Agricultural Extension
— Worldwide Innovations

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Dedicated to :

My Beloved Professors

Dr. V.Veerabhadraiah

&

Dr. N.S. Shivalinge Gowda

Whose inspiration and guidance during my post graduation and doctorate degree programmes put me in the right tract of academic and professional career.

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13

TRINIDAD & TOBAGO

Joseph Seepersad and Wayne G. Ganpat

1. Country Profile

Trinidad & Tobago comprises two islands with Trinidad being by far the larger of the two. They have a combined land area of 5,130 sq. km with Trinidad being 4,825 square kilometer. Over 95 per cent of the population of 1.3 million lives in Trinidad. Tobago's affairs are, for the most part, administered separately through the Tobago House of Assembly, and therefore, the description of it's extension system is reported separately.

The CSO report (CSO, 2004) listed Trinidad as having approximately 18,142 farmers who are mostly male (85 per cent) and average age of 52 years. These farmers farm on 84,900 hectares of arable land. The majority of this land (72.5 per cent) is under crop cultivation. While most of this land is dedicated to Sugarcane production, tree crops and vegetable cultivation are also important commodities. The rest of the farmland is used for Livestock (10.6 per cent), mixed farming (16.3 per cent) and some small amount of fisheries production. The majority of farms (63 per cent) are less than 5 hectare in size with 22 per cent being less than 0.5 hectare. Agriculture is mainly rain- fed but increasing amounts of farmland are being irrigated. Trinidad has six months of dry season (January-June) and an annual rainfall of 2010.9 mm of rain.

For most of its history, Trinidad and Tobago has devoted the majority of its agricultural resources to producing export commodities; principally sugar, cocoa, coffee, citrus and copra. Export agriculture was profitable; profitability and international competitiveness were facilitated by significant institutional support in the form of research, extension and credit. More importantly, export agriculture benefited from preferential marketing arrangements that assured a ready market, relatively stable prices and reduced marketing risk for producers. The past 30 years, however, has witnessed considerable change in the agricultural sector—export agriculture has declined significantly; domestic agriculture has surpassed export agriculture in employing productive resources and in the value of output; and the sector has further diminished in relative importance within the economy. This situation has come about mainly because of the rapid expansion of the oil and energy sector, which together with manufacturing now dominate the economy (Trinidad and Tobago draft sector policy for food production, 2001).

The relative contribution of the agricultural sector to the GDP shows a declining trend over time. Reports show that the relative contribution of primary agriculture to GDP was 5 per cent in 1985; 2.2 per cent in 1999, 1.3 per cent in 2004 and a little over 0.4 per cent in 2006.

In 2004, just about 6.2 per cent of the national labour force was employed in farming, fishing and forestry representing a decline from the 1999 figure of 9.1 per cent. Average incomes in the agricultural sector are the lowest in the country.

The government envisions an agricultural sector that is modernized and internationally competitive, that generates sustainable income levels for producers comparable to those obtained in other sectors of the economy, that enhances the country's renewable natural resources and biodiversity, and one that enriches the lives of all citizens. Agriculture has the potential to stimulate growth and employment in other sectors such as tourism and agro-industries. As the major economic activity in rural areas, agriculture plays an important role in the process of rural development.

2. Historical Background of Extension

Agricultural extension as an organized activity is about 100 years old. It began with the appointment of two Agricultural Instructors by

the Board of Agriculture in 1901 and since then it has continued in the public service domain.

Prior to 1988, all crop and livestock extension activities of the Ministry of Agriculture were included in a single unit. This unit, the Extension Division, was led by a Technical Officer, supported by County Extension Officers, designated as Agricultural officers in all the six agricultural counties. Each County Extension Officer, persons trained at the first-degree level in general agriculture, supervise the work of frontline Extension workers designated as Agricultural Assistants in all the districts located in the county. Staff was responsible for Extension education and services, e.g. subsidies, flood damage assessments and access road reports. Educational approaches were mainly farm advisory visits, some lectures, demonstrations and occasional field days, exhibitions, farmers' field competition *etc.* The provision of services, at all times, could form the greater part of their work.

3. Description of the Agricultural Extension System

3.1. Public Extension Providers and Approaches

3.1.1. Agricultural extension

In 1988, the Ministry undertook a major reform of the entire organization. Public Extension activities were subsequently carried out in two separate divisions of the Ministry:

- The Extension, Training and Information Services Division (ETISD).
- The Extension staff in the two Regional Administrations, located in the North and South of the country.

More recently, although on a much smaller scale, Extension is provided by the Forestry Division in the Ministry of the Public Utilities and the Environment and the Fisheries Division also in the Ministry of Agriculture, Land and Marine Resources.

The Regional Administrations were created in an attempt to decentralize the functions of the Ministry of Agriculture, and thus, several divisions were represented at the regional level. However, the intention was that the overall leadership and management of the various disciplines would still be vested in core units of the various divisions represented. In the case of Extension, the core unit is ETISD.

The directives (Seepersad and Douglas, 2002) stated that the Core division "has responsibility for the technical content of extension programmes and the methodology of technology transfer". The Regional divisions have "the responsibility for identifying the farming communities, the timing and the scope of the extension programmes."

There were mixed views on this system. The core staff felt decentralization was not working well while the heads of units in the region, except for Extension, expressed the opposite view. This is related to administration's primary need to satisfy the service requests by farmers and Extension staff's desire to improve the technical knowledge and skills of their clientele. Furthermore, there was dual reporting and most staff was unhappy with this arrangement.

Carpenter *et al.*, (2000) who conducted a Needs Assessment for Extension, pointed to the urgency of repairing the core-region-county interface. The proposed major strategy was to upgrade the positions in the core to Subject Matter Specialists and to improve the relationships between the two divisions.

The Extension, Training and Information Services Division (ETISD) is headed by a Director who is assisted by a Deputy Director. Most of the 18 persons in this unit have Masters degrees in various disciplines, including a few with postgraduate degrees in Extension. Only two positions are designated Subject Matter Specialist, an Entomologist and a Livestock Specialist. Although trained at the specialist's level, because there are no positions for most of these officers, they are constrained to function as "generalists" with set job descriptions.

ETISD is not directly involved in day-to-day extension activities in the field. This is the responsibility of the extension field staff in the Regional Administrations. ETISD offers all types of short (one to three days) training courses throughout the year at a centralized Farmers' Training Centre and other locations throughout the country. These courses are well advertised and are available to farmers and the general public free of charge. They cover a range of topics: livestock including broiler, ducks and turkeys, crops (tree crops, vegetables, root crops *etc.*), apiculture, small gas engines, agri-business *etc.*

ETISD also responds to requests for training by community groups and others in the general public. The division acquired a 25 seater bus and reconfigured it to become a mobile learning unit. Facilitators on board deliver multimedia presentations and even conduct demonstrations to some extent. It is used to reach farmers in remote

areas and also used in high-density peri-urban housing areas to teach basic farming skills.

A relatively new multimedia unit within the division is responsible for producing various types of agricultural publications for the Ministry like tutor-guided multimedia CD-ROMs and instructional videos. A publication unit produces factsheets, brochures, booklets and other technical print material. In recent times, it has engaged itself in the production of several Producers' Manuals on a variety of crops and livestock. It has a stock of audio visual and print material and provides a loan service for staff in the region as well as Agricultural Science educators in the formal school system.

The current trend is to produce fully digital multimedia presentations using Powerpoint presentations and digital videos as the base. This is for use both in classrooms and in the Mobile-learning Unit. New projects on the table include self-learning interactive modules for online learning through the several distance education centres around the country.

The Regional Administrations are headed by Regional Directors and staff in each region carries out frontline Extension work. In addition to crop and livestock extension there are two relatively small separate units: the Apiaries unit dealing with beekeepers, and 4-H. Staff in these units have specialized functions.

The extension field staff is directly supervised by County Officers and, in turn, a more senior official who reports to the Regional Director coordinates the extension activities of the various counties in the regions. At the county level, some effort has been made to separate the staff into those who would be doing primarily Extension from those doing regulatory and service responsibilities.

3.1.2. Scope of extension programs

The extension clients of the MoA are the vast majority of small scale, limited-resource farmers. They rarely provide services to large farmers, but these farmers have access to other services of the Ministry. In theory, MoA have a national mandate for almost everything in livestock and crop agriculture. The ministry's extension officers are expected to respond as best as they can whatever the request; they cannot really claim that any particular area is not their responsibility. So they attempt to provide answers although the Ministry itself may not have worked on that area. In practice, however, poultry,

floriculture, organic farming and even sugarcane production, may not be emphasized.

The main focus over the years has been in increasing production and productivity, more in crops than livestock but more emphasis is now being put on livestock. But the MoA has always had the major responsibility for promoting environmentally friendly practices particularly soil and water conservation.

Recently there has been a greater focus on promoting IPM strategies using the Farmer Field Schools methodology, with the help of international agencies. These are being conducted with some regularity among farmers in both regions. Farm management training for farmers is becoming more important and extension staff also provides basic marketing information.

Frontline officers operate as "generalists" who are expected to be knowledgeable on a wide range of topics. This is a formidable task given that only two persons in the Extension organization are designated Subject Matter Specialists, the usual backup experts for the frontline staff. So it is expected that staff members of the Research Division serve in a limited way as SMSs. Many international and regional organizations with agricultural portfolios operate in Trinidad, so there is an additional pool of resource persons whom they can consult on an informal basis.

Frontline officers in the MoAs have at least a two-year diploma in general agriculture at the tertiary level but some have first and even second degrees in agriculture. There is no organized in-service training programme for field staff, but they do benefit from occasional workshops. The number of frontline staff in each county varies with the number of districts, but ranges between 6-8 staff members. All field staff is eligible for loans to buy vehicles and receive traveling allowances.

3.1.2. Forestry extension

The Forestry Division has, within recent times, added a strong extension component to Forestry Programmes. While it always had some field staff, they were mainly involved in service and regulatory duties. There has been for some time a two-year pre-service course in forestry so that there was a core of trained persons in technical areas who could operate at the frontline. The recent widespread large-scale

involvement of private forestry required a shift to a new role as educators for forest officers. This has not been easy because these officers have not been formally trained for this role. The programme on private forestry is targeted at private landowners, especially those with large parcels, who are willing to commit land and other resources to relatively long-term forestry and agro-forestry projects. In 2001, 621 farmers were registered in private forestry programmes. Extension methods used to achieve these objectives include field visits, seminars, quarterly bulletins, sample plots, demonstration plots and seedling production and distribution.

Concurrently, a shift towards Community Forestry has meant that officers have to work with NGO's and CBO's in a variety of sustainable development programmes.

The Forestry Information Unit provides forest resources information to the public. Information officers conduct educational activities at schools and in communities using interactive and interpretive presentations.

3.1.3. Fisheries extension

The Fisheries Division has only three persons assigned to Fisheries Extension, two for marine fisheries operating with roughly 5,000 fisherfolk who depend on fishing for their livelihood and one person for aquaculture extension. Support staff from the Division assists them and they carry out regulatory service and extension activities.

Some of the services provided include: training in aquaculture practices including pond construction and management, assistance in establishing community-based and individual aquaculture projects, technical advice and assistance, site visits and evaluation, registration of aquaculture (including ornamental fish breeders), and incentives for registered aquaculturists.

The Caribbean Fisheries Training and Development Institute, which is separate from the Fisheries Division, provides several modular courses in Maritime and Fisheries Training. Most of the courses are conducted at the Institute but some are also taken out to the communities when possible. It is also the only institution in the Caribbean with the capacity to deliver training in fish processing technology. It conducts training for all types of audiences from throughout the Caribbean.

3.2. *State Funded Extension Providers*

The National Agricultural Marketing Development Corporation (NAMDEVCO) was established to promote agricultural marketing and stimulate trade in the agro-industry of Trinidad and Tobago. While the primary role is to manage all wholesale markets for fresh produce and seafoods in the country, other roles, principally, Marketing Extension has risen to the fore. Methods include: telephone, taxes, walk-ins, e-mail, newspapers, newsletters, training sessions, television and its website. Clients of this organization are: farmers, processors and investors.

Farmers, who are provided with technical information on good agricultural management practices as well as guidelines to producers on export market requirements, advice on post-harvest practices assisting with marketing arrangements *etc.* They also provide them with daily and weekly commodity prices for fruits, vegetables and sea foods. This information is also published weekly in the newspapers. Staff actively promotes linkages between producers and exporters, processors, caterers, hotels and restaurants. They also provide information on service providers to the sector as well as addresses of foreign buyers.

Processors are linked to farmers with the required produce at required times and fisherfolk receive information on price; quantity and varieties of fish species traded through these markets are also captured and made available to fisher folk.

Investors are given advice to potential investors on opportunities in production, value-adding, trading *etc.* and caterers who provide meals to school children on a daily basis also benefit from information to link them with suppliers of fruits and vegetables.

The recently developed National Agricultural Market Information System (NAMIS) is an on-line tool that provides timely and accurate information to stakeholders enabling them to make informed management decisions.

The Sugarcane Feeds Centre is an institution of applied research, demonstration, development and training in tropical livestock production located on 60 hectares of land. It is partially funded by the Government of Trinidad and Tobago with additional funding generated by its activities. The Ministry of Agriculture and Marine Resources has administrative responsibility for the centre.

Most of the Centre's animals are kept in housing, i.e. "zero-grazed". The objective is to promote integrated and more sustainable production systems where farm and other local feed resources are primarily used. The work is actively promoted as a model for small farmers to adopt and staff members have a lot of direct contact with farmers who visit, aquaculturists, students and others in the sector. Field days and exhibitions are also organized as part of their activities.

3.3. *State Assisted Extension Providers*

3.3.1. Agricultural societies

The most prominent is the Agricultural Society of Trinidad & Tobago (ASTT), which is well over 100 years old; and at its peak, in the "colonial" days wielded considerable influence on agriculture. It still tends to be treated by government as the voice of farmers and it continues to receive an annual subvention from government. It does not have field staff.

It holds a regular monthly meeting and gets information to members and the public in various ways such as agricultural exhibitions, field trips and various types of publications. It collaborates with other agencies to run training activities for their farmers. In recent times, it has started its own in-house training programme for farmers and other interested persons in selected areas of agriculture.

3.3.2. Cocoa and coffee industry board

Under a recent renewed programme, many farmers have accessed loans to either rehabilitate old fields or replant with new varieties. Six staff members with generalized training in agriculture work in Extension activities. These Extension staff work with all cocoa farmers but pay special emphasis to those in this new program. They provide technical information as well as marketing and other financial information.

3.3.3. Agricultural cooperatives

Although a lot of effort has gone into developing farmer cooperatives, their record has not been quite impressive. Few active cooperatives exist and they provide minimal role in extension. The Citrus Growers Cooperative and the Coconut Growers Cooperative have endured the years.

3.3.4. Agricultural development bank

Through its "Youth Window" project, loans are provided to existing and potential agribusiness entrepreneurs between the ages of 18-35 years. Technical advisors also provide support. Mentors, who serve as role models, are available to help them along the way.

3.4. Private Sector Extension Providers

3.4.1. Agricultural input suppliers

Several Agricultural input suppliers now regard and promote themselves as going beyond selling products. Some of them undertake R & D as well, but their activities are largely technology transfer on the products that they market. They are usually quite willing to collaborate with government, the University of the West Indies and other organizations in the agricultural sector in R&D efforts.

These companies have about 15-20 field staff that have either a paraprofessional qualification or degree, and are in regular touch with the farming community, promoting their products and monitoring the performance of the product in the field. Apart from field visits, they hold field days, and participate in seminars and exhibitions. Some of them have short radio programmes and one company, Caribbean Chemicals, has been running its radio programmes twice weekly since 1966.

3.4.2. Contract farming

Contract farming is practised largely in the broiler industry. It is quite a large industry since the country is self sufficient in poultry products, the main sources of protein for the population. The industry is dominated by vertically integrated businesses involved in feed manufacturing, processing and production. They also operate a contract farming system with farmers where they supply the farmers with the chicks, feed, medication and technical support. They then buy all the chicks from the farmers at the contracted price at the agreed time.

Technical representatives who are responsible for technology transfer, monitoring supplies of feed and other inputs and providing other forms of support, service the contract farmers. It is a very intensive system since technical representatives visit the farms twice or more a week to monitor activities.

3.4.3. Agro-processors

Agro-processors are involved to a limited extent in extension activities. Some milk processing is done by the local Nestle Company and other smaller companies. Nestle in Trinidad at one time had three persons with at least a first degree, working with the dairy farmers providing general advice and assistance in addition to making arrangements for milk collection *etc.* and dealing with any problems between the company and the farmers. Now there is only one person, in keeping with the general state of the industry.

3.4.4. The Coconut Growers Association and the Citrus Growers Association

The Coconut Growers Association and the Citrus Growers Association are also involved in technology transfer. Both associations have at least one staff with at least a first degree in Agriculture. The extension focuses on the association to get the correct type of product and quality of products from the farmers as well as marketing arrangements.

3.4.5. Exporters

Exporters of vegetable crops to other Caribbean islands and North America constitute a small but growing enterprise. People who are involved in exporting agricultural products or buying wholesale from farmers are important sources of marketing information for farmers.

3.4.6. Commodity groups

Several commodity groups also exist and they play largely an advocacy role on behalf of the farmers they represent. They also have been important for sharing information especially in areas where the "official" knowledge system had not focused a great deal of efforts. The Horticultural Society of Trinidad and Tobago, the Rabbit Breeders Association, the National Food Crop Farmers Association and the Small Ruminant Association are some examples.

3.5. *International/Regional Organizations*

Several regional NGOs work in Trinidad and Tobago, although they have not been very important players in Trinidad's agricultural extension system compared to some its Caribbean neighbours where they play major roles.

3.5.1. The Caribbean Network for Integrated Rural Development (CNIRD)

The Caribbean Network for Integrated Rural Development (CNIRD) is an independent, regional non-governmental organization. CNIRD was established with a view to helping, promoting and advancing the process of rural transformation in the Caribbean, especially as regard youth and women. Its website gives a list of publications, activities and programme areas.

3.5.2. The School of Agriculture in the Faculty of Science and Agriculture at The University of The West Indies (UWI)

The School of Agriculture in the Faculty of Science and Agriculture at The University of The West Indies (UWI) has a proud legacy of having evolved from the Imperial College of Agriculture (ICTA) which at one time was the premier research and training institution in tropical agriculture. The faculty of Agriculture is located in Trinidad.

It is the main institution for training professionals in various fields of agriculture, which includes courses in agricultural communication and extension. Most Extension officers in Trinidad and the wider region with first degrees would have benefited from formal training at this institution. The UWI also offers a Diploma in Agricultural Extension and over the years many paraprofessionals within the region have completed this course.

3.5.3. The Caribbean Agricultural Research and Development Institute (CARDI)

The Caribbean Agricultural Research and Development Institute (CARDI) is the main agricultural research and development organization in the Caribbean. It is supported largely by the various governments. CARDI deals with component research by focusing on giving new technologies a commercial footing by designing, testing, and validating production and marketing systems. A series of Research Centres have been developed to concentrate on the component aspects in each CARDI country, including Trinidad & Tobago.

3.5.4. The Inter-American Institute for Cooperation on Agriculture (IICA)

The Inter-American Institute for Cooperation on Agriculture (IICA) is another important supporter and facilitator of agricultural

research throughout the America. IICA is also involved in technology transfer and rural development activities – workshops for technical staff and farmers, farmer exchange programs, assistance to CBOs and more recently, distance education programs.

3.5.5. The Food and Agricultural Organization of the United Nations (FAO)

The Food and Agricultural Organization of the United Nations (FAO) has a sub-regional regional office for the Caribbean which is based in Barbados and a country office in Trinidad. Apart from its other activities, FAO has provided support for Extension and Rural Development over the years. It has organized several workshops and conferences, funded studies, provided technical assistance *etc.* on several extension related areas.

3.5.6. The CAB International Caribbean and Latin American and Regional Centre

The CAB International Caribbean and Latin American and Regional Centre is located in Trinidad. It has provided a range of training courses throughout the Caribbean including one in Trinidad on "Farmer Participatory Methods for Ecological Crop Management".

4. Extension Approaches in Tobago

Tobago, the smaller island is approximately 116 sq. km. in size and has a population of 50-60,000 persons. The majority of the island is mountainous and farm land is estimated at 2038.5 ha. Access roads to farmers' holdings are generally very bad. There are 969 farmers, farming mainly crops (39 per cent), livestock (28 per cent) and mixed crop and livestock (32 per cent). A small amount is involved in fisheries. Most farmers are male and average age is 50 years (CSO, 2004). They are serviced by eight agricultural staff, each in charge of an agricultural district. Staff members are mostly paraprofessionals and are supervised by an extension supervisor who is trained at the degree level.

Extension work is conducted mainly with crop farmers and staff mostly use advisory farm visits, some demonstrations and farmers' meetings.

A separate livestock unit within the Agricultural Division provides extension to livestock farmers. There are 4 staff members and they provide extension to mainly sheep and goat farmers and dairy farmers. They also use a centralized government run farm as a demonstration center.

The Kendal farm school runs short non-residential training courses for farmers in all aspects of crop and livestock production. Available fact sheets and other printed material are distributed through the farm school. Radio programs are also made here for dissemination on local channels at regular intervals.

One staff works with young persons with the school system as part of the worldwide 4H organization. Basic agricultural and life skills are promoted.

Farmer to Farmer Extension is a well recognized, informal method of information sharing among Tobagonian farmers. Farmers actively seek out each other for advice at times.

Input suppliers also provide information on their products and on general crop cultivation.

5. Innovations in Agricultural Extension

5.1. Contracting Mass Media

In Trinidad and the rest of the region, the normal approach to dissemination using the mass media is to rely on free slots allocated to government on radio and television stations. The slots are usually quite inadequate and mostly at inappropriate times. The Hibiscus Mealybug Information Campaign, which was conducted during 1995-1997, provided an opportunity for a new approach. The country's agriculture was under grave threat and Government Extension contracted out its mass media production and dissemination. It used radio programmes and jingles combined with other media—television, various forms of print media, posters and very importantly, meetings and visits by extension officers. The Ministry contracted commercial houses for certain aspects of the programme, but it maintained responsibility for technical content of messages. And it did not only rely on the usual time slots available for government programmes. The government purchased slots on commercial radio and TV channels so that selected

material could be presented at or around "prime time". The campaign was generally acknowledged as a success (Seepersad and Ganpat, 2001).

Since then, programmes that are deemed to have urgent, national importance have followed this approach. The Growbox system vegetable production campaign in 2006 targeted low-income households and provided training and start-up materials to grow vegetables around their homes. The programme for the control of the Black Sigatoka disease in bananas and plantains conducted in 2006 also utilized the mass media to educate the public and farmers about the dangers of this disease and preventive actions to follow.

5.2. *Participatory Learning Approaches*

The Farmer Field School method (FFS) was introduced to extension in 2001. Since then it has been used to promote the use of Integrated Pest Management (IPM) among farmers. Field staff had to be re-oriented from instructional methods to experiential learning methods. This has been challenging, but FFS are increasingly being conducted across Trinidad and the staff is now embracing this approach to farmer empowerment as another option in their toolkit. Farmer Field Schools are community based and are held to the convenience of farmers.

5.3. *Mobile Outreach Initiative*

The problem of reaching people in rural communities and having a venue with all modern classroom facilities was addressed when the Extension division, in 2005, purchased an air-conditioned, 25 seater bus and reconfigured it to have become fully powered to facilitate use of computers and multimedia projection equipment for several hours at a time. Extension officers go to rural communities and high density housing areas, are able to park at any location close to their clientele and deliver programmes using modern Information and Communication Technologies (ICTs). There is a huge demand for this service and plans are being made in one Administrative Region to have a similar Mobile Learning Unit as part of their programme.

5.4. *e-learning*

It appears that in general, farmers are making rather limited use of the Internet now but its use is increasing. Use of the Internet varies among certain types of farmers. The floriculturists, who are highly

commercial and well educated, use the Internet regularly (including the use of electronic forums) and to an emerging extent by younger beekeepers and commercial pineapple farmers. Another emerging trend is that some farmers who are unable to use the Internet themselves, ask their children to look for information on the Internet when necessary.

The Ministry has its own website which provides information on work of some of the divisions, list of courses offered by the Farmers Training Centre, application forms for those interested in participating in the Youth Apprenticeship Programme in Agriculture, "recent" news articles. It has started with the availability of a Producers manual using the Growbox system of vegetable production. Manuals on Hot pepper production, Cassava production, Rabbit production have been completed and published in print form and are soon to be uploaded to the website for use by the farming community line.

Reports indicate that exporters, farmers and clients are using the NAMDECO website and names system. And the company has been providing computer skills training to exporters to assist them in making full advantage of the site.

5.5. *Plant Clinics*

Plant clinics are occasionally conducted mainly to address pests and diseases problems. While these are organized and conducted by Extension staff, staff of the Research division is always involved. The Research-Extension link is necessary because of the lack of Subject Matter Specialists in the core Extension Division.

5.6. *Youth Apprenticeship Programme in Agriculture (YAPA)*

Because of government's concern with the aged farming community, YAPA was initiated in 2003 for youth (17-25 years). Its primary purpose is to provide an opportunity for young people to become involved in farming. It is expected that this experience will show them that farming can be pursued successfully as a career and in a business, like manner. This should have the desired outcome of increased numbers of young persons entering the farming sector.

The programme is linked to overall policy goals of food security, poverty alleviation, employment and rural development. As a result the goals of YAPA are not only to increase the number of farmers, but

also to increase the number of agribusiness entrepreneurs and skilled workers for the agricultural sector.

The program is conducted by the Extension Staff in the regions.

6. The Way Forward

Some of the key areas that will need further attention are:

6.1. Farmers' Organizations

As the role of civil society becomes more and more important such organizations have to be fully prepared to assume greater leadership responsibilities in agricultural and rural issues. This, however, will only happen if they receive sustained financial support, encouragement and training. Extension should be given a clear mandate to help, develop and nurture these organizations.

6.2. Effective Coordination of all Extension

Too much has always been expected of the public sector extension services. The existence of other players on the scene presents better opportunities for extension workers to help catalyse development through deliberate and sustained collaborative programmes. As co-management and other participatory methodologies gain importance, much can be learnt from the experience of public sector extension agencies in this area.

6.3. Flexibility

Public agencies have often been described as "bureaucratic" in a pejorative sense and inflexible although the picture is changing. In this era of rapid change and uncertainty, perhaps the biggest challenge facing public sector extension services is how to organize themselves so that they can adapt themselves quickly to any changes in the environment.

6.4. Revisit/Reorganize the Public Agricultural Extension System

As various consultants have recommended, Extension should be one division in the MoA and staff should report to the Director of Extension. The number of Subject Matter Specialists should be increased to provide sufficient technical backstopping to frontline staff over a range of programme areas.

The number of frontline staff should also be increased so that each agricultural district has at least one officer to service the farming community.

6.5. Certification of all Extension Staff

The technical competencies of staff in both the private and public sectors vary widely. Some have little or no formal training in adult education and communication techniques, and no in-service training is provided in these areas for public extension workers. The quality of service thus provided to the farming community is at risk and has the potential to discredit the Extension service in the eyes of the farming community. The time has come to seriously consider a certification programme for Extension workers.

6.6. Embrace Additional Approaches to Extension

The tool kit of workers need to expand beyond instructional methods. While the Farmer Field School has been introduced, Extension staff need to be educated in Participatory approaches in general. Group Dynamics need to be stressed given the serious imbalance between number of staff and farmers and Distance learning approaches with the appropriate application of modern ICTs.

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