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Design and Implementation of a Communication Campaign on Best Management Practice for Forest Nurseries[1]

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ABSTRACT

High quality tree seedlings are critical factors which determine the success of tree plantation projects. To produce high quality seedlings, nursery operators need to apply appropriate nursery management practices. However, tree seedlings produced by nursery operators in the Philippines are often of low quality, due in part to weak organization in the nursery sector and lack of skills in the application of nursery practices among nursery operators. The *Q-seedling Project* or *Seedling Enhancement Project* funded by the Australian Centre for International Agricultural Research (ACIAR) is being implemented in Leyte and Northern Mindanao to remedy this skills gap. The project includes a communication component to promote widespread adoption of best management practice in forest nurseries. Following the strategic communication approach, information dissemination activities in the project are based on the needs of the target users. Training workshops have been held on producing high quality seedlings. Also, communication materials have been developed for nursery operations, including a training guide, videos instructional posters on Q-seedling production technologies, and a jingle about Q-seedlings. This paper describes the design and use of these communication materials.

Keywords: Information dissemination, strategic communication, instructional materials, forest nursery,

INTRODUCTION

Forest nursery research is replete with information that tree seedlings produced by nurseries in the Philippines are of low quality (Harrison et al. 2008). This problem has been attributed to the weak organization of the nursery sector – i.e. government nurseries crowd out the private nursery sector by giving free seedlings to tree farmers

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– and the fact that nursery operators lack technical knowledge related to the application of recommended nursery practices.

The problem of a lack of nursery skills highlights a disparity between forestry research and practice. Thus, in ACIAR project ASEM/2006/091 *Enhancing Tree Seedling Supply via Economic and Policy Changes in the Philippines Nursery Sector* or the *Seedling Enhancement Project*, communication activities have been initiated to address these problems. The communication project applies the strategic communication framework of Adhikarya (1994), in the context of promoting adoption of improved seedling production technologies. Adhikarya's strategic communication model suggests the need to ascertain target audience information needs as the basis for designing messages to be disseminated through a combination of communication media. The communication activities of the Q-Seedling Project aim to encourage nursery operators to apply best management practice (BMP) in forest nurseries, are tailored to fit to the nursery operators' current knowledge, attitude and practices in seedling production, using a cost-effective media mix.

The effectiveness of the strategic communication approach in persuading farmers to adopt recommended practices has been demonstrated in many projects, e.g. a media campaign in Vietnam in 1994 aimed at encouraging rice farmers to reduce pesticide spraying (Heong et al. 1998; Escalada et al. 1999). The project was found to reduce insecticide use by 53% with no loss in production. Over three years the reduction in insecticide use spread to more than a million rice farmers. Similar campaigns have been implemented in Malaysia (Adhikarya and Posamintier 1987), e.g. rat control which increased farmers' adoption of chronic poison baits from 61% to 98% and physical control methods from 31% to 60%. The strategic communication approach has also been used successfully in motivating farmers to participate in environmental protection efforts (Day 2000).

This paper describes the process of designing and developing communication activities and instructional materials to promote the application of BMP in forestry seedling nurseries in Leyte and Northern Mindanao, the Philippines. Research results suggest that other projects that use communication may be able to gain insights from the activities being applied in the seedling enhancement project. The paper discusses the methods applied in designing the campaign and the communication materials and activities implemented.

RESEARCH METHOD

The 'information gap' connotes the difference between the intended clients' present knowledge and practices and the level of knowledge, attitudes and practices desired of them. The information gap which is addressed in this study is the difference between forestry seedling nursery operators' current knowledge and practices and the level of knowledge and the use of appropriate technologies which will enable them to produce high quality tree seedlings and other planting materials. In the ACIAR Q-

Seedling project, identifying the information gap was deemed critical because it guided the design of communication objectives and interventions to respond to information needs.

Information Needs Assessment

A survey of the operational effectiveness of private and government nurseries was conducted on Leyte Island and in Northern Mindanao in 2008, during the early part of the Q-Seedling Project implementation (see Gregorio et al.; Mercado, et al. this issue). Data were gathered on the management practices used by nursery operators and the factors that hinder their practices. To gather more in-depth information on the nursery operation, focus group discussions (FGDs) were conducted in the four pilot municipalities of the Q-Seedling Project, namely Isabel, Bato, Libagon and Palompon. FGD participants were farmers (or nursery operators) and nursery managers. The FGDs gathered data on farmers' perceptions of high quality tree seedlings, the seedling production technologies they apply, problems in nursery operation, their experiences in nursery management, and potentials of producing high quality tree seedlings.

Determining the Technologies

To design the interventions to be implemented as part of the Q-Seedling Project implementation, meetings were held with staff of the Q-Seedling Project and DENR. In these meetings highlights of the results of the nursery surveys were presented by the study leaders and the technologies appropriate to the needs of the nursery operators were identified. The meetings also gathered information regarding the availability of communication materials that may be adapted or modified so as to meet the needs of the clientele.

COMMUNICATION ACTIVITIES FOR THE Q-SEEDLING PROJECT

Setting the Communication Objectives

The survey and the FGDs invariably confirmed the low quality of tree seedlings produced by private and government nurseries as a major problem. This problem is largely due to the nursery operators' lack of skills and limited information on seedling production technologies. More specifically, survey responses underscored that nursery operators do not appreciate the value of the recommended practices, and that they lack skills in the application of the practices. Hence it was decided that motivational and instructional messages would be designed and disseminated through a cost-effective media mix. Communication objectives were formulated to guide the communication activities of the project. Table 1 presents the nursery operators' practice gaps identified, reasons for the gaps, and the communication objectives to address the gaps.

Table 1. Nursery operators' practice gaps, reasons for gaps and communication objectives

Current practice	Problems identified	Communication objectives
Seeds and wildlings are mostly collected from mother seed trees of poor physical and unknown genetic qualities.	Lack of knowledge of the importance of superior germplasm sources.	To improve nursery operators' knowledge of the importance and benefit of collecting germplasm from superior mother trees.
	Lack of skills in identifying high quality mother trees.	To improve nursery operators' knowledge and skills in the identification of suitable mother trees. Nursery operators will obtain seeds from mother trees that are straight and not branchy.
Pre-sowing treatment is not conducted and germination medium used is unsterilized resulting in low seed germination rate.	Lack of knowledge of the need for pre-sowing treatment and sterilization of germination medium.	To improve farmers' knowledge of the importance of sterilizing the germination medium and the application of pre-sowing treatments.
	Lack of skills in applying pre-sowing treatment and sterilization	To improve nursery operators' skills in the application of pre-sowing treatment of the soil to be used as medium for germination.
Potting medium used has poor physical and chemical properties, thus producing weak and stunted seedlings.	Lack of knowledge of the value of appropriate potting medium.	To improve nursery operators' knowledge of the importance of using high quality potting medium.
	Lack of skills in the selection and preparation of potting medium with good physical and chemical properties.	To improve nursery operators' skills in using high quality potting medium.
Nurseries are established in shaded areas, thus seedlings produced are etiolated.	Belief that shading is beneficial to seedlings and direct exposure to the sun is detrimental to seedling growth.	To alter the belief that heavy shading is necessary for producing high quality seedlings.

Table 1. Nursery operators' practice gaps, reasons for gaps and communication objectives (cont.)

Gap	Reasons for the gap	Communication objectives
Placing potted seedlings on the ground, resulting in the development of long taproots penetrating into the ground rather than producing many fine lateral roots and resulting in root damage upon uplifting.	Lack of knowledge of the value of using elevated beds to enhance the development of young fibrous roots and prevent the growth of long taproots.	To improve nursery operators' knowledge of the benefit of placing potted seedlings on elevated beds. To increase number of nursery operators using elevating beds.
Root deformation – for example J-rooting and root coiling – due to faulty potting.	Lack of awareness of the negative effects of root deformities.	To improve nursery operators' knowledge of the adverse effects of root deformities in tree farming.
Nursery operators use inappropriate bags as seedling containers.	Belief that white plastic bags (which allow sun penetration) are as effective as black polyethylene bags and container size is not an important consideration in producing high quality seedlings. White plastic bags are less costly than the black polyethylene bags.	To improve nursery operators' knowledge and skills in the use of appropriate bagging materials.

Communication Activities

To respond to the information gaps, the project has designed and implemented training programs on high quality seedling production technologies and has produced communication materials.

Training in high quality seedling production technologies.

Considering the need to improve nursery operators' skills in applying the recommended seedling production technologies, it is necessary that these operators be exposed to actual application of the technologies. Thus, the training program which

has been implemented has been titled *Hands-on Training on Q-seedling Production Technologies*. An important feature of this training program is the use of highly participatory and practical teaching strategies. Results of the focus group discussions conducted after the training revealed that the workshop improved participants' knowledge and skills in producing high quality tree seedlings. Table 2 summarizes the lessons participants have learned from the training. Figure 1 presents photos of farmers participating in the practicum during the *Hands-on Training on Q-Seedling Production Technologies.*

Guide to producing high quality tree seedlings.

This guide explains the techniques for producing high quality seedlings. Topics covered include characteristics of high quality seedlings, choosing and collecting germplasm, pre-sowing treatment, bagging, sun hardening and grading. This guide, which contains highly visual extension material (see photo in Figure 2), is also designed as a reference for developing leaflets on specific topics on seedling production.

Figure 1. Hands-on training in seedling production technologies to improve nursery operators' skills in applying BMP to nursery operation

Table 2. Topics participants learned about during the training program

Topic	Brief description
What are high quality seedlings	Participants learned about the characteristics of high quality tree seedlings – sturdy, free from root deformities including J-roots, vigorously growing, free from pests and diseases – and the fact that high quality tree seedlings are easy to grow and do not necessarily come from abroad.
How to establish a nursery	Participants learned the criteria for choosing a nursery site and the basic infrastructure needed to produce high quality tree seedlings.
Growth and performance of high quality seedlings	This is the most important skill participants acquired during the training workshops. Participants are now able to pinpoint the advantages of using high quality seedlings and the disadvantages of using low-quality seedlings.
Sowing fine seeds	Participants learned how to sow very small seeds including those of bagrass (*Eucalyptus deglupta*).
Sub-irrigation method	Before the training workshops participants reported that they used a sprinkler to water the newly sown fine seeds. During training they learned that sub-irrigation is more effective than the using of a sprinkler.
Use of polyethylene bags	Participants had been using plastic bags. After the training workshops they recognized the value of using the polyethylene bags and also appropriate bag sizes.
Use of fertile soil as a potting medium	Participants thought that any soil could be used as potting medium. At the training workshops they learned that the best medium is a fertile soil, e.g. topsoil or humus soil.
The need to sterilize the germination medium	Participants said that they did not sterilize the soil used as germination medium. Now, they are aware of the need to sterilize the germination medium to prevent the attack of diseases, including damping-off.

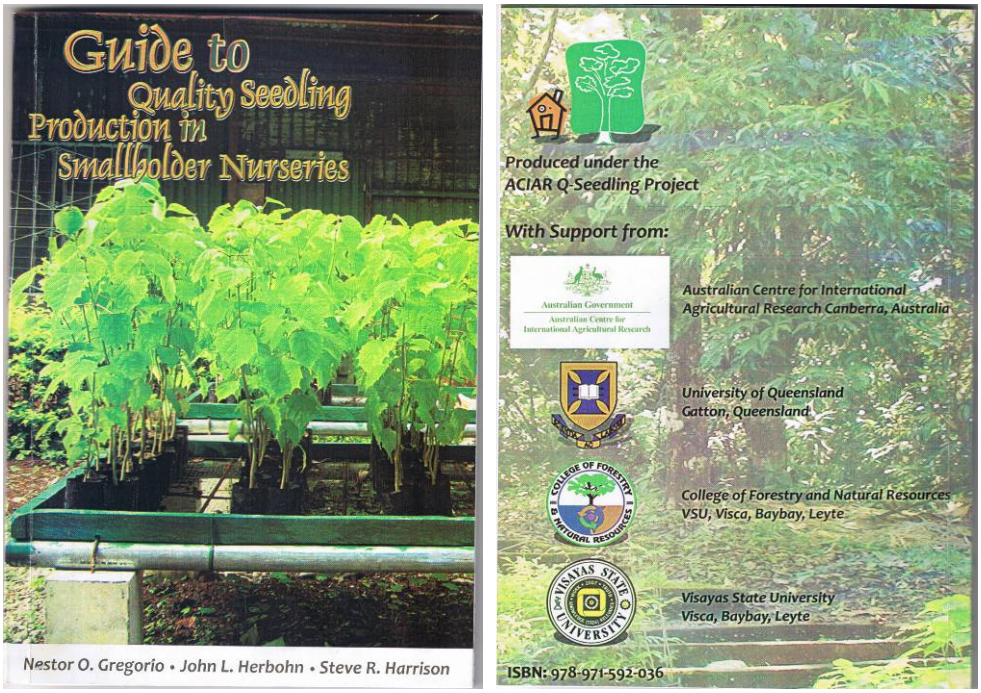

Figure 2. Cover page of the guide to production of high quality seedlings

Training guide and videos on producing high quality seedlings (*Pagpatubo ug Dekalidad nga Luyong*)

The nursery operators' lack of technical expertise has been identified as among the factors hindering the production of high quality seedlings. Unfortunately, in the project sites, it was found that extension workers at the agriculture offices of the local government units (LGUs) where the Q-Seedling Project is being implemented, do not give priority to tree seedling production compared to fruit and other agricultural crops because these extension workers themselves lack the vital technical know-how about high quality forestry seedling production. To alleviate this problem, officers of the Community Environment and Natural Resources Offices and Municipal Agricultural Offices suggested the need for training programs not only for nursery operators but also for extension workers.

To improve the effectiveness of training programs, many authors have emphasized that trainers use multimedia learning materials. It is on this premise that, along with the training guide, instructional videos on the production of high quality seedling have also been designed. In contrast to the traditional designs, however, the use of the videos is embedded in the training where learners – in this case farmers or extension

workers – actively construct their own meanings. Briefly, the trainers ask trainees to judge the nursery production practices of a fictitious character, Mang Eman. The farmers' solutions to his problems serve as a springboard for learning. In this way, learning becomes highly participatory. The training module and video materials have been developed in coordination with specialists in nursery management from the College of Forestry and Natural Resources of Visayas State University (VSU). These modules have been designed in such a way that participants become active learners, unlike in traditional training designs where training participants are passive receivers of information. A pilot implementation of the training module revealed that farmers enjoy this strategy and they commented that the videos made them think and correct their misconceptions. The modules also make learning effective because they focus on a realistic story about the experiences of a nursery operator.

Instructional posters on seedling production technologies

These instructional posters portray characteristics of high quality seedlings, collecting and growing wildlings and important reminders in growing tree seedlings. The posters are given to nursery operators after the training to serve as their guide in applying the recommended seedling production technologies. Farmers commented that the materials are effective tools in disseminating technology on tree seedling production and can serve as the best alternative during training if an extension worker or a farmer-trainer does not have an LCD projector to show the process of applying the recommended practices.

Jingle about Q-seedlings.

Considering the power of music, a music video has been designed, entitled *Sa Q-seedling, Segurado Ta!* (You're assured with Q-seedlings!), which is aimed at promoting the production of high quality seedlings by nursery operators for use in tree plantations and reforestation projects. The jingle can be used in various ways. It was produced as a music video, dance video and karaoke. The music video can be aired on local cable channels. Its audio version is currently being aired through Radio DYAC of the VSU. When members of the seedling enhancement project participate in field days and fairs, the music video may be played. Copies of the CD will also be distributed to the Techno Gabay Centres of the DENR. The Techno *Gabay* Centres (or Technology Guide Centres) are the nerve-centre for disseminating agricultural information in the Philippines. Monitoring the farmers' reactions revealed that the jingle catches their attention and that the jingle is a fast way of creating awareness of the value of Q-seedling. The idea of the dance video is to use it as an ice-breaker during training sessions. However, the complex dance steps were found difficult to follow, and participants suggested designing more simple dance steps.

Figure 3. Cover pages of the instructional posters on seedling production technologies

CONCLUDING COMMENTS

This paper has presented the process of designing and implementing a communication support mechanism for the promotion of best management practice in forest nurseries. Considering the potential impacts of the communication campaign, other implementers of communication and extension projects may be able to gain some insights from our experiences.

The design of the communication campaign relied on the data on nursery operators' perceptions, knowledge, attitude and skills gaps identified in the survey and FGDs conducted in the early part of the Q-Seedling Project implementation. These data led to the design of messages that were responsive to the needs of the intended clientele. The data also served as a guide in the choice of the cost-effective mix of communication media.

Worth highlighting are the positive reactions of the participants to the instructional videos. The design of the videos made learning challenging and interesting. This finding seems to suggest instructional materials in support of training programs should be designed to achieve active learning. At this time, only partial data can be presented on the effects of the communication campaign. However, promotion of BMP for nurseries is expected to be sustained by DENR and other partner organizations. Thus, as these initiatives proceed continuous monitoring and evaluation will be conducted to determine the effects of the application of the campaign in terms nursery operators'

knowledge, attitude and application of the improved practices. Likewise, now that nursery operators' awareness of the need to produce high quality seedlings is increasing, further communication activities will have to be designed to encourage tree farmers and implementers of reforestation project to use only high quality seedlings.

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