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EXTENSION AND SUSTAINABLE AGRICULTURAL DEVELOPMENT: LOOKING TO THE FUTURE

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INTRODUCTION

Sustainable agricultural development is now very much in focus both in the rich highly industrialized countries of the North as well as the poorest less industrialized nations of the South. The farmers in all these countries, of course, will bear the brunt of sustainable agricultural development in the final analysis since they are the ones who will be called upon to implement technologies necessary for sustainable agriculture. As the entity which is the first line of contact with farmers, Extension must be regarded as having a critical role to play in the worldwide thrust towards sustainable agricultural development. This article, therefore, takes a look at Extension in the future, as it attempts to grapple with issues and priorities relevant to its role in sustainable agricultural development.

SUSTAINABLE AGRICULTURAL DEVELOPMENT - Definition and Scope

Batie [1989, p.1084] pointed out that while there are different interpretations

There is consensus among its advocates that sustainable development is a concept based on intergeneration equity - that is, the current generation must not compromise the ability of future generations to meet their 'material needs' and to enjoy a healthy environment.

In looking more specifically at the agricultural sector, the Food and Agriculture Organization of the United Nations (FAO) stated the following

imperatives for sustainable agricultural development.

- (a) It should conserve land, water, plant and animal genetic resources; and
- (b) It should be environmentally non-degrading, technically appropriate, economically viable and socially acceptable [FAO, 1989].

Ahmad *et al.* [1991, pp.2-13 & 14] listed the determinants of sustainable agricultural development as follows:

- (1) *Physical determinants* of appropriate soil management, avoidance of atmosphere pollution and groundwater pollution, by hazardous chemical use; promotion of efficiency in energy use.
- (2) *Biological determinants* in approaches to productivity enhancement and pest and disease control compatible with sustainable production and biodiversity maintenance.
- (3) *Production determinants* which require formulation of improved production systems e.g. agro-forestry in which complex interactions between biological, physical and socio-economic components of the system are precisely quantified.
- (4) *Socio-economic determinants* which influence the formulation of policies conducive to allocation of financial, managerial and administrative resources to the agricultural sector in support of the adoption of sustainable practices for national agricultural development.

EXTENSION - AN ESSENTIAL INGREDIENT IN THE DEVELOPMENT MIX

The range and complexity of the determinants listed in the preceding section, underscore the magnitude of the task that lies ahead. In this regard, it is necessary *first* to view Extension in its widest sense. Thus, "Extension" should encompass not only the public systems, but also other agencies involved in information delivery and technology transfer such as the private/commercial sector, farmers' organizations and non-governmental organizations (NGOs). In this context, recent moves in some Caribbean countries to set up separate extension services for forestry and fisheries must be viewed as especially significant. Although the influence of public sector extension systems is pre-eminent, the fact that there are "multiple providers" of some extension tasks must be recognized. Indeed, as Maalouf *et al.* [1991, p.70] point out:

There is a great deal of benefit that could arise from public-private sector cooperation and complementarity in agricultural extension.

The second point that emerges from a consideration of the determinants previously listed is the multi-faceted nature of sustainable agricultural development. Extension, no matter how broadly defined, will not be able to handle the job by itself; its effectiveness will be constrained by the individual contributions of the various "ingredients" in the agricultural development "mix" and the dynamics of the overall process. For example, the problem of people cultivating crops on steep slopes and other areas prone to severe erosion, have more to do perhaps with issues of poverty, unemployment, landlessness and other underlying causes, rather than the lack of the "know-how". Thus, Kangas and Rivera [1991, p.81] in looking at the role of Extension in mitigating tropical deforestation argue that:

"Policies that discourage deforestation are necessary, if Extension, for example, is to be effective for this purpose.

Again, Falloux [1987, p.208] noted that:

... providing increasing land security is a necessary condition to establish sustainable production systems.

While, as the next section would argue, Extension should be the key instrument for bringing together the different actors that impact on sustainable agriculture, nevertheless, there are situations where much could be achieved by Extension on its own if given the necessary support. This position is advanced by Kangas and Rivera [1991, p.86] as can be seen in the undermentioned quote:

We are also convinced that public sector extension services deserve to be given greater status among agricultural development institutions. We argue that (i) the pendulum has swung too far in favour of the relative emphasis being given research over extension, particularly in Latin America, and (ii) research goals are not so important any longer as regards questions of mitigating deforestation. The real problem at present is to convince farmers of the value of sustainable land use alternatives. Hence, the important element is not research but behavioral change.

HOLISTIC APPROACHES

Given the multi-dimensional nature of sustainable agricultural development, it follows that holistic approaches should be used in analyzing the situation and developing solutions, so that not only the various components in the mix will be identified, but also the inter-relationships among the components. Beginning with the Caribbean Agricultural Extension Project (CAEP), extension has pioneered the use of sondeos in holistic needs assessment in the Eastern Caribbean, and this kind of effort will also be needed in dealing with sustainable agricultural development.

A feature of the sondeo, used in Farming Systems Research (FSR), that commends itself to studies in sustainable agriculture is the fact that extension and farmers who are the potential users, are involved from the beginning of the technology generation process, rather than after the technologies have been developed, as in the case with the classical "technology transfer" models. Such involvement in the development

and testing of the technologies, helps to ensure that technologies are appropriate not only to the physical environment, but also to the social and cultural context.

In view of the important role being assigned to sondeos and similar approaches (Rapid Rural Appraisal, Rapid Reconnaissance Surveys) it is perhaps necessary to reiterate some of their key features in the context of the present discussion. These methods grew out of FSR, and although initially labelled as "*quick and dirty*" compared to formal surveys, as Seepersad (in press) points out, they have come to be regarded as equally valid and even superior to traditional formal studies in some situations. Their specific features are:

- (1) They are completed in a short period of time, usually less than six weeks, thus facilitating quick start-up and implementation of programmes;
- (2) They aim at a holistic and systemic view of the situation, achieved largely through the use of multi-disciplinary teams working in an inter-disciplinary fashion;
- (3) Problems and solutions are viewed from the farmers perspective; and
- (4) All the major stakeholders are involved in the process; thus, they are community-based and this helps to build and strengthen linkages among the various organizations.

IMPACT OF COST-RECOVERY APPROACHES

The problem of reduced and reducing resources available to extension and approaches being contemplated for coping with that problem is also germane to the present discussion. This is indeed a real problem that is being experienced worldwide and in the Caribbean. Close to home, the Rural and Agricultural Development Authority (RADA) in Jamaica, has suffered severe cutbacks in staffing creating much concern among farmers. Some countries have moved towards cost-recovery approaches - charging fees for services provided - and major external donors such as World Bank and USAID are also contemplating incorporating such mechanisms for extension projects.

A likely outcome of cost-recovery

approaches is that people will pay only for technical advice, which will give obvious and perhaps immediate economic returns. Thus, issues related to sustainable agriculture, that are more in the area of a "*public good*", are likely to be relegated to the "backburner" by extension systems, if such services are offered only on the basis of direct payments from the users. Of course, NGOs could assist in filling the vacuum, as is the case in Belize and some other Caribbean countries. However, care must be taken that extension's capacity to deal with sustainable agricultural development, should not be severely compromised whatever the system adopted.

GROUP APPROACHES

In terms of its *modus operandi* also, extension will need to develop a greater capacity for group approaches, since many of the recommended measures to prevent environmental degradation and promote sustainable agricultural development, require collective approaches - people acting in concert. Indeed, the audience or clientele for some sustainable agriculture programmes may extend beyond those directly involved in agriculture and could include the wider community.

Another related aspect is that extension and other agencies will need to intensify their interactions with farmers' organizations which are growing in strength, and unfortunately, perhaps in numbers. Their support and active involvement must be enlisted, if programmes on sustainable agriculture are to achieve success. Indeed, a worldwide umbrella organization, the International Federation of Agricultural Producers have already indicated its views in a publication entitled: "*Sustainable Farming and the Role of Farmers' Organizations*". It endorsed the systems approach involving multidisciplinary teams, but strongly emphasized that involvement should take place not only at the grassroots level but also at the policy-making level (IFAP, undated).

DEVELOPING EXTENSION PROGRAMMES ON SUSTAINABLE AGRICULTURE

Turning to some issues regarding specific

extension programmes, first, extensionists obviously would need to be clear on what they are promoting, and the implications. They must be prepared to answer questions that will inevitably arise. What are the short and long-term benefits of sustainable agricultural development? How is it going to affect farmers' incomes? How would lower profits or other hardships that arise from the practice of sustainable agriculture be offset?

Another consideration is that our messages must not appear to be inconsistent with what has gone before. Sometimes, such Schuh (1987) pointed out, proponents of sustainable agriculture "*tend to have an anti-development perspective in their rhetoric*", and this, of course, must be avoided at all costs. Indeed as Prof. Morse of Cornell University cautioned that some efforts to promote sustainable agricultural practices may have dysfunctional consequences. In a letter to the editor of the Journal of the International Bee Research Association (1992), he pointed out that such efforts in the bee industry has resulted in use of second rate equipment and lack of standardization in the industry.

One area that could be seen in that light depending on how it is promoted, is low input sustainable agriculture (LISA), or low external input sustainable agriculture (LEISA). For a long time, the use of inputs such as fertilizers and pesticides have been promoted as necessary ingredients in modernizing agriculture and they have indeed contributed significantly to high productivity in agriculture in many countries, both in temperate and tropical regions. In our part of the world, increasing agricultural productivity is still a priority, and most farmers appear to be sold on the idea. For example, at a recent annual general meeting (July, 1992) of the Jamaica Agricultural Society (JAS), farmers lamented the high cost of inputs and strongly appealed to the government to implement measures to alleviate the situation. The JAS obviously felt this matter as important to farmers survival.

In Belize, some NGOs involved in promoting LISA systems among two groups of small farmers, reported little success. They found that both groups sought to mechanize as much as possible, reflecting a tendency to want to

modernize, even when the mechanized approach was not sustainable. Both groups also seemed to be hungry for new knowledge about pesticides, fertilizers and machinery, but they were less interested in learning about low-cost technologies of traditional and sustainable agriculture (Post, Zantingh and Chan, 1992). It is clear that promoting low-input systems will not be an easy task, even though benefits may seem to be obvious.

The arguments above regarding LISA is not meant to deter efforts at promoting such systems. As Haverkort and de Zeeuw (1991) pointed out in regions where agriculture can be characterized as complex, diverse and risk-prone (CDR), high external inputs have not made a significant impact. Thus alternative systems must continue to be explored. Concern about the high costs and availability of external inputs may offer an opening for re-emphasizing the importance of practices such as using correct amounts of pesticides, correct placement and timing of fertilizers and the like which could help to reduce costs significantly in the long run. Such practices will also promote sustainable agricultural development since they will result in reduced amounts in the ecosystem.

There are perhaps several other similar areas that could constitute good starting points for extension programmes. A concern effort should be made to:

- (a) compile information on existing practices that seem to offer good potential for sustainable agricultural development;
- (b) to evaluate them critically from the perspective of all the relevant disciplines; and
- (c) to test them systematically on farmers' holdings before disseminating to a wider audience.

PUTTING THE PIECES TOGETHER

Who should be held responsible for putting it all together? As both this paper and Haverkort and de Zeeuw (1991, p.32) emphasize, sustainable agricultural development is a complex issue. Those authors stated:

The search for sustainable agricultural systems is obviously more than a search

for alternative farming techniques. The philosophical, scientific and social organization principles used to develop agriculture are in need of critical reflection and re-examination.

While Extension should lead the battle at the frontlines the temptation to use it as a "whipping boy" when progress is slower than anticipated, as has often been the case, must be resisted. Success will only be assured when Extension is given proper "ammunition" and on-going support to confront the threats posed by unsustainable systems of agriculture.

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