one, (3) Obtain approval for Mr. Shuga's family to be moved to Tucson (4) Obtain approval for Mr. Shuga to return to Yemen on a yearly basis in conjunction with work on present sorghum/millet contract.

Attachment four expresses his desires after he considered his situation. The University received telephonic approval on September 15, 1978 for Mr. Shuga to return to Yemen approximately November 1, 1978.



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
DEPARTMENT OF PLANT SCIENCES

June 12, 1978

MEMO FOR THE RECORD

SUBJECT: Mr. Yahya Shuga's Special Program

A special program was arranged for Mr. Shuga by the Department of Plant Sciences to provide him with on job training between summer Center for English as a Second Language courses. The program was designed to familiarize him with research objectives and procedures under various research projects conducted by the University of Arizona. The program was arranged by myself and approved by Dr. Melvin H. Schonhorst and Dr. R. Phillip Upchurch. A University vehicle was used for all travel. The program was divided into local and off campus activities.

Local Campus Program

Mr. Shuga was briefed on the role of the research assistant supporting the Yemen National Sorghum and Millet Crop Improvement Program. All aspects of this function were covered. Particular emphasis was placed on the correct ordering and shipment of supplies, correspondence requirements and location of data used to obtain research information. Mr. Shuga spent approximately three full days with Mr. Dale McDonald observing daily activities. These activities included picking up of supplies.

Mr. Shuga sat in on the debriefing of Mr. Orrin F. French, who had recently returned from Yemen as a irrigation specialist. Three hours were spent discussing the trip of Mr. French and Yemen project activities.

The Agriculture section of the library was visited. Two hours were spent randomly looking at the material available. The importance of asking a librarian for assistance in locating reference material was stressed. Agricultural publications from different countries of the world were pointed out.

Visited local equipment rental stores to observe equipment and machinery that is available for rent. As a result of Mr. French's Yemen visit, the importance of ditch digging equipment relative to installing irrigation systems was discussed. Various sizes of ditch diggers were observed. Larger ditch digging equipment was also observed at a city street construction site.

Furrow openers have been shipped to Yemen. A farm implement dealership was visited so Mr. Shuga could see the furrow openers that have been shipped to his country. Various size tractors and farm machinery were also observed.

Attachment 1

A very large nursery was visited. The numbers of different plants available for sale were observed. They ranged from small flowers to large trees.

The following University of Arizona farms were visited: Campbell Avenue; River Road and Casa Grande highway (both sides). Mr. Shuga observed all the University activity which was ongoing at these farms. Particular attention was paid to the sorghum plots at the Casa Grande Highway farm. Mr. Carl Schmalzel briefed Mr. Shuga on his activities as Dr. Voigt's assistant. Mr. Shuga showed high interest in the grapes grown at the Campbell Avenue farm. Beef, poultry and dairy cattle operations were observed as well as present greenhouse functions. New greenhouse construction was also seen, as was the garden center. Particular attention was paid to the method of irrigation used on these farms. All the machinery available on the farms was observed. Seed house activities were explained. Nelson's livestock auction was visited. This auction has numerous cattle and horses for sale on auction days. The complete auction facilities were toured.

Dr. R. Phillip Upchurch, Head, Department of Plant Sciences, and Mr. Shuga had a working lunch together near the end of the summer break. Aspects of Mr. Shuga's participation as an Agency for International Development (AID) sponsored student and University research projects were discussed.

Off Campus Program

Dr. Fred Turner, Jr., Superintendent, Safford Experiment Farm, was contacted and a visit to his farm was completed on May 30, 1978. Dr. Turner gave Mr. Shuga a thorough briefing and guided tour of the Safford Farm. Highlights included: weather station equipment; grape experiment; machinery used; wheat, sorghum, cotton, alfalfa, safflower and pecan plots; effect of one acid irrigation water treatment for increased stands; irrigation pumps/system used on the farm. Dr. Turner visited Yemen as a short term soils fertility specialist in January of 1978 and had met Mr. Shuga earlier this year. The tour was complete with picture taking and free pecans from Dr. Turner.

The Marana Farm was visited on May 31, 1978. The water pumps used and irrigation system in effect was observed, as was the farm machinery. Cotton growing is a prime crop of this area and the machinery used for harvest was seen. The sorghum plots were also seen. Mr. John Hoffman and Dwight Palmer of Evergreen Airlines, Marana Air Park, gave Mr. Shuga a guided tour of the aircraft and equipment used for application of aerial spray and dust in agricultural settings. It was interesting to note that this airline had pictures which portrayed their helicopter involvement in an Agency for International Development spray project in Pakistan.

June 1, 1978 Mr. Shuga was shown University activity in the Phoenix, Arizona area. The United States Water Conservation Laboratory, Cotton Research Center and Mesa farm were visited. Mr. Leonard Erie, Dale Bucks and Orrin French of the Water Laboratory gave an excellent briefing and tour of the facility. Different irrigation system components and a briefing of their applicability were given. Mock ups of systems made the tour more meaningful. Particular attention was paid to the environmental lab, rice experiment and computerized data collection of the various projects. Dale Bucks and Orrin French had worked the previous day and all night on a pump breakdown at the Mesa Farm, so the remainder of the day, Mr. Shuga and I spent without a guide. Mr. Shuga signed in as a visitor to the laboratory, (the first from Yemen) and received a current list of laboratory publications for future reference. Dale Bucks had visited Yemen as an irrigation specialist in 1977, so Mr. Shuga knew him also. The Cotton Research Center activity was observed from a vehicle drive-through due to time constraints. At the Mesa farm attention was given to the experiments which Mr. Bucks and French had briefed Mr. Shuga on earlier in the day. The irrigation system for cantalope, potatoes and tomatoes was observed. Farm equipment and crops grown were also seen. Various irrigation systems in actual use on the farm were observed. On the way back from Phoenix, we stopped at the Marana farm and discussed the sorghum plots there with Mr. Carl Schmalzel.

Summary: Mr. Shuga was shown various research projects and facilities during the summer break. The University facilities visited included meeting someone he had known prior to attending the University of Arizona or had met after his arrival. The special program met it's planned objective.


Dale E. McDonald
Department of Plant Sciences

cc: Dr. Schonhorst/Dr. Upchurch
Dr. Matlock
Dr. Voigt
Ms. Juanita Bland
Mr. Yahya Shuga'a



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
DEPARTMENT OF PLANT SCIENCES

August 8, 1978

Mr. William Parker
Programs Operations, Program Division
Office of International Training
Agency for International Development
Washington, D.C. 20523

Dear Mr. Parker:

This letter summarizes our telephone conversation of today concerning the topics listed below concerning the status of Mr. Yahya Ismail Shuga.

a. Project Implementation Order/Participant:(P10P) Present P10P, block 19, states Mr. Shuga will attend the Center for English as a Second Language (CESL) for two sessions with an on the job training program between sessions. Mr. Shuga has completed the above mentioned courses and training. P10P further states in block 19 that in August, 1978, he will begin undergraduate degree training in agriculture at the University of Arizona. Mr. Shuga received the results of his Comprehensive English Language test on August 7, 1978. This test was administered at the conclusion of his second CESL course. Test results were 96 out of a possible 300 points. CESL authorities advise a score of 180 to 200 should be obtained prior to taking the Test of English Foreign Language (TOEFL). The TOEFL score must be 450 to 500 before undergraduate degree training can commence. At this point, we can not follow the P10P and start his undergraduate training. Based on your telephone concurrence of today, we are taking steps to enroll him in the fall 1978 CESL for 16 more weeks, starting August 26 thru December 20, 1978. Request written approval to deviate from the P10P.

b. Future training. When his fall 1978 CESL sessions are complete, if his TOEFL score will not permit undergraduate level entry into agriculture the question will arise: What is the best course of action for Mr. Shuga to obtain agriculture training? Your suggestion to give him a special training or a technical training program at the University of Arizona certainly has merit. I have discussed this with Mr. Shuga today. His feelings are that this type of program is what he needs. He would prefer to receive training in practical agriculture operations, i.e. machinery, cotton harvest, vegetables, etc. He feels a 1 or 2 year training period, coupled with CESL training is adequate as an alternative to obtaining a Bachelor's Degree in agriculture. To administer such a program will require detailed planning and staff action to finalize. At the present time, there is no contract between A.I.D. and the University of Arizona to permit us to expend funds to administer such a program. These items are only mentioned for consideration, if alternate training becomes a reality.

c. Inadequate monthly maintenance allowance. As you know, I have contacted Ms. Bland via phone and in writing on this subject as early as April 1978. He receives \$412/month to be used essentially for living expenses: food, housing, clothing, etc. As an attachment to this letter, you will find a copy of a monthly itemized list of Mr. Shuga's expenses. The list has been prepared by his advisor.

Attachment 2.

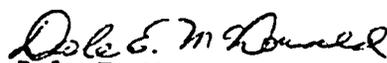
d. Home leave to participate in the Sorghum/Millet Project. Mr. Shuga has requested that he be permitted to return to Yemen for 2-3 months each summer to continue in the development of this project. He has worked on the project 5 years and most certainly could benefit the project by his presence. For example, if he were to return the end of May, he would be of assistance during the planting season. You suggested this question be directed to Dr. Voigt and that possibly the present A.I.D. 1304 contract be amended to include such a provision. I am sending a copy of this letter to applicable personnel to obtain their views on the subject.

e. Tuition Billing Address: I discussed with Ms. Bland of your office the fact that CESL still does not have an address to bill for Mr. Shuga's tuition. She researched this problem and notified me the information had been sent to Eydie Henderson, Accounts Receivable, SUPO, Box 21042, University of Arizona, Tucson, Ariz. 85720. The University was to sign the task order and return to the A.I.D. contract office. The next step included the A.I.D. contract office forwarding forms 1034 to the University for billing purposes. I contacted the accounts receivable office and no record of Mr. Shuga was on file, nor did a Ms. Henderson work there. Request the task package procedure be reinitiated. Send it to:

Mrs. Ann Brown
Accounts Receivable, SUPO
Box 21042
University of Arizona
Tucson, AZ 85720

I have given Mr. Shuga your special greeting per request.

Sincerely,


Dale E. McDonald
Department of Plant Sciences

DEM/aj

cc: Dr. Matlock
Dr. Voigt
Mr. Wilson
Dr. Upchurch
Ann Brown
CESL Billing



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
DEPARTMENT OF PLANT SCIENCES

August 8, 1978

Mrs. Juanita Bland
Program Operations Assistant
Program Division
Office of International Training
Agency for International Development
Washington, D.C. 20523

Dear Mrs. Bland:

This letter provides justification for Mr. Yahya Ismail Shuga to receive an increase in his monthly allowance of \$412 as an academic A.I.D. participant. Request this justification be submitted to the Institute of International Education Committee for approval and we be promptly advised of results.

<u>Item</u>	<u>Average Cost</u>
1 Bedroom apartment	\$210
Utilities	30
Food	150
Clothes	20
Miscellaneous	20
Total	\$430

The apartment he is staying in is not lavish by any stretch of the imagination. It is a small 1 bedroom with a kitchen for cooking the majority of his own meals. Mr. Shuga is 33 years of age, a family man with his wife and 3 children residing in Yemen. Under these circumstances one would not expect him to live in a dormitory with another younger student. The apartment is small but located close to the University so no transportation costs are required. Dormitories are full anyway, so off campus living is required. The following quote is extracted from the Center of English as a Second Language brochure: "off-campus housing is difficult to find, and a two bedroom apartment rents for from \$300 to \$350 per month". His utilities are averaging \$30 per month, but these rates are scheduled to increase throughout Tucson shortly. The food cost is comparable to what it would cost to purchase a meal ticket and eat 3 meals a day, 7 days a week in the University Student Union. The miscellaneous items include stamps, envelopes, pencil, notebooks, etc. to exist in the University environment. The \$20/month for clothes is extremely conservative considering today's cost of clothing. The money for this item has not been available anyway on the present \$412 allowance. Mr. Shuga was told by an unofficial Yemini source he would receive \$500/month before he agreed to come to the United States. As you say, he was misled on this figure. The fact remains the \$500 per month figure is a realistic figure in view of today's constantly rising prices. Disregarding inflation does not alter the fact that it is happening. I have asked Mr. Dale McDonald of this department to help Mr. Shuga locate an apartment at a lower cost per month. After 2 full days another suitable apartment at a lower cost was not located. Rents on apartments are increasing and Mr. Shuga's has just

risen to \$210/month. Mr. Shuga has attended all classes since beginning CESL, he studies his assignments and puts his best effort forward. There is absolutely no money left over for any extras. The only way he can exist now is to cut back on food and clothes.

Thank you for your time and consideration.

Sincerely,



Melvin H. Schonhorst
Professor, Department of
Plant Sciences

MHS/aj

cc: Dr. Matlock
Dr. Voigt
Tom Wilson
Dr. Upchurch



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
DEPARTMENT OF PLANT SCIENCES

August 29, 1978

MEMO FOR RECORD

SUBJECT: Mr. Shuga's Expenses

FROM: Dale McDonald *Dale McDonald*

I discussed today this subject with Mr. Shuga. He has just received his monthly AID check for \$412. His apartment rent is due (first and last month on a 9-month lease). Rent is \$210/month so he owes \$420 now. If he pays it, he will not have enough money to pay for electricity, food and CESL books for next month. We had not received any word from AID/W on our request for an increase in his monthly check. I discussed this situation with Ms. Jorgensen. She did offer the following suggestions: (1) Double up with another student to reduce housing costs (He feels living with another Arab would hinder his learning of English and as a married man, deserves some privacy). (2) Rent a cheaper apartment (We have spent a considerable amount of time looking and he believes he has the best apartment now, considering closeness to the University, markets and restaurants. A cheaper apartment farther away would increase transportation cost which now is zero). (3) Obtain a loan (Problem is the loan would have to be repaid and he does not know where the money to repay would come from). Ms. Jorgensen advised she had not received any other complaints by AID grant students on lack of funds. I called Ms. Bland/Mr. Parker, AID/W and discussed the situation with her. I inquired about Mr. Shuga's request for an increase in his monthly AID allotment. She has not received an answer on this request, but will try to determine status and notify me. I also asked if there were any provisions so Mr. Shuga could obtain additional money now to cover the additional \$210 for last month's rent on his lease. She advised that as long as he was receiving his monthly check, no additional funds could be authorized.

I spent time with Mr. Shuga in the afternoon discussing our morning conversation and my phone calls. The uncertainty of Mr. Shuga's status is having a negative effect on his desire to obtain a University education. For example: he has taken a reduced standard of living by coming here; he does not feel AID funds are adequate to live in Tucson (As a family man, father of 3 children, and experienced in his country's Ministry of Agriculture, he is not the young, normal student with only University responsibilities and he feels he should not be forced to live like one.); he does not know when he will be permitted to return to Yemen for a visit or to work on the project there; he is aware some other Yemen students here receive considerably more educational allowances than AID provides; he has no idea when he can pass CESL and he came here for Agricultural training, not so much CESL; his Yemen salary will be cut in half by the Ministry of Agriculture in Yemen if he remains here over 4 months (If he returns to Yemen, he will remain on full salary); he can not ask his family to send money here to support him. Since his status is a subject of discussion for Dr. Upchurch

Attachment 3

on his visit to Yemen, Mr. Shuga desires to meet with him upon his return.

Summary: Mr. Shuga is very unhappy and is beginning to think coming to the University was a mistake.

DEM:ew

cc: Dr. Upchurch
Dr. Schonhorst
Dr. Voigt
Dr. Matlock
Mr. Shuga



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE

INTERNATIONAL PROGRAMS
214 ALUMNI BUILDING

September 7, 1978

(602) 884 1717

Mr. William Parker
Programs Operation, Programs Division
Office of International Training
Agency for International Development
Washington, D.C. 20523

Dear Mr. Parker:

This letter summarizes the feelings of Mr. Yahya Shuga concerning his undergraduate training as outlined in Project Implementation Order/Participants 279-030-1-80011. Our recommendations on the matter are also provided.

Previous correspondence from the University of Arizona, College of Agriculture, Department of Plant Sciences has expressed his concern for what he considers to be an insufficient monthly maintenance allowance. He advises us the Yemen Ministry of Agriculture reduced his Yemen salary by fifty percent after he was here four months. Financially, there is no way he can provide for his family with three children on his reduced Yemen salary, while he is having financial problems here. If he were home working his full salary would be restored.

Mr. Shuga certainly appreciates the training received thus far, but now believes the following course of action is best for all concerned:

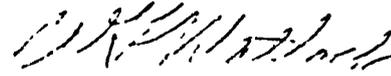
1. He will return to Yemen to arrive Sana on November 1, 1978.
2. Renegotiate future training after he arrives in Yemen.
3. Attend a two-year specialized agriculture training program at a University in Egypt. This program would include English training, but primary emphasis would be on study/actual field work with various crops to include sorghum, millet, cotton, vegetables and machinery operations. He advises such programs are already in being in Egypt. His attendance there would also enhance the Sana projects as he could continue their support during the summer months.

We recommend your immediate concurrence with Mr. Shuga's points one and two listed above. Reference his two-year special agriculture training program. We are willing to negotiate such a program for Mr. Shuga. The program would include crop science and related research activities with actual sponsored field work under the supervision of applicable University of Arizona Professors and Staff members. Such a program would encompass conventional crop production aspects and include appropriate control procedures for pests, diseases and insects.

Attachment 4

Mr. Shuga has requested that he be authorized to travel from Tucson to Sana by the most direct route. This office can make his travel arrangements, if you desire. He will require advance travel funds.

Sincerely,



W. Gerald Matlock
Coordinator, Agriculture
International Programs

WGM/aj

cc: Dr. Voigt
Dr. Upchurch
Mr. Stickney
Mr. Young
Mr. Shuga
Mr. Campbell
Mr. Wilson

Progress Report of Visit to
U. S. Agency for International Development
Sorghum/Millet Project in the Yemen Arab Republic

Report prepared by:

Gerrin F. French
Agricultural Research Technician
U. S. Water Conservation Laboratory
4331 E. Broadway Rd.
Phoenix, Arizona 85040

Dates of Visit: April 12, 1978 to May 17, 1978

Attachment five

Reason for Visit: Dr. R. L. Voigt, Chief-of-Party in Yemen requested a soils and irrigation specialist to aid in preparing the fields at Bir al-Choum for planting of sorghum for the 1978 growing season and the pre-irrigation of these same fields.

Observations and Procedures: Upon my arrival to Sana'a it was determined that the furrowers sent from the University of Arizona at Tucson had not arrived and some other arrangements for furrowing out would have to be made. In the company of Dr. Voigt we visited with Dr. M. El-Lakhany at FAO in Taiz and were able to engage the use of a furrower from that facility.

On return to Sana'a I made some preliminary soil tests with an Oakfield probe and shovel. The fields in question "A" and "B," had been plowed and chiseled to a depth of approximately 50 cm on 48 inch (120 cm) centers in both directions. Probing showed that a barrier still existed at 20 cm between chisel marks and that the shattering effect of the chisel was a maximum of 15 cm on either side of the chisel mark. It was recommended that additional chiseling on 24 inch (60 cm) centers be accomplished in the direction of irrigation only before furrowing out. After the additional chiseling was performed the fields were disc harrowed to break up numerous clods and to level out the chisel marks.

After some difficulty with weak shanks on the furrower the two fields were furrowed out. The furrowers were set on 70 cm centers and the wheels on the tractor had to be set into its narrowest width to accommodate the furrower. The furrowers were approximately 20 cm in depth which is ideal for this width of furrow.

After M. S. Acharya, Agricultural Engineer, IVS, had completed the pump installation at the new pump site, a 10 cm PVC plastic line was laid from the pump to field "A." On recommendation of Dr. Voigt, fields "A" and "B" were divided into quarters with slight modifications for ease of planting. The quarters should be irrigated one at a time to accommodate continuous planting dates. Quarterly divisions of fields "A" and "B" are shown in figures 1 and 2 respectively.

On May 8, 1978, irrigation was commenced on the west quarter of field "A." Both the new and the old pumps were used and the furrows were irrigated from both directions. The flow from the two pumps was about 150 gals./minute. The quarter was irrigated for three continuous days for a total of about 16 hours. This is equivalent to 7.8 inches (20 cm) of irrigation water per acre.

Irrigation on the second quarter was started on May 14, 1978. Each quarter should be irrigated in the same manner as the first or until approximately 8 inches (20 cm) is applied.

Irrigations should be in charge of Yahya Abdoul with technical advice from M. S. Acharya. Planting should be done just above the water line on the east side of the furrow regardless of the level of the furrow. Then future

irrigations will not get above the seed row. Moisture from the pre-plant irrigation should be adequate for at least one month after germination. Visual plant symptoms can be used as an aid to determine when an irrigation is needed along with checking the moisture in the soil.

Dr. Voigt should determine how fast the quarters should be irrigated based on how fast he can plant them.

On April 19, 1978, in the accompaniment of Jeff Lee visited the Bir al-Shaif farm. Jeff had started some cuttings of grapes, deciduous fruit, and nuts. He had planted these cuttings in the opposite direction recommended by Bucks. (1) This necessitates redesign of the irrigation system on Field I, which is shown in figure 3.

On May 14, 1978, with Jeff and Charles Uphaus again visited Bir al-Shaif to discuss some problems with the Director of Horticulture. The existing line from the pump to the cistern has developed leaks. It is aluminum pipe and is probably effected by salt accumulations in the soil. My recommendation is to replace it with 3" PVC plastic pipe and bury it at 60 cms.

The Ministry is also concerned with the wastage of the exhaust water from the pump. My recommendation here is to build a tank to collect this water and that Jeff make plans to build his potting shed adjacent to the tank to utilize this water. A spigot should be installed in the tank so that water could be drawn off for other purposes.

Future Recommendations for Bir al-Shaif: After harvesting of the 1978 sorghum crop on fields "A" and "B" is completed the stalks should be shredded and turned under with a light disking. Barley should be planted at double the normal planting rate along with 50 lbs. of ammonium nitrate added to the soil to hasten stalk decay. The fields should again be divided in quarters. Border dikes should be run up along the dividing lines and the barley irrigated up with about 6 inches (15 cm) of water. The 6 inches of water should be sufficient to carry the barley through the winter period along with seasonal rainfall. A light irrigation in February might give some additional growth depending on temperatures and rainfall.

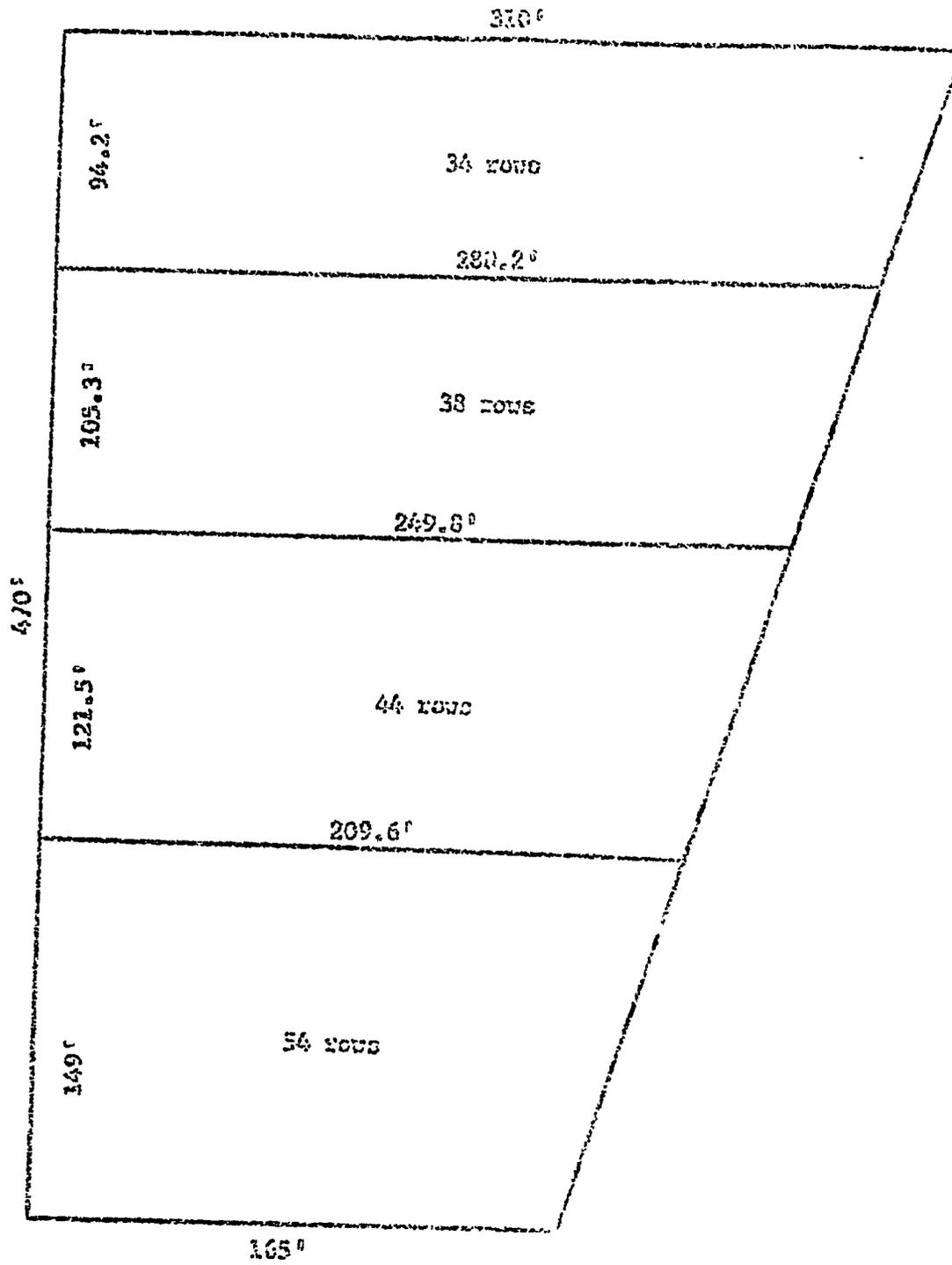
If the barley is quite high at time of spring plowing it should be shredded and disked under. However, if not much growth is attained, simple plowing will suffice. About 20 lbs. of a nitrogenous fertilizer should be added at time of plowing. Chiseling should be accomplished each year until the induration is completely broken up. Chiseling should be done between the previous years marks and in the direction of irrigation only.

At some time between crop rotations an attempt should be made to level all fields.

Machinery Recommendations: Purchase of the following pieces of equipment is highly recommended:

1. Narrow tires and wheels for the International 854 to provide a lighter tractor for furrowing out and other field practices.
2. A "Lilliston" furrow mulcher to reduce crusting and preserve moisture after furrows have been irrigated. The "Lilliston" should be used as soon as machinery can safely enter the fields preferably with the "754" tractor.
3. A border disk to be used in alfalfa culture. The present small plots with the low borders are unacceptable. Borders should be large and level with at least 8 inch (20 cm) dikes around the border. A whole border should be harvested at one time and a 4 to 5 inch irrigation given as soon as the hay is removed. One irrigation between cuttings should be sufficient for the next crop. The border disk could also be used for small grain culture and other uses as well.

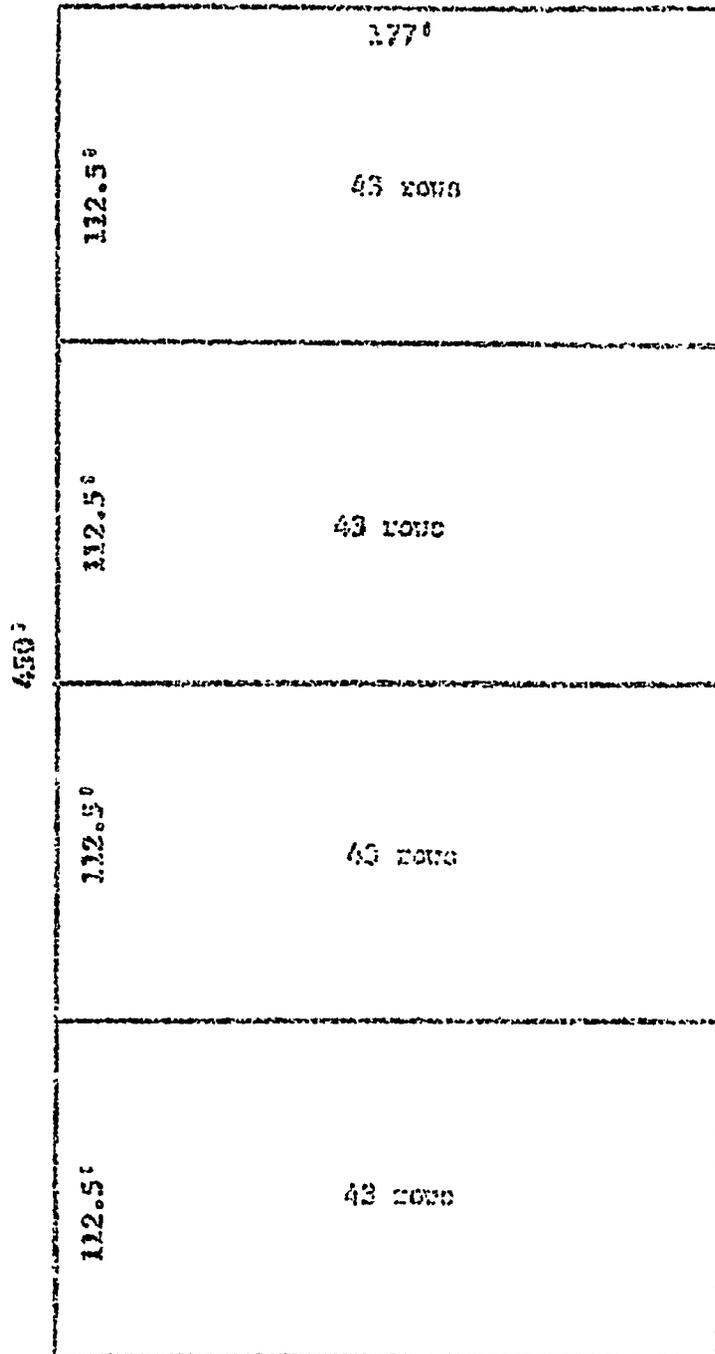
Bir a'-Ghoun Field "A"



Each quarter has $27906.25 \text{ ft}^2 \approx 0.64 \text{ acres}$
 Requires 66038.5 liters/acre inch (2.5 cm)

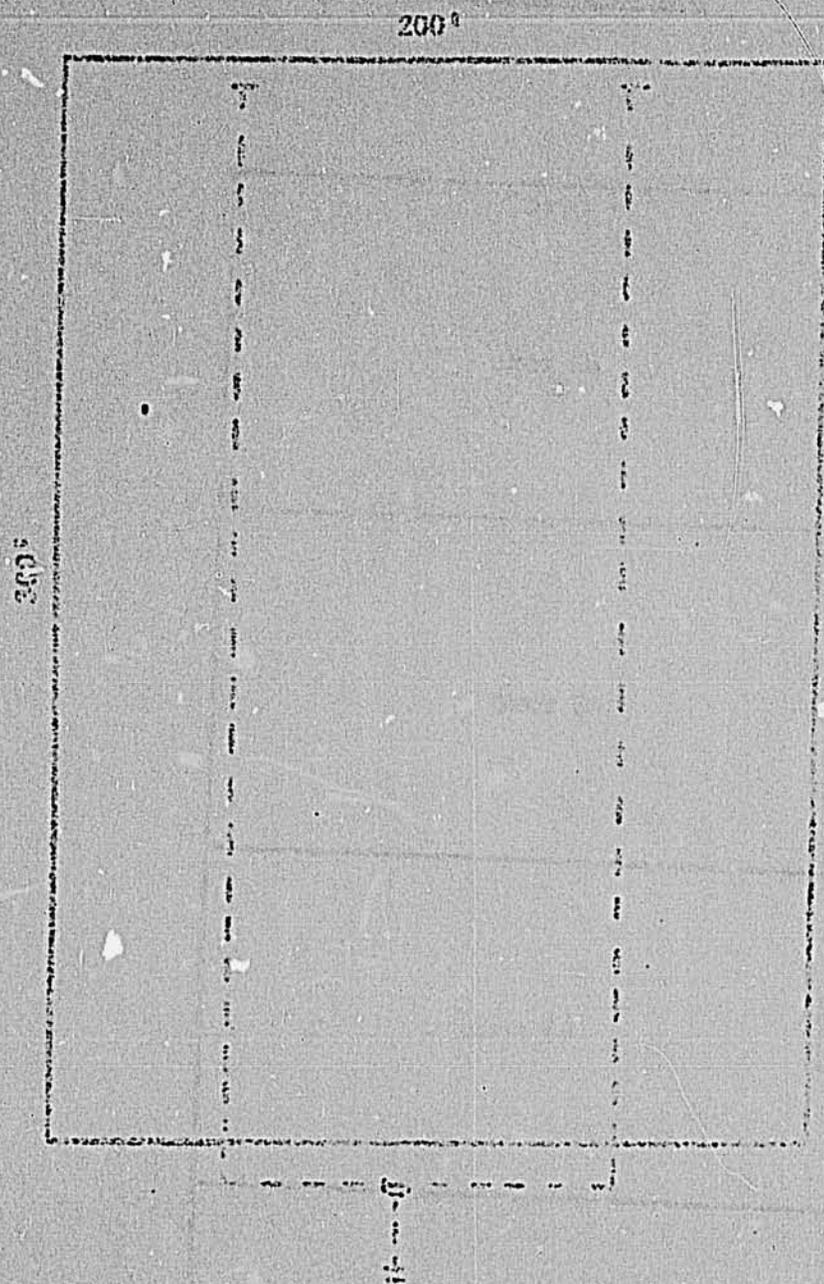
Figure 2

Bir al-Ghoun Field "B"



Each quarter has $19912.5 \text{ ft}^2 \approx 0.46 \text{ acres}$
Requires 67465 liters/acre inch

Redesign of Irrigation System of Field I at Bir al-Shabi



List of Materials

1. 750 feet of 4" PVC pipe with bell ends
2. 2-4" 90° elbows
3. 1-4" tee
4. 1-6" x 4" reducer
5. 80-4" saddles with 1½" threaded outlet
6. 160-1½" threaded plugs
7. 2-4" end caps

Literature Review

1. Bucks, D.A., Irrigation Design, USAID Farms, Yemen Arab Republic, Initial Report, November 1977.
2. Turner, F., Soil and Fertility Recommendations, USAID Farms, Yemen Arab Republic, February 1978.

13 November, 1978

**Report of Administrative Visit to U.S. Agency for International Development
Sorghum/Millet Improvement Project in the Yemen Arab Republic**

Report Prepared By:

Robert P. Upchurch, Head

Department of Plant Sciences

and

Technical Director, Contract

AID/NE-C-1304 (Yemen)

University of Arizona

Tucson, Arizona 85721

Dates of Visit - August 23, 1978 - August 30, 1978

Contract No. AID/NE-C-1304 (Yemen)

Contract For: National Sorghum and Millet Crop Improvement

Attachment six

Report of Administrative Visit to National Sorghum and Millet Crop Improvement Project in the Yemen Arab Republic.

The University of Arizona holds Contract AID/NE-C-1304 (Yemen) to provide services to the Yemen Arab Republic Government for the purpose of establishing a national sorghum and millet crop improvement program within the Ministry of Agriculture of the Yemen Arab Republic. The contract started January 15, 1977 and has an interim termination date of March 30, 1979. For the contract the Plant Sciences Department of the University of Arizona is supplying two individuals to serve in Yemen for up to 24 months each. Dr. R. L. Voigt is at Post serving as Chief-of-Party and Plant Breeder and Dr. D. M. Stewart is at Post serving as Agronomist. A total of six short-term specialists have now visited the project and prepared their reports. The areas covered included Entomology, Irrigation (2), Weeds, Soil Fertility and Grain Storage. On campus, support of the project continues with Dr. M. H. Schonhorst providing professional support. As a routine aspect of operating the Project, the Technical Director paid an administrative visit to Yemen, arriving on August 23, 1978 and departing on August 30, 1978.

General types of activities undertaken during the visit were as follows (not necessarily in order).

1. Private in-depth discussions with Chief-of-Party,
Dr. R. L. Voigt.
2. Private in-depth discussion with Agronomist, Dr. D. M.
Stewart.
3. Private discussions with three IVS support personnel.
(Madhu Sudan Acharya, Tasawar Hussain, Adres T. Tacadao).

4. Private in-depth discussions with groups within the Mission
 - a. Asst. Ag. Development Officer, E. M. Stickney
 - b. Mission Director, R. G. Huesmann
5. On-site inspections of field plot research at Sana and of recently occupied project headquarters.
6. Visit to University of Sana.
7. Visit to field research site at British Farm south of Sana.
8. Field trip to inspect outreach plots between Sana and Sadah.
9. Joint exit interview with Mission Director and Asst. Ag. Development Officer.

Principal observations by the writer and possible courses of action are identified below:

(1) At the Sana site, major advances were made in 1978 in carrying out more effective field plot studies. This involved reorienting the rows, new planting techniques and better control of insects. The writer estimates that the field plots are 80% effective with 8 out of 11 experiments slated to give good quality information, a much higher performance than in 1977. This promising report assumes that the season will be successfully completed.

(2) At the Sana site, there is still room for considerable improvement in field plot technique. Earlier planting and leveling of the plot area are two of the principal opportunities.

(3) The status of the Training Program for Mr. Yahya Shuga, currently on the U of A Campus was reviewed with Mr. Stickney and Mr. Huesmann. It was concluded that a two-year period of training especially designed for his needs would represent the best alternative when the current English improvement course has been completed. I

agreed to arrange for such a course of action if it appears feasible in due course. In the meantime, Mr. Shuga is showing some concern over the extensive separation from his family.

(4) The delivery of supplies of all sorts to Yemen continues to be a problem. Mr. Stickney suggests that the port of Hodeida may now be relatively unencumbered and that direct shipment from the States in large metal containers may now be practical. This avenue needs to be explored.

(5) The excessive income tax on University of Arizona personnel in Yemen was reviewed. The problem arises because personnel must list many items, such as housing, transportation, etc. as benefits and then pay income tax on the inflated income. The items listed cannot realistically be considered benefits. Our University of Arizona personnel have suffered a reduced standard of living, education and income under the current arrangements. Unless some solution can be found, there is no possibility of extending the contract beyond its interim expiration date of March 30, 1979.

(6) Opportunities for improving coordination among donor groups working in Yemen was discussed. The need for such coordination is growing now that the World Bank is scheduled to extend funding for UNDP/FAO agricultural programs in Yemen and USAID has an interest in a substantial Title XII Agricultural Program for Yemen. Interest by several parties in a Seed Multiplication Project and an Agricultural Training School at Ibb currently provides a basis for much interaction. As a specific mechanism of interaction, the writer suggests the

possibility of a Yemen Agricultural Technical Society which would hold an annual meeting. This would allow scientists and managers to present their programs on a professional basis. In such a setting, much informal coordination can occur. In this setting, the lowered profile of agencies is an advantage.

(7) The availability of land and other resources to carry out field research continues to be limiting and will be more so as more people are trained to do research. A minimum of three well-run stations is desired, one each at low, medium, and high elevations. The Al-Jeruba site should suffice for the low elevation site once it is operational. The Sana site is being improved but the amount of land is inadequate for projected needs and there is some danger of it being lost because of urban/government needs for building sites. Another location in the Sana area should be a high priority as should a site for mid-elevation work.

(8) The Plant Breeding Project is proceeding in a logical fashion. There are first, second, third, fourth and fifth-year field tests underway each year. The earlier years involve many selections which are gradually reduced in number as the best lines are advanced for more intensive tests in succeeding years. One of the major problems to date has been the high degree of field experimental variability which has reduced the chances of improved lines being advanced to more elaborate tests. Considerably more attention must be given to this problem of variability. In any case, the present plant breeding approach is the best possible under the circumstances.

Emphasis is being placed on conventional selection procedures to evolve new and better adapted varieties for immediate farmer use. These will also be used to cross into productive combinations for future hybrids. Thus, attention is being given to both the immediate need for better varieties and the production of successful hybrids which involve more elaborate and lengthy breeding procedures.

(9) Attempts to increase the Yemen Sorghum Collection (about 4550 entries) at the British Farm in 1978 were unsuccessful because of poor control on planting and management procedures. It has now been concluded that this collection should be put in the hands of the World Sorghum Germplasm Project located in the U.S. Personnel there will characterize and preserve the seed for eventual use in Yemen and elsewhere.

(10) The outreach program for 1978 consisted of a dozen or more field tests conducted at various rural farm sites. This work has been headed by Agronomist Stewart with the aid of Dr. Voigt and other Project personnel. Basically, four sorghum entries were tested for suitability. This included a local type, a hybrid and two "best bet" selections from the Yemen Sorghum Project. At this point, it appears doubtful that any of our entries will outperform the local selections. However, the outreach program may be considered a real success in that it has given an insight on how to work with farmers. Numerous observations have been made on how the outreach program can be improved another year. Also, this program has provided a basis for understanding more clearly the needs and interests of the

farmer at the grassroots level, e.g., specific weed problems, preliminary herbicide tests, on-the-farm pesticide demonstrations and disease problems were identified during the 1978 season.

(11) There is a very large interest in weed control in Yemen. Labor is in short supply and this will be increasingly so. Under these circumstances, annual and especially perennial weeds become unreasonable burdens. I recommend that our weed control program in Yemen, interrupted by the untimely death of short term consultant Mr. Fred Arle, be reinstated and accelerated.

(12) There is a need in the Sorghum Project for gaining a higher profile at the farm level on positive results. In due course, this will come through the introduction and demonstration of improved, higher yielding sorghum varieties. In the meantime, we need to take some steps to take the pressure off of the sorghum breeding project as it requires time to turn out improved varieties. Part of the higher profile can be gained through efforts on weed control mentioned above. We have good technology in weed control and can readily adapt it to provide spectacular, economic results in Yemen. Another prospect is to consider introducing new crops for use in conjunction with sorghum. I recommend that a new crops specialist be sent to Yemen for a short term visit to get such work underway.

(13) On a visit to the University of Sana, Mr. Mohamed Mutahar, Vice Chancellor, gave an excellent overview of the University, its role, progress, and plans. Our concern will be mostly with the Department of Biology in the Faculty of Science. More consideration should be given to interaction with this Department.

(14) In reviewing project personnel requirements, it was concluded that we should continue in our efforts to send a support person from the U.S. to work with Dr. Voigt. Dr. Stewart plans to depart Yemen on or about November 30, 1978 and Dr. Voigt will depart on or about March 15, 1979 according to present plans.

(15) The current status of the Plan of Work was discussed. There are opportunities for improving our Plan of Work documentation in the future. Considering all the paperwork currently available, the Technical Director is satisfied that present documentation of the program is adequate.

(16) The use of pot experiments to explore soil fertilization needs is still attractive from several standpoints. A soil fertility expert should go to Yemen for a short term to initiate this work.

The visit to Yemen was most informative and helpful. My appreciation is expressed to all in Yemen who helped make the visit useful. A special note of appreciation is due to Director Robert G. Huesmann, Morgan Stickney, Bob and Jane Voigt and Don Stewart.

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