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*Full Length Research Paper*

## A Focus Group approach to exploration of the dynamics of farmers' groups in Trinidad, West Indies

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As part of its agricultural development strategy, the Government of Trinidad and Tobago plans to promote the development of Producer Organizations. Historically, the sustainability of farmers' groups in Trinidad has been poor, with several unsuccessful interventions. This study seeks to do a preliminary exploration of some of the issues which could impact group sustainability, as perceived by the two main stakeholders - farmers and extension services staff. Purposive sampling was done to carefully select participants from pools of experienced farmers and extension officers. A single separate focus group session was conducted with samples from each of the two populations. The information obtained was subjected to thematic analysis to identify the key issues which resonated with both groups. The results of that study are reported in this paper, with important verbatim statements quoted in order to support findings. The major issues on which both stakeholders agreed were related to (i) the preconditions for group survival or failure and (ii) leadership. Recommendations include: The review and modernization of the existing constitution which governs groups, governance training for leaders and potential leaders, and the introduction of decision making procedures in which members can participate.

**Key words:** Extension officers, focus groups, farmers' group development, sustainability, thematic analysis.

### INTRODUCTION

According to Barham and Chitemi (2009), farmers' groups are social structures and successful collective action initiatives are influenced by group asset configurations, composition, and characteristics.

The interest in the creation of farmers' groups is not new. Over time, many farmers' groups have been formed in Trinidad and the Caribbean. However, most exist only for a short time, going out of existence for a host of reasons which have not been fully investigated. This

situation is not unique to Trinidad, but a reflection of what exists in the wider Caribbean. In a move to ensure the sustainability of farmers' groups, the Caribbean Farmers Network (CAFAN), the Technical Centre for Agriculture and Rural Cooperation (CTA), and the Caribbean Agricultural Research and Development Institute (CARDI) sought to work together to build and sustain farmers' groups (Francis, 2010). The Inter-American Institute for the Cooperation on Agriculture (IICA) also has an

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initiative aimed at promoting the sustainable development of farmers' groups in the Caribbean.

Notably, umbrella organizations for farmers' groups, such as the Agricultural Society of Trinidad and Tobago (ASTT), seem to survive but not the groups at the community or grass roots level. What then are the issues that cause farmers' groups to become dysfunctional after a time? Several studies, conducted elsewhere, have looked at this problem from the perspective of the farmers. Even so, the extent of intra-group dynamics has not been properly researched in developing countries (Liverpool-Tasie, 2012). It is the thesis of this paper, however, that the answers do not lie solely with the farmers, and that the role of other key stakeholders also may be important in farmers' group sustainable development.

The inefficiency of the public extension service, which was designed to support the agricultural sector in Trinidad, has led to farmers' ever increasing complaints about the lack of attention they receive from the Government. In most developing countries, the extension officer is the only face of Government a farmer ever sees. Hence, Governments are constrained to take action to improve the efficiency of the extension service so that many more farmers will have access to it. Indeed, the Trinidad and Tobago Government's strategic plan has stated clearly that Government, through its Ministry of Food Production, will work to develop farmers' groups (Ministry of Food Production Land and Marine Affairs, 2011).

Consequently, in this study both the producers and the service providers are assessed, although independently. At the same time, a focus is placed on both the commonalities and the differences in the views the two groups hold of the possible sources of and solutions for the dysfunctional dynamics of farmers' groups. In doing so, we use the theoretical background of social capital in terms of how it can help to strengthen collective work and group viability. Such an examination has the potential to shed more light on the issue and to distill some actions for attention by the policy makers, the extension organization, training providers, and the farmers themselves. The objective of the present study, therefore, was to elicit, evaluate, and compare the views of extension officers and farmers regarding issues which could impact the sustainable development of farmers' groups in Trinidad.

## LITERATURE REVIEW

### The importance of social capital and collective action

The relationship between social capital and collective action among farmers has been well documented in the literature (Svendsen and Svendsen, 2000; Uphoff and Wijayarathna, 2000; Chloupkova et al., 2003; Megyesi et al., 2010; Mishra et al., 2013). Gyau et al. (2012), in a

study in Cameroon, highlighted the significance of collective action specific to improving small-holder benefits in the value chain and enabling them to gain market access and bargaining power. They suggested that it was important to understand the farmers' attitudes, opinions, and motivation for collective action. The authors suggested that these would inform on the effective approaches needed to enhance farmers' decisions to participate in a group. Baah (2008) in a study of cocoa producer groups in Ghana indicated that the low resource base and managerial capacities of farmers were constraints for these groups. They recommended that the potential of farmers' groups could be enhanced through capacity building, inclusive of provisions for organizational financial management and advocacy skills. Hellin et al. (2009) proposed that collective action may be able to exist even in the absence of formal farmer organization. In such instances, individuals may come together not so much to form a group but for the purpose of accomplishing a specific task (a process called 'task cohesion'). They suggested that, once that task is accomplished, there is no need for any group development beyond that point. Farmers' organizations are considered to be the more formal expression of collective action while farmers' groups are considered to be the informal expressions of collective action, but one which can be sustained, given the right group dynamics.

The benefits to the groups, therefore, will be related to equity and collective working relationships among the members. Farmers within a community more than likely share similar attributes and problems. Coming together as a group has the potential to positively impact their livelihood. Agrawal (2001), in his review, identified a list of several common enabling conditions required for the successful outcomes of collective action. These conditions include: small group size; clearly defined boundaries; shared norms; past successful experiences; appropriate leadership; interdependence among group members; members with different material worth but common identities and interests; and low levels of poverty. These conditions fit the domain of resource-restricted farmers as are found in most developing countries. It is probably less likely in these countries for wealthy successful individuals to be interested in collective action since there would be no perceived personal benefit to them from belonging to a group.

Social networks throughout rural communities have been shown to play an indirect role in increasing agricultural productivity by knowledge sharing (Liverpool and Winter-Nelson, 2010). For example, a farmers' group which has experience with a certain pest in one geographic area can share the knowledge and information gained from those experiences with other groups. Social capital and collective action are highly compatible with the attainment of sustainable farming practice (Flora, 1998). According to Bijman (2008), farmers' groups can also be important to rural

**Table 1.** Sample guiding questions used in Focus Group protocols.

<b>Focus Group 1 (Extension Officers)</b>	<b>Focus Group 2 (Farmers)</b>
Farmers' organizations/groups are important to modern day farming communities. How do you feel about this statement?	Do you think that farmers' organizations/groups have a role to play /are important to modern day farming? What are your general feelings about farmers' organizations/groups?
What do you see as the main advantages of farmers' organizations/groups?	Any advantages/ disadvantages? What do you perceive are the characteristics of a successful farmers' organization /groups?
Based on what you think and what you have heard others say, what do you believe are farmers' general feelings about farmers' organizations/groups? Are they happy to belong to such organizations? Or, do they mostly feel that it is a waste of time?	Are you happy to belong to such organizations/groups?
What do you think is the general position of Ministries of Agriculture and of Government/s on Farmers' organizations? Do you have any stories of interactions with these bodies that show why you think as you do?	What are the main origins of conflict?
	Generally, why are farmers reluctant to form or belong to farmers' organizations/groups?

development through coordination of production systems, an action which can enable contract farming. The larger yields in produce which can be achieved through coordination are more appealing to certain niche markets. When farmers form groups, this can enhance their social capital and positively impact food security at both the individual and household levels (Martin et al., 2004).

In spite of what appears to be the obvious benefits from group formation because of the increased social capital and enhanced collective action therein, several studies have identified elements which work against group development. Toseland et al. (2004) stated that failure to understand group dynamics can lead to unproductive meetings and dissatisfied members while Afolami et al. (2012), in a study in South-West Nigeria, suggested that the absence of external support posed a serious challenge to the sustainability and ability of the group to survive. Our study has as its focus, therefore, the exploration of both those elements which favor group sustainability and those which promote failure in farmers' groups in Trinidad.

## METHODOLOGY

### Sample selection

This was a qualitative study using independent groups of the primary stakeholders. Purposive sampling was used to select participants. Two focus groups were conducted. In Focus Group 1 (FG1), nine (9) extension officers participated. The participants were carefully selected from a pool of extension officers pursuing further studies at the Eastern Caribbean Institute of Agriculture and Forestry (ECIAF) in Trinidad. The sample chosen consisted of experienced extension officers, who had significant previous involvement with farmers' groups. The eight (8) participants (only one of whom was female) in Focus Group 2 (FG2) were chosen

from four of the main farmers' groups in Trinidad – Orange Grove (4), Maloney (2), Manzanilla (1), and Cunupia (1) Farmers' Associations.

The recruitment strategy for participant selection involved initial screening for eligibility using a questionnaire. A background check was done for all participants. Participation was voluntary and participants were free to discontinue participation at any point. The nine (9) extension officers in the study were between 30 and 35 years of age and all had at least five years previous experience working with farmers' organizations. The eight (8) farmers ranged in age from 25 to 61 years, with an average of 26 years of farming experience. Guide questions for FG1 and FG2 were developed and evaluated for face validity by two academic subject matter specialists, one public service extension expert and one qualitative research expert (Table 1).

Note that the questions in Table 1 were used only as a guide since additional questions were put to the participants based on responses given. Additional questions which arose are not reflected within this table but contributed to the analysis of the information from both FG 1 and FG 2.

### Information collection

The focus group exercises FG 1 (extension officers) and FG 2 (farmers) were conducted at the main conference room of the ECIAF. The facilitator was supported by two note takers, who recorded the discussions and kept field notes, including non-verbal responses among participants, distractions, expressions of satisfaction and dissatisfaction etc. The group was assured of confidentiality and anonymity and made aware that the session was being audio recorded. Notes were also taken regarding participants' reactions to each other's comments. Each focus group session lasted for approximately 2½ h. An immediate debriefing session was done with the facilitators to make a preliminary identification of the main issues that emerged. Detailed field notes were later transcribed and compared with recordings for verification and elaboration. The audio files were uploaded to a computer and also fully transcribed by the researcher. The field notes taken by the facilitator, whose responsibility was to observe non-verbal communications, were cross referenced and linked with the transcribed document to determine the level of non-verbal concen-



**Table 2.** Themes emerging from the focus group discussions with extension officers and farmers

<b>Emerging themes</b>	
<b>Focus Group 1 ( Extension Officers)</b>	<b>Focus Group 2 ( Farmers)</b>
(1). Group Survival Sub-themes: (a).Triggers of failures (b). Possible solutions	(1). Negative issues related to farmers’ groups
(2). Group elements Sub-themes: (a).Composition (b). Benefits/Advantages (c). Disadvantages (d). Leadership/administration	(2). Importance of farmers’ groups
(3). Group formation	(3). Leadership in farmers’ groups
(4). Governmental support	(4).The Agricultural Society of Trinidad and Tobago in farmers’ group development
(5). Women’s groups	(5). Team building

sus with expressed views among verbal participants.

**Thematic analysis**

QSR NVivo<sub>8</sub> software was used to manage and organize the data, facilitating identification of emerging themes. In reporting the emerging themes, illustrative verbatim quotations are used to highlight the perspectives of the participants and some indication is given of the level of agreement among them.

**RESULTS**

The emerging themes identified in the analysis of FG1 and FG 2 are summarized in Table 2.

**Focus group - extension officers**

The themes which were dominant, in terms of the most discussed, in the focus group session with the extension officers are shown in Figure 1. In order of decreasing frequency of references, these were: *Group Survival, Group Elements, Group Formation, Government Support, and Women’s Groups*. These emerging themes and sentiments, expressed by the extension officers, are detailed in Table 3 but are coalesced into three issues, discussed subsequently.

**Issue 1: Composition, leadership, and administration**

There was consensus among the participants in this focus group for the statement that, *“Successful farmers are least motivated to form groups or attend meetings since they have no issues that impact them. The smaller*

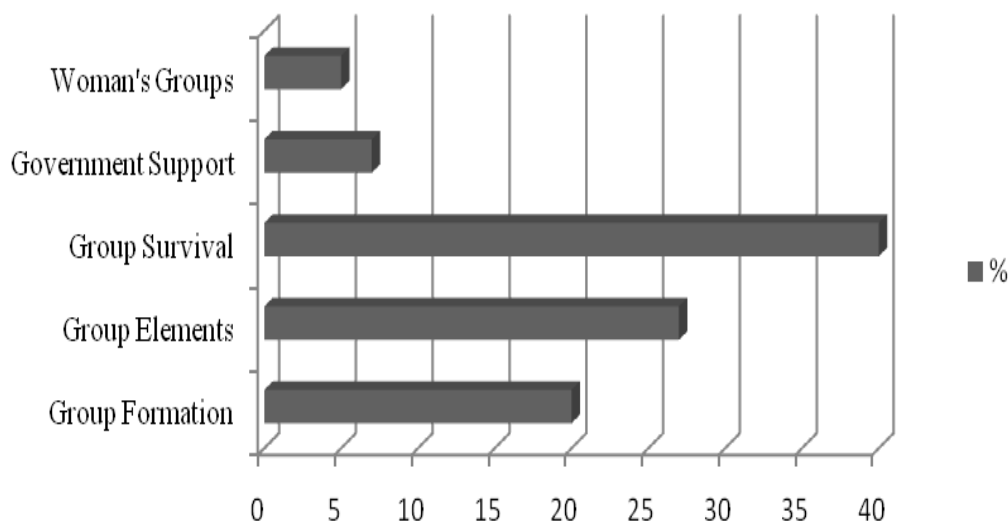
*farmers who are resource poor, however, tend to be motivated to group formation and participation.”* It was further stated, with some agreement from others, that, *“In my opinion it is a lack of vision on the part of successful farmers to not want to be motivated to be involved in farmers’ groups.”* The lack of interest of successful farmers in farmers’ groups can retard the advancement of the group with respect to capacity building through resources and knowledge sharing.

The extension officers indicated that the leadership of a farmers’ group was important to the group’s future survival. One participant indicated that, *“When leadership is not strong and the personality is not attractive, it makes the group ineffective and eventually the group dissolves.”* Additionally, leadership qualities such as leadership effectiveness, stability, good governance attributes and trust were major issues the extension officers felt were impacting farmers’ groups. Another statement, for which there was strong agreement among the officers was that *“Farmers are unfamiliar with how to hold meetings and how to handle membership dues and how to govern a group effectively”*. Ineffective administration of a farmers’ group can retard advancement and prevent the group from achieving its objectives.

**Issue 2: Specific triggers of failure of farmers’ groups**

The issues affecting farmers’ groups which have contributed to failures are in many instances common among the countries, represented by the extension officers in the focus group. Participants pointed to several reasons why groups failed - the lack of trust in leadership; poor internal communication; too large groups; too many aged farmers in the groups; the absence of

### Relative Numbers(%) of References made to Different Themes during the Extension Officers' Focus Group



**Figure 1.** Frequency Distribution for the relative number (%) of references for each theme – extension officers' Focus Group (FG1).

accountability; groups with memberships spread over different classes; concerns about whether members were indeed farmers; membership issues related to the payment of dues; competition and conflict within the group; and the absence of Extension personnel trained in group work. The following are some illustrative verbatim statements from the extension officer participants. These highlight some of the triggers of failure for which there was agreement among the other participants:

1. "Competition is a real issue, members of the group may feel that the leader of the group gets everything and keeps information."
2. ".....being the leader, everything comes to you first and sometimes benefits do not go down the chain to other members or there may be bias in the leader selection as to who receives benefit."
3. "Groups can be too large and the disputes among them can make the group fall apart."
4. "Poor communication in the sharing of information accounts for the failure."
5. "It is hard holding the group together if they are not getting what they want. It just eventually becomes a talk shop and farmers become fed-up with that."

#### **Issue 3: Governmental support**

All the extension officers in the group were in agreement with the view that there should be a role for Government's involvement in farmers' groups. There

was consensus among the participants for the need for financial support by the Government directed towards farmers' groups. The participants were all in agreement that Government has no choice but to become involved in farmers' group formation to ensure that the group obtains donor support from external agencies. There was the general perception among the majority of participants that the involvement of Government with farmers' groups can make the groups vulnerable to political interference and discrimination. In spite of this, the participants were of the view that Government should provide funding incentives to farmers' groups. Several verbatim statements support this view of the Government's responsibility for farmers' groups:

1. "Governments have no choice but to support farmers' groups since donor agencies are not going to support individual farmers. FAO, for example, will not work with an individual farmer."
2. "Funding from the Government for farmers' groups is important beyond incentives offered for individual farmers. That is, there should be an incentive for the group as a unit."

#### **Solutions to the issues as proposed by the extension officers**

The extension officers in the focus group proposed several possible solutions to the issues impacting the sustainability of farmers' groups. Among these solutions

**Table 3.** Consensus opinions of participants in the extension officers' Focus Group (FG1).

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<b>Themes and associated sentiments (FG1)</b>
<p><b>Theme 1: Group survival</b> Triggers of failure include: Mistrust of leadership; Greed; Aging members; and inexperienced leadership.</p>
<p><b>Theme 2: Group elements</b> Sub-theme 1 composition: Most of the group members are resource- poor farmers; successful farmers are not motivated to join; and Farmers' groups are aging. Sub-theme 2 benefits/advantages: Shared expertise; Help from donor agencies Sub-theme 3 disadvantages: Too much competition; Uneven distribution of benefits; Potential for theft by leadership. Sub-theme 4 leadership /administration: Everything comes to the leader first; Group Effectiveness is connected to leader's strength and personality; Stable leadership leads to a stable group; Leader needs good governance training; and There is less trust when leader is non-farmer.</p>
<p><b>Theme 3: Groups formation</b> Groups are formed Because of needs/benefits; Just for existence sake; Because they prove more effective than individuals alone, Based on geography; Based on geography and commodities; To share and complement knowledge ; To attract donor agencies; With no procedural manual; and When extension officers bring together serious farmers</p>
<p><b>Theme 4: Government support</b> Governments must support groups to get aid from external agencies; Government incentives should be for the group and not for individual farmers; Farmers may not trust the Government; and Governments will practice political favoritism</p>
<p><b>Theme 5: Women's Groups</b> Women's farmers groups are more committed than men</p>
<p><b>Proposed solutions</b> Implement monitoring mechanisms for group activities and finances. Ensure transparency of group functioning. Use a procedural manual for group formation. Provide training for farmers Provide training for extension officers</p>

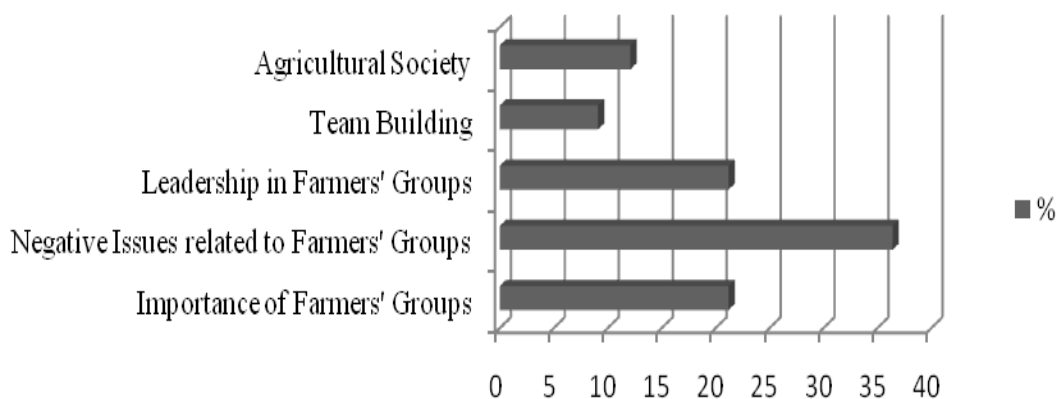
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was the need to change the perceptions that the leadership of farmers' groups will always be untrustworthy. There was agreement among the participants that there should be some procedural manual for group formation. Monitoring of farmers' groups by Government agencies to ensure transparency and accountability will resolve some of the trust and financial mismanagement issues. There was consensus for training farmers and extension officers in the areas of good governance, communications skills, and conflict management as a possible solution to some of the

negative issues in farmers' groups. The illustrative verbatim statements below reflect the views of the extension officers for the possible solutions to address the issues impacting farmers' groups:

1. *"We need to change this perception that the leaders' in farmers' groups will take everything, once the mechanisms are in place to prevent such an occurrence. Things are changing and we cannot base the success of the group on past experiences."*
2. *"Monitoring is the key also in Trinidad. The cooperative*

## % References made to different themes during the Farmers' Focus Group



**Figure 2.** Frequency distribution for the relative number (%) of references for each theme – farmers' Focus Group (FG2).

*model for farmers' groups is more transparent (here)."*

3. *"There should be some procedural manual for group formation."*

4. *"Farmers' groups need to be trained in good governance and communication skills".*

5. *"We, the Extension Officers, also need training in group formation, governance and conflict management."*

### Focus group - farmers' groups

The themes which dominated the focus group session among the farmers, in descending order of most discussed, were *negative issues related to farmers' groups*, the most dominant theme, followed by the *importance of farmers' groups*, *leadership in farmers groups*, *role of the Agricultural Society of Trinidad and Tobago*, and *team building* (Figure 2).

The participants indicated that *farmers' groups are important* (Emerging theme 2) for the development of the agriculture sector in Trinidad. They pointed to benefits such as mutual support and sharing of information. They commented that the group as an entity was stronger than the individual, and that Government support for farmers in a group is easier than for individual farmers. They all agreed that *team building* (Emerging theme 5), through farmers' interactions at social events, and mechanisms to resolve issues for the benefit of the group were all important for the future survival of the group. There was agreement among the farmers that the *Agricultural Society of Trinidad and Tobago* (Emerging theme 4) was responsible for encouraging farmers to form groups. Emerging themes 1 and 3 were two main themes also mentioned by the extension officers but are detailed now from the farmers' perspective. These are the negative

issues which impact the success of Farmers' Groups in Trinidad (theme 1), specifically the role of the group leadership (theme 3). The main themes and sentiments are outlined in Table 4.

### Issue 1: Negative issues related to farmers' groups

There was general consensus among all participants on the negative issues related to farmers' groups. These issues included perceptions of stealing and corruption; bias and inequity in the distribution of benefits; lack of transparency and accountability; poor communication; and issues related to the group leadership. It was pointed out that, when farmers come together in a group, there are still issues regarding competition, since the market for agricultural produce is relatively small.

The farmers can come together for issues regarding infrastructure, subsidies and threat to production but when it comes to pricing and competition it's a different matter. In instances when the executive acts in isolation and does not communicate with the members, there is a breakdown in the level of trust. The participants indicated that the group leader has the responsibility of holding the group together. It was suggested that disrespect of the leader for members along with lack of trust among members themselves are the two main issues impacting the success of farmers' groups. The following are selected verbatim statements, made by participants in the farmers' focus group, illustrating the negative perceptions related to farmers' groups:

1. *"The perception of stealing and corruption is a major challenge impacting the success of farmers' groups"*
2. *"In the early stages of the group's existence there are*

**Table 4.** Consensus opinions of participants in the farmers' Focus Group (FG2).

<b>Themes and associated sentiments (FG2)</b>
<p><b>Theme 1: Negative issues related to farmers groups</b></p> <p><b>There are perceptions that:</b></p> <p>There is stealing and corruption;            There is bias in the distribution of benefits;            Group founders have a sense of entitlement;            Less active members are disadvantaged            Lack of procedure is discouraging;            There is competition in general;            There is competition because of quality produce;            There is no transparency and accountability;            There is poor communication; and            There is poor leadership</p>
<p><b>Theme 2: Importance of farmers' groups</b></p> <p>Groups are important because:</p> <p>They aid in development of the agricultural sector;            They provide a context for mutual support;            They offer more opportunities for shared information;            Groups are stronger than the individual;            Government support is easier for groups than individual;            Farmers' groups help the community, and            Farmers, as a group, can maximize aid received</p>
<p><b>Theme 3: Leadership of farmers' groups</b></p> <p>There is a need for a procedure in the constitution for dealing with a bad leader;            A lot of power is invested in leadership; and            The leader determines the success of the group.</p>

issues. Since the executive have a say they may be biased in, for example, the lobby for certain access roads for some farmers. Also, since the leadership is responsible for directing resources, the opportunity for bias creeps in."

3. "Some members feel that, since they were responsible for the group formation and did all the work in the beginning, they ought to benefit more."

4. "The executive not speaking to the members, poor information sharing and lack of cooperation are some factors which negatively impact farmers' groups."

### **Issue 2: Specific leadership issues in farmers groups**

The quality of leadership is intertwined with the negative issues related to farmers' groups. The type and style of leadership is fundamental to the success of the group. The leader of the group is vested with the power of acting on behalf of the group. The membership will lose confidence in a group if the leadership is poor and this loss in confidence will be compounded if there are trust issues in addition. The focus group discussions revealed

that all felt it imperative that there be a constitution with provisions for taking action against the leadership in circumstances of poor leadership and management. There was no dissent on this particular sentiment. All participants felt strongly that passionate, strong leadership was essential to the success of farmers' groups. The selected verbatim statements below illustrate the participants' views with regard to the role of leadership in farmers' groups:

1. "There are situations where the group leader becomes a dictator. However, once there is a constitution there are ways to remove him in a democratic manner".

2. "Elections and a constitution are important and are used to guide the membership in matters concerning leadership."

3. "Power is part of human nature and sometimes it can cause issues in a group."

4. "A group is only as good as its leaders. The leaders determine the success of a group."

5. "You must have passion to want to be a leader in a farmers' group. It does not have a monetary reward and it takes up a lot of time. If you do not have the passion, it

would not last.”

## DISCUSSION

Challenges to farmers' groups have made some of them prone to failure. Authors of several previous studies have reported on both triggers of failure and elements which could promote success. Danida (2004) suggested that (i) capacity building of farmers' groups was a slow and uneven process and that the outcomes are often determined as much by factors of social behaviour and cultural norms as by economic logic and (ii) farmers' groups also suffer from problems concerning the accountability of their leaders and the group's legitimacy as representative membership organizations for poorer farmers, for rural women, and for other marginalized groups among farmers. Norbu (2008), in a study in Bhutan, pointed to the issues of transparency and accountability, misuse of authority and group finances by the leadership, which consequently induces mistrust among the group's membership.

Many of these issues of group dynamics and, in particular the role of leadership, were raised in both focus groups in this study. Some of these issues predispose farmers' groups to failure while others act as triggers to hasten the collapse of functioning groups. Both extension officers and farmers felt that issues such as mistrust of leaders; associated greed; the inexperience of both members and leaders; the aged membership; members' perceptions of corruption and bias existing among leaders; lack of transparency in procedures; poor communication; and the prevailing expectation of entitlement by group founders are some of the major reasons that set groups at serious risk of failure.

The issue raised here of the threat to group sustainability caused by poor communication has been touched on often in the literature. Deosaran (1980) in his study of food-producing agricultural groups of Trinidad and Tobago revealed concerns related to the lack of confidence by the membership of these groups, ineffective communication, and the disregard for the promotion of a team spirit beyond that shaped by financial self-interest.

Ostrom (1990), writing about farmers' groups in general, took a similar view. She reported on the internal and external factors impacting farmers' groups in their attempt for collective action. The internal factors included lack of capacity to communicate with each other, inadequate mechanisms to develop trust and no sense that they share a common future. Alternatively, powerful individuals who stand to gain from the current situation, may block efforts by the less powerful to change the rules of the game. Ostrom (1990) suggested that external factors could take the form of authorities, who are indifferent to the internal group problems and who may resist the group's attempts at making constructive

changes either because of that indifference or because they stand to profit from the *status quo*.

Fortunately, most of these issues can be corrected over time. Issues such as lack of transparency and accountability require some re-organization of governing principles as well as training. Perceptions of corruption and bias can be treated with adequate mechanisms to monitor the actions of leaders. Inexperience can be addressed through directed continuous training. The aged membership suggests that there is the need to promote group development much more among the emerging cadre of young farmers. Extension would have an important role in this regard since a prime role of extension is group development.

Both the extension officers and the farmers, participating in this study, believe that communication would have to be improved and enabling technologies would have to be utilized on a wider basis if younger persons are to be encouraged to join groups. The way meetings are conducted should also be modernized to appeal to young farmers. The sense of entitlement by group founders has to be addressed if young persons are to become active members of the group. The introduction of pathways for participation in the group decision-making process could go a long way toward lessening the hold of the older members in the group while at the same time giving more active roles to the younger members. The entire group governance process needs attention. This may require intervention by the Government of Trinidad and Tobago or even external assistance to reorganize governance procedures and make them up to date with modern best practices around the world.

Concerns were articulated by focus group participants in this study about the strength of the group leaders, the extent of the training in governance they receive, whether the leader is an active farmer or not, the role of the leader under the constitution, and the assigned powers of the leader. Leadership makes or breaks an organization. As such, clear roles and responsibilities must guide leadership. For the proper governance of groups, leaders must be trained in governance procedures and management. The strength and power vested in leaders must be rationalized. As such, in circumstances where these issues are present, opportunities exist to provide management training to leaders. Improving the leaders' communication skills must also be an important component of such training.

While many of the issues which impact group sustainability worldwide, as detailed in the literature on studies conducted elsewhere, have been found to be relevant to the group development efforts in Trinidad, some other unique issues have been found to be important as well in the Trinidad context. Along with attention being paid to the factors identified above in this study, constitution reform and good governance to include participatory procedures have been identified as needing special attention. These have the desired effect

of greatly improving social capital among groups, a key ingredient for the development of sustainable farmers' groups.

The information from the research described in this paper was used to guide and design deeper and broader studies in which the perceptions of extension officers and farmers in Trinidad, on the issues revealed here among others, were collected via the administration of structured survey instruments. In these later studies, the samples consisted of almost all (123) of the extension officers in Trinidad and approximately 20% (293) of farmers in farmers' groups. The results of those studies will be detailed later.

### Conflict of Interest

The authors have not declared any conflict of interest.

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Full Length Research Paper

## Utilisation of sunflower crop among smallholder farmers in sub-Saharan Africa: Evidence from Nigeria and Botswana

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Sunflower is a crop with high oil and economic values which portends its great potential for enhancing agricultural productivity and poverty alleviation among smallholder farmers. These notwithstanding, optimum benefit of the sunflower value chain have not been adequately harnessed. Conceived with the backdrop of lack of awareness about the commercial, nutritional and medicinal potentials of sunflower among the rural farm families, the study assessed the utilisation of sunflower among smallholder farmers in two southwestern states (Ogun and Ekiti) of Nigeria, and two districts (southeast and Kgatleng) of Botswana in sub-Saharan Africa. A total of two hundred smallholder farmers were randomly chosen from four purposively selected farming communities in southwestern Nigeria and Botswana districts. Results showed that 49 and 84% of the respondents were aware about the sunflower crop in Nigeria and Botswana, respectively, while only 10 and 25% cultivated the crop, respectively. The results further showed that all those (25%) who cultivated the crop in Botswana utilised it as animal feed only, while their Nigerian counterpart utilised it for variety of purposes. While 6 and 7% utilised it as animal feed and manure/fertiliser production, respectively, in Nigeria, 2, 5 and 8%, respectively, used it for cake/snack production, and traditional and ornamental purposes. Yet, another 6% cultivated the sunflower crop for seed oil extraction. The study concluded that, although, higher proportion of smallholder farmers from Botswana knew about and cultivated the sunflower crop, yet, their Nigeria counterpart utilised the crop more. The need for continuous popularization of the production and utilisation of sunflower crop among smallholder farmers was therefore recommended in both Botswana and Nigeria.

**Key words:** Sunflower utilisation, smallholder farmers, value chain.

### INTRODUCTION

Smallholder farmers are vital for agriculture and rural economy of every developing nation especially in the

sub-Saharan Africa and other parts of Africa continent where they largely rely on rain-fed agriculture. The

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smallholder farmers are generally marginal and sub-marginal farm households that own or/and cultivate less than 2.0 ha of land and are characterized by a narrow spectrum of education, mass illiteracy with high level of poverty and poor standard of living (Adedoyin et al., 1996; Ekong, 2003). They usually produce crops in mixed intercropping, which often result in persistent and continuous poor yield in agricultural production leading to poor financial return thereby exacerbating their poverty condition (Amujoyegbe et al., 2011).

The sunflower, *Helianthus annuus* L., is one of major crops of global importance native to the United States. Archeological evidence suggests that Native Americans began cultivating and improving the sunflower as early as 2300 B.C. (Rindels, 1996). Although, alien to the tropical and subtropical Africa, it could be suitable for planting in most areas of Nigeria and Botswana, considering its tolerance to drought and great variety of soil (CAADP, 2008; Amujoyegbe et al., 2012).

The sunflower crop has a lot of potentials and has been utilised for a wide variety of purposes from time immemorial. For instance, 'native Americans in the U.S. have been using wild sunflower for food and medicine for at least 8,000 years, the seeds were usually roasted and ground into a fine meal for baking or used to thicken soups and stews. "Seed-balls", similar to peanut butter, made from sunflower butter made a convenient carry-along food for traveling. Roasted sunflower hulls were steeped in boiling water to make a coffee-like beverage. Dye was extracted from hulls and petals. Face paint was made from dried petals and pollen. Oil, extracted from the ground seeds by boiling, provided many tribes with cooking oil and hair treatment. Medicinal uses included everything from wart removal to snake bite treatment to sunstroke treatment' (Rindels, 1996). Also, by adding sunflower to an existing crop rotation, pest problems such as corn borer or soybean cyst nematode can be reduced (Myers, 2002). A field of sunflowers in bloom is a striking sight, and many farmers remark about the pleasure they, and people passing by, get from seeing the flowers (Myers, 2002).

According to Johnson et al. (2009) cited in McClure et al. (2013), there are basically two types of sunflower hybrids: the oilseed type that is grown for vegetable oil and the confection or non-oilseed type. The oilseed type has a higher oil composition in the seeds than the non-oilseed type. Oilseed types produce smaller black seeds and the oil is primarily used for human consumption. The oilseed types are also marketed as a sole ingredient for birdseed or in birdseed blends. The non-oilseed type produces the large, striped seeds that are used for human food snacks in the shell or as kernels, in baking ingredients, and in birdseed mixes (Johnson et al., 2009). Currently, production of edible oil in sub Saharan Africa has been largely from oil palm and soybean, which remain inadequate for the ever growing teeming population (FAO, 2003). Sunflower, which is the fourth

leading oil consumed (7.8%) behind (oil) palm (31.8%), soybean (30%) and rapeseed (14%) (ASA, 2008) has not been adequately exploited for its commercial edible oil potential in most African countries, especially Nigeria and Botswana. Even in South Africa, for instance, where approximately 95% of all sunflower seed produced is processed for sunflower oil production, the dilemma of the sunflower market is that not enough sunflower seed is produced locally for the oil industry. With the total demand for sunflower seed, resulting from the total demand of sunflower oil, increased to over 1 million tonnes, South Africa has become a huge importer of sunflower crude oil in the last decade (FPMC, 2003).

Enhancing the value chain can improve the livelihood of smallholder farmers, ensure competitiveness in the global market, and ultimately contribute to economic growth. However, imperfections along the chain continue to widen the disparity between farm gate and retail prices, leaving poor farmers with the least value (IFPRI, 2008). Despite the promising potentials of the sunflower which portends great potential for enhancing agricultural productivity and poverty alleviation among smallholder farmers, optimum benefit of the sunflower value chain have not been adequately harnessed. Conceived with the backdrop of lack of awareness about the commercial, nutritional and medicinal potentials of sunflower among the rural farm families, the study assessed the utilisation of sunflower among smallholder farmers in two southwestern states (Ogun and Ekiti) of Nigeria, and two districts (southeast and Kgatleng) of Botswana in sub-Saharan Africa. Specifically, socioeconomic characteristics of smallholder farmers were described, and their awareness about and utilisation of the sunflower crop were assessed.

## METHODOLOGY

The study was conducted in two Southwestern states (Ogun and Ekiti) of Nigeria and two districts (Southwest and Kgatleng) of Botswana. Ogun state is an important state where the principal partner of the project is located (Crawford University, Igbesa) while Ekiti state is the site of the Faculty of Agriculture of the Crawford University where the Sunflower Extension Centre is located. Ogun state which is an agrarian state with extensive industrial encroachment has a population of about 2, 338,570 (NPC, 2006) and occupies a land area of 16, 762 km<sup>2</sup>. The coordinates of the state is 7°00'N 3°35'E/ 7°N 3.583°E with transitional savanna vegetation. It experiences approximately eight months (March – October) of bimodal rainfall and five months (November – March) of dry season each year with slightly irregularity in the rainfall distribution annually. On the other hand, Ekiti state is an inland state with a total land area of 9, 251 km<sup>2</sup> and a population of 1,628,762 (NPC, 2006). The state falls within 7°30'N 4°30'E/ 7.5°N 4.5°E, and the vegetation is rainforest with some patches of guinea savanna. It experiences approximately eight months (March – October) of bimodal rainfall and four months (November – February) of dry season each year with slightly irregularity in the rainfall distribution yearly.

Botswana, where the second institution (Botswana College of Agriculture) is located is predominantly flat, tending toward gently rolling tableland. Botswana is dominated by the Kalahari Desert,

which covers up to 70% of its land surface. It covers about 600,370 km<sup>2</sup> (231,804 sq mi) and lies between latitudes 17° and 27°S, and longitudes 20° and 30°E. According to 2011 population Census, Botswana has a population of about 2,024,787 people (BPC, 2012)

Two farming communities were purposively selected from each of the countries because of their proximity to the participating institutions. These communities were Adie-Owe Igbesa in Ogun State and Oye-Ekiti, Ekiti State of Nigeria; and Oodi in Kgatleng District and Mogobane in South-East District of Botswana. Fifty farmers were also purposefully selected at each of the locations making a total of 200 participants for the study within a time frame of twelve months. Structured interview schedule, which was developed by the researchers using literature and professional experience, was used for data collection. Reliability test of the instruments was determined using a pre-test technique. With correlation coefficient ( $r = 0.71$ ) obtained from the analysis, the research instrument was adjudged reliable since the correlation value of 0.7 and above are considered as satisfactory or good for a test-retest reliability (Statistics.com, 2014). The data collected were processed using SPSS version 14. Descriptive statistics such as percentages, means, line graph and charts were used to analyze the data.

## RESULTS AND DISCUSSION

### Socio-economic characteristics of the respondents

Results in Table 1 showed that 82% of the respondents from Nigeria were male, while 18% were female. Conversely, 56% were female in Botswana, while 44% were male. The results indicated that more female were engaged in smallholder farming in Botswana compared to Nigeria, where more male were involved. Majority (72.0%) of the respondents from both countries were aged between 31 and 60 years old. Mean age of respondent from Nigeria was 46.4 years, with standard deviation of 12.45 while mean age of respondents from Botswana was 56.13 with standard deviation of 10.85. The results thus indicated that respondents from Botswana were relatively older than their Nigerian counterparts. Similarly, majority (83% Nigerian and 86% Botswana) were married, while few others were either single or separated from their spouses. Majority (89% Nigerian and 95% Botswana) were Christians while very few were of the Islamic faith.

Results in Table 1 further showed that in Nigeria, 89% of the respondents could read and write, while 52% of the respondents from Botswana could read and write. Also, while 9% of the Nigerian could neither read nor write, 38% Botswana could neither read nor write. The results indicated that respondents from Nigeria had higher literacy level than their Botswana counterpart. These results have implications for educational techniques and approaches to adopt in continuous popularization of sunflower crop in both countries, in order not side line the unlettered ones amongst the smallholder farmers.

Similarly, in Nigeria, 72, 58 and 53% of the respondents belonged to religious association, community development association and farmers' association, respectively. While half (50%) of the

respondents belonged to cooperative societies, 41 and 30% belonged to social organization and political group, respectively. Conversely, while 40% of the respondents from Botswana belonged to religious association, very few (less than 10%) were members of other associations. The results indicated that level of association membership was higher amongst Nigerian smallholder farmers compared to their Botswana counterpart.

Results in Table 2 showed that majority of the respondents (75.0% Nigerian and 87.0% Botswana) had farm size below 20 acres, while few cultivated above 20 acres in both countries. Mean farm size was 14.45 acres in Nigeria and 13.1 acres in Botswana. In addition, 59% of respondents from Nigeria acquired their farm land through inheritance, while 26% cultivated rented land area. Conversely, in Botswana, 56% of the respondents acquired their farm land through gift. The results indicated that respondents from both countries own sizeable portion of cultivable land area, from which they might dedicate some portion to sunflower crop, if they are convinced about its economic importance and become interested in its cultivation.

Furthermore, results in Table 2 showed that 61 and 28% of the respondents from Nigeria engaged in mixed cropping and mixed farming, respectively, while 11% engaged in mono cropping. In Botswana, however, 55% engaged in mixed farming, while 40 and 5%, respectively, engaged in mixed cropping and mono cropping. The results indicated that respondents from both countries already engaged in 'multi-farming' system, and therefore the integration of sunflower cultivation into the existing system could significantly enhance smallholder farmers' productivity.

Results in Table 3 showed that 49% of the respondents from Nigerian indicated they know about sunflower crop, while 84% of their Botswana counterpart knew about the crop. Results further showed that 24 and 26% of the respondents indicated parent and co-farmer as their source of awareness about sunflower in Nigeria, while 49 and 39% of their Botswana indicated these same sources, respectively. 17 and 8% indicated extension agent as source of awareness in Nigeria and Botswana, respectively, while very few (7% and below) indicated other sources friends, mass media and market. These results implied that parents and co-farmers were most prominent ways through which respondents knew about the sunflower crop. The results underscored the need for popularization of sunflower amongst smallholder farmers through use of mass media, radio, for example, which will gain wider coverage and audience.

### Sunflower cultivation and utilization

Results in Figure 1 showed that, despite the proportion of respondents that knew about the sunflower crop as earlier discussed, only 10 and 25% of the respondents cultivated the crop from Nigeria and Botswana, respectively.

**Table 1.** Respondents' socio-economic characteristics.

Variable	Nigeria (n = 100)		Botswana (n = 100)	
	Frequency	Percentage	Frequency	Percentage
<b>Sex</b>				
Male	82	82.0	44	44.0
Female	18	18.0	56	56.0
<b>Age (Years)</b>				
Below 30	13	13.0	0	0.0
31 – 60	72	72.0	72	72.0
Above 60	15	15.0	28	28.0
Mean	46.40		56.13	
Standard deviation	12.45		10.85	
<b>Marital status</b>				
Single	13	13.0	7	7.0
Married	83	83.0	86	86.0
Divorced/widowed/Separated	4	4.0	7	7.0
<b>Religion</b>				
Islam	8	8.0	5	5.0
Christianity	92	92.0	95	95.0
<b>Literacy level</b>				
Can read and write	89	89.0	52	52.0
Can read but can't write/Can write but can't read	2	2.0	10	10.0
Can neither read nor write	9	9.0	38	38.0
<b>Association membership</b>				
Religious association	72	72.0	40	40.0
Village council	48	48.0	0	0.0
Cooperative society	50	50.0	9	9.0
<b>Community development</b>				
Association	58	58.0	3	3.0
Social organization	41	41.0	4	4.0
Political group	30	30.0	0	0.0
Farmers' association	53	53.0	9	9.0
<b>Farming experience (Years)</b>				
Below 20	31	31.0	12	12.0
21 – 40	23	23.0	19	19.0
41 – 60	4	4.0	2	2.0
Above 60	0	0.0	2	2.0
No response	42	42.0	65	65.0
<b>Mean</b>	21.19		27.07	

Source: Computed from field survey, 2013.

This indicated that low cultivation of sunflower amongst smallholder farmers in both countries. Results in Figure 2 showed that all those (25%) who cultivated the crop in Botswana utilised it as animal feed only, while their Nigerian counterpart utilised it for a variety of purposes. While 6 and 7% utilized it as animal feed and

manure/fertiliser production, respectively, in Nigeria, 2, 5 and 8%, respectively, used it for cake/snack production, and traditional and ornamental purposes. Yet, another 6% cultivated the sunflower crop for seed oil extraction. The results indicated that the potentials for enhancing agricultural productivity and reducing poverty amongst

**Table 2.** Respondents' farm size, land acquisition and type of farming.

Variable	Nigeria (n = 100)		Botswana (n = 100)	
	Frequency	Percentage	Frequency	Percentage
<b>Farm size (Acres)</b>				
Below 20	75	75.0	87	87.0
21 – 40	6	6.0	13	13.0
41 – 60	4	4.0	0	0.0
Above 60	1	1.0	0	0.0
No response	14	14.0	-	-
<b>Mean</b>	<b>14.45</b>		<b>13.1</b>	
<b>Land acquisition type</b>				
Inheritance	59	59.0	39	39.0
Rent/lease	26	26.0	3	3.0
Outright purchase	9	9.0	2	2.0
Gift	8	8.0	56	56.0
<b>Type of farming</b>				
Mono cropping	11	11.0	5	5.0
Mixed cropping	61	61.0	40	40.0
Mixed farming	28	28.0	55	55.0

Source: Computed from field survey, 2013.

**Table 3.** Awareness about the sunflower crop.

Variable	Nigeria (n = 100)		Botswana (n = 100)	
	Frequency	Percentage	Frequency	Percentage
<b>Do you know about the crop?</b>				
Yes	49	49.0	84	84.0
No	51	51.0	16	16.0
<b>Source of awareness*</b>				
Parent	24	24.0	49	49.0
Co-farmer	26	26.0	39	39.0
Friends	7	7.0	5	5.0
Extension agent	17	17.0	8	8.0
Mass media	7	7.0	3	3.0
Market	1	1.0	3	3.0

\*Multiple responses applicable, Source: Computed from field survey, 2013.

smallholder farmers through sunflower utilisation have not been well harnessed in both countries.

## CONCLUSION AND RECOMMENDATION

The study concluded that higher proportion of smallholder farmers from Botswana were aware about and cultivated the sunflower crop. However, their Nigeria counterpart utilised the crop more. Notwithstanding, optimum benefit

that could be derived from utilisation of sunflower have not been adequately harnessed in both countries. The need for continuous popularization of the production and utilisation of sunflower crop among smallholder farmers was therefore recommended in both Botswana and Nigeria.

## Conflict of Interest

The authors have not declared any conflict of interest.

# cultivate sunflower

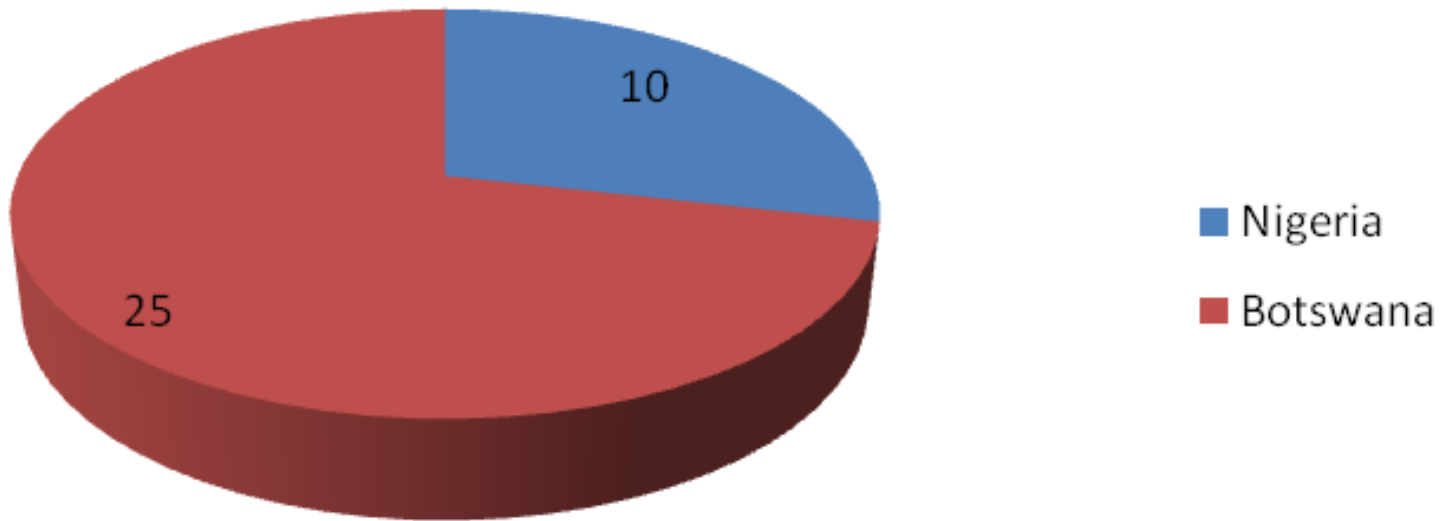


Figure 1. Percentage distribution of respondents that cultivated sunflower crop. Source: Computed from field survey, 2013.

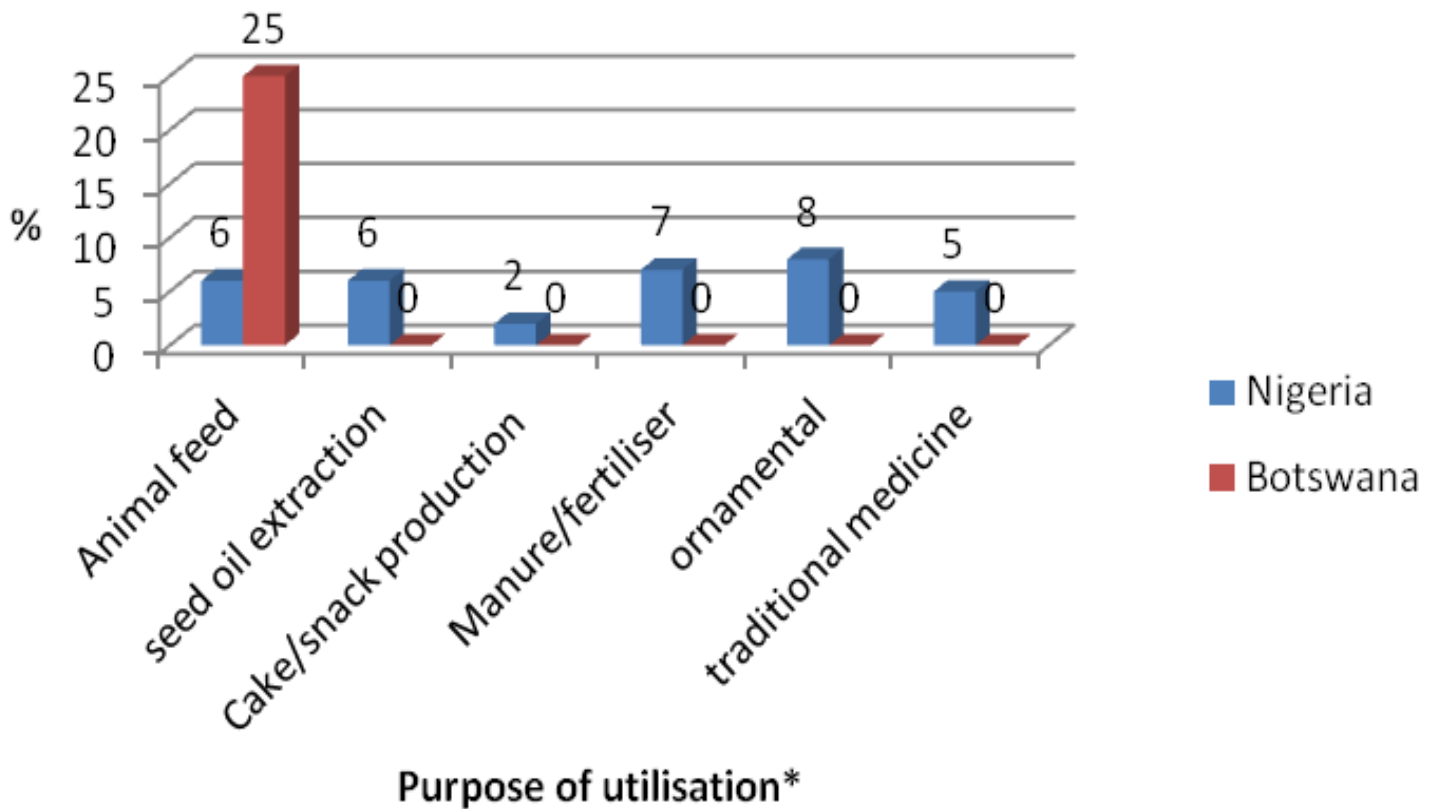


Figure 2. Percentage distribution of respondents that utilised sunflower crop. \*Multiple responses applicable. Source: Computed from field survey, 2013.

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*Full Length Research Paper*

## Trends in budgetary expenditure on the agricultural sector in Nigeria (1977-2004)

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The study estimated trend equations for budgetary expenditure on Nigeria agricultural sector between 1977 and 2004. Secondary data in the form of budgetary expenditure records were obtained from various publications of Central Bank of Nigeria (CBN) and Federal of Statistics (FOS). Results from the fitted trend equations showed that budgetary expenditures on agriculture were generally low and insignificant ( $p > 0.05$ ). Annual compound growth rate of expenditure on the sector was also low (1.02%) and fluctuating for the entire period under review. Furthermore, the fitted quadratic equations in time variable showed the absence of either significant acceleration or deceleration in expenditure growth on agriculture. This, therefore, confirms that expenditure growth on agriculture had been stagnant, suggesting a case of financial neglect of the sector. Based on these findings, the study recommends deliberate efforts by Government to increase funds to agriculture in order to boost self-sufficiency in food production and reduce poverty in Nigeria.

**Key words:** Trends, budgets, agriculture, expenditure, Nigeria.

### INTRODUCTION

Government pronouncements over the years have indicated that the agricultural sector occupies a priority position in national development programmes. In fact, the large number of agricultural institutions such as the Agricultural Development Projects, River Basin Development Authorities, Agricultural Development Banks and others, as well as the series of government campaigns and slogans directed at the sector in recent years may be cited as evidence of government's concern for the development of the sector. Despite the institutions, campaigns and slogans, farm production has failed to keep pace with food demands (Obadan, 1998; NISER,

2003). Apart from the commonly stated problems of poor input distribution, inefficient marketing, low level of farm technology and poorly coordinated extension systems, there is the need to also consider the magnitude of funds actually spent on agricultural programmes. The successive development plans of countries find expression in the annual budgets, which make financial provisions for public investments in enterprise and infrastructure. Thus, the budget speech at the beginning of each year attracts considerable political attention particularly in developing countries where peoples' expectations rise spontaneously based on new allocations

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in the budget for improving their living standards within the short run (Ayoola and Oboh, 2000).

However, the annual budget as a policy instrument for implementing poverty reduction programmes in the plan has been criticized frequently as biased against agriculture in preference to other sectors of the Nigerian economy (Oboh, 2001). This criticism reflects in the popular explanation of the poor performance of developing economies in terms of a chronic "neglect" of the agricultural sector. It is expected that the current rising revenues derived from petroleum should be invested largely in agriculture and agro-industrial development in increasing both the productive and absorptive capacity of the sector.

In spite of the re-echoing of the problems of inadequate funding of agriculture by several experts, an in-depth and long-term trend analysis of expenditure on the agricultural sector was yet to be carried out. This study is, therefore, designed to estimate trend equations for the actual budgetary expenditure on the agricultural sector in Nigeria between 1977 and 2004.

## METHODOLOGY

### Data

Secondary data in form of budgetary expenditures on the agricultural sector were obtained from various issues of the statistical bulletin of the Central Bank of Nigeria (CBN) and abstracts of statistics published by the Federal Office of Statistics (FOS) covering 1977 to 2004.

### Method of data analysis

Annual compound growth rates of budgetary expenditure on the agricultural sector were computed by fitting exponential equations in time variables to the data as follows:

$$Q = a_e^{bt} \quad (1)$$

Which when linearised in logarithms becomes

$$\text{Log } Q = a + bt \quad (2)$$

Where Q is budgetary expenditure on the agricultural sector, t is the time trend variable and 'a' and 'b' are the regression parameters to be estimated.

The annual compound growth rate (r) in budgetary expenditure on the agricultural sector is given as

$$r = (e^b - 1) \times 100/1 \quad (3)$$

Where e is Euler's exponential constant (2.71828). The estimating Equation (2) was fitted to the budgetary expenditure data on agriculture for three periods as follows:

Period 1: 1977 – 1985 (Pre-economic reform period)  
 Period 2: 1986 – 2004 (Economic reform period); and  
 Period 3: 1977 – 2004 (Entire period).

In order to confirm the existence of acceleration or deceleration or stagnation in budgetary expenditures, quadratic equations in time

variables are fitted to the data for the three periods as follows:

$$\text{Log } Q = a + bt + ct^2$$

According to the above specification, the linear and quadratic time terms define the secular path in the dependent variables (Q), while the quadratic time term ( $t^2$ ) allows for the possibility of acceleration or deceleration or stagnation in growth during the period of study (Sawant, 1981; Onyenweaku, 2004; Onyenweaku and Okoye, 2005). Significant positive value of the coefficient of  $t^2$  confirms significant acceleration in growth, significant negative value of  $t^2$  confirms significant deceleration in growth while non-significance of the coefficient of  $t^2$  implies stagnation or absence of either acceleration or deceleration in the growth process.

## RESULTS AND DISCUSSION

### Estimated trend equations

The estimated trend equations for budgetary expenditure on the agricultural sector are presented in Table 1 for the three periods under review. The coefficient of the time trend (b) is positive and statistically non-significant across the three periods. This implies that government budgetary expenditure on agriculture remained the same (low and insignificant) during the pre-reform period, reform period as well as the entire period.

### Computed annual compound growth rate

Table 2 showed the computed annual compound growth rate of budgetary expenditure on agriculture across the three periods. During the pre-reform period, expenditure grew at a compound rate of 12.16% per annum, declined to 0.13% during the reform period while it grew at a rate of 1.02% for the entire period. The decline in expenditure growth rate during the reform period means that the structural adjustment efforts of government did not translate into any improvement in expenditure growth on the agricultural sector (CBN/NISER, 1992).

### Estimated quadratic equations

The estimated quadratic equations in time variable for budgetary expenditure on Nigerian agriculture is shown in Table 3. The coefficient of  $t^2$  for the three periods (pre-reform, reform and the entire period) were statistically insignificant. This result confirms the absence of any significant acceleration or deceleration in the growth of budgetary expenditure on Nigerian agriculture. In other words, expenditure on agriculture for the periods under review has been stagnant. This suggests that the agricultural sector has been consistently neglected in terms of funding as observed by Imodu (2005). This stagnation in the annual growth of expenditure on agriculture betrays credibility gap between the usually stated priority status accorded agriculture and the



**Table 1.** Estimated trend equations for budgetary expenditure on agriculture in Nigeria (1977 – 2004).

Budgetary expenditure per period	Estimated parameter			
	a	b	r <sup>2</sup>	F
Pre-reform period (Period 1)	1.958 (0.654)	1.698 (2.371)	0.484	5.621
Reform period (Period 2)	9.273 (2.966)	0.165 (0.586)	0.019	0.344
Entire period (Period 3)	6.125 (2.804)	0.228 (1.451)	0.075	2.106

t – ratios are in parentheses; \*\*\* significant at 1%.

**Table 2.** Compound growth rates of budgetary expenditure on agriculture in Nigeria (1977 – 2004).

Periods	Growth rate
1	12.6 (3.261)
2	-0.13 (-0.122)
3	1.02 (1.451)

t – ratios are in parentheses.

**Table 3.** Estimated quadratic equations in time variables for budgetary expenditure on Agriculture in Nigeria (1977 – 2004).

Actual expenditure for period	Estimated parameter				
	a	b	c	R <sup>2</sup>	F
1	0.132 (0.888)	0.346 (3.478)	-0.032 (-2.377)	0.831	12.259
2	0.942 (8.266)***	-0.127 (-1.817)	0.003602 (1.818)	0.163	1.661
3	0.635 (4.047)***	0.04043 (1.502)	-0.0011 (-1.165)	0.123	1.745

t – ratios are in parentheses, \*\*\* significant at 1%.

willingness of government to release adequate funds to develop the sector. The implication is that, new projects and programmes may suffer implementation since there is no significant increase in expenditure on agriculture.

## Conclusion

The results of this study have confirmed stagnation in budgetary expenditure on the agricultural sector. This is an evidence of lack of financial commitment to the agricultural sector, which is the mainstay of Nigerian economy. From the foregoing, agriculture appeared marginalized as exemplified by the non-significant budgetary expenditure on the sector before and during the reform periods. There is, therefore, the need for

Government to deliberately increase the funding of the agricultural sector. This may help to implement new projects and programmes aiming at boosting food self-sufficiency and reducing poverty in Nigeria.

## Conflict of Interests

The authors have not declared any conflict of interests.

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