

Improvement of Pearl Millet

The ninth IN-PROGRESS-REVIEW of the project, "Improvement of Pearl Millet", was held 0830 hours 10 October 1979 in the Auditorium Conference Room, Ft. Hays Branch Experiment Station, Hays, Kansas.

Personnel attending: Richard L. Vanderlip, Edward T. Kanemasu, Robert Mills, William D. Stegmeier, Elizabeth Varriano-Marston, Tom Harvey, Barry Michie, Francis L. Barnett, Herman A. Praeger, Jr., John Gardner, William Phillips, Director, Ft. Hays Branch Experiment Station, and David Andrews, Principal Millet Breeder, ICRISAT, on sabbatical, University of Nebraska.

International travel coordination was discussed. Dr. Kanemasu reported on his cooperative microclimate study with ICRISAT at Hissar, India. The Hissar site was selected because of the high temperature of the area and the availability of limited irrigation. This year there is a severe drought in the area. The limited irrigation was not adequate to establish a uniform stand. The plants are stunted. It appears there will be so much variability in the stand and between the plants that the yield data will be of little or no value. The microclimate data should be useful. Dr. Cielo Romm, who is conducting the study will be leaving as her husband is leaving the Ford Foundation position in New Delhi for a position on the faculty, University of California, Berkeley. Arrangements were made for a scientist on the ICRISAT staff at Hissar to conduct the study during the next growing season. Dr. Kanemasu feels this coordination during the growing season is a necessary part of the conduct of the study.

Dr. Vanderlip and Bill Stegmeier reported on their trip to Hissar, Ludhiana and ICRISAT, India. Using slides, they discussed the research plots they visited. They were especially impressed with the results that were being obtained in the disease nurseries. For example, the dwarf male sterile, the desired parent for hybrid production by plant breeders, 23 D₂B, developed by Dr. Glenn Burton, USDA, SEA, Tifton, Ga., is highly susceptible to downy mildew. They irradiated some seed with cobalt and found lines that were resistant to downy mildew. The change in the genetic makeup that created this resistance also rearranged the recombining ability of the male sterile, but the plant breeders are beginning to find solutions to this problem. While at ICRISAT arrangements were made for a graduate student of Dr. Vanderlip to conduct his research with Dr. Bidinger, Cereal Physiologist, ICRISAT, on techniques to identify early seedling drought resistance. This is a problem in India and Africa as the pearl millet is planted after the first rain. If there is not a timely rain in the next few days, the plants will not survive. It is during the seedling stage that drought resistance is of primary importance. Dr. Bidinger and Seetharama, ICRISAT, in coordination with Dr. Vanderlip have initiated a project to develop a pearl millet growth and development model using the sorghum growth and development program of Vanderlip-Arkin as a basis for this project. During the return trip they stopped at the University of Hawaii where arrangements were initiated for the winter nursery for growing the second generation of breeding material. This arrangement will allow growing the breeding material on Molokai providing proper isolation as no pearl millet is grown there. There also will be no language barrier there as there was with the Puerto Rico program of the past.

Grain Science did not have an international coordination visit this year. They are planning on conducting visits next year.

The group then was taken on a tour of Bill Stegmeier's pearl millet project on the station. He has isolation seed increase plots, breeding nursery, yield trial, and recombining plots. This is an extensive program at the Ft. Hays Branch Experiment Station. The new personnel of the INTSORMIL program who had not visited this program before were impressed with the magnitude of the project and diversity of the plant material in the plots.

The group then returned to the conference room.

The yield trials at Tribune, Garden City, Minneola, St. John, and Manhattan have been harvested. The yield trial at Hays will be harvested next week. Threshing and recording data for the agronomic research will be completed as soon as possible. Then the grain will be made available to Grain Science for their analysis and will be provided for the new projects of INTSORMIL. It is anticipated each entry will yield four pounds of grain. By bulking the three replications we should have twelve pounds of grain from each of the six locations. This should be adequate for all the projects of "Improvement of Pearl Millet" and INTSORMIL. If there are requirements for heads of grain or any other plant material, the border rows or the unharvested plants in the plots are available. Recommend you obtain what you require at your earliest opportunity. We will combine the remaining pearl millet in about two weeks.

The annual report was discussed. As the research data is not completed, and will not be for some time, it was decided to prepare an interim annual report like we did last year. This to include a narrative of the ongoing research, list of personnel working on the project and financial status. The narrative is to be provided to Al Praeger for consolidation by 20 October. He will then prepare the report.

The target date for completion of the information to be included in the annual report was set as 15 December.

The financial status of "Improvement of Pearl Millet" and INTSORMIL was discussed. "Improvement of Pearl Millet" for the period of this fiscal year is underspent by approximately \$30,000 of the \$344,000 budgeted. However, some of the projects have overspent the budgeted amount. Upon receipt of the comptroller's report for the full fiscal year, a determination will be made if there should be a reallocation of budgeted funds. There has been no expenditures of INTSORMIL funds to date. The administration of how to spend them was discussed. Distribution of the indirect costs that develop the Sponsored Research Overhead funds was discussed. These are to be distributed in accordance with University policy, 55% of the total goes to the unallocated fund administered by Anderson Hall, 5% of the total goes to the Kansas Agricultural Experiment Station and the remaining 40% goes to the department that generates them. How this is handled within your department is to be determined by you and the Head of your department.

The INTSORMIL project requires a semi-annual and annual report. The semi-annual report is due 1 March. Further information will be provided at the next IN-PROGRESS-REVIEW.

The annual inventory of non-expendable equipment is due. Provide to Al Praeger the non-expendable equipment purchased this fiscal year by 20 Oct. so he can prepare the report.

Grain Science would like to obtain 150 lb samples of grain from known populations or hybrids to fulfill requests they have been receiving for grain samples. It was considered that grain in this amount could be provided from at least four different populations.

The "Improvement of Pearl Millet" project has been invited to present a seminar to the Agronomy faculty and graduate students 11 December. It was decided to accept the invitation and each researcher is to present the scope of their work and results of the research. Fifteen minutes was thought to be adequate time for each researcher.

Since all personnel would be in Manhattan 11 December, the next IN-PROGRESS-REVIEW was scheduled 1300 hours 11 December, Room 106 Waters Hall.

Dr. Charles Francis and Dave Andrews visited Ft. Hays Branch Experiment Station 9 October for an overview of Bill Stegmeier's pearl millet program. Dave stayed over to attend the IN-PROGRESS-REVIEW. He was asked for his comments and suggestions for the improvement of our program. First of all, he was impressed with the breeding program, its organization and the amount of genetic material available. He had no idea the program would be of this magnitude. Also, he was amazed by the results that can be obtained by so few personnel working on the project. He had identified various lines having high potential for seed parents and combining ability and has arranged with Bill Stegmeier for seed to be provided ICRISAT. He was pleased that adequate seed was available for exchange of materials; although limited to grams this is all that is necessary. He did notice that similar lines grown at Hays tillered more than at Hyderabad, India. He would be interested in knowing what caused this to occur.

Dave Andrews accompanied us to Manhattan. On 11 October he had conferences with Dr. Kanemasu and Vanderlip. During this time preliminary arrangements were made for Dr. S. C. Gupta, pearl millet breeder, ICRISAT, to attend Kansas State University on sabbatical next year where he would be available for consultation for our breeding program in addition to his studies.