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MISSION REPORT

WEST AND CENTRAL AFRICAN SORGHUM
IMPROVEMENT RESEARCH NETWORK
20 - 24 September 1988
Maroua, Cameroon

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I met Dr Ramaiah, the Acting Coordinator of the West African Sorghum Improvement Research Networks and discussed with him the agenda for the workshop which was then modified to include the activities of the SAFGRAD Coordination Office. At Douala airport, nine of the participants were without visa to enter Cameroon. The immigration officers, after lengthy discussion kindly provided entry visa. This issue, however, was resolved by 10.30 p.m of which I had to remain behind at the airport to assist participants. The next day (19 September) majority of the participants including the Coordinator and myself were not able to get seats on the flight to continue to Maroua. The Coordinator and myself requested authorities of IRA at Maroua to go ahead with the opening ceremony with the hope that remaining participants could be able to proceed to Maroua on 20th September.

Early morning of 20th September, I discussed the flight problem with airport officials and kindly assisted nine participants to have seats on the same flight.

A. Technical Comments on Sorghum Improvement Research Activities in Cameroon

The results of on-farm testing showed that low Coefficient of Variation (CV) was obtained among multilocational trials in different villages. This was attributed to increased research skills of extension agents managing the trials. It was also commented by SAFGRAD Director of Research, that the low CV among on-farm trials may be due to homogeneity of soils in different villages. One of the new varieties CS-354 was reported more efficient under water stressed conditions and is relatively more adapted by farmers.

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Sorghum Improvement

Muskwari

142 accessions of Muskwari Sorghum were collected by ICRISAT last year and are available for any interested researcher. Agronomic techniques are the major constraints to Muskwari production. Double cropping is advocated and it was noted if Framida, S 35 etc are truely resistant to or simply tolerant to Striga hermontheca. The mode of resistance in Sorghum to Striga hermonthica was not explained. Striga hermontheca was reported for the first time on cowpea and soybean and this needs to be investigated more critically.

This network should request ICRISAT to establish a sorghum germplasm, conservation facility (long-term cold storage) in West and Central African region. Only hybrids that produce 15-20% higher yields than open-pollinated varieties under similar input levels will be extended to farmers.

Sorghum Agronomy

In the Far North Province of Cameroon, sorghum is best planted at the end of June and optimum plant density varies with the amount of rainfall. Striga is not controlled by minimum tillage or intercropping cowpea, soybean or millet and its damage is done before Striga plants emerge.

The optimum plant density for Muskwari sorghum is 10-15000 plants/ha. The extra work involved in digging more holes makes higher densities uneconomical. Irrigation of Muskwari is uneconomical. Direct sowing and application of fertilizer are not beneficial but mulching is recommendable. The first week of October is optimum time for transplanting. Planting Crotolaria or Sesbania as fallow double crops gave good yields and the yield of cowpea was also promising.

The lack of fertilizer is the most important factor limiting sorghum production by the local farmers. Marshall 25 ST seed dressing effectively controls termites and leads to better stand establishment.

Tied- ridging alleviates water conservation problems where rainfall is erratic, except in sandy soils. In the Sudan savanna zone, early July is optimum for planting sorghum to avoid bird damage and grain mould. In Cameroon, technologies are given in complete packages to the farmers by SODECOTON but farmers take only what they can manage from the packages.

Applying herbicides before transplanting Muskwari sorghum reduces need for manual weeding but is uneconomic. The dam of the Benoue River is adversely affecting the cultivation of Muskwari down stream. 31% of farmers have adopted S-35 and have grown it on 30% of their farm land. Direct sowing of S-35 without ploughing has no adverse effect on S-35 yields. 50 Kg Urea gives lower yield but is more economical than 100 kg. 12 diseases were reported on sorghum in Cameroon in 1973 survey. We are not sure if bacterial leaf blotch occurs in Cameroon and Sooty Stripe has devastated sorghum in some regions in 1988. The report of greenbug on sorghum was not conclusive and needs to be confirmed. Birds are very important pests of sorghum in Cameroon. Crop protectionists should be involved right from the initiation of sorghum, improvement programmes.

B. Regional Programme

In the morning session of 21 September, the acting Coordinator of sorghum research network outlined the previous activities of the network. The report included review of the recommendations of the first two workshops held in Ouagadougou, Burkina Faso and Bamako in 1984 and 1985 respectively. It was at these workshops that major constraints of sorghum production, the level of research activities in different NARS and research priorities and strategies were identified in order to provide technological options to alleviate food production problems in the region. The Steering Committee of the Sorghum Research Network was realized in 1986 and met three times and was able to realize the following regional trials :

i. West African Sorghum Variety Adaptation Trial - Early (WASVAT - Early)

ii. West African Sorghum Variety Adaptation Trial - Medium (WASVAT-Medium)

iii. West African Sorghum Hybrid Adaptation Trial (WASHAT)

iv. West African leaf disease Screening Nursery

v. West African Sorghum Striga Trial (Only in 1988).

It was reported that the third monitoring tour was conducted in Burkina Faso from 30 september to 3 October 1987 of which representatives of national programmes of Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Gambia, Ghana, Niger, Nigeria, Senegal and Togo participated. The first striga training workshop was also held from 5 to 10 October, 1987. It was reported that 12 participants from eleven countries participated in this training.

During the Third Steering Committee meeting, a project for supplemental funding for the network was prepared and was submitted to the Special Project for African Agricultural Research (SPAAR). This proposal was being considered for funding by certain donors.

For future training and networkshop activities, the following areas of training of short duration were proposed :

i. Disease identification and host resistance screening to be offered to Mali ICRISAT regional sorghum research programme.

ii. Varietal release, seed production and certification will be organized at Kano, Nigeria where the second regional sorghum research team is based.

iii. Agronomic research on-farm testing, design analysis and interpretation including designs at ICRISAT Sahelian Center, Niamey, Niger.

iv. Screening for drought resistance.

While discussing the coordinators'report on sorghum improvement research networks activities, concern was expressed at the apparent poor linkages between SAFGRAD and ICRISAT. Interaction with other regional networks managed under SAFGRAD is lacking and need to be strengthened. Since multidisciplinary research activities is necessary for the improvement of sorghum, other research disciplines such as agronomy, plant protection should be integrated in order to enhance sorghum production. As recommended earlier, the appointment of full-time Coordinator for sorghum research network as a separate position from the team leader was highly recommended.

Dr Ramaiah introduced the Two Regional Sorghum Research teams located in Mali and Nigeria. The Kano team will have responsibilities for collaborating with the national programmes in eight countries viz Central African Republic, Cameroon, Chad, Nigeria, Niger, Benin, Togo and Ghana.

The allocation of countries to the two teams is purely for administrative convenience and to avoid confusion.

It was reported that the Kano based ICRISAT team has been granted full diplomatic status by the Federal Government of Nigeria and

the principal Scientists are treated as United Nations officials. This will smoothen activities within Nigeria.

Three principal sientists (Breeder, Agronomist, Entomologist) have been in place since April/May 1988. It is expected that the team would be strengthened by a Plant Pathologist and a Physiologist during 1989. Informal contacts with sorghum researchers in the 8 mandate countries during both the regional pearl millet workshop Nigeria from 14-19 August, 1988 and at this workshop were made. A meeting with representatives from these countries is planned during 1989 to agree on details of cooperative activites.

Entomology Research

Emphasis will be placed on screening for resistance to the known major insect pests of sorghum in the region, viz stem borers, shoot flies, head and storage insect pests.

This will necessitate studies on the biology of an economic threshold levels and economic importance of each insect and the development of screening techniques.

It is hoped to establish a facility for laboratory rearing of some of the insects in order to make our screening results meaningful. Insect pest nursery for the regional trials was planned.

For countries which lack entomologists, emphasis will be on the training of national staff. A Short training course on identification and screening methods for major insects pests is planned to be held at Kano. In the meantime, surveys will be conducted with national staff to identify existing major insect pests.

C. Comments on Regional Trials

Some countries felt that there is a poor communication system within the zone, therefore, seeds should be sent early so that the Regional Trials should be planted at the right time. To overcome the communication gap, it was unanimously decided that the seed multiplication of the entries decided in the workshop should be multiplied by Coordinator, Sorghum Network during off-season. Entries included the national programme should supply 200 gm seeds at the time of workshop with complete address.

All member countries of the sorghum workshop unanimously recommended that the Regional Trials should be conducted for a minimum of two years with same entries including two to three entries or 5 to 10% of the best entries from the previous years testing. It was also recommended unanimously that after presenting the results of trials, the entries in each trials should be decided in the workshop and each country should give information of the entries with at least 200 grams seeds.

The workshop recommended that these regional trials should be conducted precisely with intensive evaluation in the areas of sorghum growing zone that is relevant to the maturity duration of the entries in a trial.

Furthermore, it was recommended that ICRISAT should establish a sorghum germplasm conservation facility in West and Central African region. Only hybrids that yield 15-20% higher yields than open pollinated varieties under similar input levels should be extended to farmers, it was commented that scientists involved in the regional trials should apply themselves in conducting research in order to obtain meaningful and reliable data.

In the morning of 23 September the on-farm research trials of Testing and Liaison Unit (former ACPO-programme) were visited. Among the technology that was being evaluated were the effect of seed dressing on plant establishment, fertilizer and variety effects on yield. Elite varieties of sorghum were also evaluated on farmers' fields, it was reported that S-35, S-34, CS-95 etc. are being widely adapted.

D. Renewal of Steering Committee Members

Following the field trip, during the afternoon, I was asked to chair the session that also included the selection of new members of the Steering Committee. The criteria for selecting members of the Steering Committee was outlined as follows :

i. Should be full- time researcher on sorghum

ii. Different disciplines such as agronomy, plant protection, soil scientists etc should be represented in the committee

iii. Regional representation from West and Central Africa.

Three new members i.e scientists from Cameroon, Burkina Faso and Senegal were elected. Ghana, Benin and Chad sorghum or scientists from these countries were nominated as alternate members. The new members of the committee are :

- Dr Dangi - Sorghum Research Leader
  NCRE/Cameroon with 12 votes

- Dr Da Sansan - INERA/Burkina Faso with 12 votes -

- Dr Luce Cloud - ISRA/Senegal with 9 votes

Candidates that were elected as alternate members are :

- Dr Frolich Walter - from Ghana Nyankpala Research Station
  with 7 votes

- Dr Doso Yovo - from Benin INA/station with 7 votes

During late afternoon of 23 rd Sept, the Governor of North Extreme Province of Cameroon was kindly present to officially close the workshop.

On behalf of the workshop participants, ICRISAT and OAU/STYRC SAFGRAD, I was asked to give vote of thanks to the Government of Cameroon and its people in general, to the Governor of Extreme North Province, the Director of IRA and his scientific and administrative staff in particular for providing logistic and institutional support for hosting the Third Sorghum Research Networkshop.

E. SAFGRAD/CAMEROON FSR

I also met two members of the SAFGRAD FSR team at the Sorghum workshop in Maroua. I was informed that farmers field-day was scheduled to take place on 22 September. The previous afternoon, I was able to go to Garoua to visit the on-farm testing activities and also to participate at the farmers' field-day. Farmers'representatives from Pitao Jalingo and Gashida district were present. Two SAFGRAD scientific staff, field monitors, the SODECOTON representatives for the zone were present at the meeting.

Feedback information from farmers of the above mentioned districts showed that the application of the following technologies did increase yield of maize and sorghum.

a. Seed treatment has improved plant establishments and consequently also improved the total yield of cereals.

b. Some farmers observed that the application of fresh organic matter burned and killed plants, while most farmers commented that the application of decomposed organic matter did increase yield. The transport of manure to farmers' field however, was mentioned as main problem.

c. Farmers commented birds as major pests on sorghum and millet. Farmers responded that they would also prefer to plant early maturing maize varieties if seed is made available to them.

d. It was commented that in general that improved varieties have low germination and plant establishment but there was no problem of germination of cowpea seeds.

Farmers suggested that SAFGRAD field monitors should make contacts for field trials ahead before growing season starts-since the cooperating farmers need to decide which of the plots to use for research trials. Finally, farmers thanked for the technical assistance and support provided through SAFGRAD/IRA project.

F. Recommandations of Third Regional Sorghum Workshop

Workshop

1. Taking into account the importance of the sorghum crop and the research activities on sorghum improvement in Niger, the workshop unanimously proposed that the fourth workshop scheduled for the last week of January 1991 be held in Niamey, Niger. The workshops were decided to be held in the off-season to enable participant to discuss the results. The workshop in Niger is subject to the approval by the Government of Niger.

Training Workshop

2. In view of the importance of agronomic research and and on-farm testing in developing suitable technologies and making them available to farmers, and the importance of experimental designs and data analysis in the interpretation of results, the workshop recommends that the regional programme organise a short-term training for technicians in the region.

Monitoring Tour

3. In order to encourage national scientists to visit other national programmes within the region during the crop season, exchange ideas and information, the workshop recommended the visit to the national programmes of Mali and Niger, by national scientists from Mali, Togo, Benin, Tchad, Guinea, Cameroon and Burkina-Faso.

Regional Trials

4. a. In view of the difficulty in multiplying the seeds and the early dispatch of regional trials to national programmes the workshop strongly recommended that the member countries interested in including their varieties/hybrids in the regional trials should send the seeds to the Coordinator by early October to arrange for multiplication in the off-season and timely dispatch of the regional trials. It is suggested that all the entries should be multiplied under comparable conditions in one location in the off-season by the Coordinator.

b. In order to abtain valid information it is recommended that the regional trials be repeated over two seasons. About 5-10 % or 2-3 best entries will be advanced as controls to next batch of regional trials along with the new entries.

c. In order to reduce the coefficient of variation and improve the statistical validity of the trials the workshop strongly recommended that the regional trials should be planted on time, in the appropriate ecological zone and on a relatively uniform piece of land and protected well against the birds.

5. Stand Establishment and Seed Quality

In view of the damage to the grain by grain moulds, bugs etc... and their eventual poor germination and stand establishment, it is recommended that a detailed investigation be carried out to improve this trait. As an additional selection criterium it is recommended to test for seed germination after harvesting the regional trials.

6. Coordinator

In view of the heavy responsibilities of the Coordinator and need to intensify the network activities, the workshop strongly recommended immediate appointment of a full-time Coordinator.

7. Transfer of Technology

In view of the difficulties encountered in transferring the technology to the farmers the workshop recommended that the national programme scientists be encouraged to put more emphasis in this activity.

8. Dissemination of Information

a. In view of the difficulties expressed by the scientists for exchange of information and results the workshop recommended that SAFGRAD takes appropriate measures for the rapid initiation of Journal of Agriculture to facilitate publication of research results.

b. In order to get familiar with the sorghum scientists in the region it is recommended that the Coordinator compile a directory of sorghum workers and distribute to various national programmes.

9. C C R N

In view of the global mandate of CCRN the workshop recommended that CCRN plays an appropriate role in strengthening the regional network.

10. Transplanted Sorghums Muskwari ?

In view of the regional importance of these transplanted sorghums in different countries it is recommended that the improvement of these sorghums should receive appropriate attention in the network.

11. Financial Assistance

The need for financial assistance to the national programmes was again emphasized and was recommended that the regional network explores various possibilities in this direction.

12. Technical Assistance

Because some national programmes are relatively weak the workshop recommended that the network provides some technical assistance to strengthen the national research activities and assist in training scientists/technicians.

G. Steering Committee meeting recommandation of 24 September is being finalized by the Acting Regional Sorghum Research Coordinator.

1988-09

MISSION REPORT Cameroon 1988 (WCASRN)

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