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West and Central Africa Maize Network 87274
(WECAMAN)



FINAL REPORT ON THE TRANSITIONAL PERIOD

April 1 - September 30, 1993

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Preface

This report covers the activities of the West and Central Africa Maize Network (WECAMAN) during the transitional period, April 1 to September 30, 1993.

During the transitional period, a minimum capacity was maintained for the Network to ensure a quick re-start of full network activities once the decision on future support of networks by USAID had been taken. Based on the results of the SAFGRAD impact assessment study, USAID has selected the Maize Network as one of the four collaborative networks to be supported for a two-year period. Consequently, approval has been given for a two-year project for the Maize Network. The Project is expected to commence in October, 1993.

Abbreviations

ACPO	Accelerated Crop Production Officer.
BRA	Bureau de Recherche Agronomique, Tchad.
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo.
CIRAD	Centre de Coopération International en Recherche Agronomique pour le Développement.
CRPA	Centre Régional de Production Agro-pastorale.
IARC	International Agricultural Research Center.
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics.
IDR	Institut de Développement Rural.
IDRC	International Development Research Center, Canada.
IITA	International Institute of Tropical Agriculture.
INERA	Institut d'Etudes et de Recherches Agricoles.
INRAN	Institut National de Recherches Agronomiques du Niger.
NARS	National Agricultural Research Systems.
NGO	Non-Governmental Organization.
OAU	Organization of African Unity.
SAFGRAD	Semi-Arid Food Grain Research and Development
SCO	SAFGRAD Coordination Office, Ouagadougou.
USAID	United States Agency for International Development.
WECAMAN	West and Central Africa Maize Network.

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The support of the directors of agricultural research in the National Agricultural Research Systems (NARS) of the Network's member countries is gratefully acknowledged. The interest and active participation of researchers of the national maize programs contributed in no small measure to the successful operation of the Network.

The Network appreciates the logistic support provided by the SAFGRAD Coordination Office, especially in facilitating effective communication with NARS. Prompt and effective administrative and technical backstopping from IITA Headquarters at Ibadan, Nigeria, played a significant role in the successful implementation of the programs of the Network.

Several IARC's and organizations namely CIMMYT, ICRISAT, CIRAD, IDR (University of Ouagadougou) and many CRPA Directors, ACPO Program in Togo, IDRC through INERA/Burkina Faso and USAID/Burkina Faso co-operated fully with the Network and are gratefully acknowledged.

Finally, the IITA/SAFGRAD Project is grateful to the United States Agency for International Development (USAID) for providing funds for the maize research activities presented in this report.

Ouagadougou
September, 1993

Baffour Badu-Apraku
Coordinator, Maize
Research Network.

Declaration

Mention of a particular pesticide, any other chemical or product in this document does not imply endorsement of, or discrimination against any manufactured products by IITA/SAFGRAD.

Executive Summary

The SAFGRAD Phase II terminated on March 31, 1993. To prevent the disruption of network activities while considering a proposal for a new project for the Maize Network, USAID agreed to provide funds for a sixth month transitional period, starting from April 1 to September 30, 1993. The purpose of the grant was to ensure that a minimum capacity was maintained during the transitional period, to sustain the interest of NARS in networking, to continue technical and financial support to NARS in order to maintain research momentum of the national programs and to prevent the loss of experienced professional staff, valuable germplasm in cold storage, facilities and equipment.

Several activities were carried out during the transitional period. These included (a) regional trials, (b) collaborative research, (c) resident research, (d) varietal maintenance and seed increase, (e) community level seed production, (f) provision of financial assistance to national programs, (g) data analysis and publication of research results, and (h) preparation of a two year project proposal for the Maize Network.

Thirty-seven and thirty-five sets of RUVT-early and RUVT-extra-early, respectively, have been dispatched to the 17 member countries of the Network. Also, \$23,500 was allocated to lead centers and technology adapting centers in support of collaborative research projects, regional trials and seed production activities.

The resident research activities included progeny yield trials involving drought tolerant families from Pool 16 DT and Pool 16 DT x Pool 16 Sequia at Kamboinse and Farako-Bâ, conversion of DR Pool Yellow, DR Pool White and TZEF-Y for streak resistance and two diallel crosses aimed at the creation of extra-early white and yellow pools. The seed increase program involved the regeneration of breeding materials in cold storage

and multiplication of seed of all the varieties nominated for the regional trials. With technical guidance provided by the Network Coordinator to Sahel Solidarité, seed production of the extra-early varieties, TZEE-W-SR, TZEE-Y-SR and tZEF-Y made available by the network have been organized for farmers of 12 villages in Burkina Faso.

Introduction

The results of the SAFGRAD impact assessment study revealed that the Maize Network has been successful in stimulating the capacity and initiative of national scientists to solve maize production problems. Several technologies have been developed and/or identified by NARS lead centers and IITA core scientists and have been adopted by several member countries resulting in increased production and productivity. Moreover, several promising technologies are currently in the pipeline for further testing and release. Finally, there has been significant returns to investments in research (Sanders et al. 1993; Boughton et al. 1993).

As a result of the significant progress made by the Maize Network, USAID indicated its willingness to continue the support for the Maize Network even though the SAFGRAD II was expected to terminate on March 31, 1993. IITA therefore submitted a proposal for a two-year project to USAID to enable it to continue its role of strengthening the agricultural research capabilities of NARS in West and Central Africa. Since the approval process of the project was expected to take at least six months, USAID agreed to provide bridging funds to IITA to cover the period April 1 to September 30, 1993 and thus help to prevent the disruptive effects of the termination of SAFGRAD Phase II Project. The purpose of the grant was to:

- 1) ensure that minimum network capacity was maintained during the transitional period when USAID was expected to review and take a decision on the project proposal.
- ii) sustain the interest of NARS scientists in networking.
- iii) continue to provide technical and financial assistance to NARS in order to maintain the research momentum of the national programs.

- iv) prevent the loss of experienced professional staff, valuable germplasm, facilities and equipment during the transitional period.

This report covers the following key network activities carried out during the period April 1 - September, 30:

1. Regional trials
2. Collaborative research
3. Resident research
4. Varietal maintenance and seed increase
5. Community seed production
6. Provision of financial assistance to national programs.
7. Data analysis and publication of research results.
8. Preparation of a two year project proposal for the Maize Network.

The report also contains sections on the problems encountered during the transitional period and recommendations for future network activities.

1.0. Regional Trials

Thirty-seven and thirty-five sets of RUVT-early and RUVT extra-early, respectively, have been dispatched to 17 countries in West and Central Africa (Table 1). A set of each trial has also been planted at Kamboinse using tied ridges. The trials at Kamboinse are expected to be harvested in October.

2.0. Collaborative research

The collaborative research projects have the objective of exploiting the strengths of the strong NARS (Lead Centers) for the generation of technologies which can then be shared with other network member countries. The lead centers continued to implement research projects that have been assigned to them.

Table 1. Number of sets of Regional Uniform Variety Trials (RUVT) dispatched to member countries of the Maize Network, 1993.

Country	Number of Trials Requested		
	RUVT-Early	RUVT Extra-Early	Total
Benin	3	3	6
Burkina Faso	3	3	6
Cameroon	3	3	6
Cape Verde	1	0	1
Central African Republic	2	2	4
Côte d'Ivoire	2	2	4
Gambia	2	2	4
Ghana	3	3	6
Guinea	3	-	3
Mali	2	3	5
Mauritania	-	2	2
Niger	2	1	3
Nigeria	3	3	6
Senegal	2	2	4
Sierra Leone	2	2	4
Tchad	2	2	4
Togo	2	2	4
Total	37	35	72

3.0. Resident research

Due to limited funding, the resident research activities were scaled down considerably. The activities carried out during the period under review included:

- i) Breeding for earliness and drought tolerance
- ii) Breeding for extra-earliness
- iii) Varietal maintenance and seed increase
- iv) On-farm level community seed production.

3.1. Breeding for earliness and drought tolerance

a) Progeny yield trials

Pool 16 DT, a white dent, drought tolerant and streak resistant population has undergone several cycles of improvement since 1986 and several varieties have been extracted from it. Two sets of trials involving S1 progenies generated from Pool 16 DT and Pool 16 Sequia x Pool 16 DT in 1992 have been planted using 12 x 12 lattice design at Kamboinse and Farako-Bâ. The objective is to identify superior S1 families from Pool 16 DT and Pool 16 Sequia x Pool 16 DT for recombination in an effort to improve the drought tolerance of Pool 16 DT.

b) Streak resistance conversion program

Advancement of DR white Pool and DR Yellow Pool to BC1F1 stage:

The two drought tolerant pools, DR White Pool and DR Yellow Pool were created through a diallel involving seven local and improved varieties (JFS, Capinopolis 8245, DR Synthetic, Pool 16 DT, Maka, SAFITA-104 and T x T No. 42). After a cycle of recombination and selfing, the pool was separated into white and yellow fractions. The DR white pool was crossed to Pop 30 SR and DR Yellow Pool to Pop 31 SR in an effort to upgrade the level of streak resistance of the two pools. Both pools are currently at the F1 stage, i.e. DR Yellow Pool x 31 SR F1 and DR White Pool x Pop 30 SR F1.

Thirty-eight F1 involving DR white Pool x Pop 30 SR and 53 F1 involving DR Yellow Pool x Pop 31 SR and the respective recurrent parents have been planted at Kamboinse in an effort to advance each material to the BC1F1 stage.

Advancement of TZEF-Y to BC1F1 stage: TZEF-Y, an extra-early yellow variety has proved promising in the RUVT-extra-early in several member countries of the network. It is therefore under consideration for release in Nigeria, Cameroon, Togo and Benin Republic. The major defect of this variety is that it is susceptible to the streak virus disease. A programme was therefore initiated in 1991 to convert the variety for streak resistance. TZEF-Y was crossed to Pop 31 SR followed by the selection of 55 F1. The 55 F1 crosses and the recurrent parent, TZEF-Y, have been planted at Kamboinse in an effort to advance the crosses to the BC1F1 stage.

3.2. Breeding for extra-earliness

Extra-early varieties are required in the Sudan savanna zone of West and Central Africa to fill the hunger gap in July. The varieties are also considered essential for the Sudan savanna in those years when maize cannot be planted at the normal time due to the late onset of the rains.

Through a program initiated by IITA/SAFGRAD in 1984, several extra-early maturing cultivars have been developed and made available to national programs. The most promising among the extra-early white varieties are TZEE-W-SR BC5 F2, TZEE-W-SR x Gua 314 BC1 F5, Pop 30 x Gua 314 BC1 F5 and Pool 27 x Gua 314 BC1 F4. The most promising yellow extra-early varieties are CSP-SR BC5 F2, TZEE-Y-SR BC5 F2, CSP x Local Raytiri and TZEF-Y. There is a need for broad-based white and yellow extra-early breeding populations to ensure continuous development and release of improved varieties of the two grain types.

Two sets of materials, a set involving the extra-early white cultivars and the other involving the extra-early yellow cultivars have been planted at Kamboinse with the objective of producing two sets of diallel crosses in an effort to create an extra-early white and yellow breeding populations.

4.0. Varietal maintenance and seed increase

In order to ensure that adequate quantities of seed are available for 1994 trials, to satisfy seed requests from national programs and NGOs and to regenerate breeding materials in cold storage, all the varieties nominated for the regional trials and other varieties in the coldroom have been planted at Kamboinse.

5.0. On-farm level community seed production in Burkina Faso

This collaborative program involving INERA, NGOs and the Maize Network Coordinator is aimed at assisting small scale farmers in the Sudan savanna zone to produce their own seed of early and extra-early varieties for planting. This program is very important since there is no organized seed production of varieties of these two maturity groups. Several kilograms of seed of the extra-early varieties, TZEE-W-SR, TZEF-Y, TZEE-Y-SR have been made available to the NGOs, Sahel Solidarité, Liptako Gourma, CRPA, Fada N'Gourma, etc. for seed production in selected villages in Burkina Faso (Table 2). The network coordinator has been providing technical advice to Sahel Solidarité to ensure the success of the program.

6.0. Provision of financial assistance to national programs

Funds have been allocated to Lead Centers to assist in implementing assigned collaborative research projects. Technology Adapting NARS have also been allocated supplemental funds to strengthen their adaptive research activities, particularly varietal maintenance and seed multiplication. The 1993 allocations are presented in Table 3.

Table 2. Quantity of maize seed made available by the Maize Network for community seed production in Burkina Faso, 1993.

<u>Variety</u>	<u>Recipient</u>	<u>Quantity</u>
TZEE-W-SR	Director of INERA	20
TZEE-Y-SR	Fédération Burkinabè Associations et des Clubs UNESCO	15
TZEE-W-SR	"	15
Pool 16 DT	"	15
SR 22	"	15
TZEE-Y-SR	Formation de Jeunes Agriculteurs (FJA)	2
TZEE-W-SR	"	2
TZEF-Y	CRPA-Kaya	1
TZEE-Y-SR	"	1
JFS	"	3
TZEE-W-SR	Sahel Solidarité	20
TZEE-Y-SR	" "	20
TZEE-Y-SR	Fada-N'Gourma	20
Pool 16 DT	CRPA, Goumogho village	10
TZEE-Y-SR	" "	10
TZEF-Y	Liptako Gourma Project	10
TZEE-W-SR	CRPA Basioko	15

Table 3. Funds allocated to Maize Network member-countries in 1993.

Country	Amount \$
Ghana	1,500
Nigeria	1,500
Cameroon	2,000
Côte d'Ivoire	1,500
Togo	1,500
Burkina Faso	2,000
Mali	1,500
Benin	1,500
Senegal	1,500
Niger	1,000
Cape Verde	1,000
Tchad	1,000
Central Africa Republic	1,000
The Gambia	1,000
Guinea Conakry	1,000
Guinea Bissau	1,000
Mauritania	1,000

7.0. Data analysis and publication of research results

Data from the two sets of regional trials conducted by member countries of the Maize Network in 1992 have been analyzed and the results published in French and English. Also, the report of the eleventh meeting of the steering committee and the 1992/93 Annual Report have been published. The three documents have been distributed to all member countries of the network.

8.0. Preparation of a two-year project proposal for the Maize Network

Following the decision of USAID to fund the Maize Network for a two year transitional period, the Maize Network Coordinator joined IITA headquarters staff for about two weeks in June to prepare the project proposal.

9.0. Major problems encountered in achieving objectives

The major problem encountered during the transition period was the lack of funds to carry out important network activities such as steering committee meetings, consultation visits by the coordinator and other members of the steering committee to national programs, monitoring tours/biennial workshop etc. The uncertainties surrounding the future support for the Network aggravated the situation. The result is that it has not been possible to review the collaborative research activities and to monitor the progress. Also, the momentum of the network has gone down considerably. Request to the lead centers to send the progress report on the collaborative research for 1992 has not yet been met. Also, several countries have not submitted the justification for the Network's financial support to their programs in 1992.

10.0. Recommendations for improvement

There is an urgent need for the revival of the interest of the member countries of the maize network in networking. To this end, a general assembly of the member countries should be convened soon after the commencement of the 2-year project for the maize network to elect a steering committee, review and reassign collaborative research projects and plan the activities of the network.

References

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