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Tanzania: Communicating Local Farming Knowledge

The link between the documentation of local knowledge and the dissemination of useful local technologies to farmers is generally weak in the indigenous technology development process. A considerable amount of local knowledge has been documented, but in most cases, such information is not made available to farmers in a form they can make use of to improve their agricultural production. In the cases where information is given back, it is often too general and/or does not relate to the targeted groups' own surroundings and culture.

To fill this gap, the Uluguru Mountains Agricultural Development Project (UMADEP) has been working with local farmers to document their local knowledge related to Natural Crop Protection (NCP) and to spread this knowledge to other farmers in the Uluguru Mountains using interesting and locally relevant educational materials and farmer-led training workshops. The approach used by UMADEP involves the local community throughout the process of collection of the knowledge, documentation and dissemination.

Mgeta is a division in Morogoro Rural District, Morogoro Region in the eastern part of Tanzania. Situated on the slopes of the Uluguru Mountains. The climate is subtropical and allows the production of a wide range of horticultural crops, i.e., cabbage, cauli-

flower, peas, lettuce, parsley, leeks and deciduous fruits (peaches and plums).

UMADEP has been in operation in the Mgeta and Mkuyuni Divisions since 1993 with the overall aim of improving the agricultural productivity and the general socio-economic conditions of the small-scale farmers in the project area. The project works as an integrated agricultural development project using multidisciplinary approaches and is implemented with a collaborative effort between government and donor agencies. The Agricultural Officers in charge of crop development activities have already undertaken several micro-research projects on NCP involving the use of botanical pesticides; trap crops and organic fertilisers on the UMADEP demonstration plots and subsequently replicated in farmer's managed plots.

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Before the introduction of industrial inputs, the farmers in Mgeta depended solely on NCP, utilising parts of certain indigenous plants prepared in various forms for crop protection and against animal diseases. After the introduction of agro-chemicals, farmers rapidly abandoned the traditional ways of controlling insect pests and diseases and opted for industrial agro-chemicals. Their reasons were many: the government gave subsidies for farm inputs including agro-chemicals; chemical pesticides require less time for preparation and application; the chemicals proved more effective than botanical pesticides, and the companies producing and trading agro-chemicals advertised and marketed them aggressively.

However, the government has now stopped subsidies on agricultural inputs and the cost of agro-chemicals is very high. Furthermore, due to ongoing campaigns on environmental conservation, farmers in Mgeta, like other parts of Tanzania, are becoming more aware of the hazardous effects of industrial agro-chemicals.

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Name _____

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Letters, comments, and requests for publications should be addressed to:

Editor: IK Notes
Knowledge and Learning Center
Africa Region, World Bank
1818 H Street, N.W., Room J5-055
Washington, D.C. 20433
E-mail: pmohan@worldbank.org

In collaboration with government extension staff in the area, UMADEP initiated efforts to encourage farmers to go back to NCP. Since indigenous knowledge on NCP has started to disappear from farming communities, the indigenous plants that provide the raw materials for NCP have lost their value and are also disappearing. The first intervention by UMADEP was to campaign for the safe use of chemical pesticides while encouraging farmers to research for more effective botanical pesticides through farmer-managed trials.

Most farmers involved in these kinds of research were members of farmers' groups known as *Ujuzi asili* from Tehenzema Ward, who devoted a portion of their land to produce organic vegetables. This is because they own enough land and either have knowledge on NCP themselves or have access to local knowledge on the uses of botanical pesticides through the elders.

UMADEP, using demonstration plots located in the village, also conducted experiments simultaneously with farmers. UMADEP staff also helped farmers to organize and monitor the results. Farmers were trained on how to compare traditional and new methods of pest management and data collection.

In Mgeta, as in many other parts of Tanzania, extension personnel are trained to encourage farmers to reduce the use of industrial agro-chemicals due to their adverse effects on human health and the environment. However, it is hard for them to do so since knowledge of NCP is limited to only a few members of the community and also because the communities have no alternatives. Moreover, most farmers believe that the botanical pesticides are there to be used by old people and farmers who cannot afford chemicals, not by the young and better-off farmers. This reluctance to use botanical pesticides is a key factor in reducing the spread of natural crop protection practices.

Steps and approaches

In order to effectively communicate the message about NCP to communities, UMADEP developed visual materials (posters, booklets and leaflets) with very simple instructions about the use of botanicals and with illustrations

done in a comic book style. The materials were drawn and created by a local artist whose objective was to make them relevant and attractive to local tastes. The following are the steps and approaches which were used for the production of posters relating to the use of botanical pesticides in Mgeta division.

(i) *Accessing the know-how of the innovation*

Because the use of local visual educational materials is not very common in Mgeta, UMADEP organised a workshop where farmers who are experts on botanical pesticides met with the artist, project staff and extension officers. The aim of the workshop was to increase the understanding of the two distinctively different inputs that are needed for the visual material, i.e., the indigenous knowledge about the botanical pesticide and the artistic creativity that makes the information interesting.

A two-day residential workshop was organised whereby farmer experts were invited from six villages within Mgeta Division. During the workshop, the farmer experts presented their experiences and research findings regarding the use of botanicals in crop protection. Based on this information, UMADEP staff decided to focus on disseminating information about the two most familiar plants regarding which the majority of farmers had confidence in their effectiveness in controlling insect pests.

(ii) *Defining communication needs*

The main issues which were proposed to be documented for community consumption included: plant description and habitats, propagation techniques, preparation and application, insect pest control and management, and how the plants can be used for soil and water conservation as well as improvement of soil fertility. The propagation techniques were emphasised because, for example, *kibembeni* (local plant species corresponding to the *Buddleia* species) can only be found in the forest reserve which is about 5 kilometres from the residential areas. Therefore, to increase availability, these plants need to be planted within the field.

(iii) *Targeting the audience*

For the purpose of sharing information and popularizing the use of botanical pesticides, workshop participants recommended that the educational materials developed should be mainly targeted to young farmers. This is because young farmers are the most reluctant to use NCP and because there is a communication barrier in the use of NCP between the older and young farmers. Furthermore, the participants suggested that the project arrange a field visit for the artist to see and be able to visualise the working places, field tools and equipment and the habitat of the selected plants in typical local settings.

(iv) *Visualisation and production of artwork*

The artist visited a few of the farmers who had participated in the workshop. During the visits, the artist got a good idea about the habitat of the plants, the local names of plants and insect pests, and their damage to crops. He also studied how the farmers prepared and applied the botanical pesticides and the tools they worked with in order to render this information in the drawings. After the field work, the artist developed a draft of six posters describing and explaining the use of two selected plants.

(v) *Field testing*

Before the final production of the posters, the artist, together with extension and UMADEP staff conducted field-testing for the posters with the representative farmers from the community. This was intended to ascertain:

- Whether the farmers had understood the posters and the contents.
- The farmers ability to identify with the drawings, the situation, the problem and solutions, and the character (age and gender relationship). This helped to determine whether or not the visual representation of the information and the problems was realistic.

(vi) *Farmer-to-farmer dissemination*

Since the posters carried only abstract information about the use of botanical pesticides, project staff thought that the best teachers and disseminators of information in the educational campaign would be the farmer experts

themselves. Using them in dissemination workshops would give them the opportunity to explain in detail their experiences with botanical pesticides to their fellow farmers. Allowing farmers to share their practical experiences with other farmers would also help to increase trust and confidence in the use of botanical pesticides by the younger and better-off farmers. To achieve this, UMADEP staff organised a planning workshop to define the roles and responsibilities of the farmers as well as extension staff in the education campaign.

For the purpose of reaching as many farmers as possible, it was agreed that seminars should be organised at the sub-village level and in primary schools. The posters should be placed in public areas such as markets, in the village government offices and in the beer shops. The farmer experts volunteered to conduct seminars for other farmers with some help from the project, especially for organising the audiences and meeting other logistical needs. Farmer participants (volunteers) from each village were allocated a few sub villages near where they lived, where they would train their fellow farmers using posters already developed as a guide.

Lessons learned

- Testing of the posters or training materials permits crucial and valuable feedback from audiences for improving the materials before final production.
- Involvement of the target audience from the initial planning of educational materials builds a sense of ownership of the materials. The end-user then values the educational material more and is therefore more likely to use the information and share it.
- Farmers are much more interested in issues that they immediately recognise as being part of their local situation. Therefore, the use of local artists is crucial as well as using drawings that fully reflect local people, images, tools, activities, responses and environment.
- Dissemination of the local knowledge about indigenous plants using modern methods such as printed posters added value to the knowledge and indigenous plants involved. Consequently, it promotes the conservation and multiplication of indigenous plants. It also stimulates farmers to research and develop other local knowledge related to agricultural production.
- The partnership of farmers with UMADEP helped the farmers to obtain quantitative proof of the economic viability of their Natural Crop Protection practices. It also improved their skills in carrying out experiments designed to develop a farming system that is adapted to their conditions, needs and objectives. Further, farmers participating in farmer-to-farmer dissemination workshops are able to develop their communication skills and abilities.

This article was written by A.H. Mgumia, Assistant Coordinator for the Uhuguru Mountains Agricultural Development Project (UMADEP), P.O. Box 3094, Morogoro, Tanzania. For details email: Umadep@mail.Suanet.Ac.Tz