

## **Agricultural Extension in Botswana: Growing a Hybrid over Decades of Selective Experience**

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### **Summary**

The study reviewed agricultural extension in Botswana to assess its growth and achievements in ensuring good service delivery since 1935 when formal structures of agricultural extension were beginning to establish. The objectives were to (1) identify the strategies that have been used over time; (2) determine the merits and demerits associated with the strategies; (3) identify the challenges of the extension system; (4) determine the extent of use of the lessons from historical approaches in maintaining good service by the present extension system; and (5) make recommendations for further improvement of extension service delivery. Published and unpublished secondary sources revealed several restructuring programs undergone by agricultural extension, and up to six different extension approaches that have been tried out over the years (1935 – 2005). Restructuring programs dealt with challenges of previous extension approaches each time a new one was introduced. Aspects of challenges to effective extension delivery in Botswana: administrative or management, staff training, Physical, farmer, and general, have persisted through out the 65-year evolution of Botswana's agricultural extension service. Human resource management reforms such as job analysis, supportive supervisory interpersonal relationships, organizational development and work life improvement are discussed and recommended for further improvement of agricultural extension in Botswana.

Key words: Agricultural Extension Delivery Challenges

### **Introduction**

In the developing countries, improvement of agricultural production, profitability, and sustainability depends on the farmers, to adopt change and their innovative use of technologies, organizational approaches, management systems, institutions, and availability of resources. Agricultural extension through advisory services and programs forges to strengthen the people's capacity to innovate by providing access to knowledge and information. According to the USAID report (2002), farmer capacity building can be achieved through (1), advising farmers on opportunities not only in agricultural production as it is the case in developing countries, but in marketing, conservation, and family livelihoods; (2) facilitating development of local skills, organizations, links with other programs, and related institutions; (3) developing and transferring new technologies to farmers; and (4), taking a wholesome approach to addressing public interest issues in rural areas such as resource conservation, health, monitoring of food security and agricultural production, food safety, nutrition, family education, and youth development.

Presently, according to Information Communication Technology (ICT) bulletin (2003), agricultural extension is at a time of crisis with services which are suffering under bureaucratic centralized management structures. The report adds that the agricultural extension services find themselves squeezed by decentralization policies, diminishing public funds and the privatization of public services that urgently need changing. The ICT report points out to processes such as decentralization, privatization, and a diverse range of information service delivery systems that respond to the needs of all beneficiaries shaping agricultural extension worldwide.

In Botswana, a number of factors challenge the success of the extension delivery system. The First National Conference on Agricultural Extension in 1995 identified five major categories of problems that are:

- **Physical:** referring to rainfall that leads to low and unreliable yields, limited market for products and inadequate transport and communication facilities.

- **Administrative or Management:** referring to inadequate residential and office accommodation, uncoordinated grass root level extension system, low moral among extension workers, extension agents attending to administrative and emergencies rather than extension duties, un complimentary programs, subsidies targeted to operations rather than to the product and lack of targeted programs for farmers.
- **Training:** as in the shortage of specialized trained personnel and inadequate in-service training.
- **Farmer:** the constraints including lack of credit facilities, absentee farmers, poor adoption rate due to negative attitudes, shortage of drought power, shortage of farm labour, inadequate farmer's organizations, and inadequate knowledge and skills on improved farming practices.
- **General:** referring to poor coordination among sister departments, inadequate research extension linkages, extension agent/farmer ratio too high, and some extension areas too wide for one agent.

The paper provides a review of agricultural extension in Botswana with emphasis on previous systems since 1935. The focus is primarily on the lessons throughout the evolution of agricultural extension, systems and approaches: challenges and opportunities offered for the improvement of the present. As pointed out by Hulme (1989), whatever the present situation is regarding extension, an awesome set of problems ought to be tackled if service delivery is to be made more effective. The paper suggests the answers to improving Botswana's agricultural extension as embedded in the historical path through which it evolved, and the present approaches aiming at improving the past.

### **Methods and data sources**

According to Adam (1992) there is "little that can be said about improving extension that has not been said before". He says that many of the "so called new ideas" about extension often turn out to be earlier visions not put in practice. As stated by Creswell (2003), the purpose of literature review is to share with the reader the results of other studies that are similar to the one being reported on. Therefore, to gain an in-depth understanding of the challenges and opportunities for agricultural extension in Botswana overtime, secondary sources were reviewed. Botswana government documents, conference proceedings, reports, other studies, informal interviews and discussions with Ministry of Agriculture officials, extension workers and experts, and farmers provided the data used in the paper. The emerging lessons and themes of issues provided the basis for the recommended strategies for further improvement of agricultural extension in Botswana.

### **Findings**

#### **Agricultural Extension Approaches Used in Botswana and Challenges**

The purpose of agricultural extension service in Botswana has always been to assist all farmers regardless of their socio- political status and presently, with more emphasis on group extension approaches than individual. The first extension activities in 1926 emphasized animal agriculture whose specific messages targeted dairy production. The duties of the first extension agent, the dairy inspector covered extension and research. According to Hobb (1985), the agent's responsibility was to find the best management practices for dairy production and persuading farmers to adopt the practices.

In 1935, the Department of Agriculture was established. The department's mandate was to do research on crop and pasture agronomy, and develop pig, poultry, and forestry production while other livestock production was relegated to the Veterinary Department. The extension approach used then was the Foremen Farmers. "Foremen", referred to also as 'Cattle Guards' were appointed by the department of Veterinary Services which had been established much earlier to advise farmers. The extension system under the Foremen Farmers approach was found to have little effect and was eventually changed in 1947. At the same time, the emphasis of extension in 1940's shifted to small scale, traditional sector agricultural production. As a result, two small scale irrigation schemes were set up.

In 1947, the Cooperative Demonstration Plot Scheme (CDPS) therefore, became an established extension approach and marked the birth of a fully fledged agricultural extension service in Botswana (Lever, 1970). The CDPS extension approach required extension agents to conduct demonstrations on the farmers' fields to get new technologies to reach a wider population of farmers. This was for a wider coverage of the dissemination of information. Despite the high yields on the demonstration plots, many farmers failed to continue once they did not have access to subsidies. New ideas did not transfer to the farmers' fields as sustainability and adoption of ideas were a major problem in this system.

The Pupil Farmer Scheme (PFS), an approach based on a concept borrowed from Zimbabwe replaced the CDPS in 1962 (Lever, 1970). In the PFS extension approach, one extension agent worked with and targeted 15 to 25 farmers. To qualify as a pupil farmer and be part of the 15 to 25, a farmer had to own a plough, drought oxen, and have cleared the bush and de-stumped his or her field. As the pupil farmer progressed and production methods improved, he or she was promoted using a scale of "pupil farmer, progressive, improved, and then master farmer", the highest ranking (Baker, 1988). Five years into the implementation of the PFS yielded 4150 registered farmers; thus making 16% of the farmer population in Botswana registered under the PFS. The total according to the categories on the progression scale were, 1700 pupil farmers, 1400 improved farmers, 750 pupil livestock men, 200 progressive farmers, 100 master farmers. Farmers who were not registered with the scheme were not getting any extension advice. The PFS approach was dropped and replaced in 1976 following a consultancy commissioned to evaluate the scheme (Willet, 1981). Some of the constraints unveiled by the evaluation were: lack of coordination, inadequate supervision of staff, lack of equipment, poor transportation, poor housing, selectivity and limited coverage.

The Ford Foundation supported consultancy commissioned by the Botswana government in 1972/73 to review the national rural development programs recommended a shift in focus from subsistence to commercial farming and the replacement of the PFS by a more 'modern' approach that was able to reach more farmers, the Integrated Rural Development Program (IRDP). The approach proposed combined both rural and agricultural extension service delivery and covered many rural development projects such as education, rural infrastructure, water supplies, health, rural industries and agriculture (Mrema, 1995). For agricultural extension, emphasize was to be on group methods and work through farmers associations, and individual farm visits. More funding for research, agricultural credit schemes, and subsidies for agricultural inputs was recommended. Therefore, the PFS was eventually replaced by the Accelerated Rural Development Program (ARDP) in 1973 to 1976 following a report by the consultants, Chambers and Feldmann (1973) and recommendations for an integrated rural development program. However, according to Mrema, (1995), Chambers (1977) reviewed the ARDP in 1976, after three years of implementation. Chambers observed that:

- Overall, the ARDP was a success as a rural extension system and thus, a success at providing services and building rural infrastructure but poor in raising agricultural productivity and production (Odell 1978 in Mrema, 1995).
- Success was evident in the implementation of rural infrastructure and social welfare projects.
- The implementation capacity of the ARDP on agricultural development was the lowest as only 30% of the allocated budget had been used by the end of the three years. Lack of trained workforce was seen to be the cause of poor implementation capacity of the Ministry of agriculture (MoA) during the ARDP.

After the Chambers (1977) report, the Ministry of Agriculture engaged in several human resource development projects including the expansion of Botswana College of Agriculture in 1979-84, then the only College in the country offering higher training in agriculture. This was to offer personnel of the Ministry opportunities for higher training at BSc and MSc.

As per the influence of development ideologies of major international agencies such as FAO, the Botswana government introduced the Farming Systems Approach (FSA) in the 1980's and several programs assisting farmers with inputs such as Arable Land Development Project (ALDEP), Accelerated Rainfed Arable Project (ARAP) and Agricultural Technology Improvement Project (ATIP). This was an attempt to increase farmer productivity and agricultural production. Challenges of the extension approach were reported as: the spending of lots of money on subsidies was worrisome, a major part of agricultural extension service was to ensure the subsidies reached farmers and therefore, a diversion from its mission; and, a big proportion of the extension agents work time went to the distribution of inputs, payment of subsidies, and assessment of farmer applications.

In 1989-90, a major review of the agricultural sector in Botswana was conducted and the findings led to the development and adoption of a new agricultural policy that emphasized household food security as opposed to national food self sufficiency in 1991. The challenges for agricultural extension with the new policy were reported by Mrema as: extension advice to farmers needing a design that gave maximum economic benefit rather than promoting national production plans; farmers requiring economically sound advice on farm techniques that are relevant to their situations rather than attempting to produce food that ignores their economic advantages; subsidies included in the policy packages needed targeting; farmers expected to adopt a commercial rather than a subsistence production approach; and, service provision through the private sector not forthcoming and requiring encouragement.

At the same time as the new policy on agriculture was formulated, The Ministry of Agriculture underwent a major reorganization through the Organizational and Methods (O&M) study of the Government Departments. This led to the split of the former Department of Field Services and the establishment of two parallel agricultural extension systems in the Ministry and regions: one system was for livestock production and health, and the other for crop production and forestry.

The Ministry of Agriculture underwent another restructuring through the Organizational and Methods exercise. The restructuring was approved by Cabinet in November, 2005 and the implementation began in 2006. The restructuring took into consideration a number of recommendations from Mrema (1995) and others at the First National Conference on Agricultural Extension (1995). Some of them were the separation and renaming of the Department of Animal Health and Production, the Department of Veterinary Services and another one of Animal Production. The two departments are under the Deputy Permanent Secretary, Technical Services. In addition, the extension services were reorganized into one unified extension service under six Regional Agricultural Coordinators at regions and coordinators reporting to the Deputy Permanent Secretary (Support Services). Other departments which were renamed were the Division of Agricultural and Statistics as the Division of Research and Statistics; the Department of Crop Production and Forestry became the Department of Crop Production. Another new department was that of Agricultural Business Promotions; while, the Department of Agricultural Research was maintained without change. The other recommendation was the establishment of a coordinating unit of agricultural extension under the Deputy Permanent Secretary's Office (Support Services). This meant the integration of agricultural extension functions under Crops and Horticulture, Animal Production, Farmer Education, Animal Health, Agricultural Business Promotion and Conservation of Agricultural Resources would be under the coordination of Extension Service Coordination Department.

The roll out of the implementation plan of the restructuring continues with challenges. According to discussions at forums such as the stakeholders workshops of the Rural Extension Coordinating Committee (RECC) and Farmer Association Meetings, by the extension personnel and experts, other Agricultural Officers at the Ministry of Agriculture and farmers countrywide, as the roll out of the implementation plan of the restructuring continues, challenges also emerge. These are:

- Staff movements of the MoA such as retirement, redeployment, inter departmental and inter ministry transfers disturbed continuity of extension service delivery, as well as delayed programming.

- The Department of Extension Service Coordination not having its own personnel but coordinating the activities of other department personnel and causing confusion in the leadership and role conflict among staff.
- Having no unifying strategic plan for departmental extension functionaries coordinated by the department of Extension Service Coordination therefore causing confusion especially at the extension-farmer interface.
- Inefficient services provision by extension workers in the respective extension areas and district.

**Table 1: Agricultural Extension Strategies and Challenges of Year 1947 to 2005**

YEAR	EXTENSION APPROACHES	CHALLENGES
1935	Foremen Farmer	Little effect on adoption and farmer development
1947	Cooperative Demonstration Plot Scheme	Problem with sustainability and adoption of ideas.
1962	The Pupil Farmer Scheme	Lack of coordination & inadequate supervision of extension staff. Lack of equipment. Poor transportation & housing for extension agents. Scheme selective with inadequate coverage.
1972	Integrated Rural Development Program	Improvement to the Pupil Farmer Scheme not evident. Became more of a rural extension with many rural development projects than agricultural extension.
1973	Accelerated Rural Development Program	Poor in improving agricultural productivity & production. Poor implementation capacity and lack of trained workforce.
1980	Farming Systems Development Approach	Diversion of extension from its mission' Extension agents spending more of their work time on distribution of inputs, payment of subsidies, & assessment of farmer applications.
2005	Unified Extension System With Regional Agricultural Coordination	No continuity of extension programmes due to slow process for filling up positions in the new department. Delayed extension operations due to MoA staff movements. Lack of a common/unifying strategy for all departments in the MoA that have an extension function.

Table one illustrates the evolution of agricultural extension in Botswana over 65 years and seven strategies that were adopted and used over time, plus the challenges experienced. According to Mrema (1995), all types of extension approaches have been used in Botswana. He gave examples of the Pupil Farmer Scheme, the Farming Systems Research projects by Agricultural Technology Improvement Project (ATIP), as examples of strategies that have been modeled around the Training and Visit (T&V) and Farming Systems Research (FSR) extension approaches, respectively. The T&V and the FSR are within the framework of eight agricultural extension approaches used by extension organizations world wide (Axinn, 1988).

### **Lessons and Opportunities for Improvement**

The experience from the historical approaches to improving agricultural extension delivery, a number of lessons can be drawn that further advise the present extension system. The trend emerging from table one shows changes that occurred in agricultural extension in Botswana; in some cases, faster than the implementation of intervention programmes meant to tackle challenges of previous systems. For instance, it took 12 years and 15 more to accept that the Foremen Farmers and the Cooperative Demonstration Plot Scheme that followed it were not working. While, one year was enough to show that the Integrated Rural Development Programme was not much of an improvement on the Pupil Farmer Scheme that it replaced. This amplified the importance of monitoring and evaluation, and the frequency at pre-determined intervals.

In addition, It appears from the thematic analysis of the challenges as reported by the evaluation of the systems that some functions of management were at fault: lack of coordination and supervision of extension staff, diversion of extension from its mission, lack of adoption by farmers, lack of continuity of extension programmes, and poor implementation capacity are some of the challenges that are indicative of the fact. This confirms the contention by Rivera and Kalim Qamar (2003) about the extension organizations having to revitalize their management systems and programmes. They suggest four key management functions in extension: good leadership, high level employee training, increased budgets and salaries, and combating resistance of change by extension personnel.

### **Conclusions**

The purpose of this paper was to review the history of agricultural extension in Botswana to identify the strategies that have been used to improve service delivery, determine the challenges, the interventions targeting the challenges, and the success of the intervention programmes at meeting the challenges for a more improved agricultural extension in Botswana. The following conclusions were made:

1. Seven extension strategies have been used, one after the other, over 65 years since 1935. It appears that the restructuring and organization of agricultural extension in Botswana has utilized aspects of all eight types of approaches found essential in agricultural extension world wide. This in itself is invaluable experience that needs factoring into all future evaluation or restructuring exercises to improve service delivery.
2. All restructuring programmes of the Ministry of Agriculture (MoA) were an attempt to solve problems of previous extension approaches and strategies thereof. However the timeliness was a challenge as the criteria guiding the choice of interval at which the monitoring and evaluation was done and decisions for replacement of an approach were made were not clear.
3. The five groups of constraints of agricultural extension in Botswana: physical, administrative, staff training, farmer, and general/logistics are recurring problems from 1935 and are well known. This is evidenced by the mention of the same even presently, in agricultural extension fora country wide.

## Recommendations

All five constraints of agricultural extension in Botswana excluding can be addressed through a management framework that enables the development of appropriate structures for the organization of agricultural extension, the design of best strategies and a strategic human resource plan. This is to manage change, have continuous development of intervention programmes for improving the system and at the same time recognizing the diverse needs of farmers and those of extension agents. The following human resource management reforms are recommended in order to strengthen those already in place such as the Performance Management System (PMS):

1. Job Analysis: - the MoA should review the current jobs of extension workers to develop more current job profiles especially for extension agents who are at the forefront of the agricultural extension service delivery. Job analysis should also indicate the current skills requirements of extension workers. As noted by Vijayaragavan and Singh (1989), most extension organizations do not have clearly defined job descriptions or job specifications for extension workers. The same applies to the MoA in Botswana. There is no evidence of a job description or job specification review for extension workers since the Job Evaluation Exercise of the Public Service in the late 1980s. However, a Job Analysis study by Tladi (1996) revealed that the job of extension agents had eight job operations or objectives, with three, farmer education, administration of extension services, and implementation of government schemes seen by extension agents as most important.
2. Organizational development and change management: - The average education level of Botswana farmers with increasing unemployment of graduates and more people retiring early from employment into farming has obviously improved and therefore suggests diverse farmers' needs. The farmers' needs impact on extension programming and skill requirements of extension workers. For example, some of the challenges resulting from the restructuring of extension in 2005 we reported as slow recruitment for new positions and increased staff movements. This change needed fora during which extension workers of all cadres could discuss, be prepared, and given coping skills training to ensure smooth transfer of employee emotions, attitudes, and values as the organization of extension changed (Dessler, 2003).
3. Supportive Supervisor Interpersonal Relationships: - The MoA should see to the revision of the training policy, have systematic training plans, improved work conditions with more supportive supervisory interpersonal relationships, more transparency in dealing with issues of employee welfare such as promotions and career advancement, and transfers to have renewed trust in the management by the employees.
4. Work Environment and Work Life Improvement: - the work life of extension workers needs improvement; not only the office space and residential accommodation as recommended by NDP-9. According to a study by Tladi (1996), the key impediments in the agricultural extension work environment as reported by extension agents in Botswana were lack of prospects for career advancement, lack of regard for staff welfare, insufficient job information flow, inadequate performance feedback, and inadequate equipment.

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