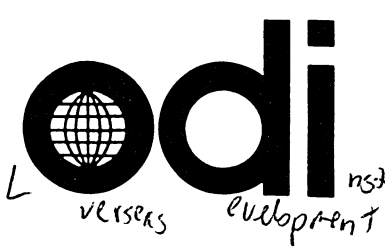

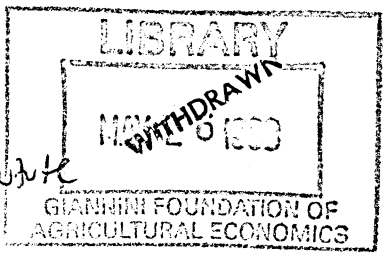

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NON-GOVERNMENTAL ORGANISATIONS AND AGRICULTURAL RESEARCH:

THE EXPERIENCE OF THE GAMBIA

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CONTENTS

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ACRONYMS

AATG	Action Aid (The Gambia)
ADPII	Second Agricultural Development Project (World Bank)
ARREV	Annual Research Review
CILSS	Comite Inter-Etats de Lutte Contre la Secheresse dans le Sahel
CRS	Catholic Relief Service
CSRM	Cropping Systems/Resource Management Programme
CUSO	Canadian Universities Service Overseas
DAR	Department of Agricultural Research
DLS	Department of Livestock Services
DOP	Department of Planning
DWR	Department of Water Resources
FAO	Food and Agriculture Organization
FFHC	Freedom from Hunger Campaign
FITT	Farmer Innovation and Technology Testing Programme
FPR	Farmer Participatory Research
FSR/E	Farming Systems Research/Extension
GAFNA	Gambia Food and Nutrition Association
GARD	Gambia Agricultural Research and Diversification Project
GOTG	Government of The Gambia

Acronyms (continued)

GRS	Gambian Research Services
MCH	Maternal/Child Health
MOA	Ministry of Agriculture
MMAP	Methodist Mission Agricultural Programme
MWRF&F	Ministry of Water Resources, Forestry, and Fisheries
NARB	National Agricultural Research Board
NASS	National Agricultural Sample Survey
NBD	North Bank Division
NGO	Non-Governmental Organisation
ODA	Overseas Development Administration (UK)
OFCOR	On-Farm Client-Oriented Research
RDP	Rice Development Programme (of FFHC)
SGA	Sesame Growers' Association
TANGO	The Association of Non-Governmental Organizations
VDC	Village Development Committee

ABSTRACT

This paper reviews recent concerted efforts by the Gambian Department of Agricultural Research to work with NGOs in technology testing and feedback. Eight NGOs participated in the Farmer Innovation and Technology Testing and/or Rice Research Programme activities in 1989 and an expanded programme of collaboration between NGOs and government is planned for 1990. NGOs are also represented on the Task Force committees of specific government research programmes. Whilst the NGOs each have differing agendas, participatory approaches and various forms of on-farm research are common to all, allowing NGOs to articulate small farmers' requirements into the public sector's research agenda. Another level of complementarity between government and NGOs is that resource constraints have forced government to limit the number of crops on which it conducts research, and NGOs have researched some of those outside the government's portfolio. Although problems remain (in eg. competition between NGOs and government for professional staff and on the division of responsibility for management of trials), interaction between NGOs and government is generally healthy and complementary, and set to expand in the future.

I INTRODUCTION

This paper examines the current status and potential for the involvement of Non-Governmental Organisations (NGOs) in agricultural research in The Gambia. NGO interest in agricultural research comes from three sources. First, there is a growing appreciation that a continuing flow of innovations is essential to increasing agricultural productivity which in turn is a key to improving the incomes and well-being of rural Gambians. Although individual NGOs have made progress in promoting specific technologies, adoption by farmers is mixed and unlikely to produce dramatic changes in productivity and incomes in the near term. Second, there is a perception that innovations available from the Gambian Research Services (GRS) and external sources of technologies are insufficient in both quantity and quality to produce the desired improvements in agriculture, particularly among resource-poor farmers[1]. Third, farmer participatory research (FPR) is a logical extension of NGO operational strategies which stress village-level/bottom-up orientations to the design and implementation of development activities. FPR can serve to define more sharply key constraints to increasing agricultural productivity and assist with the identification and adaptation of technologies appropriate for specific farming systems.

NGO participation in agricultural research is a welcome development which can greatly enhance the effectiveness of the activities of these organisations as well as improve agricultural research and development efforts generally in the country. However, individual NGOs must identify their specific areas of comparative advantage in the spectrum of agricultural research which requires a broad appreciation of the relationships among the various components of an effective research system. GRS can assist in this process and build the foundations of effective collaboration in the process. FPR can be a powerful tool, but its utility will be seriously limited unless it is effectively linked with other sources of ideas and innovations (Mills and Gilbert, 1989). These sources include GRS and the international research centres, but are by no means limited to them (Biggs, 1989b). NGOs and the farmers they serve can borrow from each other as is already happening. The notion that NGOs

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[1] This perception is growing, particularly among donor agencies, but is not yet widespread among NGOs. The more common view is that strong extension and community action can overcome possible deficiencies in the technologies as is discussed in section IV.

individually or collectively can go it alone in meeting their agricultural research needs should be avoided. However, the research activities of an individual NGO should be first and foremost those that are perceived by the staff of the organisation as directly relevant to their objectives and only secondarily as a service to other agencies, such as research programmes in GRS. In this regard, each NGO should be encouraged to develop its own specific approach and scope of research activities consistent with its needs and capacities.

A division of labour between GRS, development agencies (including NGOs and government extension services/special projects) and external sources of innovations is gradually evolving in The Gambia which can work to the benefit of all concerned, particularly the farm families of the country. Effective collaboration, however, requires that all parties, including NGOs, GRS, and the government extension services, be able and willing to work together on the basis of mutual respect and common interest. In this regard, the areas of competition and tension need to be clearly recognized and efforts made to reduce or eliminate the sources of these problems.

Section II of the paper provides an overview of agricultural research and development in The Gambia and the expanding role of NGOs in the country. Section III describes the activities of 8 NGOs which have initiated some form of agricultural research activities in recent years. Section IV examines the common elements in NGO approaches to agricultural research. The final section suggests ways to strengthen NGO/GRS collaboration in the areas of priority setting and planning; linkages and networking; on-station research; on-farm research; and monitoring and evaluation.

II BACKGROUND - AGRICULTURAL DEVELOPMENT IN THE GAMBIA AND NGOs

This section describes the setting of the paper, including the agricultural economy of The Gambia, the institutions concerned with agricultural research and development, and the changing role of NGOs in the country.

A. *The Gambian Agricultural Economy*

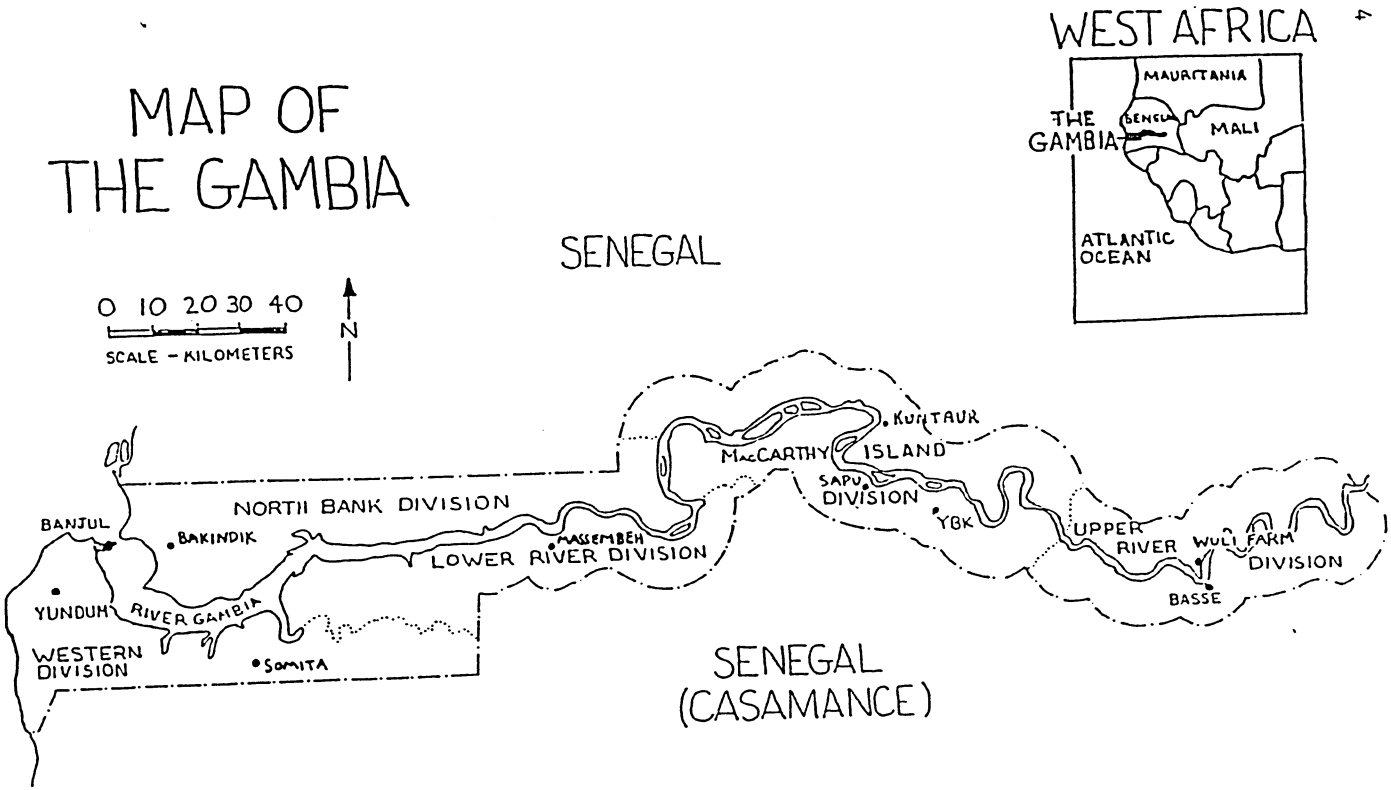
The Gambia is one of the smallest countries in Africa with a total land area of approximately 11,000 square kilometres. A significant portion of

the country is taken up by the River Gambia and its tributaries (Figure 1). The total population is estimated to exceed 850,000 in 1990 and is growing at a rate of 3% despite a life expectancy of only 43 years. The population density is the fourth highest in Africa and its current per capita income of $220 places it among the world's poorest countries (IBRD, 1989).

Gambians live primarily in rural areas and agriculture provides employment for approximately three-quarters of the population. Migration has been an important feature for more than a century with movements from overcrowded resource-poor areas to the north and east to urban centres and rural areas on the south bank where land is still available (Colvin, 1981). In-migration from neighbouring countries, notably Senegal, Guinea, Guinea Bissau, and Mali, has also been an important factor. As a consequence of these movements, the geographic distribution of various ethnic groups has changed dramatically over time. Mandinkas still account for the largest single ethnic group in the country as a whole, but Mandinka out-migration to urban areas in the West combined with Wolof and Fula in-migration to the same areas (eg. in the northern and eastern portions of the country) have increased the relative importance of these groups (Posner and Gilbert, 1989a and 1986b).

The agricultural economy (which accounts for 35% of gross domestic product) remains heavily dependent upon groundnut production primarily for export and cereals (millet, sorghum, rice, and maize) for domestic consumption. There has been no clear trend in the overall area cultivated annually over the past decade which was approximately 180,000 hectares in 1989 (Figure 2). However, there have been major shifts in the crop mixtures in response to changes in weather conditions and relative prices. Drought and low producer prices for groundnuts encouraged the production of coarse grains, notably early millet and maize, during the early 1980's. In 1986, there was a major increase in groundnut prices as part of the government's Economic Recovery Programme (ERP) which led to increased production of that crop. Despite improvements in per capita production of cereals, The Gambia remains heavily dependent upon imports of rice and wheat flour to meet local requirements. Just how dependent is matter of uncertainty because of substantial unrecorded re-exports of rice to neighbouring countries.

The use of animal traction and fertiliser has increased dramatically in the past two decades and The Gambia is now among the highest users of both of these improved inputs in the region. More than 70% of the households (dabadas) own and operate animal traction and an even higher percentage


MAP OF
THE GAMBIA
SENEGAL
0 10 20 30 40
SCALE - KILOMETERS
N
WEST AFRICA
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THE GAMBIA
SENEGAL
MALI
ATLANTIC OCEAN
KUNTAUR
MacCARTHY ISLAND
SAPU DIVISION
YBK
NORTH BANK DIVISION
BANJUL
BAKINDIK
MASSEMBEH
LOWER RIVER DIVISION
UPPER RIVER
WULI FARM DIVISION
BASSE
YUNDUM
RIVER GAMBIA
WESTERN DIVISION
SOMITA
SENEGAL
(CASAMANCE)

FIGURE 1

have access to it. In some parts of the country the use of animal traction for land preparation and planting of upland crops is almost universal (eg. North Bank Division), (Posner and Jallow, 1987; Sumberg and Gilbert, 1989).

Despite these changes, crop yields have not increased significantly in most parts of the country, although they fluctuate from year to year in response to weather conditions. Factors possibly explaining this situation include the decline in average rainfall by 25% since the 1960's (Wright, 1988), and a reduction in fallowing caused by a growing scarcity of suitable land in several parts of the country (Mills, Kabay and Boughton, 1988). Out-migration has resulted in the stagnation of numbers of economically active rural residents in some parts of the country, notably the Baddibu districts of NBD, which may have partially offset the effects of increased mechanization upon agricultural production (Posner and Gilbert, 1989a).

There is ample evidence that Gambian farmers are innovative and are willing to make changes in their farming systems in response to opportunities to improve their incomes. The shifts in cropping patterns and the spread of fertiliser use and animal traction are dramatic illustrations of this process (Mills and Gilbert, 1989). Other innovations which can further this process are available from the research services and external sources of improved technologies (Diallo, O'Neil and Manneh, 1988). To date, however, the net result of these changes has been to keep rural incomes from deteriorating in the face of declining rainfall; a growing shortage of land for crop production; and the out-migration of the most able elements of the population. Further improvements in agricultural productivity are required to sustain and hopefully raise income levels. Strengthening the capacity of research and development institutions in support of this effort is a major focus of agricultural programmes and policies in the country.

B. *Institutions Supporting Agricultural Development*

The public and private sector institutions concerned with agricultural research and development in The Gambia are generally smaller in size and fewer in number than one finds in many other African countries, which appears traceable to the size of the country. There is less institutional differentiation - research and extension in specific areas share the same ministry or even the same department which, in theory at least, facilitates linkages between the two. The ratio of extension personnel (public and

private sector) to farm families is one of the highest in Africa and the smallness of the country reduces problems in communication between different regions. However, the agricultural sector encompasses a range of commodities and issues which are comparable in number and complexity to those found in much larger countries which places heavy demands upon the country's limited research capacity.

Research on crops is the responsibility of the Department of Agricultural Research (DAR) which, prior to 1988, shared a department with the Department of Agricultural Services (DAS) which operates extension services for crops (Figure 3). DAR has six research programmes including Cropping Systems/Resource Management (CSRM), Rice, Horticulture, Upland Cereals, Grain Legumes/Oilseeds, and Agricultural Engineering/Animal Traction[2] The Departments of Livestock Services, Fisheries, Water Resources, and Forestry combine research, extension, and special services for these subsectors. The principal task of the Department of Planning (DOP) is the operation of the National Agricultural Sample Survey (NASS), but its staff includes socio-economists who participate in research activities.

In 1988, a National Agricultural Research Board (NARB) was created to advise the Minister of Agriculture on matters related to the conduct of agricultural research in the country. Following an assessment of constraints and priorities in 1989, the NARB issued a policy statement which is currently providing guidance to the GRS (Norton et al., 1989; NARB, 1989). The NARB directed the research services to focus their resources upon eight priority commodities including groundnuts, early millet, upland rice, vegetables, cotton, ruminants, fisheries, and forestry. The NARB further indicated that priority attention should be directed to collaboration with development agencies, including the extension services and NGOs, in the identification, testing and dissemination of improved technologies.

Research staff in the six departments totals 43, including 8 expatriates (Table 1). Most researchers divide their time among a variety of tasks including extension and administration so that the person-years devoted to research is less than 20, half of which is in DAR. Among the Gambian

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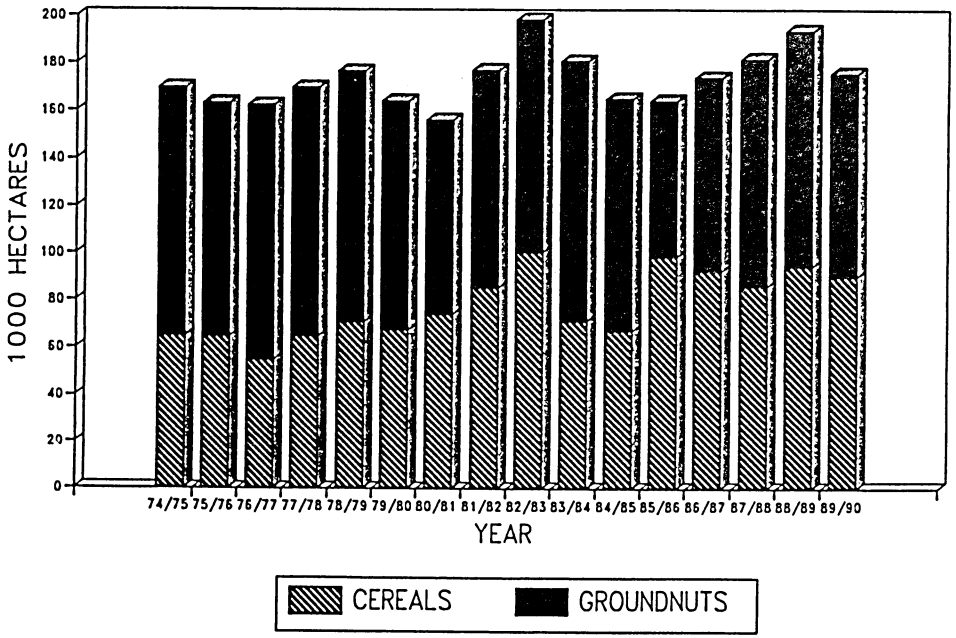
[2] Some development and testing of rice production and post-harvest processing equipment is being done by the Appropriate Technology Unit (ATU) of the Department of Community Development (ATU, 1989).

FIGURE 2: CROPPED AREA IN THE GAMBIA
1974– 1989



research staff, sixty-three percent have the equivalent of a masters degree, but only 1 researcher has the equivalent of a doctorate (Zuidema, 1990).

The GRS has received considerable external assistance in recent years, notably through the Gambia Agricultural Research and Diversification (GARD) project supported by USAID; the Overseas Development Administration (ODA) in the areas of socio-economics and seed technology; the Food and Agricultural Organization (FAO) for fertiliser trials; and the Comité Internationale pour la Lutte Contre la Sécheresse dans le Sahel (CILSS) for agricultural statistics and varietal trials.

The priorities and policy statement by the NARB has served to focus resources on a sub-set of priority commodities and research issues. However, a serious imbalance between needs and capacity is likely to continue in the medium term (Zuidema, 1990).

The GRS has been able to produce a number of important research results which directly address some of the major constraints to increasing productivity in Gambian farming systems. These include measures to improve plant populations (Cockfield, et al., 1989); fertility maintenance strategies (Mills et al., 1989; and Mills and Senghore, 1989); mechanization of rice production in the inland valleys (Remington, 1989; and Jones, 1989); reduction of equine mortality (Sowe et al., 1988; Sumberg, 1989); pest-resistant varieties of coarse grains (Zethner and Ngom, 1988; Mbenga, 1989/90); horticultural marketing (Daniels, 1988); bush burning (Njai, 1989); revitalization of the production of findo, cowpeas and cassava (Watt et al., 1990; Diallo, 1988 and 1989; George, 1988) ; and feed management (Njai et al., 1988; Njai and Mills, 1988). The results borrow extensively upon research findings in other countries and collectively could contribute to significant improvements in agricultural production in the country over the next decade.

On-farm research has received considerable attention by the research services in recent years, although the more resource-intensive forms of farming systems research and extension (FSR/E) have proved incompatible with current and prospective capacities in GRS (Gilbert, Posner and Sumberg, 1989). In 1989, the Cropping Systems/Resource Management (CSRM) Program and the Research/Extension Liaison Unit (RELU) of DAR initiated a programme of Farmer Innovation and Technology Testing (FITT) in collaboration with development agencies in an effort to expand and accelerate the flow of innovations (DAR, 1989; Mills and Gilbert, 1989; Diallo and Suso, 1990). The participation of farmer groups, inspired

TABLE 1: PERSON-YEARS IN RESEARCH IN NARB RESEARCH UNITS
JANUARY - DECEMBER, 1989

	GAMBIANS		EXPATRIATES		TOTAL	
	In Position	Person-Yrs Research	In Postion	Person-Yrs Research	In Postion	Person-Yrs Research
MOA						
DAR	18	9.15	6	1.55	24	10.70
DLS	9	4.36	1	.80	10	5.16
DOP	2	.33	-	--	2	.33
Subtotal	29	13.84	7	2.35	36	16.19
MWRFF						
DFOR	1	.25	-	--	1	.25
DFISH	1	.48	-	--	1	.48
DWR	4	1.90	1	.50	5	2.40
Subtotal	6	2.63	1	.50	43	3.13
TOTAL NARB	35	16.47	8	2.85	43	19.32

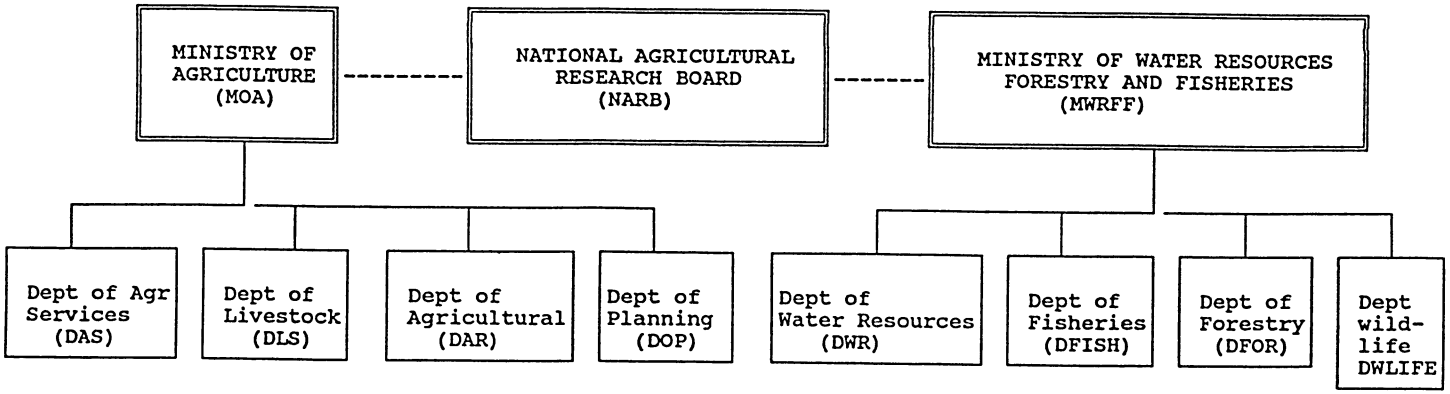
in part by the experiences of the Agricultural Technology Improvement Project in Botswana, was a major feature of the FITT programme (Norman et al., 1988). A companion programme focusing specifically on improved technologies for rice production in the inland swamps was launched at the same time under the auspices of the Rice Research Program of DAR (Remington, 1989). In a separate development, the Department of Livestock Services (DLS) initiated a collaborative programme with the Catholic Relief Services (CRS) to examine the feasibility of fattening sheep for sale at Tabaski. NGOs figured prominently among the development agencies participating in these programmes.

In recent years, government departments concerned with providing agricultural services have been undergoing changes including a major restructuring of the Ministry of Agriculture, improvements in salary levels, and associated reforms in the civil service generally aimed at improving its effectiveness. The responsibilities were reduced through divestment and privatization and staff retrenchment with a view to focusing efforts on a narrower range of functions where it was felt the public sector retained a comparative advantage. However, government departments have generally not fared well in competing with the private sector for the most able staff which has seriously complicated efforts to improve the performances of these departments even with a reduced set of responsibilities and better conditions of service. Further, efforts have been made to strengthen linkages between research and extension, but the general perception, particularly on the side of DAS, is that the relationship has deteriorated since the mid-1980's (Sonko et al., 1988; Trent, 1989). Performance levels have been slow to improve which has tended to reinforce negative perceptions of the public service by policymakers, donor agencies and staff members themselves.

The Role of NGOs

NGOs have been active participants in agricultural development efforts in The Gambia since before independence (1965). However, their relative importance has increased significantly in the past decade in the wake of drought relief activities and economic/policy reform programmes which sought to strip down a broad range of public services through retrenchment, divestment and privatization (Bazalgette, 1988). Large, well-established NGOs operating in several countries such as CRS, Save

FIGURE 3: GAMBIAN RESEARCH SERVICES



RESPONSIBILITIES:

NARB - Policy and priority setting
DAR - All crops research
DAS - Research/extension liaison and research on pest management
DLS - Livestock research
DOP - Agricultural statistics and socio-economic research

DWR - Agro-climatology and water quality
DFISH - Fisheries research
DFOR - Forestry research
DWLIFE - Wildlife research

the Children, Action Aid, Freedom from Hunger Campaign (FFHC), and CUSO, were joined by a growing number of smaller local organisations to be inserted undertaking a variety of development activities often with a primary focus on agriculture. Virtually all the international NGOs, plus a growing number of local institutions, are members of The Association of Non-Governmental Organisations (TANGO) which has recently established a secretariat to serve TANGO and member organisations.

Underlying these developments is the growing perception, particularly by donor agencies, that improving the performances of government departments in supplying various services will be a long-term process. Even though funds continue to be channelled through government departments, attention and support is shifting toward alternate arrangements, including a range of private sector organisations. Input distribution was an early and logical target for divestment/privatization. NGOs with their grassroots development orientation have expanded their agricultural extension and development activities often as part of their efforts to make social services (education and health) self-sustaining through income-generating programmes.

In addition to competing successfully for funds, NGOs have been able to attract qualified personnel, many of them from the government departments, which has both enhanced their performances and reputations as well as enabled several organisations to expand their scale of operation. Agriculture-related activities in particular have expanded dramatically in recent years.

III NGOs' INVOLVEMENT IN AGRICULTURAL RESEARCH: EIGHT EXAMPLES

This section reviews the activities of eight NGOs with specific reference to their agricultural development programmes. The agencies discussed include Action Aid The Gambia (AATG), CARITAS, Canadian Universities Service Overseas (CUSO), Catholic Relief Service (CRS), Freedom From Hunger Campaign (FFHC), Good Seed Mission, Methodist Mission Agricultural Programme (MMAP), and Save the Children Fund (SCF-USA), who are collectively responsible for a major portion of "formal" agricultural development activities undertaken by NGOs in the country. All these agencies participated in the FITT and/or the Rice

Research Program activities during 1989[3]. Although the eight organisations vary significantly in size and scope of operations, from AATG and CRS who operate throughout most of the country with large complements of staff, to the Good Seed Mission which is currently run by one person in a few villages of Lower River Division, they are not a typical cross-section of NGOs found in The Gambia. All of them have links with international organisations and are not local NGOs in the usual sense[4]. The MID-South divisional office of DAS also participated in the FITT programme during 1989/90. For a review of DAS involvement see Diallo and Suso (1990). Table 2 summarizes the major characteristics of the eight organisations including their respective geographic scopes of operation.

A. *Action Aid The Gambia (AATG)*

AATG is the largest NGO in terms of staff with over 400 employees operating in four of the six divisions of the country[5]. The agency receives funding from a variety of sources in the U.K. including ODA, various community-link and sponsorship programmes with individuals, communities and institutions in the U.K. as well as from the parent institution, Action Aid U.K. The activities include the operation of 33 primary schools and assistance to 38 government schools; literacy and skills development training programmes; provision of extension services and inputs for the production of a variety of crops, livestock, bee keeping, fisheries and agroforestry; assistance with land reclamation and tidal irrigation development; savings and credit services; community health; and the construction of wells, schools, and seed stores (Action Aid, 1989).

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[3] The Mid-South divisional office of DAS also participated in the FITT programme during 1989/90. For a review of DAS involvement see Diallo and Suso (1990).

[4] For a detailed discussion of both local and international NGO activities in The Gambia, see Bazalgette, 1988.

[5] AATG has reduced its geographic coverage in the past year and its activities are now almost entirely in three divisions: Lower River Division (LRD), and McCarthy Island Division North and South (MID-N, MID-S). AATG is still assisting government primary schools in North Bank Division (NBD), but has effectively withdrawn from both Upper River Division (URD) and Western Division (WD).

Table 2: Characteristics of Selected NGOs in The Gambia

AGENCY	ACTIVITIES	LOCATIONS	STAFF[1]	FUNDING SOURCES
AATG	Education General Agriculture Fish./Agro-forestry Savings/credit	LRD MID (N & S) NBD (schools)	444 (4) ODA	Action Aid UK, UK link programmes
CRS	MCH/food aid Sesame/cowpeas Fruit trees Mills/dehullers Wells/gardens	National	74 (4)[2]	CRS/NY; USAID IDRC Afr. Hunger Fund Private donations
CARITAS	Gardens Water supply Women's programmes V.D.C. Project[3]	National	74 (1)	Catholic Church Netherlands Germany Australia
CUSO	Health Agriculture Agro-forestry Literacy Village crafts Tech. education	URD	27	Canada
FFHC	Cereal banks Land improvement Rice	LRD, NBD, MID(N), URD	37 (1)	German Agro-Action GOTG Private Agencies Cooperating Together (PACT)
GOOD SEED MISSION	Seed Production General Agriculture	LRD	11	Church donations (USA, Germany)
MMAP	Wells Gardens/Orchards Oil presses	WD NBD MID	22 (1)	Christian Aid London[4] Inter-Church Coordinating Committee for Development Projects
SCF-USA	MCH Rice/Millet Gardens Education	NBD	33	SCF-USA USAID/GARD

[1] Figures in parenthesis indicates Gambian staff with at least a first degree in an agricultural field.

[2] This figure includes CRS staff working with the Gambian Food and Nutrition Association (GAFNA) and the Sesame Growers' Association.

[3] Village Development Committees Project includes seed stores, coos mills, onion shelters, and fishing activities in two villages.

[4] Support from ODA for MMAP comes through Christian Aid.

AATG has promoted a number of improved practices for a broad range of commodities over the past decade. The agency has employed individuals with experience in different areas to design interventions. Major emphasis during the mid-1980's was upon community development and group action rather than upon the technologies being proposed. Prior to the initiation of the FITT programme in 1989, there was no systematic attempt by AATG to assess the suitability of specific technologies that they were promoting.

A Research, Evaluation and Monitoring Unit (REMU) was established in 1988 to establish "an internal reporting and monitoring system, and conduct - evaluations and research" (Action Aid, 1989). The creation of REMU was stimulated in part by concerns about the impacts of AATG interventions on the well-being of participating villages. REMU has conducted surveys on literacy and skills development; community health improvement; and school leavers. In addition, the unit recently initiated a major assessment of the Rainfed Crop Production Project which will compare the progress of project participants over a 2-3 year period with that of non-participants. AATG has requested advisory assistance from DAR/GARD with respect to its monitoring and evaluation activities (Giffen, 1989).

In the early 1980's, AATG initiated a Research Action Monitoring (RAM) programme by which individual AATG staff members could undertake research projects on subjects of their choosing. The purpose of the programme was to provide staff with research experience under the supervision of senior AATG staff and a network of advisors located in each of the AATG target areas; and to generate information for AATG managers. Middle-level staff selected subjects ranging from studies of local markets to the impacts of education on communities. It was further envisaged that participants would be able to use the resulting papers toward meeting the requirements for a diploma. A link arrangement was established with the Universite Cooperative Internationale (UCI) in France, but formal accreditation of the programme with a diploma-granting institution has not been achieved. A number of workshops and individual consultations between participants and advisors were held between 1984 and 1988, but to date no reports on the selected subjects have been completed.

AATG collaboration with the Gambian research services dates from early 1986 when AATG staff participated in a Horticultural Research Group together with representatives of the Department of Agriculture (research

and extension units) and other NGOs (CARITAS, CRS and Methodist Mission) (Gaye, Jack and Caldwell, 1986). The group carried out reconnaissance surveys in the western part of the country which led directly to the initiation of horticultural marketing research activities by DAR (Daniels, 1988). More recently, AATG has been represented in the Horticultural and Rice Research Task Forces. AATG was not active in the Task Force meetings in 1988 which may reflect a higher priority for community development activities as opposed to the promotion of innovations. AATG was also involved in the multiplication of improved groundnut varieties used in Senegal beginning in 1987 and has received advisory assistance from the Winrock On-Farm Seed Storage Project and the Seed Technology Unit in this area.

In 1989, AATG participated in the FITT and Rice Research Program workshops and, as a consequence, farmer groups in two villages (Yorna in MID-N and Boiram in MID-S) carried out trials on groundnut varieties, sorghum, and cowpeas[6]. REMU staff oversaw the activities with backup support from the CSRM research programme of DAR. Difficulties were encountered in obtaining the requisite collaboration from the AATG field staff in the two villages. Results for the groundnut variety trials were encouraging despite late planting. Intercropping trials with E-35, a striga-tolerant sorghum, failed in Yorna but were promising in Boiram. Although it was intended to carry out tests of hand-drawn weeders for rice, these were not done due to the difficulty in locating suitable fields (eg. line-planted fields). There was strong interest among farmers in the programme which AATG plans to continue in the coming year.

B. *Catholic Relief Services (CRS)*

CRS has been operating in The Gambia since 1964 and focused its efforts on food aid during the early years. Since the mid-1970's emphasis has shifted increasingly to long-term development, specifically in the areas of health/nutrition and agriculture (CRS, 1988). Within the Health and Nutrition Program, priority is placed on Maternal/Child Health (MCH) which includes the provision of community-based services such as weight monitoring, instruction and supplemental feeding. The programme is being integrated into The Gambia's Primary Health Care System.

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[6] For a complete review of AATG's on-farm testing activities in 1989/90, see Jallow (1990).

The CRS in The Gambia is part of a cluster of CRS activities in the sub-region which is administered from Dakar, Senegal. As such, the programmes in the country have close links with those in neighbouring countries. The cluster agricultural advisor is currently based in The Gambia.

In agriculture, CRS successfully promoted sesame production from 1985 through 1988 following on-station testing of sesame and sunflower varieties by the research service in earlier years. The area devoted to the crop has grown from virtually zero to approximately 8,000 hectares in 1989 (DOP, 1989). The fact that the crop could be planted late after the peak labour period and required minimal attention prior to harvest were important factors contributing to its popularity among farmers. Although CRS assisted with the installation of oil presses in 16 locations, capacity proved to be insufficient to handle the volume of production. Problems encountered in milling and marketing as well as extensive pest damage in 1988 has dampened enthusiasm somewhat, but it appears that sesame is now an established component of the farming systems of many communities (Barrett, 1987).

Since 1987, CRS has participated in cowpea promotional efforts in collaboration with the research and extension services. CRS was, in fact, promoting cowpea production on a limited scale prior to 1987. Although there is strong farmer interest in the commodity owing to its high price and popularity among consumers, difficulties in efficiently controlling insect pests have kept yields low (Diallo, 1988).

CRS has also developed and installed a mini-dehuller for coarse grains to be used in conjunction with mills with support from the International Development Research Council (IDRC). Although dehullers operating in urban/semi-urban areas have been generally successful, those in villages have been less so (Krubally and Nance, 1990).

The agricultural programme also includes the multiplication and distribution of improved fruit tree seedlings and seeds for rainy season vegetables. CRS operates a research station and nursery at Nemakunku to produce these materials. CRS is collaborating with the Winrock On-Farm Seed Storage Project and the Seed Technology Unit in the multiplication of improved planting materials.

Since 1987, CRS has been an active participant in the on-farm and on-station research activities for sesame and cowpeas. The Nemakunku

nursery has also been used increasingly as a testing site for sesame and cowpea varieties and associated agronomic practices, notably spacing. CRS is represented on the Grain Legumes/Oilseeds Task Force of DAR's research programme and, since 1989, effectively took over principal responsibility for research activities related to sesame and cowpeas since neither of these commodities were included among those given high priority for GRS by the NARB (NARB, 1989). In the case of sesame, efforts have focused on testing confectionery varieties, the production of which will not be affected by a processing constraint. CRS has also been conducting live fencing and rainy-season vegetable trials.

In 1988, the agricultural programme initiated a formal assessment of both the socio-economic and technical dimensions of the dehuller project with support from IDRC. The study, which is still in progress, has involved 2 staff members virtually full time for what will be more than 2 years (Krubally and Nance, 1990). In addition, CRS has received support from ODA in the form of consultancy missions/special studies on sesame marketing and processing by experts from the Overseas Development Natural Resources Institute (ODNRI) (Barrett, 1988).

CRS ran trials in three villages including Kafuta in WD, Sinchu Madado in MID-S, and Kurau in URD, as part of the FITT programme in 1989. The specific technologies selected included maize varieties, intercropping, and cowpeas. Due to the late arrival of the necessary inputs, there were difficulties in establishing the trials at Sinchu Madado and Kurau. The latter village is located on the north bank of URD and is very difficult to reach during the rainy season. The cowpea and maize trials at Kafuta were generally successful. The trials were planted on communal farms by village groups with Village Monitors from CRS assuming responsibility for oversite of the activities. In addition, a Tabaski sheep-fattening trial is being carried in Fass, NBD, in collaboration with the research unit of DLS.

CRS is focusing upon institution building which will strengthen the administrative and management skills of local NGOs to the point that they will be identifying and implementing their own projects, thus allowing CRS to become non-operational. The two major NGO partners of CRS are the Gambia Food and Nutrition Association (GAFNA) and the Sesame Growers' Association (SGA).

C. *CARITAS*

CARITAS operates under the Catholic Archdiocese of The Gambia with support from the Catholic Church. Financial support for the agricultural programme activities comes from the Netherlands, Germany, and Australia. The agency has 74 employees including staff with experience in agriculture. The activities include village gardens, school gardens, well construction, coos mills, fishing, adult education, and women's welfare promotion in McCarthy Island Division. All these are accompanied with development education work designed to raise the level of awareness of the local population.

CARITAS is active in horticultural garden development in the western part of the country. During the 1989/90 season, the agency is supporting gardens in 16 villages, all located in WD and MID-S. There is a pilot demonstration garden operated by CARITAS in Bajana, WD, for the purpose of training local people and multiplying seeds for local vegetables. In addition, CARITAS assists school gardens, primarily in Catholic schools in WD, MID-S, and one school in NBD.

Emphasis in the village gardens is on production for home consumption to improve nutrition. A village must first demonstrate its interest and ability to do things for itself by initiating and developing a garden for at least two years before CARITAS will consider the village for inclusion in its programme. CARITAS assists gardens for three years with extension, well construction, fencing and inputs. During the first year, inputs are supplied free of charge. In the second and third years, participants are provided with inputs on credit. CARITAS pays for investments such as well construction, storage facilities and fencing.

In recent years the agency has become involved in marketing and storage in response to villagers' concerns over difficulties in disposing of their produce at remunerative prices. CARITAS assisted by providing villagers with transport to markets for themselves and their produce but has since discontinued this practice due to the prohibitive costs involved. CARITAS continues to assist in this area, however, by making contacts between village groups and prospective buyers.

The specific commodities include tomatoes, onions, lettuce, and cabbage, and more recently, fruit trees and Irish potatoes. In addition, increased attention has been given to local vegetables, including sorrel, bitter tomato and okra, for which CARITAS multiplies seeds for distribution to farmers.

The extension staff also provide information on composting, living fences (lime trees), and pest control. The agency has constructed onion stores in each participating village in an attempt to reduce losses.

CARITAS has been a member of the Horticultural Task Force of DAR since 1987 and has had a special interest in the horticultural marketing research of that programme which was undertaken by Lisa Daniels in 1987/88 (Daniels, 1988). One finding is that onion storage does not appear to be profitable if the cost of the structures are taken into account. Even without construction costs, storage is only profitable if produce is held for four months (eg., through September) which is the most difficult period for successful storage. The study also included trials of onions, tomatoes and cabbages using different planting dates in attempt to see if staggering production was a promising alternative/complement to efforts to improve storage and marketing.

In 1989 CARITAS participated in the FITT programme workshop and selected fruit trees and vegetables for trials in two villages where it operates. The trials were not carried out during the 1989/90 season as this was the first year of a new three-year programme which involved an expansion of the number of village gardens being assisted. However, the agency sought and received assistance from both DAR and DAS in the areas of pest management and bud-grafting of fruit trees.
CARITAS also participated in a series of workshops organized by the Anti-Locust Campaign Task Force and the agency provided a truck and driver during the 1987/88 locust invasion in The Gambia. In 1989, a farmer training programme was organized by CARITAS in collaboration with the Pest Control Unit of DAS, to train farmers on early detection of pests and their control. Pesticides and sprayers are also available in CARITAS stores for quick distribution to villagers in times of emergency.

All the recommendations and technologies which CARITAS is extending come from the Horticultural Research Program with whom the agency maintains close relations at both the leadership and agricultural programme levels. DAR and DAS staff have provided advisory assistance to the CARITAS programme and the head of the Horticultural Research Program (Gaye) participated in an evaluation of the gardens programme in 1988/89. The head of the Bajana garden (K. Darbo) retired from the Horticultural Unit before joining CARITAS. The director of CARITAS (Njie) has served on the Horticultural Research Task Force and provided advisory assistance in research programming.

D. *CUSO*

CUSO has operated in The Gambia since 1977 with support from the Canadian Government. The character of CUSO's programme has changed rather substantially over time from a Canadian version of the Peace Corps with mostly young volunteers working in government programmes and projects, to implementing its own programmes. In recent years these programmes have included a range of community development activities in URD such as gardens, agro-forestry development, and village crafts. CUSO is involved in an integrated village development programme in 12 villages on the north bank of URD and also with placements such as teachers, craftsmen, and people in related development work (CUSO, 1989).

During 1987/88, CUSO staff had a special interest in agro-forestry and took the leadership in the establishment of an agro-forestry group with representatives from GRS and extension services. However, the group has not been active since the departures of the CUSO staff directly concerned in 1988.

In 1989, CUSO participation in the FITT programme involved trials of maize varieties and a striga-tolerant variety of sorghum (E-35) in five villages in URD (Tuba Wuli, Tuba Sandu, Darisalami, Lumbambulu Yamadu, and Lumbambulu Bambo). The trials were undertaken by Village Development Committees (VDCs) on communal fields of 1-2 hectares. Supervision from CUSO was provided by the two agricultural staff members (Jabbi and Slind) with backstopping from the CSRM and Upland Cereals programmes of DAR. There were problems with the implementation of the trials in all but one village which was partially due to the difficulties in mobilizing VDC members for the timely completion of field activities.

E. *Freedom from Hunger Campaign (FFHC)*

FFHC differs from other NGOs operating in the country in that its origins are with a long-standing programme initiated by FAO and it has a special relationship with the Ministry of Agriculture; the Secretary-General of FFHC is a civil servant appointed by the Minister of Agriculture and a few Gambian senior staff members are seconded from government departments. In addition, FFHC receives an annual subvention from the

government. However, a major portion of its support has come from Deutsche Welthungerhilfe (German Agro-Action) which is an NGO operating in several countries in the developing world.

In recent years, FFHC has focused its efforts on the middle portion of the country (LRD, NBD, and MID-N), supporting cereal banks and swamp/tidal rice production (Rice Development Program [RDP]). Using a "food-for-work" incentive for villagers, RDP constructed causeways to improve access to mangrove swamp areas suitable for rice production. The programme was selected for inclusion in a study of non-pump irrigated rice production systems carried out under the auspices of the Department of Water Resources with support from the GARD Project in 1986/87 (Elias, 1987). The study found that returns to investments in access were high assuming high levels of utilization of the newly-accessed locations. However, areas initially cleared were often under-utilized, with villagers expressing more enthusiasm for opening up additional areas - no doubt a consequence of the availability of food-for-work for causeway construction. Consequently, attention shifted in 1989 to the extension of improved practices for rice, including varieties, line planting, and equipment (threshers, sickles, etc.) to increase the utilization of swamp areas. A rice production research unit was established, staffed by an agronomist seconded from the GRS, which focused its efforts primarily on multiplying improved varieties using contract farmers. Since 1988, FFHC has received advisory assistance and rice seed for its seed multiplication activities from the Winrock On-Farm Seed Storage Project and the Seed Technology Unit.

FFHC/RDP is represented on the Task Force of the Rice Research Program of DAR and participated in a varietal trials programme in 1987 which tested rice varieties from the West African Rice Development Association (WARDA) suitable for tidal and mangrove swamp areas. Unfortunately, the trials were not well run and failed to produce any usable results.

RDP has also initiated a comprehensive programme of monitoring and evaluation involving data collection and analysis in its target areas. The results of this assessment are not yet available.

In 1989, RDP participated in both the FITT and Rice Research workshops and opted to carry out trials in one village (Manduar, LRD) on papayas, findo, limes, and cowpeas. Trials of animal traction equipment for rice

were also planned but not implemented because a key staff member departed for training at the time the trials were to have been implemented[7].

The non-rice trials were all implemented on communal fields and, except for the findo, they all largely failed due to late planting, and inadequate practices, notably the lack of spraying for insects in the case of the cowpeas. The non-rice trials were supervised by a member of the agricultural staff based in Manduar. The Rice Production Program of FFHC is interested in continuing a technology testing programme, but with a focus exclusively on rice in the future.

G. *Good Seed Mission*

The Good Seed Mission was established on the old agricultural station site in Massembeh, LRD, in 1985. Its purpose is to combine evangelical work with the development and extension of improved agricultural practices in collaboration with farmers in the area. The Mission is affiliated with the Missionary Church and is working in fellowship with the World Wide Evangelical Church (WEC International). Tom and Laura Cosier established and operate the mission.

The production of improved seeds for distribution to farmers continues to be the major focus of the Mission's activities. Supplies of maize and rice seed were initially acquired from GRS (Seed Technology Unit) at Sapu in 1986. Other crops grown in recent years include sorghum, cowpeas, findo, sesame, groundnuts, cassava, and papaya. Planting materials were obtained from GRS research programmes at Yundum and Sapu and advisory assistance is being provided by the Winrock On-Farm Seed Storage Project and the Seed Technology Unit of DAR.

A second major purpose of the Mission is to assist farmers in the area to develop and utilize improved methods for both animal traction and tractor-based farming systems. Mission staff are currently working closely with five farmer groups in Massembeh and surrounding villages.

The long-term objectives of the Mission include the establishment of the

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[7] Trials are being carried out using equipment developed by the Appropriate Technology Unit of the Department of Community Development in Mansakonko (Appropriate Technology Unit, 1989).

Massembeh area as a recognized centre for the production of quality seeds and planting materials. Toward this end, the Mission is currently seeking funding in support of a programme to work with father-son teams who will form the core of a Gambian Quality Seed Producers' Association. The initial focus will be on upland crops, but in the future it is envisaged that mother-daughter teams will also be formed to work primarily on rice and other crops grown primarily by women.

The Good Seed Mission participated in the FITT workshop in 1989 and in findo, cowpea, and cassava varietal trials. The cowpea trials were successfully run on-farm in four villages in the area. Findo and cassava have been designated medium- and low-priority commodities by the NARB, thus DAR has largely discontinued work on them. The Mission has experience in growing findo and was interested in trying varieties which had been obtained from Mali by the Upland Cereals Research Program and tested during the 1988 season (Watt et al., 1990; Owens, 1989). Similarly, mosaic-resistant cassava varieties developed by IITA had been tested by the Horticultural Program of DAR in 1988. Both trials were run under controlled conditions on the Mission's farm at Massembeh with encouraging results. In addition, improved papaya varieties were provided by the Horticultural Program and are now producing successfully.

H. *Methodist Mission Agricultural Program (MMAP)*

Headquartered in Brikama and operating in 85 villages in WD, MID, and NBD, MMAP has been assisting with the development of horticultural gardens, orchards, and fruit tree nurseries for more than a decade. As part of this effort, the Mission developed simple but effective methods of well construction; private crews trained by the Mission operate throughout the country. MMAP encourages orchard development through the propagation and sale of seeds and seedlings which are produced at five orchards in WD and two additional new fruit tree nurseries in NBD and MID[8]. Farmers are encouraged to undertake the establishment of fruit tree nurseries in their compounds for transplanting in their areas. Poly-pots are imported and sold to farmers as part of this effort.

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[8] MMAP is currently rehabilitating a garden orchard in Jenoi, LRD, on behalf of DAS (MMAP, 1989).

The environment has been a long-standing concern of the mission (MMAP, 1989). As part of the promotion of tree planting, the former director of the agricultural programme carried out research on the inter-relationships between the destruction of tree cover, declining rainfall, and falling water tables (Mann, 1975).

MMAP was invited to participate in the Horticultural Research Group in 1986, but was not active. In 1989 they participated in the FITT workshop and selected fruit trees for trials which were implemented in two villages in NBD. The Horticulture Research Program also provided MMAP staff with instructions in bud-grafting techniques. In addition, the Mission is implementing trials both on-farm and at their Brikama nursery on living fences (euphorbia) with encouraging results.

I. *Save The Children Fund (SCF-USA)*

SCF-USA operates entirely in NBD where it is carrying out a programme of Maternal/Child Health, primary education, and agricultural development. Special attention is given to activities which contribute directly to improvements in child and maternal health and nutrition; thus, income-producing activities for women receive special emphasis. Rice production has received special attention, including the multiplication of improved varieties and the construction of seed stores.

Beginning in 1987, SCF participated in on-farm trials for an assortment of improved practices for rice in the inland valleys of NBD including improved varieties, use of animal traction, line seeding, and fertilisation. The trials were carried out in close collaboration with researchers from the Rice Research Program (Remington, 1988; Jones, 1989). As a result of this work, line seeding is widely practised in some valleys in the division.

In addition, the agency has tested pest-tolerant varieties of early millet and mounted demonstration trials for cowpeas. SCF continued its participation in these activities in 1989. The testing and seed multiplication activities which are collectively designated the Rice and Millet Production programme (RAMP) are largely supported by a grant from USAID using funds from the GARD project specifically designated to assist NGOs in technology testing and pilot promotional work (SCF-USA, 1989). Advisory assistance on the seed production activities has been provided by the Winrock On-Farm Seed Storage project and the Seed Technology Unit at Sapu.

SCF had difficulties in running rice varietal trials during the 1987 season and expressed concerns about its ability to participate in the data collection and field monitoring as they were designed by the DAR Rice Research Program staff. Consequently, the trials and data collection for farmer tests of mechanized seeding and land preparation in which SCF-USA participated were simplified for the 1988-89 seasons.

Responsibility for the field research activities are combined with those of the overall programme. SCF does not have any staff with specific training or experience in research at the present time, although an agricultural economist (Higgens) was employed briefly by the agency in 1988/89. SCF has an interest in natural resource management and may make this a theme of its activities in the future. There are plans to recruit a staff member with background in resource management and possibly to include some research responsibilities in his/her terms of reference.

SUMMARY: The eight NGOs who participated in on-farm research activities in collaboration with GRS in 1989/90, encompass a variety of different commodities and operational strategies and provide a broad geographic coverage. Most had been involved in some form of research activity and/or had participated in research programming activities with GRS prior to 1989. Some agencies have also initiated monitoring and evaluation activities which involve extensive data collection and analysis.

Most of the NGOs work with village groups, usually some form of Village Development Committee (VDC), and in more than half the cases trials were run on a communal basis. Although researchers from GRS programmes provided advisory assistance in the design of trials and data collection, there were important deviations from plans caused by delays in the arrival of inputs, and problems in communication/assignment of responsibilities between supervisory and field staff in some instances, notably with the larger organisations. Despite these problems, most of the trials were carried out and both the NGOs and the farmer groups involved have expressed an interest in continuing an on-farm testing programme in the future. In at least two instances, notably CRS and the Good Seed Mission, the agencies are in the process of developing plans which will involve substantial trials/research components for the future.

IV. COMMON ELEMENTS IN NGO APPROACHES TO AGRICULTURAL RESEARCH

As noted in the introduction to this paper, NGO interest in agricultural research stems largely from a perceived need to improve the flow of innovations, both qualitatively and quantitatively. Further, there is a growing realization that some internal capacity at least to assess research information in relation to the objectives of the agency is necessary to make this possible. The scope and scale of the research activities and the associated capacity seem likely to evolve in different directions reflecting the diversity of the agencies involved.

There are important common elements. First, all NGOs are primarily concerned with development and view research as a support function. This fact has important implications for the orientation of staff and the distribution of research responsibilities. In almost all cases, NGO staff involved in research combine that with development or monitoring and evaluation responsibilities, with research receiving secondary or tertiary attention in terms of time allocations[9].

There is a strong, built-in linkage between research and extension as a consequence, but the distinction between the two may be blurred in the process and produce results which are not satisfactory from either perspective. The clearest illustration of this is the decision of most NGOs and the VDCs to run the trials on communal fields which, in some instances, are 1-2 hectares in size. The quality of land selected for communal fields and the timeliness of operations often compares unfavourably with individual fields. Further, the VDCs depend on the production from the communal fields to support community development activities. In this situation, introducing a technology which is relatively new can tip the scales heavily against success and adversely affect VDC development plans and group morale and cohesion. For several NGOs (if not the majority) who carried out trials in 1989/90, there was some

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[9] One exception is CRS, whose research staff under the Nemakunku Research and Nursery Project are full-time researchers. Their other duties during the off-season are secondary or tertiary to their research responsibilities. The extension staff of 16 are full-time extension workers whose participation in the on-farm and multilocation trials is useful in strengthening their effectiveness as exension agents.

confusion, especially at the field level, whether the technologies were being tested or promoted. This has profound implications for the nature of interactions with farmer groups.

Second, NGOs generally perceive themselves as having a grassroots or "bottom-up" orientation. They are responding to felt needs as expressed by their clients: the farm families and farmer groups or VDCs in the villages in which they work. As such, to the extent that an agency conducts research at all, there is a general preference to work on-farm with farmers or preferably through the same groups or VDCs that are involved in the development activities. There is a strong convergence between farmer participatory research (FPR) and NGO operational philosophies in nearly all instances. This is both an advantage and a potential weakness for the same reasons as cited in the previous paragraph.

The grassroots development orientation of NGOs encourages consideration of systems interactions. For example, CRS's involvement in sesame processing and CARITAS's assistance in horticultural marketing is a direct outgrowth of problems encountered in promoting the production of these commodities. Such interactions are not particularly well covered by GRS since they may involve collaboration across programme and departmental lines. FPR is likely to open up additional interaction areas (crops, livestock, and the environment). Few NGOs, however, have the capacity to follow up on a broad range of commodities and issues in terms of either promotion or research and are probably ill-advised to try to do so. Most NGOs have chosen to focus their efforts on a few commodities, such as rice or horticultural crops and have staffed accordingly. Only AATG has agricultural programme activities for commodities other than crops. There is much less interest in, and capacity for, on-station research or on-farm researcher-managed trials or anything that is not an integral part of the village-level programmes. Although at least three NGOs (CRS, Good Seed Mission and Methodist Mission) have been involved in either on-station research or research/investigations which are more general in nature and not specific to a village, this tends to be the exception. This orientation has important implications for the division of labour between NGOs, GRS, and external sources of innovations as is discussed in the following section.

Third, NGOs are increasingly open to critical assessments of the technologies being promoted in their development programmes. In some cases this may reflect pressures from parent organisations and funding

sources, but in other instances there is a genuine concern that the existing packages, which may not have changed for years and/or are not significantly different from what farmers are already doing, are not producing the hoped-for improvements in productivity and incomes. For example, the development of dry season vegetable gardens, which continues to be a major focus of NGO activities, may have reached or exceeded sustainable levels in several parts of the country without changes in technologies. Some gardens may continue at current levels only as long as NGO support in the form of free or subsidized inputs and assistance with marketing is forthcoming. Increases in productivity and/or improvements in the efficiency of marketing may be necessary to reduce this dependency[10].

The entrée of most NGOs in The Gambia was in food aid or in community services such as education, literacy, and maternal/child health. Subsequently, attention turned increasingly to income-producing activities as a means of eventually sustaining these services without continuing external inputs. However, priority attention was given in most instances to the dynamics of community action and involvement, rather than to the technological and socio-economic feasibility and acceptability of the specific innovations that were selected as the basis of the income-producing activities. The NGOs' strengths were (and largely continue to be) the creation of a positive environment for change at the village level (through establishing and animating VDCs) and delivery of a range of services in a reasonably dependable fashion via motivated staff.

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[10] It is not clear that there is major room for improvements in the efficiency of the marketing system (Daniels, 1988). Some studies, notably the NGO-Sector Study (Bazalgette, 1988), call for greater NGO involvement in the marketing of horticultural crops in particular as a means of addressing such problems as seasonal overproduction. Short of establishing a canning factory or dumping tomatoes into the river, it is not clear how NGO involvement will solve the problem. The underlying assumption is that low prices during the peak production period reflect serious deficiencies in the marketing systems (eg. unscrupulous middlemen and women). The findings of Daniels (1988) strongly suggests that the problem and its solution lie in the seasonal distribution of production or in producing for export. One major commercial exporter (Radville Farms) is buying from women's gardens for export, but has experienced considerable problems in getting producer groups to maintain quality standards and adhere to schedules for harvesting and shipping. FPR is being considered as an approach to deal with these problems and NGOs may assist with the effort.

The implicit assumption in a number of instances seems to be that these strengths could overcome possible shortcomings in the technologies being promoted. The evidence suggests this is a doubtful proposition. Farmers may be quite willing to use practices associated with free or subsidized inputs as long as those continue, but only the technologies which truly fit are likely to survive the withdrawal of such assistance. Further, the spontaneous farmer-to-farmer spread of an innovation, which is a critical factor in determining the impact of a promotional programme, rarely takes place if the technology is not very attractive in its own right. Animal traction is an example of one technology which has fuelled itself (Sumberg and Gilbert, 1989).

Good guesses and luck were at least as important as the village-level organisation and the promotional programme itself in explaining CRS's success with sesame (Barrett, 1988). Sesame fits very well into the prevailing farming systems and four years without drought in succession were also helpful. It is difficult to cite any other examples of NGO successes in The Gambia that are comparable to sesame[11].

There is also an appreciation, on the part of CRS in particular, that success may generate new sets of problems - as the difficulties with sesame marketing and milling dramatically illustrate (Barrett, 1988). Some research capacity, internal or external, is needed to better foresee these second- and third-generation problems and devise solutions.

The interest in technology assessment may also be partially a consequence of NGOs' attempts to reconcile their grassroots, "bottom-up" operational philosophies with the manner in which they select the technologies that are promoted which has tended to be rather top-down in the past. How far individual NGOs will be willing and able to proceed in this direction is likely to vary considerably between organisations.

Bottom-up FPR approaches suggest that farm families should play a major role in defining the research and development agendas. In defining strategies for the medium and longer term (5-plus years) there are strong arguments in favour of such an approach. However, there are limits to which an individual agency can usefully respond to a wide range of

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[11] There are examples of successes by government departments and special projects, notably the maize promotion efforts of the Mixed Farming Project in 1983-85 which was associated with the Departments of Agriculture, Livestock and Planning (Fulcher and Eckert, 1986).

concerns on an annual basis. The decision of FFHC to focus on rice, stems in part from its desire to achieve some impact in this area and to staff and plan accordingly. There is a danger that individual NGOs will spread themselves so thin in terms of commodity coverage, their ability to understand any single commodity will be seriously reduced to say nothing of sustaining quality extension programmes in several commodities simultaneously. AATG has the broadest commodity coverage among the NGOs which is a source of concern, although the agency is quite large in terms of staff relative to others.

Fourth, NGO staff generally have mixed feelings about collaborating with government departments, especially where this involves depending upon those departments to perform specific services which are critical to the success of their programmes. Officially, NGOs favour cooperation with government agencies and each other. Privately, NGO staff members will express doubts about the feasibility of truly collaborative arrangements based on past disappointments. Many NGO staff are former civil servants with a low regard for the departments in which they previously served. There are also jealousies among NGOs themselves and between NGOs and government departments over the distribution of credit and blame[12]. Although most NGOs depend on official sources of support, including the Gambian Government in the case of FFHC, they consider themselves distinctively "non-governmental" in their operational philosophies, conditions of service, levels of performance, support services, discipline, accountability, and overall sense of identity. However, motivation, morale and performance levels of staff in NGOs tend to compare favourably with those found in government departments, including DAR and DAS, which continue to face serious problems in these areas[13].

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[12] Difficulties of this nature are perhaps more pronounced between NGOs and the extension services, particularly DAS, than between NGOs and GRS, perhaps in large part because until recently NGO/GRS interaction has been quite limited. Collaborative arrangements exist between DAS and at least three NGOs (AATG, CRS and FFCH) and representatives of these and other NGOs frequently attend bi-monthly staff meetings of DAS at which lively exchanges of views tend to be the rule. NGO participation in research Task Forces and the Annual Research Reviews (ARREV) of DAR is more in the capacity of individuals concerned with specific issues/commodities than as representatives of specific agencies.

[13] Zuidema (1990) examines these issues with specific reference to GRS Departments. See also Trent (1989).

A cynical assessment of the situation might conclude that NGOs exist and thrive because of the deficiencies in the services provided by the public sector. There is a vested interest in preserving the perception that a performance gap exists and that NGOs and the private sector generally can provide an increasingly broader range of services in greater quantity and quality for a lower price as compared to the public sector. For some donor agencies this perception is becoming official dogma. Unhappily, the performance of government departments tends to provide support for this view and as able Gambians and donor agencies desert these departments, it will increasingly resemble a self-fulfilling prophecy.

The examination of the experiences of selected NGOs in recent years shows a greater interest in expanding the flow of technologies, but strongly suggests that there are limits as to how many agricultural research responsibilities these agencies can effectively absorb[14]. In this regard there is a growing appreciation of the need for institutions, including some form of national research capacity, to supplement what NGOs can do for themselves.

For its growth and survival, GRS needs more support than it currently enjoys from clients. For larger countries in the region, few questions are raised about the need for a national agricultural research capacity, but this cannot be taken for granted in smaller countries which often lack any significant track record of accomplishment (Gilbert and Sompo-Ceesay, 1989). The achievements of the GRS in recent years in terms of improvements in research management, production of research results, and efforts to improve linkages with clients have not been able to overcome strongly-ingrained negative perceptions by clients and staff members alike. The creation of DAR was an attempt to improve the status and performance of this important component of GRS by making research on crops the primary function of a single department. A strongly-held view, in DAS in particular, is that the restructuring has served primarily to weaken the links between crops research and some of its principal clients without improving the quality and quantity of services provided (Trent, 1989). However, a number of NGOs, specifically some of those that participated in on-farm research activities in recent years, feel that in some respects the services provided by GRS are improving. Equally important, they feel that these services are a critical complement to efforts to

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[14] The same might also be said of extension and selected other services.

strengthen their programmes. Others feel that insufficient planning by GRS and delays in the delivery of inputs seriously undermined the effectiveness of the FITT programme in 1989.

In summary, individual NGOs are in the process of developing research activities in various directions which reflect their individual capacities and operational strategies, but there are a number of important commonalities among them. These include approaching research as a service function for their development activities; a preference for on-farm and FPR approaches; a willingness to critically assess technologies currently being promoted; and mixed feelings about collaboration with government departments. While there are undeniable tensions among GRS, NGOs, and government extension services, there are also important complementarities. In order to overcome strong negative perceptions of their effectiveness, government departments generally and the GRS in particular need clients who feel they are being well-served. NGOs need assistance in the identification and testing of technologies to maintain and hopefully improve the momentum of their development efforts. The following section offers suggestions aimed at building effective collaboration between GRS and development agencies including both NGOs and the extension services.

V. TOWARD STRONGER NGO/GRS COLLABORATION[15]

Collaboration between NGOs and GRS is already a reality. The 1989 on-farm testing programmes, in which eight NGOs participated in association with DAR and DLS research programmes, significantly extended the scope and scale of this cooperation. This section offers suggestions on the further strengthening and institutionalization of the combined research capacities. Specific attention is given to possible divisions of labour in the areas of i) research priority setting and programming; ii) linkages with sources of innovations and networking; iii) on-station research and multi-location trials (cluster sites); iv) on-farm research; and iv) surveys, monitoring, and evaluation.

There are at least two overriding issues which are prerequisites to any

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[15] Although specific attention in this section (and the paper as whole) is given to NGO/GRS collaboration, most of the suggestions apply equally to GRS/extension service relationships.

sustainable progress. First, GRS must take measures to improve the quality and quantity of services it is providing to its clients in a fashion that is consistent with its current and prospective capacities. Specifically, the quantity of innovations provided to development agencies and farmers, whether in the form of recommendations for promotion or technologies to be tested, must be substantially increased. All research and linkage activities should be assessed in relation to the probable timing as well as the nature of the technologies which will flow from them to clients. This implies having GRS place more emphasis on the transfer of information between sources of innovations and clients (in both directions) than perhaps even conducting research (eg. trials and formal surveys). Statements which the NARB and the Director of DAR have made in the past year on GRS and departmental policies and priorities go a long way in this direction (NARB, 1989; Sompo-Ceesay et al., 1989; Sompo-Ceesay and Gilbert, 1989).

The key to improving the productivity of GRS is the people themselves - researchers, administrators, policymakers, and the entire range of support staff. Training and experience can develop competence and capacity, but the creative management of human resources is necessary to instill the motivation and pride that are seriously lacking at present.

Otherwise, shifting resources from research to linkage activities will only reallocate frustration and reduce even priority research to levels that are unlikely to contribute anything. In this regard, it is hoped that the recommendations in the recent review of human resources in GRS will receive serious consideration (Zuidema, 1990). Overall productivity can and must be improved to the extent that the level of effort devoted to research can be increased rather than reduced in the process of expanding the flow of information to and from clients.

DAR has already taken steps in this regard by including client liaison responsibilities in the schemes of service of all research staff and having the Assistant Director oversee research/extension linkages. The suggestion has been made to allow research staff to formally serve as consultants for development agencies in a fashion that complements their other responsibilities (Sompo-Ceesay and Gilbert, 1989). Departments and research programmes might enter into formal agreements by which selected services are provided to development agencies with the costs of the services being borne by the development agencies.

Second, a stronger consensus is needed on the legitimacy of a national

agricultural research capacity and the deployment of that capacity between public and private sectors as well as between research and linkages. The creation of the NARB is an important dimension of this process. However, more progress is needed in making donors and development agencies full partners in this consensus.

USAID is currently the major external donor supporting the development of GRS through the GARD project. ODA has supplied important complementary support to DAR in agricultural economics and seed technology. ODA assistance is being phased out in the next year, and agreement has not been reached on future support from USAID beyond the end of the current contract with the University of Wisconsin in December, 1990. Uncertainties about future support reflect dissatisfaction with the rate of progress as well as changes in the priorities of these donors. USAID/Banjul currently has much less confidence in the feasibility of institutionalizing a stronger agricultural research capacity in the public sector than it had when the GARD project was designed in 1985.

Eicher (1989) argues that African countries generally are generations behind Latin America and Asia in the development of their agricultural research institutions and that long-term approaches which were effective in those regions in the 1960's and 70's should be the focus of efforts in Africa. Projects which have achieved dramatic progress in institution building in five years or less in the region are almost non-existent. Unfortunately, the necessary long-term commitment tends to run counter to the growing emphasis which USAID and other donors are placing on short-term impacts. Episodic infusions of aid which are discontinuous in terms of levels and priorities, such as has characterized support for GRS during most of its history, almost guarantee that institution-building efforts will fail[16]. Although it was envisaged that building GRS would take "15 to 20 years" (USAID, 1985), in retrospect it was naive that all parties would have the necessary continuity of commitment in the face of inevitable changes in key actors and priorities in such a time frame.

These two overriding issues are closely intertwined. A consensus on the need for an agricultural research capacity requires research results to create and sustain it. Dependable and applicable research results require

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[16] Beyond simply failing to make progress, institutions can be weakened or destroyed by erratic support that is short- to medium-term in nature (Eicher, 1989).

stronger institutions and a sustained commitment to do what is necessary to development those institutions.

While a full discussion of these issues is beyond the scope of this paper, NGOs and development agencies generally can play critical roles in breaking away from the current syndrome of negative perceptions, staff attrition and uneven support which characterizes the GRS. NGOs must decide what research capacity is needed to support their programmes and lobby strongly to see that the necessary services are provided, both within their own agencies and by other public and private sector institutions. The suggestions on divisions of labour which follow are just some of several possible configurations.

A. *Research Priority Setting and Programming:*

The NARB is responsible for advising the Minister of Agriculture on matters of agricultural research policy and priorities and issued a statement in this regard during the past year (NARB, 1989). Consideration might be given to the inclusion of one or more representatives of development agencies, as NARB members in an effort to more fully incorporate the concerns of this group of clients[17]. As an alternative or in addition, the Technical Secretariat of the NARB might be charged with annually reporting on the status of collaboration with, and services provided to, individual NGOs. In this context the Technical Secretariat could help insure that the specific concerns of NGOs are taken into account in the continuing process of refining research priorities and policies[18].

Individual NGOs are represented on most of the Task Forces of DAR which are responsible for research programming. Attendance has been somewhat uneven. NGOs and DAR should work to strengthen this participation. NGOs should be encouraged to attend and make

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[17] Sonko et al., (1988) have made the suggestion that DAS specifically should be represented on the NARB.

[18] Unfortunately, efforts to staff the Technical Secretariat have not made progress to date.

presentations at the Annual Research Review (ARREV)[19]. A special session specifically devoted to the concerns of development agencies might be scheduled during or immediately following ARREV to provide these clients with the opportunity to express their views on current research activities and future plans. Other departments in GRS might consider ways in which NGOs can participate in research programming in their respective areas of responsibility. Assistance in planning and programming works best when it is a two-way process. Fortunately, this is already the case as staff from GRS are being invited to participate, formally and informally, in agricultural programme design, monitoring and evaluations. The head of the Horticultural Research Program (Gaye) was a member of a team which reviewed CARITAS's garden development activities. Assistance has been sought from DAR in Monitoring and Evaluation for AATG (Giffen, 1989). These are healthy developments and GRS should make a special effort to see that staff have time to serve in this critical capacity as NGOs feel they could benefit from it.

B. *Links with Sources of Innovations/Networking:*

The examination of the experiences of just eight NGOs, which includes all the larger agencies involved in agricultural development, strongly suggests that NGOs can benefit from improved links with sources of innovations. Whereas some of the larger NGOs such as CRS already have good contacts in specific areas, small NGOs do not have the time or the staff to perform this service effectively for themselves.

External and internal linkages between development agencies and sources of innovations is a set of tasks which GRS can perform effectively. GRS research programmes are already assisting NGOs and other development agencies, but in nearly all cases there is a clear demand for more and better quality service. In the interests of increasing the flow of innovations and information and generally improving the status of GRS, high priority should be given to linkage activities[20].

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[19] Three NGOs attended the 1990 ARREV meetings. AATG made a presentation on its monitoring and evaluation activities at the 1989 ARREV meetings.

[20] For further discussion of this issue in relation to resource allocation and comparative advantage in small agricultural research systems, see Gilbert and Sompo-Ceesay, 1989.

The suggestion has been made that individual NGOs could enter into formal agreements with DAR and individual research programmes or researchers to provide specific services which could include obtaining information and materials on innovations of their choosing. NGOs should be prepared to cover at least a portion of the cost of these services where they are performed on behalf of an individual agency at its request[21].

In addition to being allocated time and other incentives to perform this service effectively, all GRS researchers might be strongly encouraged to learn French which would greatly facilitate access to information on innovations in Senegal and other neighbouring countries[22].

The Research/Extension Liaison Unit (RELU) of DAR has the responsibility to provide these linkage services. For the past four years, this unit has been staffed by one individual provided by the GARD project (Diallo) with the virtually impossible task of trying to serve all development agencies with information on a full range of commodities and issues.

GRS should strengthen RELU, and two prospective staff members of the unit are currently in training in the US supported by the GARD project. In addition, NGOs should consider engaging one or more research/extension liaison officers (RELO) specifically to serve them[23]. Such an individual(s) might be assigned to the TANGO secretariat and work directly with individual NGOs in developing specific links with sources of innovations, including GRS and external sources of improved

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[21] NGOs requiring financial assistance for such services might apply for funds which have been specifically set aside for this purpose from the GARD project. A letter to this effect was sent to a number of NGOs in 1987 by the NGO Liaison Officer in the then Department of Agriculture (Jagne, 1987). The important point is that individual NGOs should manage the funds for services, including linkages, which are performed specifically on their behalf as opposed to linkage/liaison services for development agencies generally which could be managed through GRS. Alternatively, such services might be managed through an NGO research/ extension liaison office attached to TANGO.

[22] Making basic fluency in French (reading and conversational ability) a required qualification for promotion to Senior Research Officer and above would provide a strong incentive in this regard.

[23] At least one NGO (CUSO) is already considering engaging a staff member with specific responsibilities in this area.

technologies. This might include the design and monitoring of service agreements between GRS research programmes and NGOs as suggested above. The NGO RELO(s) could liaise with the NARB Technical Secretariat on matters of research policy and priorities.

In general, NGOs are not well-staffed or situated to participate in many of the regional and international networks which collectively provide a wealth of information on a broad range of issues and commodities. However, there are some information networks such as Rodale Ag-Sieve which provide services specifically suited for NGOs and other development agencies[24]. In addition, special sub-regional projects such as the Winrock On-Farm Seed Storage project which operates in The Gambia and Senegal can provide extremely valuable services in linking NGOs with sources of information on their respective subjects and among various agencies within the sub-region in a fashion that is tailored to individual agency needs and capacities. The experience of this project might provide a workable model to complement GRS in providing linkage services to NGOs in specific subjects and commodities (Seed Sowers, 1989). Another project that deserves special mention is the Appropriate Technology Unit of the Department of Community Development which is designing and testing prototype equipment for rice production and post-harvest processing (Appropriate Technology Unit, 1989).

Increasing attention is being given to the broad range of sources of innovation (Biggs, 1989b). In this regard, NGOs should be encouraged to exchange information among themselves and with extension services and development projects in The Gambia and neighbouring countries. There is a fair amount of informal interaction already taking place, but it might be strengthened. Networking among NGOs and other development agencies could also be a responsibility of the proposed RELO(s) under TANGO.

A significant portion of the changes that have occurred in Gambian agriculture have been the direct result of the farmer-to-farmer spread of innovations both within the country and from Senegal (Sumberg and Gilbert, 1989). NGOs can encourage this through exchanges between

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[24] Examples in addition to Ag-Sieve which contain information on a wide variety of technologies include "Entre Nous", a newsletter published by the Rodale office in Thies, Senegal; "Tillers' Report" by Rural Futures International; and "Rurcon", the newsletter of the Rural Development Consultancy for Christian Churches in Africa.

farmer groups in different parts of the country, especially where one group has successfully tested a technology and it is well on the way to widespread adoption. One such example is the line-seeding of rice and associated practices which have been promoted by SCF-USA in inland valleys in NBD. Women rice producers in other parts of the country might visit Lamin Niumi, for example, to see and confer directly with women farmers there using these practices.

C. *On-Station Research and Multilocation Trials:*

In general, on-station research is an area in which domestic and external research institutions will take primary or even sole responsibility. Specialized skills are required to successfully carry out this type of research, and NGOs and development agencies generally are not interested in becoming involved in this type of activity.

The flavour of many of the preceding suggestions may imply that there is very little space for on-station research in a small system such as GRS. Further, there is a tendency for development agencies, donors and policymakers to regard on-station research as academic and irrelevant to the real needs of farmers. It is argued that on-farm research is the most efficient and appropriate research focus, especially in a country such as The Gambia where the focus should be on adaptive research. At the other extreme, researchers often argue that no innovations should go on-farm, either as recommendations or trials, until they have been thoroughly tested on-station.

While the latter position is clearly not practical for a research system as small as GRS, the on-farm-only view does not reflect a very deep understanding of the elements of a research system or the efficiency of the research process. An adequate discussion of this critical issue is beyond the scope of this paper, but is addressed in Gilbert and Sompo-Ceesay (1989) with specific reference to small research systems. A fair amount of the bulk screening of innovations such as varieties can be most efficiently done on-station under controlled conditions and for those commodities which have been designated as priorities for GRS, on-station research is likely to be part of cost-effective research programmes to address farmer needs. On-station and on-farm research are complements, not substitutes, although it does not follow that all or even any on-station research on a specific issue or commodity needs to be done in-country, especially for commodities which are receiving special attention in neighbouring portions

of Senegal. The question is not how much resources overall should be allocated on-farm or on-station, but what is the most efficient manner to qualitatively and quantitatively increase the flow of technologies to clients, especially for the priority commodities. Each case or commodity must be examined on its own merits.

Whatever amount of on-station research and multilocation trials GRS decides to do, there is a critical need to improve the quality of this work. It is preferable for a research station or a cluster site to have a small number of well-run trials that yield good results, than a large number of inadequately-managed trials. The frequent occurrence of poorly-run trials probably has done more damage to the reputation of GRS than anything else in recent years. Conversely, a well-conceived and well-managed trial reflects credit on the research programme involved and the research services generally.

The problem is particularly serious at the four cluster sites operated by DAR at Somita (WD), Bakindik (NBD), Giroba Kunda (URD) and Kuntaur (MID-N). Bojang (1989) has offered a number of suggestions for improving this situation which include greater participation by NGOs and other development agencies in the operations of these sites. Individual NGOs might be interested in actually running cluster-site-type operations in support of their development programmes with on-farm research activities. The sites might combine tests of innovations under controlled conditions with the multiplication of improved planting materials. A number of the NGOs are, in fact, already running nurseries for multiplication purposes.

Some NGOs have found it in their interests to do on-station research. CRS has conducted agronomic trials for sesame, cowpeas, and rainy-season vegetables at its nursery and research station at Nemakunku as a complement to their promotional programmes for these commodities. Although DAR did some work on cowpeas and sesame prior to 1989, they were not included in the high-priority commodities by the NARB. Hence, CRS has effectively assumed the leadership in research on these commodities for The Gambia.

Other NGOs, notably Good Seed Mission in Massembeh and CARITAS in Bajana, in effect operate small on-station research/demonstration programmes. The Good Seed Mission conducted trials on findo and cassava in 1989, two commodities with considerable potential which are not high priorities for GRS. While these are welcome complements to GRS,

some backstopping by GRS researchers in trial design, data collection and analysis will be needed in most instances to realize the full value of these efforts.

The character of the cluster sites will undergo fundamental changes if development agencies assume primary responsibility for running them. The purpose of these locations would be the testing of innovations for the specific areas rather than multilocation trials, with the research agendas being developed accordingly. Although some NGOs might be interested in participating in multilocation trials as designed by research programmes, the researchers involved should probably not ask the NGOs to do more than provide basic security at the sites. All the operations, data collection and analysis should probably be done by research programme staff who visit the sites regularly for that purpose. Asking NGO staff to carry out the trials on behalf of research programmes can lead to tensions and misunderstandings. Even for trials that are implemented by research staff at NGO-managed sites, the agency involved should have a good appreciation of the value of the trial beyond simply agreeing to have it located on the site.

D. *On-Farm Research:*

On-farm research, or more specifically some form of FPR, is likely to be the major focus of NGO involvement in agricultural research for reasons discussed in the previous section. Further, most on-farm research, particularly trials and farmer tests in which GRS researchers are involved, is likely to be increasingly done in collaboration with development agencies in accordance with agendas that primarily reflect the priorities of these agencies.

In the past few years, GRS has tried various approaches to on-farm research which have been described in some detail elsewhere (Gilbert, Posner and Sumberg, 1989; Mills and Gilbert, 1989; Sompo-Ceesay and Gilbert, 1989). The Pilot Areas Program, which was initiated at the start of the GARD project, sought the collaboration of the extension service in conducting a programme of on-farm research which was largely defined and managed by the research service. There were a number of problems with this approach, not the least of which was a lack of enthusiasm or worse on the part of some extension staff to a programme which seemed to do little more than add to their workloads. The demonstration trials programme, run with support from the FAO Fertilizer Use project, was

more successful in this regard, but the results in terms of data left much to be desired from a research perspective.

The Cluster Site Program, which superseded the Pilot Areas Program in 1987, attempted to consolidate the on-farm activities in four locations, with the research programmes assuming responsibility for nearly all the planning and implementation of the research activities. Although there was a significant amount of quality research performed during 1987 and 1988, the resource and staff time requirements of this effort were not considered sustainable. The fact that a major portion of the on-farm work was carried out by external technical assistance personnel tends to reinforce this conclusion.

The FITT programme and the rice technology testing programme were launched in 1989. A key feature of these programmes is the involvement of existing farmer groups, which have been formed by development agencies for promotion and development purposes in the testing of innovations. FITT is designed to enhance the effectiveness of farmer efforts by making a range of improved practices available through GRS and development agencies to a network of farmer groups for testing.

FITT addresses past conflicts between the objectives of GRS and development agencies in three ways. First, farmer groups and development agencies decide on the technologies they wish to test and the research programmes offer suggestions. Second, farmer modifications and innovations are encouraged. Finally, the role of GRS is to provide information, inputs, and assist in the design, monitoring and evaluation of results.

Research per se is not the primary objective of FITT; rather, it is to assist farmers and development agencies in evaluating potential technologies which they select for testing. The results of the first season as described in Section III are certainly mixed, especially from a research perspective, but this was expected. There is room for improvement in the quantity and timeliness of the services provided by GRS. Inputs that were promised often arrived late and visits of research staff to trial sites sometimes failed to materialize. However, the responses of the NGOs and particularly the farmer groups has been generally positive. Of the eight NGO's who participated in the FITT programme in 1989, only two feel that the effort was not worthwhile. The hope was that individual agencies would see the

benefits of some form of on-farm testing of technologies and progressively evolve their own distinctive programmes and approaches in the process. In at least one instance (CRS) this is clearly happening.

There are a number of lessons which emerged from the experiences in 1989 which might be taken into account in plans for the coming season.

First, NGOs should consider assigning one or more individuals to have priority responsibility for the on-farm research activities. It will be difficult for the smaller NGOs to assign even one staff member full time to this activity. If it is only a secondary or tertiary responsibility for a few people, it will probably not be done very well. If field staff are given responsibilities to carry out certain operations in connection with on-farm trials, they should be made to feel it is somehow to their benefit to do it and avoid having the research perceived as an added burden which they don't understand very well.

Second, individual farmer groups should be encouraged to take the initiative in selection and design of the trials from the beginning. The more the programme is farmer-group-driven the better. The more pressure farmers put on field staff and, through them, on headquarters and GRS to drive the programme, the better. There may be limits to the extent to which NGOs and GRS can respond to a broad range of initiatives as discussed in the preceding section. In this regard, there should be more direct farmer-to-farmer interactions between different groups in different parts of the country (and Senegal) working on different technologies.

Third, NGO and GRS staff need greater understanding of FPR, particularly the dynamics of operating research activities with farmer groups. The distinction between testing technologies with farmers and promoting technologies for farmers needs to be clarified. Biggs (1989a) contains a good discussion of the range of interactions with farmers in on-farm research and specific suggestions on the use of group meetings. Special workshops might be mounted for this purpose.

Fourth, trials should be run on individual rather than communal fields as much as possible. It is certainly possible to work with a farmer group, but still have the trials on individual fields.

Fifth, GRS should give priority attention to meeting its commitments in terms of inputs, information and visits that have been agreed to with

NGOs in support of their programmes. Formal agreements between GRS departments or research programmes and individual NGOs might assist in this regard.

E. *Monitoring, Evaluation and Surveys:*

A few of the larger NGOs have undertaken surveys often in connection with episodic or ongoing monitoring and evaluation (M & E) activities. At least two NGOs (AATG and FFHC) are making serious efforts to develop in-house capacities for M & E. While a full discussion of M & E and surveys is beyond the scope of this paper, the following observations might form the basis of a more thorough treatment of this service in the future.

First, most if not all NGOs are ill-advised to undertake formal surveys without the assistance of individuals with considerable experience in such surveys. Further, it will not be practical for individual NGOs to develop in-house capacities to carry out these services effectively. In this regard, some of the surveys which have been undertaken in support of M & E activities are not likely to effectively answer the questions they are supposed to answer.

Second, more use should be made of the National Agricultural Sample Survey (NASS) and the services of the Department of Planning with respect to both surveys and monitoring and evaluations. DOP needs strengthening to be sure and the NASS can be improved, but NGOs in general have not made very good use of the valuable information that exists.

Third, NGOs should give consideration to a communal capacity for surveys and at least internal evaluations. This might consist of staff associated with the TANGO secretariat who would conduct surveys and evaluations on behalf of TANGO members. This work is closely related to that of the NGO RELO(s) as previously mentioned and the two sets of staff might share the same unit in the TANGO secretariat. Individual NGOs might still do their own monitoring, but the M & E unit in TANGO could assist in designing procedures to carry this out and monitor the monitoring

systems[25]. Associated services which could also be provided by TANGO include a documentation service, the editing and production of reports, and computer services[26].

VI CONCLUDING OBSERVATIONS

NGOs are becoming increasingly interested and involved in various forms of agricultural research in an effort to improve the quality and quantity of innovations available to the farming communities they are serving. Individual NGOs are developing different approaches which reflect their specific needs and capacities. However, farmer participatory research and various forms of on-farm research are likely to be a common element among NGO research activities.

Concurrently, there is an expansion in the interaction between NGOs and GRS, some of which is competitive (in the case of efforts to recruit and retain staff), but which is generally healthy and complementary. For GRS there is a need to improve the flow of technologies to clients in order to better fulfil its primary objective of improving agricultural production and productivity in the country. The FITT programme and other activities provide an opportunity to significantly increase the flow of information in several directions; notably, between GRS and development agencies; among development agencies themselves and, most important, between farmer groups and GRS/development agencies as well as among farmers themselves. Such improvements in the services to clients can greatly enhance the credibility and self-esteem of GRS.

It is unlikely that NGOs themselves can effectively perform a wide range of services in the general area of agricultural research. The NGOs need to specify what they require and determine, in consultation with each

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[25] As noted earlier, AATG has requested advisory assistance from DAR/GARD with its Research and Evaluation Monitoring Unit (REMU) (Giffen, 1989).

[26] It is understood that the TANGO leadership is currently giving consideration to the establishment of a documentation service. Also, an organization is being established in Senegal to provide at least some of these services to NGOs there which The Gambia might benefit from.

other, GRS, and the extension services, what services will be provided by whom. The latter portion of this paper has provided suggestions aimed at strengthening the collaboration between GRS and NGOs in various aspects of agricultural research including policies and programming, linkages with sources of innovations, on-station and on-farm research, and monitoring and evaluation. Collectively, these proposals are aimed at significantly improving the contributions which both GRS and the NGOs can make to agricultural development in The Gambia in the future.

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