EXPANDING THE TOOL BOX: EXPERIENCES WITH SELF-DISCOVERY EXTENSION IN TRINIDAD

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ABSTRACT

Farmers in Tableland, Trinidad were producing Pineapple continuously on steep hillsides and applying improper management practices. Traditional extension approaches were having little impact on farmers' behaviour mainly because these farmers were operating a profitable enterprise, albeit in an unsustainable manner. An alternative approach to extension education based on constructivist learning principles was conducted. Interactive techniques, which facilitated self-discovery, were used to address the identified problems of improper fertilizer use and insufficient soil conservation practices. The primary objective was to pilot a Participatory Approach (PA) to encourage farmers to change the practices that they discovered reduced their optimum returns and which have adverse consequences on the environment. Group administered pre-evaluations, simulation exercises, walk-about on plots, simulations and focussed discussions were used to enable farmers to identify problems in their production practices and to suggest workable solutions to which they could commit themselves to implement. Farmer involvement and feedback throughout the sessions were high and initial evaluations indicated improved knowledge. This initiative also presented an opportunity to introduce the participatory approach and several associated techniques to extension field staff, who would be the main facilitators of this approach and to challenge them to use creativity in designing extension programmes. The experience has wider application in other farm enterprises.

INTRODUCTION

Over the years, several approaches have been tried regionally to meet the education needs of farmers. One precursor to extension was the establishment of Botanical Gardens in the late 1800's by the Europeans for purposes of demonstration of new methods and techniques as well as experimentation. It was in the 1900's however that extension development in the Caribbean really began to take shape and programs were developed to meet various national agricultural goals. Most are the approaches used were top-down in nature. They were based on the linear model of communication and its prescriptive approach to solving farmers' problems. Birmingham (1999) summarized several of the extension approaches used in developing countries. Some of approaches tried in Trinidad include: Commodity-based extension, provided by government other commodity producers or both depending on the nature of the product; Ministry-based general extension, in which extensionists were primarily for education purposes, but were expected to serve a number of other non-extension functions of the Ministry, for example data collection, farmer registration, subsidies, incentives, and land regularization.

The Training and Visit (T&V) system was also tried in early 1990 in an effort to reach more farmers on a timely basis. However, successes were short lived as this system was constrained by the unavailability of resources in a timely manner and on a sustained basis to do the prescribed method demonstrations. Also, the working arrangements of pubic sector employees, which provided for "casual or occasional leave", which was incompatible with the fairly inflexible routine of the Training and Visit system. Farmer feedback was not part of this approach. The Farming System Research and Extension (FSRE) approach in the early 1990's tried to focus on farmer's needs and problems, and used an integrated approach to development. Researchers, extensionists, and socio-economists, met with farmers as a team to analyze and plan for them. While this approach was laudable for its interdisciplinary approach and first attempts to involve the clientele in some meaningful way, the resulting prescriptions were based on the top-down Transfer of Technology (TOT) model and farmers' active participation beyond providing information, was minimal.

In spite of these worthy approaches tried over the years, the impact of extension is still being debated. Campbell (2001) summarized some of the difficulties public sector extension faces in the Caribbean region. The most important of these he noted, is that farmers complain that extension is not reaching them. In the instances, and there are many, where extension does reach the community, farmers often say that the technology promoted is not fully sustainable on their farms (Van de Fliert and Braun, Circa 2000). Further, extension officers note that farmers often complain that extension has nothing new to offer them, yet they always want extension to come and "teach them something new" (Personal Communication, R. Ramdass, MFPMR, 2001). It would appear that farmers' have become accustomed to the role of information receivers and tend to value information from external sources much more than their own indigenous, community-based knowledge.

THEORETICAL PERSPECTIVES

Our beliefs about how adults learn guide our approach to extension education for our clientele. Most of the approaches traditionally used are constructed on the theory of behaviorism. The goal of such approaches is to communicate or transfer knowledge and skills to a learner. Learning is said to have occurred when a correct response or a desired behavior is demonstrated.

This type of approach, based on programmed instruction, does not require any mental processing by learners. They are passive recipients of information on technologies developed elsewhere, and are simply required to produce the response desired by the information provider. This approach provides a lot of new information, but does not teach learners how to learn, nor does it provide any motivation for inquiry, discovery and for learning new things on their own. Learners become information dependent and remain so. Their ability to process, analyze and synthesize information is restricted. They would always want to see the information provider and want to be informed about "something new to try out" on their farms.

It has been recognized however, that relating instructional content to the specific context of learners' lives and interests increases motivation to learn (Dirkx and Prenger, 1997, p.2). This type of learning, frequently called contextual learning recognizes that learning is a complex

process that involves much more than the behaviorist approaches that emphasize drill and practice, recall of facts, and automatic performance of specified procedures (Imel, 2000). This type of approach, based on the theory of constructivism holds that individuals learn by constructing meaning through interacting and interpreting their environments. Constructivist approaches are based on inquiry, discovery and situated learning. Mason (2000) stated that knowledge is embedded in the context in which it is used, and learners create novel and situation-specific understandings by "assembling" knowledge from diverse sources appropriate to the problem at hand. It emphasizes that learning is an active process of constructing rather than acquiring knowledge.

The characteristics of contextual learning are listed (Clifford and Wilson, 2000) as: emphasizing problem solving; assisting learners in learning how to self regulate their learning, anchoring teaching in the diverse life context of the learners, and encouraging students to learn from each others. Strategies based on this type of learning focus on the learner in the learning situation and utilize discussions among all stakeholders to determine what is appropriate for a given situation.

Farmer Participatory Approaches are based on these principles. However, there are two fundamental problems that must be faced squarely if organizations are to implement Farmer Participatory Approaches (FPA) and strategies. These are (Engel, 1990):

i) The dominant bias in favour or research-based knowledge, frustrating the input of other types of knowledge which are necessary to develop sustainable solutions to farmers' real problems; and
ii) The internal difficulties institutions have to face as they attempt to pursue alternative strategies and develop solutions with farmers.

Administrative re-organisation, redefinition of roles and responsibilities, sharing of work domains or "turfs" and retraining of staff would be major challenges.

PARTICIPATORY EXPERIENCES IN TRINIDAD

Two exercises that were intended to form part of a wider program of Farmer Participatory Approaches (FPA) to Ecological Crop Management (ECM) were conducted in July 2000 among Pineapple farmers in the Tableland region of South Trinidad.

First Exercise:

Problem:

Farmers were cropping Pineapple on the same holding and applying only N in the form of Urea. Their crops were showing symptoms of nutrient deficiencies.

Aim:

To show that the plant uses Nitrogen (N), Phosphorous (P) and Potassium (K). By adding only one of these, N, as Urea, the plant gets proportionately less of the other nutrients.

Exercise:

A modified version of the Nuts Game, used to teach the concept of sustainability (Van veldhuizen et al., 1997), formed the basis for the discovery experience. Farmers were given containers with equal amounts of 3 evenly sized, but different coloured peas, which were

thoroughly mixed. They removed fixed amounts and counted the number of each type of pea. An equal amount of one type of pea was added, thoroughly mixed and the above procedure was repeated twice. Farmers recorded their observations. Farmers observed that overtime two sets of beans were being depleted while one was steadily increasing. They were then told that the peas represented the 3 different major nutrients, and the one that was being replaced, represented nitrogen, applied in the form of urea. They were asked to discuss their observations and its relationship to their fertilising practices. They were able to deduce, some immediately and others after a short while, that since the plant was removing all these nutrients, and they were only replacing one, there would be a subsequent deficiency in the other two nutrients over time.

Recall:

One year after the participatory activity, a sample of those who attended was interviewed. All farmers (n=8) recalled the activity and what was learnt about fertiliser deficiencies in relation to the practices used at that time. This compared with 50 percent total recall, and 50 percent partial recall on the meaning and function of the N, P, and K in fertilisers, which was taught via traditional methods in other sessions.

Second Exercise:

Problem:

Farmers were cropping Pineapple on steep slopes with minimal soil conservation measures on soils prone to erosion. Farmers were unaware of the consequences of this practice, and techniques to prevent erosion.

Activity 1: Farm Walkabout.

Aim:

Farmers to observe the effects of erosion and discuss potential solutions to prevent soil loss.

Exercise:

The extension officer led a structured walkabout to pre-selected areas of a farmer's field, which demonstrated a range of the negative effects of soil erosion. Plants were of varying maturity. Farmers observed channelling, the extent of ground cover, silting of drains and exposure of roots and subsoil. Discussions centred on what the farmer-owner did on observing the problems, as well as possible indigenous remedies. Subsequently, in an adjacent newly established field, farmers discussed potential problems and a range of possible solutions appropriate to their conditions.

Activity 2: Simulation of erosion

Aim:

To show the effects of water erosion on topsoil on steep slopes.

Exercise:

Farmers were invited to a vertical drain at the side of a cultivated pineapple bed on a hillside. They were asked to pour a measured amount of water along the drain and to collect the run-off in a container at the end of the drain and time the activity. They had to observe and discuss what occurred. This was repeated along a drain on the same slope, which had some leaves in it from a nearby tree and natural grass barriers. They then compared and discussed their observations and the reasons for the differences. They observed that there was greater run-off in the bare drain compared with the leaf-covered drain. The water also ran down the slope faster and was more

discoloured. They discussed measures that they could take to reduce the rate of run-off and topsoil erosion on their farms.

Recall

On evaluation all the persons recalled the demonstration and its purpose. All knew about prevention methods to be used.

Overall comments on the self discovery Methods

All the respondents thought that they were different to the usual extension methods and they liked their experiences. They stated that they appreciated being allowed to contribute to the activities, and to draw their own conclusions. All preferred field to classroom learning and wanted to attend further sessions although not necessarily in relation to Pineapple production.

DISCUSSION AND IMPLICATIONS

Improved contextual knowledge is increasingly being regarded (Erbaugh et al., 2001) as a key precursor to the adaptation and application of new technologies. The Ministry of Agriculture in Trinidad, as in several other countries in the region, is still locked into the technology transfer mode. The underlying assumption is that the provision of information from the generators of knowledge to those who have little knowledge would solve farmers' problems -the "full glass to empty glass" relationship. Training courses, seminars and method and result demonstrations, constitute the dominant techniques of program delivery. While farmers are involved to some extent in situation analyses, very little attempt is made to involve them in other phases of program design and delivery.

Farmers in Tableland reported liking the Participatory experiences, especially, that they were allowed to take part in and contribute to the activities and share their thoughts. To facilitate experiential learning, a fundamental shift away from lecturing and talking to farmers, to an approach where we listen and discuss more is needed. Perhaps, rather than prescribe scientific information to groups, we need to distil knowledge from groups in contextual situations, combine such knowledge with our own knowledge-set and then develop meaningful learning experiences that involve farmers in the process of inquiry, self-discovery and elaboration. Cognitive psychology tells us that learners bring an existing cognitive structure to the learning situation, and they must make sense out of the new learning relative to the old if true learning is to take place. It is in this regard that the knowledge set of researchers, farmers and extensionists must come together and generate a complete new knowledge-set for dissemination.

The notion that farmers have knowledge based on their long experience of farming in a particular situation is one that will have to be internalised by researchers and extensionists. This will require retraining of our researchers and extensionists. The institution itself will have to adapt and become more flexible to allow for greater interaction among researchers, extensionists and farmers. Participatory Approaches require a seamless interface between research and extension. This is quite different from the top down approach with its clear-cut division of responsibilities. Such adaptations must of necessity start at policy level. Central to this change must be that policy makers themselves become sensitised to the approaches that actively promote farmers' meaningful participation in specifying their immediate problems, the technology development process, and in tapping their contextual knowledge. Extension providers will require training in

these approaches and methods. Group facilitation skills will become more important than lecturing skills.

The challenge is for extension providers to engage clients in creative activities that bring to the fore their natural enquiring minds and learning abilities. This would serve to empower farmers, providing them with an enhanced capacity to solve their problems and determine appropriate actions for their farm situations and even the confidence to demand strategic information from providers when necessary.

The adoption of any new or modified Extension approach will have implications for the training of extension staff. This is essential if they are to meet the changing expectancies of small farmers to be co-participants in the development of solutions that are relevant and adapted to their own specific farm circumstances. Some pioneering work has been done using Farmer Participatory Approaches (FPA) in several parts of Asia and Africa and the best known may be the Farmer Field School (FFS) model used to teach Integrated Pest Management (IPM). This model has wider application for other areas of crop production.

Finally, Participatory Approaches should not replace tested traditional extension approaches and methods but rather compliment them. Extension agents would feel much more confident in their work with farmers if they have a choice of approaches, methods and techniques. It is therefore the duty of those who provide technical backstopping for extension field agents to continuously seek to expand their toolboxes.

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