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The Agricultural Knowledge System in Tigray, Ethiopia: Empirical Study about its Recent History and Actual Effectiveness

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Abstract

The Agricultural Development Led Industrialisation (ADLI) strategy focuses on improved agricultural packages, proper use of land and water resources, access to improved rural finance, better functioning markets and better roads. Along the lines of the Sasakawa Global (SG) 2000 agricultural program in Africa, the Government of Ethiopia has launched a National Extension Intervention Program to feed into the ADLI strategy. Using narrative interviews and focus group discussions, the study explores the current situation of the extension service in Tigray. The study observes the need for development agents to move away from transferring 'technology packages' to providing 'technology options' and helping farmers make site-specific adaptations of technologies to improve their own knowledge and practices.

1 Background and objective of the study

Within the framework of the Agricultural Development-Led Industrialisation (ADLI) policy, the Government of Ethiopia has issued a leading policy document entitled *Rural Development Policies, Strategies and Instruments* (FDRE 2001). In pursuance of this policy, new institutional arrangements are in place to coordinate and integrate agricultural and rural development efforts both at national and regional level. In the Tigray region, the Bureau of Agriculture and Natural Resources has been reorganised as the Bureau of Agriculture and Rural Development to coordinate and oversee the activities of various sectors involved in agricultural and rural development. Further, efforts are undergoing to reorganise the research system based on agro-ecology and major enterprises in each agro-ecological zone. Newly established research centers are expected to work in close cooperation with Farmer Training Centers and Research-Extension Advisory Councils to facilitate the adoption of technology packages and improve institutional coordination and linkage in the region. The overall objective of this study was to generate knowledge on the performance of the agricultural knowledge system in Tigray by reviewing and analyzing its developments as a basis for assessing its actual effectiveness and formulation of recommendations for its improvement, with a particular focus on the extension service as a key component of the system.

2 Methodology

2.1 Selection of the study areas

The study was conducted in the Central and Eastern zones of Tigray which were selected based on agro-ecological diversity and institutional and practical aspects. Since the zones are fairly large to cover, two districts were selected for the study. Further, one study community was

selected from each district: Begasheka Tabia located in Kola Temben woreda of Central zone and Debre Birhan Tabia located in Hawzen woreda of Eastern zone.

2.2 Data collection techniques

The research utilised both primary and secondary data. Life history interviews and focus group discussions were used to collect empirical data for this study. Narrative interviews with elderly farmers helped to gain an insight into the changing nature of the situation in which farmers find themselves, past or present. The story-generating question that elderly farmers were asked was: ‘*What did the situation look like when you were young, and how has it changed over time in your life time?*’ A cross-case analysis was carried out, in which similar or contrasting findings and observations were considered and discussed. Focus group discussions were also held with participating farmers, non-participating farmers and model farmers in the extension program to understand the current situation of the extension service and how they felt it has benefited or harmed them or a particular social group in their communities. Further, discussions were held with local leaders and development agents, based around key issues on the process of participating farmers in the extension program and the diffused role that development agents held and its consequences on their work and relationship with farmers.

3 Results and discussion

3.1 Evolution of agricultural extension services in Ethiopia

A review of agricultural development in Ethiopia showed that the history of agricultural research and extension is littered with examples of projects that failed to consider farming system and agro-climatic diversity. On the whole, Green Revolution packages using a model farmer strategy characterized extension services in Ethiopia. Despite the pitfalls of the transfer of technology model, efforts still continue along its line. The SG 2000 program has been working in Ethiopia since 1993 based on modernist perspectives on strategies for agricultural development. The program follows the following stages: identifying improved technologies, assembling them into packages, training development agents and potential participating farmers and conducting demonstrations on a half hectare in farmers’ fields. With the demonstration effects of the SG 2000 program, the Government of Ethiopia has launched a National Extension Intervention Program (NEIP) based on the SG 2000 project principles and approaches.

3.2 Performance of the extension service in Tigray

Farmers’ participation in the extension package program

Farmers have various motivations to participate in the extension package program. A Report of Impact Assessment of Extension Intervention in Tigray (BOANR 2002) showed that farmers participated in the extension program because they were convinced by the advice of development agents and the demonstration effects of participating farmers. However, the study revealed that compulsion in various forms has been a major means of involving farmers in the extension package program, particularly during its earlier periods. Farmers explained that ‘*the fear of being excluded from food-for-work programs and other benefits from the government*’ had been their main motivation to join the extension program. Moral punishment where development agents described non-participating farmers in meetings as ‘*backward, weak and unable to distinguish good from bad*’ was also a considerable pressure. Further, farmers were forced to join the program because they were labelled as rich, which implied that they would not be allowed to receive food aid or participate in food-for-work programs unless they join the extension program. In all, one would be inclined to consider the extension package program a failure. However,

farmers believe that it is very useful in gaining new knowledge and learning new practices, as illustrated by farmers in Begasheka: *'In the past, we were not aware of the benefits of improved inputs and resisted the requests of development agents to allot land for demonstration plots. If it were today, all of us would be using fertilisers and improved seeds'*.

Implementation of the extension package program

The extension package program has been implemented in a top-down approach based on a quota system. Despite much resistance, development agents forced farmers to join the extension program because they are evaluated based on the number of farmers adopting new technologies. Besides, technology packages lack agro-ecological specificity. Improved technology packages have not been adequately tested locally before they are promoted on a larger scale. This makes farmers and development agents lose confidence in the effectiveness of new inputs under local conditions. In Begasheka, farmers believed that improved seeds perform poorly under local conditions and are not really better than local seeds. Therefore, they preferred to use fertilisers with local seeds than with improved seeds.

Development agents have weak capacities to demonstrate technological packages and offer adequate technical assistance to farmers (BELAY and DEGNET 2004). They received limited technical support from supervisors. Development agents in Debre Birhan tabia explained that their supervisors were not very useful in providing technical assistance, as illustrated in the following: *'Their objective is to follow up the execution of plans and report progresses. If we identify knowledge gaps in our performance and ask for assistance, we will be evaluated by that and will not be promoted'*. From this it is clear that, for the supervisors the important aspect was to get the job done and to report accomplishments and this makes development agents to work to meet the expectations of their supervisors, on whom their promotion and job security depended.

Farmers' adaptation of introduced extension packages

In the study areas, farmers made site-specific adaptations of extension packages. For example, farmers modified the spacing recommendation for maize to reduce the foregone benefit of land. They also apply less urea in poor lands to reduce the risk of crop failure. Further, farmers adapted the idea of how a tied-ridger works and used a wide *diger* (pulverizer) to make furrows to harvest rainwater. Farmers also modified the design of modern beehives with three suppers vertically, arranging the suppers sideways to reduce the loss of nectar and energy of bees when travelling upwards through the suppers and also removed the third supper (which is often less productive) and constructed another beehive. These examples demonstrated that different farmers have different strategies and when supported properly, all can yield good results. But this kind of diversity is not adequately valued by development agents who only sought farmers to adopt their recommendations. However, actual extension work is more than the delivery of technology packages and its effectiveness is tested much by the extent to which it has contributed to the development of farmers' knowledge and adaptive capacities.

How do farmers see development agents?

In describing what constitutes good development agents, farmers said that *'commitment is a basic test of the knowledge and skill of development agents'*. Farmers believed that development agents have adequate knowledge, but their services generally turned out not to be in their interests. Farmers expressed that *'general information at occasional meetings will not be adequate'* to help them gain practical knowledge and solve their problems. This underlines that the capacity to innovate may be desirable but not necessary for development agents. The basic requirement for development agents is a commitment to serve farmers in their capacities. In this context, farmers in Begasheka expressed concerns at their being unable to hold development agents accountable: *'We need extension advice on weekends but development agents are not often available and*

willing to advise us'. Despite this, farmers considered their services very useful, and this is understandable as they are the only source of external information. Development agents are considered as important change agents to mobilise the people and teach new methods of farming and improved technologies, as illustrated by farmers in Begasheka: *'If there are no development agents, we will go back to our traditional practices as there are no many wise farmers in our community'*. In describing new roles for development agents, farmers said that *'they should be able to live with us and respect our knowledge'*. They should also be ready to be *'criticized and corrected'* by farmers.

Farmers' perception of the use of model farmers

Faced with a situation where few development agents have to work with many farmers, development agents employed a model farmer strategy to increase the extension coverage. They worked with 6 to 8 model farmers who are expected to assist 8 to 12 follower farmers. However, personal and technical problems limited the use of model farmers. Community members in Debre Birhan tabia explained that *'model farmers were selected based on favouritism and were not really better farmers and useful sources of information'*. Some model farmers in Begasheka even admitted that they are not really model farmers: *'We did not adopt the extension package ourselves let alone assisting other farmers'*. This means that if model farmers are to be recognised by their peers as competent and trustworthy experts, they must adopt new technologies before their followers. In this context, farmers in Debre Birhan tabia explained: *'If model farmers do not use new technologies and share us their experiences, we do not consider them knowledgeable'*. This supports the complaints of development agents as well as community members about the selection of model farmers by local leaders based on relationship and political patronage rather than on their knowledge and skills in farming, willingness to assist other farmers and ability to adopt new technologies.

4 Conclusion

The extension service in Tigray is based on the SG 2000 agricultural program. It starts with technology identification and packaging rather than with understanding the farming system and then identifying technology packages which fit farmers' circumstances. Furthermore, technology packages lack agro-ecological specificity. They are not adequately tested for their local adaptability before they are widely promoted. Farmers make site-specific adaptations of introduced technologies. However, development agents do not learn so much from farmers' adaptations what to tell to other farmers. There is, therefore, a greater need for development agents to move away from transferring 'technology packages' to providing 'technology options' and helping farmers make adaptations to improve their own knowledge and practices. They should comprehend farmers' complex situation and possess insightful economic management knowledge in order to advise farmers on more efficient use of resources. Furthermore, local leaders and development agents should increasingly focus on fostering development awareness of local people through communicative interventions rather than persuading farmers into compliance of top-down extension programs based on coercive and misleading measures.

5 References

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