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*Food Fortification Symposium*  
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Report of TDY to Lesotho in Regards to a Food Fortification Symposium, Appropriate Food Technology, and Iron Fortification of Sorghum

SUMMARY

A TDY assignment was carried out in Lesotho, August 21 - September 2, 1981 for the combined purposes of being a speaker on the program and assisting in the conduct of a Food Fortification Symposium, August 25-27, and for holding discussions with USAID and COL personnel regarding ideas and suggestions for Nutrition and Agribusiness Group (NAG) involvement in activities in the areas of Appropriate Food Technology and Iron Fortification of Sorghum. The Office of Nutrition, AID/W in cooperation with USDA provided two additional speakers for the Symposium, Dr. John Vanderveen, Director, Division of Nutrition, FDA and Dr. John Nichols, Marketing Economist, Texas A&M University. This three member team gave seven formal presentations on the program covering the technological, economic, and governmental responsibility factors involved in the planning and implementation of a national program for the fortification of foods with vitamins, minerals, and proteins. In addition, the team members participated in question and answer, and discussion sessions all during the course of the Symposium. The sponsors declared the Symposium a success based on the program content and the solid attendance and participation by the nearly 70 attendees.

In addition to participating in the Symposium, I met with Steve Norton, USAID, and discussed the other two subject areas to obtain his advice on their present status in the country, on the interest or capability of the COL to participate in such activities, and on further steps that should be taken in regards to my suggestions for involvement of the NAG. The general advice was that neither USAID nor the COL were in a position to take on any new commitments either of money or personnel. If the inputs to be offered could be useful

and integrated into present programs then he recommended that we pursue it further. However, if it required new initiatives, planning, and programming then he could not support our continuation of activity development.

Norton described a new and active team working on a Renewable Energy Technology project as part of the Rural Development Program and suggested I talk with them regarding inputs in the area of Appropriate Food Technology. A meeting was held later with the RET team and several problems were identified where NAG could assist by compiling data and providing information related to these problems. This assistance will be provided as rapidly as the information can be obtained.

Included in the meeting with Norton was a discussion regarding the iron fortification of sorghum. The results of this discussion were less positive in the respects that (1) the GOL has no money or manpower to direct toward any type of testing or field trials and (2) this may not be a good time to suggest such testing as it might disrupt the consideration and discussion on general food fortification and stop any program for the fortification of maize meal and wheat flour. Consequently no contact was made with GOL principals regarding this subject. It was agreed that testing of sorghum meal from Lesotho could be carried out in the U.S. for our own information so samples of sorghum meal were obtained and sent to the U.S. to be used in iron absorption tests at Kansas University to determine the bioavailability of added iron from sorghum. This work will be done to add to the meager base of knowledge regarding the availability of iron sources when added to sorghum meal. The results of the testing will determine any further action to be taken regarding trying to carry out a field trial in Lesotho.

Specific details regarding discussions and results for each of the three subject areas are included in the following sections carrying the respective headings.

APPROPRIATE FOOD TECHNOLOGY

The Nutrition and Agribusiness Group is developing a program on Appropriate Food Technology and is currently exploring ways that inputs from the Group can be utilized in this specific area of Appropriate Technology to benefit the rural poor in developing countries. One method of utilizing any such resources would be to integrate the AFT into ongoing rural development programs or to those in the planning stages in order to utilize the infrastructure and mechanisms already in place while in turn adding a new dimension for improving the nutritional status and quality of life of the rural segment of the population.

A meeting was held with Steve Norton, USAID, in order to describe the types of inputs that could be available through NAG and to cite specific technologies that could be supplied for use in various programs as well as to obtain his advice and guidance on the status of rural development programs in Lesotho and suggestions of any candidate projects that could utilize the offered assistance.

Of the several projects underway or soon to start in Lesotho, only one was described as being amenable to the offered assistance. The one was the Renewable Energy Technology project which is headed by Jay Stryker and includes a team of Judy Gay, anthropologist, and Gary Klein, technologist. A brief look at the RET project paper showed areas of mutual interest and possible use of NAG inputs so a meeting was scheduled with the team. A very informative and useful meeting was held at the RET office. The work of the team was described as centering on the utilization and conservation of energy in the areas of heating buildings, heating of water, and cooking methods. This latter area is the most active and of most concern to NAG as it includes improved methods of cookery both by efficient use of fuel materials via the development and use of the

Paola Cooker and by the utilization of solar energy through the use of different types of solar ovens. The RET office is planning its activities to avoid duplication of those of the Rural Technology Unit of the MAG of the GOL. The RTU is working on increased crop production and introduction of nutritionally improved crops among other things in the attempt to provide more food and nutritionally improved diets.

No specific role for NAG inputs was defined during the discussions but several problems and questions confronting the work of the RET project were brought up and assistance was requested in finding information or answer, if possible, and providing it to them. The problems centered on food cookery and microbiological aspects of sub-optimal cooking, holding foods at intermediate temperatures, and incomplete cooking as might be expected on a cloudy day using a solar cooker. In addition, information was asked for the design and construction of ox collars for work oxen and for specific high protein green crops that might be used in Lesotho.

At this point it looks like the role for NAG in Lesotho would be as a source or provider of information directed at specific problems encountered in a program already actively implementing some form(s) of Appropriate Technology. This role does not really meet the goals of the AFT project in regards to involvement and intended value. However, it should be recognized that the RET project was already planned and underway so present a different field of opportunity for the consideration of NAG inputs into the project than would be the case if NAG had been involved during the planning stages.

I agreed to acquire the information requested and provide it to them just as soon as possible. I anticipate a continuing correspondence from the RET project and occasional requests for technical assistance which we can provide in support of this application of Appropriate Technology.

IRON FORTIFICATION OF SORGHUM

One phase of the Office of Nutrition, AID/W project for Combatting Iron Deficiency Anemia includes the carrying out of one or more field trials in developing countries to demonstrate the bioavailability of iron from different sources when added to various foods. An earlier evaluation of Lesotho food-stuffs and methods of processing foods indicated that it had suitable conditions as a field site for the study of the addition of iron to a staple food, specifically sorghum, since the staple food is universally consumed and is centrally processed for the most part. Also the use of sorghum as the vehicle would provide much needed data since comparatively little is known about the bioavailability of iron from sorghum compared to that known about the other cereal foods. This combination of conditions prompted the idea to look into doing development studies and a controlled field test on iron fortified sorghum in Lesotho.

At the same meeting with Steve Northon, USAID mentioned earlier, the general idea of the goals, the nature of the activities to be carried out, and the expected inputs from USDA/USAID and the GOL regarding the study of adding iron to sorghum were discussed. His advice was sought regarding the interest and capability of the GOL to participation in such a project. The advice and comments were as follows: (1) It was again emphasized that the GOL had no money or manpower to commit to any new initiatives such as testing or the conduct of field trials. The level of technical expertise is low and the availability of technical personnel such as for doing hemoglobin determinations, etc. is about zero even at the hospital; (2) With the present high interest and consideration for the general fortification of the staple foods including sorghum meal along with the maize meal and wheat flour, any introduction of a project like this that might indicate lack of sufficient knowledge about iron

fortification might jeopardize the approval and implementation of a broad fortification program; and (3) A really good explanation of why the testing was being done in Lesotho would have to be presented first to dispel any idea that the people of Lesotho were being used as test subjects only or guinea pigs and would not realize any benefit from it in the long run. The GOL would have to be assured that they would receive the test results and that the results would be helpful in planning and implementing food fortification activities in Lesotho.

All of those points considered together indicated that the time was not right nor the conditions suitable to initiate discussion or planning activity with GOL personnel. However, on the consideration that in the near future the situation will be amenable to some cooperative activity and in order to gain information about the bioavailability of iron from various sources when added to sorghum meal, samples of common sorghum meal were obtained in the market place and shipped to the U.S. for testing by Dr. Jim Cook at the University of Kansas Medical Center who is the principal investigator on the project for Combatting Iron Deficiency Anemia. In addition, instructions for the typical preparation of sorghum meal porridge called *Le Sheleshele* were obtained and will be used to prepare the iron fortified sorghum meal for its testing. This testing probably will not be completed for several months. The results, whatever they are, will add to the relatively small base of knowledge regarding sorghum and they will be used in helping to determine any further action to be taken regarding proposing a field trial in Lesotho. By this time also, a decision is supposed to have been reached regarding general food fortification (as discussed under Food Fortification Symposium) so a decision to pursue a field test may find a more appropriate time and more favorable conditions.

FOOD FORTIFICATION SYMPOSIUM

In November 1980, I visited Lesotho and carried out an evaluation of how feasible, appropriate, and effective a program for the fortification of staple foods with vitamins, minerals and proteins might be toward eliminating defined nutrient deficiencies. The evaluation included a positive feasibility and the recommendation that a symposium be held regarding all aspects of food fortification. The report initiated the effort for the planning and carrying out of a symposium which culminated in the presentation of the Food Fortification Symposium--concepts, technologies, program options held August 25-27, 1981. The program included a comprehensive review of the technological, economic, and governmental responsibility factors which are involved in the planning and implementation of a national program for food fortification. The program also included presentations and discussions on supplemental/weaning foods both by commercial manufacturing companies and from the point of view of home and village level blended foods such as Likuni phala from Malawi and Super-porridge from Lesotho.

In addition to myself, AID/W through USDA provided the services of Dr. John Nichols, Market Economist from Texas A&M and Dr. John Vanderveen, Director, Division of Nutrition, FDA, as speakers on the program. A total of seven presentations were given by the team in addition to their being engaged in question and answer sessions and informal discussion all through the three days of the symposium.

The symposium was attended by nearly 70 people from all segments of the GOL plus representatives of PVOs, of the governments of Malawi, Swaziland and Botswana and representatives from commercial concerns in RSA. The attendance was excellent and the type and extent of questions asked during regular question and answer periods plus in the informal discussion time indicated to the sponsors

and the speakers that the information being presented was pertinent, important and well received.

An extensive record of the entire proceedings was obtained both from the written copy of the formal presentations and the taping by two different sources of all of the presentations plus the question and answer periods with the attendees. The representatives from three commercial firms in the Republic of South Africa fully described their high protein and multiple vitamin products and while their presentations were appropriate to round out the entire picture of concepts of adding nutrients to the daily diet of people, their emphasis seemed to present an atmosphere of either/or, i.e. either consider adding certain vitamins and minerals to staple foods at the mill through regular fortification procedures or to add their preparations at home, hospital, etc. after it is purchased from the market shelf, with the emphasis obviously on the latter. This element of confusion was expressed in the options discussion and recommendation period at the end of the symposium.

A summary was compiled of all of the options raised during the symposium for adding nutrients to food. These options were discussed by the entire group during the last two-plus hours of the program. No clear cut statement of preferred options or a ranking of priority for various options resulted from this discussion however. So the steps to be followed in the near future regarding the status of consideration for food fortification in Lesotho are as follows:

1. The UNCO and representatives of the special Cabinet Sub-Committee on Nutrition are to meet in early September to restudy the options and discussion and formulate a proposal or plan in regards to what goals are to be set and what strategy, option(s) to be recommended. This proposal and recommendations will be presented to the full Council of Ministers at their regular

meeting in late September with the hope and intent of obtaining an approval decision regarding them and indication to proceed with planning of a food fortification program. Thus it is possible that a decision will be known by early October whether a food fortification plan for Lesotho will become a viable program for the nutritional improvement of the majority of the population.

No further action or follow-up is planned at this time regarding food fortification as no request or need for it has been indicated. The offer was made informally to FNCO personnel that further technical assistance might be provided through USAID and USDA for implementation activities if a positive decision is obtained from the COL and plans made and funding definitely committed for such a program.

I wish to extend special thanks to Bob and Matty Nothstein who worked so very hard and well in planning and preparing for the Symposium, to Mrs. Phafane and the members of the FNCO for inviting us and being such nice hosts, to the members of the REF team for providing me an opportunity to help, and to Steve Norton, USAID, for his cooperation and guidance through the whole visit.

Fred Barrett

Sept. 10, 1981