

PD-1121-533

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BEAN/COWPEA CRSP - STATUS REPORT

3rd QUARTER 1993 (JULY 1-SEPTEMBER 30, 1993)

PROJECT NUMBER: 931-1310

TITLE: Bean/Cowpea CRSP

MANAGEMENT ENTITY: Michigan State University

PROJECT DIRECTOR: Dr. Pat Barnes-McConnell

DATE OF ORIGINAL GRANT: 9/30/80

NUMBER & DATE OF MOST RECENT GRANT MODIFICATION: # 8 DATE: 4/21/93

PROJECT EXTENSION: FROM 4/28/92 TO 4/27/97

DATE OF LAST OBLIGATION: 4/21/93

AMOUNT OF LAST OBLIGATION: \$1,900,000

CUMULATIVE OBLIGATIONS (INCLUDING MOST RECENT ONE): \$22,458,000

VOUCHERED EXPENDITURES: DATE 09/30/93 \$19,976,434.06

ACCRUALS: \$830,843.89

TOTAL OF VOUCHERED EXPENDITURES AND ACCRUALS: \$20,807,277.95

GRANT EXPIRATION DATE: 15/25 year life

DATE/TYPE OF NEXT SCHEDULED EVALUATION:

PROJECTED DATE: January 1, 1994 TYPE: EEP

DATE/NUMBER OF LAST IG AUDIT: Not Applicable

RECOMMENDATIONS AND STATUS OF RECOMMENDATIONS: Not Applicable

Bean/Cowpea CRSP - Status Report  
3rd Quarter 1993 (July 1-September 30, 1993)

Project Purpose: Organize and mobilize financial and human resources necessary for mounting a major multi-institutional U.S.-LDC collaborative effort of research and training related to bean and cowpea production and consumption.

Research Outputs: Twelve collaborative research projects continue to support the major goals of this project.

In Mexico 180 bean varieties were planted in drought areas and were evaluated for drought tolerance. DNA analysis of these varieties is being evaluated for molecular markers which are associated with drought tolerance.

The CRSP is working with Johnson Ranches of Corning, California to develop an akara market for the United States. They have tested akara in several fast food outlets as well as one steak house. Further studies are needed but they feel that some type of frozen akara has a potential market in the United States.

Approximately 30,000 pounds of two new bean varieties with resistance to bean golden mosaic virus was produced for Honduran and Salvadorian farmers. Several Honduran bean landraces were collected and sent to CIAT, the Escuela Nacional de Agricultura in Honduras and the USDA for preservation.

In Malawi, the largest bean collection in Africa (1,035 accessions) was grown out and evaluated for a range of descriptors. This data and germplasm is being shared among the African bean programs.

In Senegal, a new cowpea variety, Melakh, was released. It is resistant to cowpea aphid mosaic virus and to the cowpea aphid. A large-scale seed multiplication program was conducted with World Vision International and provided seed of Melakh and Mouride to over 1,400 farmers in 386 villages.

Polymerase chain reaction (PCR) technology was used to classify bean golden mosaic virus isolates from beans, vegetables and different weed species in Mexico and Jamaica. The preliminary results indicate that more than one geminivirus can be present in the same plant at one time. Studies have also shown that the coat protein is essential for virus transmission. PCR technologies are routinely used in two of our host countries, Costa Rica and Jamaica.

Three new bean varieties were released by Bunda College in Malawi. A new high yielding white bean was released in the Dominican Republic. This variety, Anacaona, is resistant to rust, web blight and whitefly. In Ecuador, a new climbing bean was released. A new rust resistant pinto bean variety, Chase, was released in Nebraska. In addition to rust resistance, Chase is moderately resistant to common blight, halo blight, brown spot and white mold.

A new cowpea variety, Bettergro Blackeye, was released for the southern United States. This variety has resistance to the cowpea weevil and root-knot nematode.

A new source of bean common blight resistance was identified in a mutant ( $M_6$ ) of the black bean variety, Chimbolito. This mutant was derived from irradiation and will be tested in Puerto Rico and the Dominican Republic.

Rhizobium inoculants prepared from local Ecuadorian peat sources have been shown to perform satisfactorily at the farm level. Small-scale inoculant production has been initiated and this activity will be expanded in 1994.

Studies have shown some very dramatic differences in cooking time between bean varieties. The Mexican variety FM Bajio cooks in 93 minutes compared to 245 minutes for Bayo Victoria. The slow-to-cook phenomenon can be reduced by soaking the beans overnight in a salt solution. Soaking reduced cooking times to 38 minutes for FM Bajio and to 63 minutes for Bayo Victoria.

Six cowpea landraces were collected in South Carolina and evaluated as resistant to the southern root-knot nematode. This project is also documenting the importance of predators in insect pest control programs. These predators include damsel bugs, big-eyed bugs, minute pirate bugs, ants and spiders.

Extension: The Cameroon project has disseminated three technical bulletins on seed storage to scientists in Burkina Faso, Niger, Nigeria, Senegal, Côte D'Ivoire, Chad, Ghana, Costa Rica, Honduras and Ecuador. In Senegal, World Vision International is testing the CRSP technologies for seed storage.

In Costa Rica 155 participants attended a geminivirus field day where information was disseminated on bean and tomato geminiviruses. Control measures were discussed with the farmers.

Economics: The CRSP conducted economic studies on the seed storage technologies developed in the Cameroon project. This study indicated that the profitability of the improved storage technologies (solar heater, triple bagging and ash) will depend on the level of losses incurred by the farmers and the market price of cowpeas.

Technical Assistance: Technical support was provided as requested.

Training: Through September 30, 1993, a total of 318 degrees were granted to students who had some CRSP support. The CRSP supported 143 Masters (77 male/66 female), 74 doctorate (41 male/33 female) and 101 bachelor degrees. Forty-four percent of the graduates were women. Over 77 percent of these students were from LDCs.

The Bean/Cowpea CRSP has been very supportive of LDC educational institutions. Over 41 percent of the CRSP students obtained their training at LDC institutions.