

BIBLIOGRAPHY

SEBIANO, BEN JR. P. APRIL 2013. *Communication Strategies Applied by Benguet State University Research and Extension in the Dissemination of Matured Technologies*. Benguet State University, La Trinidad, Benguet.

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ABSTRACT

The study was conducted to describe and determine how these matured technologies are being identified; characterize the latest agriculture matured technologies; enumerate the communication strategies, identify the awareness of the intended beneficiaries; determine the problems encountered by the beneficiaries and the BSU Research and Extension during the dissemination process and their suggestions for the improvement of the dissemination process.

An interview schedule was used among 45 beneficiaries-respondents from December 2012 to February 2013 while interview using a guide questions as well as questionnaires were used to gather information from the key informant and researcher respondents.

There is a general understanding of what matured technology is in the university although there is no written definition set by the university. BSU researchers agree that agricultural technologies which are considered as matured technology should have



undergone several trials on-station and on-farm and should have been validated on station and on the farmer's field.

There were seven (7) latest matured technologies existing or developed within the university which were identified in the study for the scope of year 2010-2011. Communication strategies applied by the BSU Research and Extension include interpersonal, group, mass, and organizational communications. All of the beneficiaries-respondents were aware of the agricultural technologies which include matured technology disseminated by BSU Research and extension.

Major problem within the beneficiaries is all about the disinterestedness to apply the recommended technology. Poor needs assessment was the major problem within the BSU Research and Extension. Major suggestions on the other hand for the improvement of the dissemination process within the beneficiaries was their willingness to learn and adopt matured technologies while there's a need for the BSU Research and Extension to conduct needs assessment to recommend need technologies.

On the other hand, the major problem encountered by the BSU Research and Extension was the lack of fund to be used in the dissemination process. It was another suggestion on the part of the office to disseminate matured technologies by way of effective and making all the communication methods as of bottom-up approach.

With the agricultural technologies being developed and disseminated by the BSU Research and Extension, finding of the study revealed that not all are considered as matured



technology that some are not applicable in the farmer's field conditions, costly, do not cater to the farming problems of the beneficiaries, and proven not effective.

Thus, Research and Extension Office may consider to prioritize disseminating matured technologies since it was defined as a problem-or development oriented technology.



INTRODUCTION

Rationale

The generation today lives in the midst of technologies. Our world is continually evolving into a scientific world. People use technologies in all aspects of their lives. These technologies do not only refer to the machines we are using in general but it all involves the output of science studies or researches.

One goal of technical people however is to develop these technologies minimizing its undesirable disadvantages while maximizing its benefits. With this, Brad and Terry Thode (1994) further defined technology as the use of knowledge, tools, and resources to help people.

Research and academic sectors nowadays are concern with how these —matured technology are being disseminated to their intended beneficiaries. A mature technology, as defined by Dartmouth College (2003), is a technology that has been in use for long enough that most of its initial faults and inherent problems have been removed or reduced by further development. In some contexts, it may also refer to technology which has not seen widespread use, but whose scientific background is well understood.

To add more background of matured technology in relation to how it is disseminated. Here are some examples.

Examples of these technology-transfer activities and/or programs are the Comprehensive Technology Transfer and Commercialization (CTTC) program of the



Department of Science and Technology and the National Technology Commercialization Program (NTCP) that was established by the Bureau of Agricultural Research (BAR).

CTTC is being implemented nationwide to improve the living conditions of the people by sharing the benefits derived from the application of technology, and to hasten the process of industrialization through the application and commercialization of new and appropriate technologies. The program serves as a mechanism to realize the productive application and utilization of the results of research and development in the country (Baucas, 2002).

NTCP on the other hand, is one of the flagship programs of BAR in 2005 to ensure that technologies are strategically placed and transferred to areas and communities that most needed them. It ensures that transformation of agriculture and fisheries from resource-based to technology-based industries. It highlights research and development (R&D) breakthroughs and mature technologies generated and developed by R&D institutions. It serves as a vital tool for the development of enterprises and the improvement of agriculture and fisheries-related industries anchored on appropriate activities emphasizing technology transfer, promotion, adoption, utilization and commercialization (www@bar.gov.ph).

On the side of the academe, Benguet State University is one of the State Universities within the Philippines who also contributes to the production and dissemination of matured technologies through its Research and Extension Office. Research activities of the university are undertaken toward the discovery and/or expansion of scientific knowledge and development of appropriate technologies. Extension activities are geared towards the dissemination and utilization of useful information and technologies for the improvement of the quality of life.



The University Research and Extension program are focused on themes like the improving of the farm productivity, and profitability for food security and poverty alleviation.

Some of the development areas of programs of the Research and Extension particularly under agricultural aspects include agricultural crops, animals, and farm resources and systems (www.bsu.edu.ph).

The study then focuses on the communication strategies applied by BSU Research and Extension in disseminating agricultural matured technologies to its intended beneficiaries within the Municipality of La Trinidad, Benguet.

As stated by Rosario-Braid (1983), the need for a continuing feedback and dialogue between technology planners and users provides the justification for evolving a new model of technology transfer. The term —transfer‖ connotes a one-way flow so that —technology exchange‖ or —technology process‖ may be more appropriate concepts to describe the communication process that occurs in technology planning and utilization.

Thus, there is a need to study the communication strategies applied by BSU Research and Extension in disseminating matured technologies in order to gain insights that can be used to enhance the strategies being applied.

Statement of the Problem

This study aimed to answer the following questions:

1. What is considered as matured technology and how are these being identified in the university?



2. What are the latest matured technologies existing in the university?
3. How are these being disseminated to the public?
4. Are the intended beneficiaries aware of these technologies?
5. What are the problems encountered by the beneficiaries in the dissemination process?
6. What are the challenges encountered by the Research and Extension in the dissemination process?
7. What are the suggestions or recommendations of the respondents in the dissemination process?

Objectives of the Study

Generally, the study determined the communication strategies applied by Benguet State University Research and Extension in disseminating agricultural matured technology.

It specifically aimed to:

1. describe matured technology and how these are being identified in the university;
2. characterize the latest matured technologies in agriculture developed in the university;
3. enumerate the communication strategies applied in disseminating matured technologies;
4. identify the awareness of the intended beneficiaries of these agricultural technologies;



5. determine the problems encountered by the beneficiaries in the dissemination process;
6. determine the challenges encountered by the BSU Research and Extension in the dissemination of matured technologies and;
enumerate suggestions or recommendations of the respondents in the dissemination of these matured technologies;

Importance of the Study

Result of the study may contribute to the strengthening of the role of communication to solve the immense problems of hunger and poverty through dissemination of appropriate technologies.

Matured technologies being developed in the university consider the need of the end-users and to know if these technologies are being shared to them effectively, it may be determined by the results of the study as it may contribute for the improvement of the dissemination process between the technology disseminators and the beneficiaries.

This study may also help other communication students and researchers as it will enrich one's knowledge about the communication strategies applied by BSU Research and Extension Office specifically the Extension Services Office and the BSU agricultural researchers in disseminating matured technologies.

Furthermore, the BSU Research and Extension Office may also use the results of the study as a reference to develop and enhance their way of disseminating matured technologies to its intended beneficiaries.



Results may also contribute insights to the beneficiaries of BSU agricultural matured technologies with regards to the communication processes being followed in disseminating these technologies.

Scope and Limitation

This study was conducted at Benguet State University Research and Extension to determine the communication strategies they applied in the dissemination of matured technologies.

Beneficiaries-respondents whom the information were gathered include only the beneficiaries from the Municipality of La Trinidad, Benguet. Thus, it is important to note that information's gathered from the BSU researcher-respondents are not limited to the beneficiaries within the Municipality of La Trinidad.

This is also limited to the communication strategies applied by the Extension Office that is mandated to disseminate research output which include matured technologies and the communication strategies applied by some of the BSU agricultural researchers. These identified communication strategies being used by the BSU Research and Extension are not limited to the beneficiaries in the Municipality of La Trinidad.

Limitation of the identified matured technologies characterized for the second objective of this study was discussed in the results and discussion.



REVIEW OF LITERATURE

Agricultural Technology

Agricultural technology is applied science. It uses the knowledge obtained from scientific research to create machines, processes, and new varieties of plants and animals. These technologies are used to improve production methods on the farms, and to improve methods of processing, transporting, and distributing agricultural goods (Burton, 1998). In Benguet State University, agricultural technologies under crops focused on crop improvement, biotechnology, seedling production technology, improved cultural management practices, fertilizer and water management, integrated pest management, crop-based farming systems, postharvest handling and processing, and pesticide residue analysis and remediation.

The farm resources and systems focused on land sustainability studies, soil and water conservation and management, drainage and irrigation systems and facilities, farm mechanism, design and development of farm machinery, equipment and tools, integrated farming systems, organic farming, sericulture, and apiculture (www.bsu.edu.ph).

Communication Strategy

A communication strategy should be judged by its ability to feel the pulse of the people, to distinguish —needs‖ from —wants‖ and to effectively communicate these needs to policy makers. When more mechanisms for frequent dialogue between planners at the central level and the masses exist, and when the needs and problems of the people become



the primary focus of change, that is when it can be said that the strategy is useroriented (Rosario-Braid, 1983).

On the other hand, Bucu (1989) implies that the different communication channels substantially differed in their degree of usefulness in creating awareness, in influencing attitude and behavior, and in encouraging clientele to adopt recommended technology.

Hence, a certain communication channel may be effective in one aspect but not in other areas. Schramm (1964) as cited by Bucu (1989) reported that communication studies support the fact that mass media are generally quite capable of handling the basic tasks of informing and re-enforcing development efforts. Interpersonal sources, on the other hand, are better in changing strongly-held attitudes, beliefs and social norms in the individual level.

Perrett (1976) as cited by Bucu (1989) also pointed out that —it matters less which medium is used than how it is used especially in terms of how it is built into the local level social structure.¶ He claimed that almost any medium, if used in the right situation and used well, will work. This finding supports the result of the study.

Matured Technology

Mature technology scenarios, should not be confused with technologies available for implementation today. Achieving performance and benefits associated with mature technology will require a large and focused effort over a period of time. Estimating features of mature technology is a separate matter from envisioning—much less enabling— one or more technical paths leading to mature technology, and is also separate from



describing the societal transitions associated with adoption of mature technologies in lieu of technologies in use today (Lynd & Larson 2003).

Moreover, according to PCARRD (1997) as cited by Baucas (2002), Technologies for commercialization are technologies that have successfully passed the piloting stage or have passed the criteria for piloting or not yet piloted but have a high potential for commercial application. Generally, these technologies pass the following criteria: (1) they provide the best alternative for improving income and productivity of a greater majority of people; and (2) they provide immediate solutions to self-sufficiency problems, environmental sustainability, import substitution, export generation and promotion of alternative sources of food.

Strategies of Disseminating Matured Technologies

According to Ruttan and Hayami (1973), as cited by Fellizar Jr. (1990), technology transfer is divided into three phases: materials transfer, design transfer, and capacity transfer. Materials transfer is the simple transfer or importation of new materials such as seeds, plants, animals and machines, and the husbandry or management practices associated with these materials. Local adoption is not conducted in an orderly period. On the other hand, design transfer means the transfer of information in the form of blueprints, formulas, journals, books, and related software.

On the other hand, the Department of Science and Technology (DOST) promote and commercialize technology through the following means (Baucas, 2002):



Pilot plant assistance. This refers to the financial aid for the establishment and operation of a viable pilot plant. The aid is meant to enhance transfer and adoption of DOST-generated technologies.

Technology packaging. It involves the identification of viable investment opportunities. Packaging or identification is facilitated by providing assistance in the preparation of detailed studies for locally generated technologies.

Investors' fora/investment clinics. It is the investment opportunities generated by bringing together government and private technology generators, investors, banking and other financial institutions and technology adaptors interested in starting or improving technology-based business ventures.

Conduct of technology fairs. It is where the latest advance in science and technology is showcased; exchange of information on the investment potentials and requirements of promising technologies are facilitated; and a venue for highlighting the accomplishments of scientists, investors, and researchers are provided.

Prototype development and testing. It is the provision of financial assistance through the Invention Development Assistance Fund under RA 7459 for the fabrication and testing of technology models/equipment that have commercial potential.

Interpersonal communication is extremely useful especially when messages are difficult and the purposes are important. As a medium, it allows maximum feedback that enables development workers to improve and become more effective, Bucu (1989).



Perret (1976) as cited by Bucu (1989) on the other hand pointed out that aside from circumventing geographic, climatic and even human barriers, radio can multiply the effects of any development field extension worker in the area. Moreover, it is an effective communication carrier because of its accessibility, credibility, availability and ability to provide timely information.

Moreover, pictures, charts, graphs, brochures and other printed materials can illustrate and supplement the technicians' tasks. These can help create a condition of receptivity for an innovation (Bucu, 1989). According to Cuyno et al. (1975) as cited by Bucu (1989), instructional technologies make teaching more effective.

Another strategy recommended was the establishment of demonstration farms in strategic municipalities. Earlier reports revealed that demo farm satisfies the —kita ko, Pati koll attitude of farmers. Further, through demonstration farms, farmers could have the opportunity to feedback what troubles them (Bucu, 1989).

Problems Encountered in Disseminating Matured Technologies

In the implementation of the CTTC Program, the constraints related to technology transfer and commercialization can be grouped into four categories based on the source as follows: (1) problems within the implementing units; (2) problems within the users/beneficiaries; (3) problems with the product/output; and (4) problems within the environment.

Some problems associated with the implementing units (sometimes referred to as the delivering system) include the following as cited by Baucas (2002): limited manpower,



facilities and budgetary resources (PCARRD, 1997); inadequate data base for agricultural commodities; inadequate public information, education and communication campaign on new technologies; lack of easily understandable translation of highly technical research outputs; inadequate skills training and facilities (National Agenda for Productivity, 1996); limited role of farmers in developing research agenda (NarayanParker, 1991); deficient linkages between research and extension and agricultural researches conducted in isolation from the needs of the farmers (Arnon, 1989). The problems of some technology users/beneficiaries include: high risk involved in adopting technology; low education levels, lack of awareness or knowledge by farmers/entrepreneurs (Gomez, 1998) as cited by Baucas (2002); insufficient resources; inadequate capital; difficulty in implementing technology; and deviation of technology from beliefs, traditions and customs.

With respect to problems within the environment of technology transfer and commercialization, the following can be noted; weak linkages and coordination among various actors in the public and private sectors; stiff competition; poor infrastructure facilities (roads, communication, power, etc.; economic instability; and political interference.

Problems with product/output include the following: lack of appropriate and affordable inputs necessary for the adoption of new technologies; lack of appropriate research results (Arnon, 1989) as cited by Baucas (2002); limited market outlet; low income derived from the technology; low price of the product; great dependence on other inputs and seasonal conditions; and inadequate raw materials.

Other problems were scarcity of other resources like budget and facilities such as hardware equipment and other amenities necessary for speedy and timely operation and



implementation of communication projects were likewise commonly experienced as constraints (Bucu, 1989).

Hence, Jamias (1967) as cited by Bengwayan (1987) said that —information on agricultural innovations is lacking in the Philippines. Reading sources are obtained predominantly from personal sources (extension workers, agricultural dealers, laborers and landlords) and to a more limited extent, institutional or extension channels.¶

Another problem identified by the respondents in the study of Bengwayan (1987) was highly technical information which was very evident in many print sources. Librero

A. (1980) as cited by Bengwayan (1987) said that the —¶failure to communicate to farmers in layman’s language the results of researchers has a lot of bearing in the transfer of technology.¶

She added that —most technologies being transferred are worded in technical terms that if these are not transferred into simple form of literature, they will be useless to most farmers.¶

Challenges in Disseminating Matured Technology

Sajise (1980) as cited by Bengwayan (1987) mentioned that —effective transfer of technology requires a good Lock’s key fit.¶ This means that a systematic process is needed for classifying the target clientele, as well as their bio-physical exponent, which will result to the identification of an adaptable technology scheme. In other words, there’s should be a patterned relationship between the user and the technology transferred on the matter of what technology should be transferred. Moreover, the farmer or user should have a say on what technology should be introduced to him in consideration of his physical and natural environment.



Bengwayan (1987) also pointed out that there is a need for technology generators to look deeper into the reasons for some farmers still using indigenous technology despite the recommended technologies. Probably, the indigenous technology is a good supplement to the recommended technologies; in which case, it should be preserved and strengthened not discarded.

A review of rural development programmers further indicates that a critical gap exists in the area of extension services. The problem is not so much the number of services available, but the quality of such services. Also, there appears to be a need for improving the quality of rural institutions which may provide the resource support for agricultural extension and mass mobilization (Rosario-Braid, 1983).

One commonly felt reason by most of the respondents was the clientele —wait and see attitude. This very attitude makes the clientele passive and uncooperative and hence, makes way for their (farmers) being difficult to organize. Since they are not willing to accept new ideas at face value, it becomes very difficult to make them participate.

Receiving mechanisms will be ineffective if farmers are not organized, especially so also if the delivery mechanisms is not organized (Bucu, 1989).

Bucu (1989) further added that farmers (beneficiaries) felt that they should be consulted and be made to participate in communication planning. In her study, some respondents mentioned their active participation in the implementation of a particular project on technology dissemination and utilization. But their participation accordingly could be more meaningful with prior consultation. This response was corroborated by the finding of Parker (1977) as cited by Bucu (1989) who pointed out that without



communication, development efforts cannot be sufficiently responsive to local needs and conditions.

Moreover, according to Schramm (1964) as cited by Bucu (1989) stressed that information must not only flow to the clientele who must be informed, persuaded and educated as well but also from them. Flores (1978) as cited by Bucu (1989) also stated that the people must participate if not directly at least by feeding back to the development workers their thoughts, their own feelings, their felt needs, and their anxieties as well as their aspirations.

On the part of the cooperating agencies, Bucu (1989) emphasized that collaborative project with other agencies for institutions should be covered with a formal memorandum of agreement. The agreement should clearly spell out the sharing of resources, the complementation of expertise of personnel, each roles, functions, responsibilities and accountabilities.

Series of consultations, policy sessions and workshop should be the feature of the memo. If need be, functional committees should be organized at various levels in the organization.

Bengwayan (1987) further implies that there are numerous recommended technologies which have been proven by researchers in agricultural colleges and research institutions in the region, but these are not made available to the end-users, because of inappropriate extension and communication strategies, uncommitted agency-workers and inadequate financial and technical assistance for field workers who are in constant with most famers.



Thus, an implication by Elliot (1984) as cited by Bengwayan (1989) that —for a technology to be adopted, it must be effective and certified to work.¶

Bengwayan (1987) added that technicians should therefore improve their relationships and communication skills so they will be approached more freely by farmers in the verification of farm information. No less than Consolacion (1974) as cited by Bengwayan (1987) said that —technicians should be provided not only with proper technical skills but with communication skills as well as to be able to appropriately relate to farmers their information needs.¶

Repetition and delicate elaboration of information needs must be guaranteed continuity to attain an effective impact. Radio broadcasts on agrotechnology transfer which are short lived are not expected to instill learning to listeners (Bengwayan, 1987).

On the part of the farm news communicator, agency-respondents composed of 15 agricultural researchers in the study of Bengwayan (1987) all said that —commitment and dedication, service-oriented and friendliness, respectfulness and courtesy were ingredients of a good farm news communicator.¶

For the technologies being disseminated, it is important to note the statement of Elliot’s (1984) as cited by Bengwayan (1987) that —the reasons influencing the adoption of an indigenous technology from one culture to another is dependent on the technology’s acceptability, it’s being harmless, and its fitting to the hands, minds and lives of the people who will make use of it.¶



Definition of Terms

Extensionists. Extension workers who are personnel of the Extension Services Office. BSU agricultural researchers at the same time are also extensionists.

Beneficiaries. Group of people referring to the end-users of matured technologies.

BSU Research and Extension. Technology generators and disseminators.



METHODOLOGY

Locale and Time of the Study

The study was conducted from December 2012 to February 2013 at Benguet State University Research and Extension, Km. 5 La Trinidad, Benguet (shown in Figures 1 and 2).

This 90-year old school is located in the heart of La Trinidad, Benguet the Strawberry Capital of the Philippines. It is 3 kilometers and 15 minutes land travel away from Baguio City.

Benguet State University is a public educational institution established by law. The primary purpose of the University is to provide graduate and undergraduate courses in the arts, sciences, humanities, and professional fields in agriculture, natural sciences, technology, and other technical and professional courses as the Board of Regents may determine and deem proper. It shall promote research, extension, agribusiness, and advanced studies and progressive leadership in its field of specialization.

Research and Extension have always been considered as inherent functions of the Benguet State University even when it operated only as a farm school in the 1920s. Back then, students were inculcated with the love of scientific inquiry and ingrained with the commitment to serve their communities well, not being only excellent examples of what a successful farmer should be; but also by persisting in carrying out genuine agricultural development in the countryside.

As a chartered institution in 1971, Mountain State Agricultural College (MSAC) was mandated to do research and extension, in addition to instruction as trilogy of



functions. A new organization structure was adopted which included the Department of Experiment Station. The organizational structure was revised in 1977 thus, creating the

Research and Experiment Station, and the Extension and Continuing Education Division.

In 1984, a new governance scheme of the College created the Office of the Vice President for Research and Development Support Services.

With the conversion of the College into Benguet State University in 1986, R and E programs were placed under the Office of the Vice President for Research and Extension (OVPRE). The move enabled the University's R and E programs to be more systematic and relevant to the needs of the University and the region, as well.

Presently, the OVPRE supervises the activities of the Office of the Research Services, the Office of Extension Services, the Office of Training Services, and the different Research Centers/Institutes. In addition, the OVPRE coordinates with the

Highland Agriculture and Resources Research and Development Consortium (HARRDEC), which is based at BSU.

The Northern Philippine Root Crops Research and Training Center was established by virtue of Presidential Decree 1107 at the then Mountain State Agricultural College in March 21, 1977. The center is a semi-autonomous unit of the university, in the sense, that its own Advisory Board will approve its programs and activities, but its personnel and budget (as identified in Internal Operating Budget) shall be subject to the same University rules and regulations. The Advisory Board is composed of the DA Secretary as Chair, the University President as Co-chair, the PCARRD Executive



Director, the DA-BAR Director, a representative of the Center's collaborating agency representative of DA-Regional Office (Cluster 1 and 2), and a private sector representative as members, the Director of the Center as member and secretary. The Center has 6 technical sections; namely Crop Improvement, Crop Management and Seed

Production, Postharvest, Processing and Utilization, Engineering, Social Science and Policy, and Training and Extension.

The Horticulture Research and Training Institute (HORTI) was established by virtue of Presidential Decree 2010 signed by then President Ferdinand E. Marcos on January 12, 1986. It was conceived as a research and development arm of the Benguet State University to accelerate progress of horticultural enterprises in the Cordillera region and other highland areas.

The Institute of Social Research and Development (ISRDR) started as the Highland Socio-Economic Research Institute (HSERI) in June 1986. It was then reorganized and renamed as IHPSSERD. The reorganization provided the avenue for the incorporation of policy research and advocacy in the mainstream of BSU's research and development focus. It also strongly addresses ongoing and existing policies that need to be constantly reviewed and evaluated to accelerate economic growth.

The Institute of Highland Farming Systems and Agroforestry (IHFS) became operational on January 6, 1997. IHFS was a merger of the Institute of Highland Farming Systems (IHFS) and the Highland Agro-Forestry Institute (HAFI). It also integrated the existing Agro-Forestation Special Project and Sericulture Project located at Bektey, Puguis, La Trinidad, Benguet. The Agro-Forestation Special project was created on June



1, 1977 by virtue of MSAC Administrative Memorandum No. 2, s. 1977 by then President Bruno M. Santos. While the Sericulture Project was created by a Memorandum of Agreement (MOA) with BSU, PTRI (Philippine Textile Research Institute) and the TLPC (Technology Livelihood Promotions Center) in February, 1993 under by then President Dr. Lucio B. Victor. On May 16, 1984, the Institute of Highland Farming Systems was established during the presidency of Dr. Fortunato A. Battad as provided for in MSAC Administrative Memorandum No.17, s. 1984.

The Semi-Temperate Vegetable Research and Development Center (STVRDC) was created on January 5, 2004 by virtue of Administrative Memorandum No. 007, series of 2004. Funding support was provided by the Vlaamse Interuniversitaire Raad (VLIR) or the Flemish Interuniversity Council in Phase 2 of the Philippines-Institutional University Cooperation Programme (PIUC). The establishment of this center aims to boost the image of BSU as a Center of Excellence in Agriculture Education and enhance its capacity as a regional university.

Today, BSU continues to perform its R and E functions with much sincerity and commitment, in the hope that it will contribute to the improvement of the lives of those it selflessly serves (Research and Extension Manual of Operations, 2008). See Organizational Structure at Appendix F.

Guided by the AFMA thrusts and in accord with the government's Medium Term Development Plan (MTDP, the University Research and Extension program are focused on the following themes that cut across various program areas: (1) nurturing knowledge and information systems to promote people empowerment and gender equity; (2) improving farm productivity and profitability for food security and poverty alleviation; (3)



protecting the environment and saving biodiversity for sustainable development; (4) improving and proposing policies for competitiveness, better governance and greater benefit of society (www.bsu.edu.ph).

The school was chosen because of its prolific contribution particularly for the economic technology-based researches or study within the country specifically in the field of Agriculture under the sector of crops.



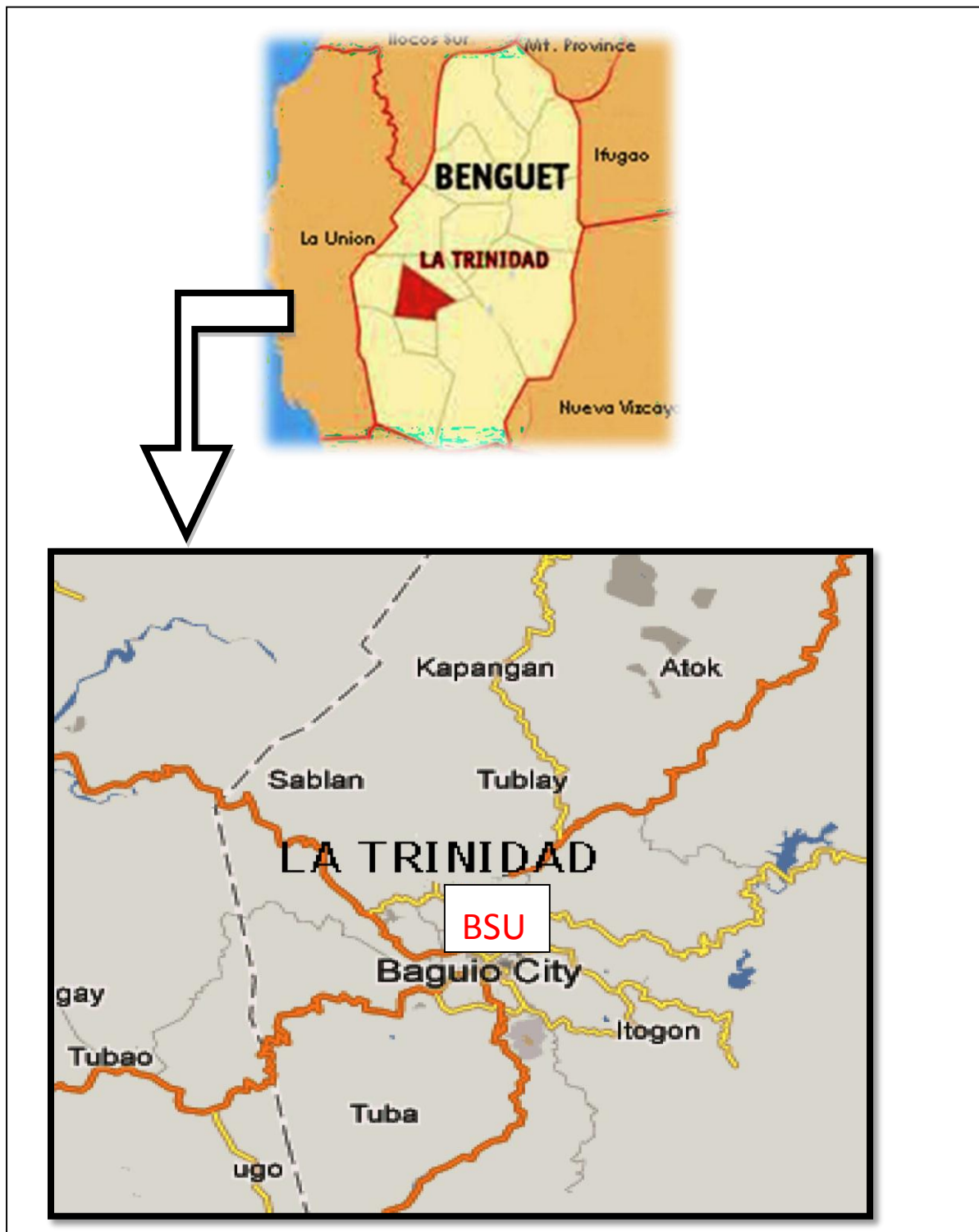


Figure 1. Map of Benguet, showing the location of the study area

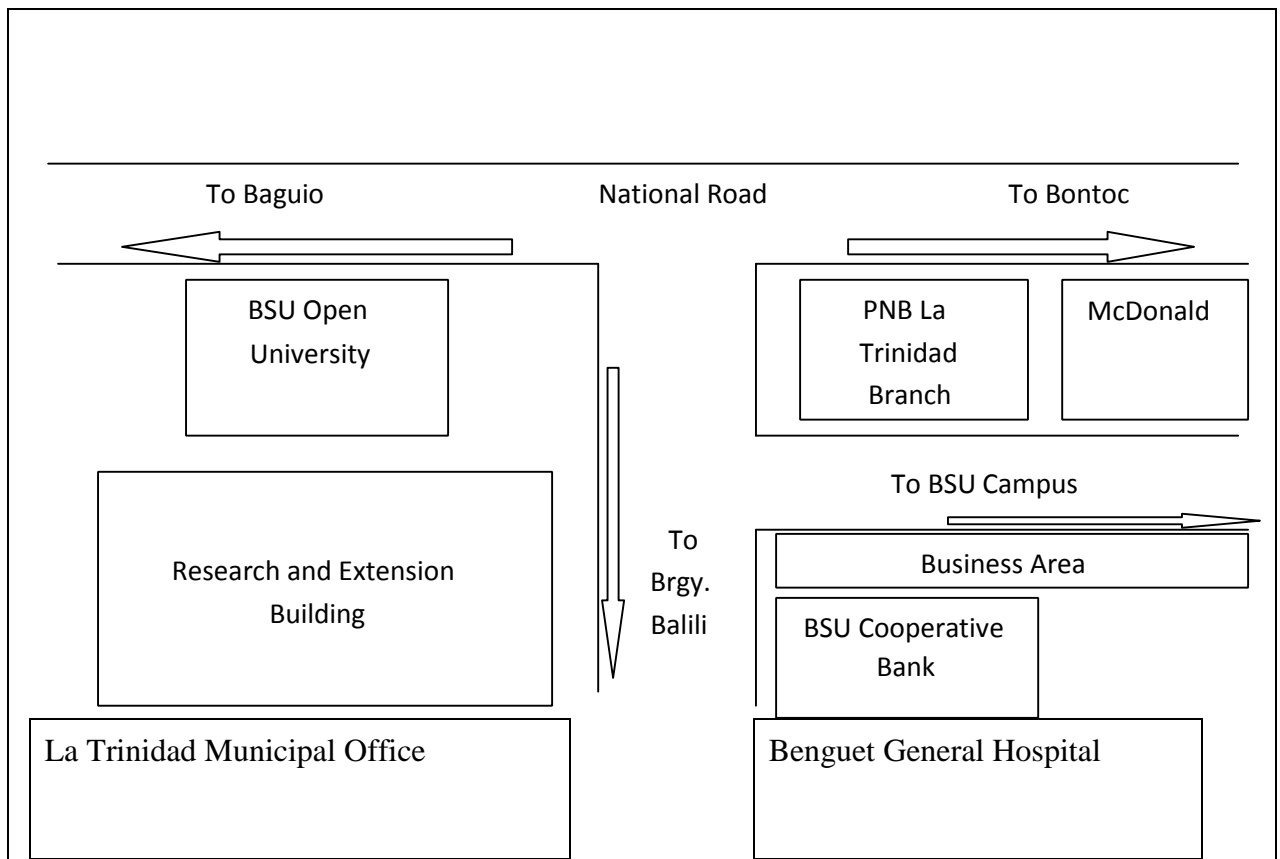


Figure 2. Vicinity map of the location of the study

Respondents of the Study

There were three groups of respondents in this study. The first group include the Directors of Research and Extension Services Offices who serve as key-informant as well as BSU agricultural researcher-respondents; one Extension Office Staff who is involve in the dissemination of R and E output which include matured technologies and; a staff from Research Office who serve as key-informant.

The second group was the researcher-respondents which were composed of eleven (11) BSU agriculture researchers who were faculty from the College of Agriculture and from the different centers/institutes of the Research and Extension. BSU Agricultural



Researchers were asked of how matured technologies are being identified within the university through its criteria and definition. They were also asked for their suggestions for the improvement of the dissemination process they applied as well as the Extension Services Office.

The third group included forty five (45) beneficiaries who were interviewed to identify their awareness regarding the disseminated agricultural technologies which include matured technologies by the BSU Research and Extension. They were also asked regarding the problems they encountered during the dissemination process. Thus, they were also asked for their suggestions concerning the communication strategies applied by the BSU Research and Extension office in disseminating agricultural technologies which include matured technologies.

The criteria in choosing the beneficiaries included the following: 1. he/she should be a regular farmer; 2. he/she must be 18 years old and above; and 3. he/she must have attended any session for the dissemination of agricultural technology or studies/researches which include matured technologies which were organized, coordinated, or implemented by the BSU Research and Extension and BSU researchers.

Purposive quota sampling was used in selecting the respondents of the study.

Socio-demographic Profile of the Respondents

Table 1 shows the socio-demographic profile of the BSU agricultural researcherrespondents in terms of sex and age. Majority of the respondents (53.3%) are female and a great majority of them (60%) belonged to the age bracket 51-60.



On the other hand, Table 2 shows the socio-demographic profile of the beneficiaries-respondents in terms of sex, age, educational attainment, and years in farming. Majority of the respondents were male (64.4%). Many of the respondents belonged to the age bracket of 51-60 (28.9%) and a great majority belonged to both age bracket of 31-40 and 41-50 with 22.2% for each bracket while there's only 6.7% belonged to the age bracket of above 60. Majority (37.8%) of them reached elementary level and 31.1% finished secondary level while only 6.7% of them who did not take any education level. In terms of years in farming, almost half (46.7%) of them belonged to the bracket of 1-10 years in farming.

Table 1. Demographic profile of the BSU agricultural researcher-respondents and key-informants

CHARACTERISTICS	NUMBER (n=15)
Sex	
Male	7
Female	8
TOTAL	15
Age	
30-40	1
41-50	4
51-60	9
61-70	1
TOTAL	15



Table 2. Socio-demographic profile of the beneficiaries-respondents

CHARACTERISTICS	NUMBER (n=45)	PERCENTAGE %
Sex		
Male	29	64.4
Female	16	35.6
TOTAL	45	100
Age		
18-30	9	20
31-40	10	22.2
41-50	10	22.2
51-60	13	28.9
Above 60	3	6.7
TOTAL	45	100
Educational Attainment		
None	3	6.7
Elementary Level	17	37.8
Secondary Level	14	31.1
Vocational	1	2.2
College Level	10	22.2
TOTAL	45	100
Years in Farming		
1-10	21	46.7
11-20	11	24.4
21-30	11	24.4
31-40	2	4.4
TOTAL	45	100



Data Collection

Data collection was done through interview schedule using a guide questionnaire to gather information from the intended beneficiaries-respondents. Questionnaire and interview schedule using guide questions were also used to gather information from the Research Services office and Extension Services office Directors and staff, and the BSU agricultural researchers-respondents. Data retrieval from the internet was also used.

Data Gathered

The data that were gathered included the communication strategies applied by BSU Research and Extension (Extension Office and BSU Agricultural Researchers) in the dissemination of matured technologies existing within the university; latest matured technologies existing within the university (2010-2011); identification of matured technology by the university through its criteria and its definition; problems encountered by the beneficiaries in the dissemination process and their suggestions for the improvement of the dissemination process and; communication problems encountered by the BSU Research and Extension (Extension Office and BSU Agricultural Researchers) and their suggestions for the improvement of the dissemination process and;

Data Analysis

The data that were gathered were organized, tabulated, categorized, summarized and presented according to the objectives of the study. Methods and analysis used include ranking, frequency count, and percentage.



RESULTS AND DISCUSSION

Identification of Matured Technology

University Matured Technology as defined by the Respondents.

According to the Research Director Dr. Eulogio Cardona, there was no well defined written document definition of matured technology made or created by the BSU Research and Extension Office even in the Research and Extension Manual; however, the general understanding of such by the researcher-respondents is that, it is a technology proven effective based on results of repeated trials or result under varying conditions and have tested in multi-field in which it is a problem/development-oriented technology.

Furthermore, BSU agricultural researcher-respondents Percival Alipit, Araceli Ladilad, and Alexander Fagyan agree that matured technologies are those that provide solution to a problem or improved productivity, developed based on a certain problem to cater to the problem of clientele, and has promising benefits for the intended clientele or community to be served. Danilo Padua added that matured technology is one that can provide —new tools in crop production that should normally be on improvement over an existing technology.

Finally, Dr. Leoncia L. Tandang, another researcher and faculty of the university, defined matured technology as a technology that has undergone the stages of technology development which include technology generation, technology verification and technology dissemination.



From these definitions given by different agricultural researchers in the university, it can be said that there is a general understanding of what matured technology is based on a certain process and criteria. This supports the definition given by PCCARD (1997) as cited by Baucas (2002) about matured technology which is a technology that have successfully passed the piloting stage or have passed the criteria for piloting or not yet piloted but have a high potential for commercial application.

Criteria of Matured Technology according to Researcher-respondents

Reliability. Nine of the researcher-respondents agree that agricultural technologies which were considered as matured technology should have undergone several trials and validation on-station and on-farm for both dry and rainy conditions.

Hence, two researcher-respondents out of these nine claimed that these technologies must have undergone complete piloting on farm.

Dr. Danilo Padua and Jocelyn Perez also noted that these matured technologies must have been verified in farmer's field or it should have been piloted among the intended beneficiaries.

Betty Gayao further stated that this technology should have been tested and passed the marketing and economics profitability. Dr. Leoncia Tandang and Jocelyn Perez simplified this as technologies that are proven economically feasible.

To a specific context, Dr. Belinda Tad-awan explained what should be considered as matured technology concerning plant or crop varieties. According to her, these varieties



should have gone series of evaluation or have undergone a certain process from ideas to implementation following a standard procedure. It should not have only tested in the station but it should have also been applied in farmer's field or it should have been tested in multi-fields. She added that it must have been tested in different weather conditions (wet and dry) and it should not only be tested in fair weather condition. She added that it should have high yield compared to existing farmer's varieties.

Problem/development oriented. Three of the researcher-respondents agree that technology which is considered as matured should be problem or development-oriented which is worth serving to the community.

According to Dr. Eulogio Cardona, matured technologies must cater to the problem needs of the beneficiaries.

Validity. Three researcher-respondents noted that matured technologies must be scientifically valid. Dalen Meldoz also explained that it should have a scientific basis which includes reports, write-up, conference, and papers which were written and published.

Dr. Padua further supported this stating that these technologies must have been packaged and disseminated properly.

Alexander Fagyan on the other hand explained that these technologies must have been based on research/researches which were conducted. Dr. Cardona added that these matured technologies should attain its objectives.



Moreover, Araceli Ladilad noted that matured technologies are those complete researches or studies. Andres Basalong added that matured technologies should have sufficient trials and consistent data.

On the specific scope of fertilizer matured technology, Fagyan stated that this technology should have undergone two to three years of trials which include a station trial for two years and another trial for another location.

Replicability. Three researcher-respondents agree that end-user or potential adaptors should produce approximately the same results of matured technology.

Tad-awan explained that these technologies should be stable in terms of yield and resistance to diseases like for example in crop varieties.

According also to Dalen Meldoz, results of matured technology should be reproduced in field conditions.

Moreover, Dr. Silvestre L. Kudan also explained that if the technology will produce the same result when other people will follow the same procedure as established by the researcher even if this will be conducted in other area with the same or similar condition then it is a matured technology. This means that even whoever implements the technology, the same observations by the person who generated it will also be observed by the other people adopting or implementing that technology, he added. —If and when the technology yields different result from what was claimed by the researcher or generator when other people implement it following exactly the same procedure, then that technology is not yet matured,|| Kudan stated.



Ready for commercialization. Kudan stated that in the condition wherein these technologies have undergone experimentation in research station and have been verified or piloted in farmer's field yielding the same results- it is ready then for commercialization and it is said to be matured technology.

Dalen T. Meldoz further agree that matured technologies are those that ready for promotion and commercialization or have passed the research stage and are undergoing the development stage for commercialization.

Acceptability. Dr. Leoncia Tandang noted that matured technologies should be socially and politically acceptable in terms of its use and safety. Belinda Tad-awan also explained that it should be accepted and more performing with higher or better performance than the usual farmer's practice.

Practicality/applicability. Dr. Percival Alipit noted that matured technologies should be applicable in terms of adaptation as of its use and utilization.

Dr. Tandang also added that it should be technically feasible.

Environment- friendly. Dr. Tandang and Perez claimed that matured technology should be environmentally sound (environment-friendly).

The above findings of this study corroborates what PCARRD (1997) enumerated concerning technologies ready for commercialization as cited by Baucas (2002) wherein these technologies should have passed the following criteria: (1) they provide the best alternative for improving income and productivity of a greater majority of people; and (2) they provide immediate solutions to self-sufficiency problems, environmental



sustainability, import substitution, export generation and promotion of alternative sources of food.

Identified Agricultural Matured Technologies

These latest agricultural matured technologies were limited for the year 2010-2011. Originally, coverage include matured technologies disseminated from 2005- 2012; however, no complete record of these technologies were found at the Research and Extension office. This was supported by the some staff in the said office stating that their list were not classified properly whether these were declared as matured or not. The noted list of matured technologies was just used to cite examples of the hundred existing technologies which were accomplished, developed, and disseminated from the birth of the institution.

Source of this information was based on the In-House Proceedings Book from the Research Services Office. These technologies however were not classified if it is matured or not. Thus, personal interview was done for the BSU agricultural researchers who conducted the research to clarify if these technologies are considered as matured technologies or not. Others were referred to the RANGTAY magazine which is the official publication of the Research and Extension featuring matured technologies.

It can be noted in the table that the kind of crops which dominantly focus of the matured technologies was under vegetable.

For the research discipline which dominantly occupies more than one matured technology was under crop improvement.



It also came out that many technologies which were developed for the year 2010 having six (6) matured technologies and only one (1) matured technology was accomplished for the year of 2011.

Table 3. Identified matured technologies

MATURED TECHNOLOGIES (STUDY/PROJECT/ PROGRAM TITLE)	RESEARCHER/S (PROGRAM LEADER, PROJECT LEADER, STUDY LEADER)	KINDS OF RESEARCH CROP	DISCIPLINE/ S	DURATI ON
<hr/>				
2010				
Potato basic seed production in the Philippines highland: The case of NPRCRTC	Cynthia G. Kiswa, Jocelyn C. Perez, Grace S. Backian, Paz A. Dalang, Lito M. Pacuz, Teresita D. Masangcay	Tuber crop	Extension and developmentseed production	August 2009-June 2010
Field evaluation of Nucleopolyhedrovirus (NPV) for efficacy against common cutworm (<i>Spodoptera litura</i> Linn.) in cabbage	Dr. Eulogio Cardona Jr.	V. Cabbage and related crucifers	Crop protection	2007-2010
Varietal improvement of Snap Beans (<i>Phaseolus vulgaris</i>)	BSU-Leoncia L. Tandang, Amelia M. Kimeu, Bernard B. Amlos, Johnson G. Bagtila UPLB-CA-IPB – Bonifacio A. Kebasen Sr., Rodel G. Maghirang	Vegetable	Crop improvement	2004-2010



Development production technologies Benguet Lily (<i>Lilium philippinensis</i>)	of Araceli G. Ladilad, Fernando R. s Gonzales, Roger T. Gayumba, Alma Antonio-Amado, Leila Mary AlipioAyban, Rimalyn D. Wakat, Diane Organo, Erica M.	Ornamental Cultural	January 2005December 2010
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Table 3 Continued...

	Galap, Rona C. Gasilang, Analyn A. Banario, Tony B. Juanito, Alvin P. Berto, Dina T. Cuebes, Arlina K. Magno		
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Chipped Alnus as substrate for Shiitake in growing bags	Bernard S. Tadawan	Vegetable	Organic vegetable	September 2008April 2010
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Promotion of Yam seed system technologies for promising purple Yam (<i>Dioscorea alata</i>) varieties	Violeta B. Salda, Dalen T. Meldoz, Grace S. Bakian, Betty T. Gayao, Francisco Binay-an, Anabelle S. Degawan	Root crops	Extension	January 2008- February 2010
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2011

Traditional rice cultivars for wet season cropping (Talo'n) in Benguet	Belinda A. Tadawan, Esther Josephine D. Sagalla, and Meynardo P. Tosay	Traditional Rice	Crop improvement/ Crop production	July 2008June 2011
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Communication Strategies Applied in Disseminating Matured Technologies

Communication strategies include the creation of message, approach used and methods or channels used in the dissemination process.

Message

Message here include the source, content, and context of these matured technologies.

Source. According to Dr. Kudan, matured technologies are being developed in the university starting from the researchers who are the technology generators. Technologies are being processed through a proposal which will be passed on the Research Services Office. This research or study will be evaluated by all the directors of centers and institutes of BSU. This group of evaluators will be in-charge of approving or not according to the relevance of the study.

If it will be approved, the university has the discretion whether or not to fund such technology depending on the available fund of the school. Other technologies may be prioritized for outside funding incase internal fund is not available. For BSU funded, funds will be coming from the university appropriations for research and extension. It is used to pay salaries of personnel identified within R and E and the cost of maintenance and other operating expenses (MOOE). The research and extension budgets are suballocated among the research units and colleges.

Hence, it will be implemented, monitored, and evaluated. Researchers will also conduct report during In-house review which is being done every year to present the results concerning the study. This process is clearly illustrated in Figure 3.



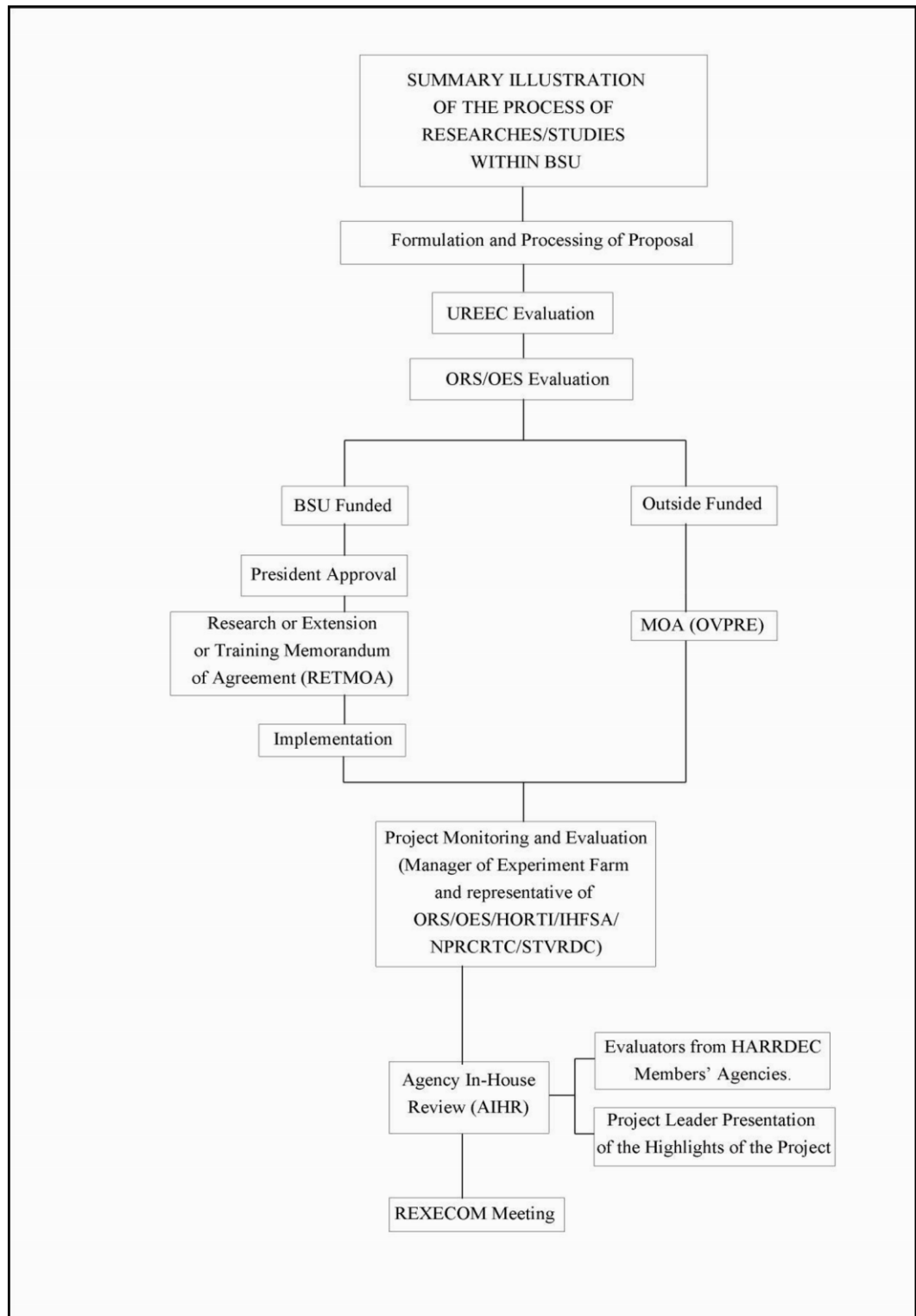


Figure 3. Source of message (matured technologies)
 Outside funded on the other hand, refers to funds coming from different sources other than the university. The major external sources of funds include the Department of Agriculture,



Department of Science and technology, Commission on Higher Education, Department of Energy, congressional development fund (CDF), LGUs, NGOs, foreign donors among others.

The process for outside funding includes submission of complete document by the researcher to the intended funding agencies. A Memorandum of Agreement (MOA) to be issued by the university president will be signed once the proposal has been accepted by certain funding agency by then the project will be implemented, monitored, and evaluated by both the University and the funding agency as indicated in the agreement.

Content. Focus of matured technologies can be based on commodity and by discipline, according to the key informants. Research undertakings for matured technologies being developed in the university can be oriented on commodities such as vegetables, ornamentals, fruit and plantation crops, and forest trees. Discipline/s on the other hand for matured technology focused on areas such as biotechnology, natural resources management, integrated pest management, postproduction, and socioeconomics.

Context. According to the key informants, the communication context for messages of the communication strategies applied by Research and Extension include historical context, psychological context, cultural context, social context, and physical context. These are all emphasized in the research documents being submitted specifically under the impact of the research to the community.

Historical context include the expectation of the technology disseminators and the beneficiaries after disseminating matured technologies.



Psychological context include how the technology affects the mood and emotions of the audience (beneficiaries). Moreover, cultural context is being affected by the beliefs or indigenous farming practices of the beneficiaries and is centered likely to the acceptance or adaptation of these recommended matured technologies.

Social context involves the relationship of the technology disseminators and the beneficiaries. As explained by the respondents, how these relationships of the two work together has something to do with the effectiveness of the message being disseminated.

Lastly, physical context include the consideration of time and place for the dissemination process of the technology including the beneficiaries, and technology disseminators.

Approach

Based on the activities being done by the Research and Extension office there were two approaches being done in communicating messages related to these matured technologies: formal and informal.

Formal communication approach. This is done during seminars, conferences, open forum, meetings, and lectures being organized or conducted by the Research and Extension wherein a certain rules are being followed.

Example of this is the non-degree courses on agri-based technologies being conducted by the Extension Services office. One example is the organic farming which covered the vermin and vermi-compost production (lectures on the biology, economics and utilization of vermiculture and vermincomposting, field demonstration and practicum will be conducted), bio-organic fertilizer preparation (discusses the procedure on how to prepare



organic fertilizer using indigenous materials, production costing, and tools/equipment needed, proper use of organic fertilizer and marketing aspects are included to ensure viability) among others.

Informal communication approach. This approach is being done without formality for the interaction between the technology disseminators and the beneficiaries as it includes the use of channels. One informant explained that informal approach can be observed for technical assistance.

Methods

Below were the communication strategies being applied by the Office of Extension Services according to OES Director Dr. Silvestre Kudan and according to the researcher-respondents. However on the side of the researcher-respondents, it is important to note that communication channels they identified don't reflect the whole dissemination process applied by the institute/centers where they are based.

Interpersonal Communication. There were several interpersonal communication methods identified in the study with regards to how these matured are being disseminated.

Techno-demo on farm. This program is geared toward the establishment of onstation or on-farm trials. Rural folks are usually assisted in establishing farm enterprises using appropriate technologies generated by experts from their researches. The condition required from farmers was their willingness to shoulder the necessary costs of production, actively participate in the planning, monitoring, and evaluation of these technologies, and are willing to share the technologies they learned to other farmerpartners. Conduct on farm



technology with the participation of farmer-cooperators providing them planting materials/inputs. At harvest, a field day is conducted to invite more farmers.

Dr. Kudan (2013) said that Matured Technology which was proven as controlling problems will be conducted in the farm station/field. Farmers or end-users will be invited through coordination with the Municipal Agriculture Office down to the Farmer Association or Organization. Announcement in the Radio through the —BSU on the Air program is also done. Farmers/end-users will observe and their questions to that specific study will be clarified. It's up to the end-users if they will adopt or not. He also stated that

this demonstration create awareness to the end-users.

One example of the university's demo farm is the Organic Demo Farm which was certified as full organic by the Organic Certification Center of the Philippines (OCCP). It has 1.5 hectares and located at the north end of the Balili Experimental Area.

It produces various highland vegetables, herbs, and fruit organically. Some of their products are American amaranth, ampalaya leaves, asparagus, beans, pepper, broccoli, bush beans, cabbage, camote tops, carrots, cauliflower, and celery among others (Marquez, 2010).

This channel/method is being applied by the Extension Services Office and the agricultural researchers.





Figure 4. A photo of the BSU Extension Services Office Organic Demo Farm located at Balili Organic Farm, Km. 5 La Trinidad, Benguet

Home visit/farm visit. In this method, the extension workers usually make appointment with Municipal Agricultural office then the MAO will do the coordination with the farmer's organization. Farm visit will only be done after proper arrangements were done. In some cases, this is done when techno-demo or trials are done in farmer's field.



Figure 5 . Sample photos of home/farm visit

Information services. This was done through technical consultation and visitors' orientation briefing. Technical consultation was also referred to as technical assistance

which is the sharing of knowledge or acquiring technical information from the experts. Technical consultations are usually being offered by the university for free during charter celebrations and foundation anniversary where activities are being set specifically for the beneficiaries of the university. Booths per service were strategically placed in designated areas (usually per college) where farmers can visit them for the consultation.

Walk-in clientele. This was done by giving data to the clientele who take initiative to visit the different institutes of the Research and Extension or directly to the researchers seeking for information concerning such technologies. Usually, farmers are the ones visiting the researchers or the office for information and assistance regarding a certain technology. At times, IEC materials are being provided to these walk-in clients.

Students as a channel of dissemination. Cardona said that students are also included in the dissemination process. This is being integrated in their curricular programs as part of the student's training and/or laboratory exercise. According to him, agriculture students who were taking their majors were instrumental in disseminating information about some of these technologies to the farmers. By simply sharing the knowledge they gain in their related subject, they may serve as a link between the farmer and the experts, Cardona added.

Tandang added that they allow students to use the technologies in their research laboratory activities.

Agro/Agrifair exhibit. This method is usually a mixture of interpersonal and group communication. This strategy displays the highlights recent applicable technologies, products, studies, or researches within the university. Such example include the developed and improved varieties that farmers/end-users may see the product and that they may



identify the difference. Examples of varieties which are common within the university include carrot, strawberry, potato among others. Tarpaulin and posters are being used to show the procedures of a certain study/research. Dr. Kudan further explained that end-users will not just view these displays but their questions concerning these things are being answered. Viewers can also avail IEC materials such as brochures, leaflets, pamphlets among others during exhibits. For the product such as crop varieties, it can be given to the farmers for them to try.

According to the Department of Science and Technology as cited by Baucas (2002), it is where the latest advance in science and technology is showcased; exchange of information on the investment potentials and requirements of promising technologies are facilitated; and a venue for highlighting the accomplishments of scientists, investors, and researchers are provided.



Figure 6. Sample photos of agri-exhibit. The Philippine Independence Day exhibit (left photo) was organized by the CHED last June 12, 2008 held at the Convention Center, Baguio City.

Harvest festival. According to the key informants, this was done to promote developed and well-improved certain varieties. These harvested products were displayed and farmers were invited through coordination with the Municipal Agricultural Office (MAO) to view and examine the products. In this event, they will be informed what varieties are recommended and they may discover the relevance comparing to other varieties that they already proved.



Figure 7 . Sample photos of harvest festival where products of matured technologies are being promoted



Figure 8. Photos of the BSU organic market

The BSU's first Harvest Festival was held on February 1, 2012. This activity gave an opportunity for the different clientele to evaluate the best variety they want to plant, to

market, and consume. The festival includes the exchange of crop production technologies for demonstration and promotion, exchange visits for observation tour, and exchange of technical staff for training (Rangtay, 2012).

This channel is being applied by the Extension Services office.

Sale of basic seeds. This was done in the form of rooted cuttings/tuber being sold to the farmers. According to Ruttan and Hayami (1973) as cited by Fellizar Jr. (1990), one of the phases in technology transfer include materials transfer which is the simple transfer or importation of new materials such as seeds, plants, animals and machines, and the husbandry or management practices associated with these materials. This channel is being applied by the BSU agricultural researchers.

Students' Undergraduate Thesis. One way of disseminating these matured technologies is through the thesis being conducted by the students. According to Tadawan, such example is the varieties of rice which is an existing matured technology existing within the university. She said that if ten (10) students will perform these varieties in their own locality with the varieties planted by their parents or relative, such comparison is being done while the technology is being disseminated to the households. This channel is being applied by the BSU agricultural researchers.

Group Communication. Several activities were also noted under this method as described below.

Seminar (lecture and hands-on). According to the extension personnel, they do not voluntarily coordinate or organize a seminar except the Research and Extension annual seminar series. They also coordinated a seminar through lecture and hands-on



training/workshop. Dr. Kudan emphasized that beneficiaries will not come if they are the one who will request for training, workshop, lecture and/or combination. Thus, if there is a minimum of ten (10) beneficiaries who will request certain seminar, then the Extension Office will set the schedules depending on the availability of the participants and the resource speakers. Notification of the farmers for the schedule will be done through posted notices and through announcement in the BSU on the air program.

The Extension coordinated to the needed experts and other resource speakers within the university. Extension Office assigned personnel notified the experts within the university through letter to the College Dean or Director of Institutes in the university. The College Dean/Institute Director forwarded the letter to the certain person needed to be informed and notified.

Materials for use were prepared including handouts. They also disseminated or promoted matured technologies through offering training courses (production to processing) national and local. It was one strategy to influence adaptors knowledge, skills, or attitudes. Training of farmers/technicians and other clientele were being conducted where new matured technologies were included in the presentation.





Figure 9. Sample photos of seminar (lecture with hands-on)

During extension seminar series, BSU researchers including visiting researchers were given the opportunity in this session to discuss their researches which include matured technologies. These were conducted in the Chrysanthemum Research and Extension building. The audience of this seminar included the Research and Extension personnel, interested students, and other interested beneficiaries or clientele.

On the part of lecture, it is commonly employed in agricultural extension activities in the Philippines. Lectures have specific learning objectives which are varied in agricultural extension and are usually based from the lecture content and the purposed audience. Lectures are done by qualified persons through an oral presentation usually with accompanying visual materials (Phil Rice n.d.) as cited by Velasco (2012).

Quick Response Services (QRS). Through this method, locality requesting help to the Extension office will enable the extension worker to coordinate with the experts to response that problem.

Dr. Kudan explained that this QRS by BSU helped the farmers in Buguias on

December 1999 during the outbreak of potato leaf miner (PLM), *Liriomyza huidobrensis* (Blanchard). Together with the help of other agencies, they use the yellow sticky trap (YST) to manage the leaf miners. It was used as a major tool in lowering the population of potato leaf miner. During PLM outbreak, any yellow and sticky materials can be used and can be staked at any distance and place in the field.

Adopt-a-community. According to Dr. Kudan, this is planned to be done this year wherein a poor community will be selected. Findings regarding farming activities will be gathered and all these technology research existing in the university as well as the best practices will be demonstrated in that community. This channel will be applied by the Extension Services office.

Technology Field Day. This method was done in partnership with other agencies like the Department of Agriculture and Department of Science and Technology. This is usually done to showcase the successful application of technology by the Magsasaka Siyentista or other farmer leader to convince other farmers to duplicate/adapt the said technology. This channel is being applied by the BSU agricultural researchers.

Farmers Field School (FFS). This was a program of the Department of Agriculture where technical staff of the University served as resource person to introduce and teach techniques to empower farmers so they will be able to select and adapt the technologies appropriate to local conditions.

Open Forum (Farmer Forum). This was done where the farmer cooperators presented the results of the technology. In this method, beneficiaries had exchanges of ideas, opinions, and views regarding some concerns of such technologies. Matured technologies were also



presented to the farmers during farmer's forum as part of BSU Charter Day celebration. This was also included during seminars (lecture with hands-on).

Open Forum (Phil Rice, n.d.) as cited by Velasco (2012) is characterized by a free, open questions and answers discussion usually after certain topics are already discussed.

It is a teaching strategy that would serve as a clearing house for participant's doubts and for the facilitator to provide insights on things they do not still know about a topic being presented or just presented (Tublay LGU, 2011) as cited by Velasco (2012).

Finding of this study was supported by the study of Velasco (2012). In his study, a farmer has stated that their queries were clarified under this method. Another respondent from Velasco's study stated that through open forum, he was able to share that as he sees it, they all graduated without any doubts and hard feelings and that they assured that they will apply what they have learned from the training.

Moreover, farmer's appreciated the open forums because they were given chance to openly ask questions which they could not ask during the other activities.



Figure 10. A sample photo of farmer's forum

BSU sa barangay. The office of the director of Extension dispatched some of its staff to the office of the mayor of a certain municipality and introduced this program. Eventually, the office of the Municipal Mayor in coordination with their Municipal Agricultural Offices or their designates convened with their barangay officials for problem consultations in their area. As soon as problems and/or concerned issues were identified and were requested for action, a team of BSU experts was deployed to conduct action research on the problem raised. These problems were addressed with the reliable studies/researches or technology existing within the university

Technical assistance was conducted during this event, according to the key informants. These provided answers to the questions of the farmers' with technical advice or recommendations. Walk-in famers who went to the Extension Office were referred to the experts to seek advice and consultation was also done.

According to the key informants, technical assistance was non-financial assistance provided by extensionists as well as BSU researchers. It can take the form of sharing information and expertise, instruction, skills training, transmission of working knowledge, and consulting services and may also involve the transfer of technical data.

Panel discussion. On the side of the BSU agricultural researchers, they acted as a panelist during presentation of developed matured technologies. It was usually done in technical forum.

Piloting. This was a participatory piloting of technologies with the farmers. This was done through conducting training by combining training method and lecture discussion, field visits, trial practicum, case analyses, and classroom exercises. It is basically done in



farmer's field with participation of farmer partner. At harvest, field day is conducted to invite more farmers.

Group discussion. This was also done through discussion with farmers on a commodity and technology. However, group discussions basically followed within seminars (lecture with hands-on).

Symposium/conferences. Researchers/extensionist disseminated technologies through paper presentation in symposia or conferences (national, international, local) or as resource speaker. Such symposia included the one which being organized by

HARRDEC annually.

Participatory Technology Development (PTD). This was done through trainings, seminar, workshop, initial planting materials provision and interagency collaboration.

Mass Communication. There were several channels noted under this method as discussed below.

BSU-on the-Air. This was a 20-minute radio program run daily from Monday to Friday at DZWT Am Radio station- Baguio City from 5:10 am to 5:30 am. It is an extension project of BSU to promptly disseminate technologies on agriculture and related fields particularly to rural households who have no access to agricultural information services. Topics include cut flower production, vegetable production, animal production, health and other agri-related subjects. Kudan explained that this program aims to bring helpful information to the listeners particularly the farmers concerning all the technology generated within the university.



According to Kudan, experts and researchers within the university shared their time in this program to discuss or lecture their beneficial researches/studies or technology. Farmers were also privileged to ask questions in this program through text messages. It was also expected that every colleges/institutions within the university will identify their technologies and disseminate this information to the end-users through this program as long as the technology is beneficial enough.

Representatives from other government organizations including those from NGOs were also invited to share relevant topics in agriculture. There were also instances that researchers will record their lecture in the extension office and then air it. The radio was likewise used because it has a wide coverage and reaches fast even far-flung areas.

According to Kudan, he anchored the program for almost 11 years since it was established on 1997 up to the present. According to him, there are a total of 26, 462 text messages from the farmers which he received that started on August 2005 to January 31 2013. He stated that he received 11 text messages per day. He also said that he oftentimes answer some of the questions of the farmers basing it on his own principles and experience.

—I discovered that farmer's today are dependent on pesticide as revealed by their common questions of what pesticide they should apply and that's why I keep on emphasizing as well as encouraging them about organic, said Dr. Kudan.

On the side of the BSU agricultural researchers, dissemination of technologies was done through BSU on the air program in DZWT as requested or as needed. This was done when there is an invitation from the anchor to discuss such technology wherein the researcher prepares the script to describe certain technology.





Figure 11. Photos of BSU on the air program with the anchor

Technology packaging and publications. Part of the strategies to disseminate information was the use of IEC materials which extended the dissemination process.

Kinds of IEC materials being produced include the magazines, production guides, book manuals, tarpaulins, leaflets, and brochures. These contained the highlights of a certain technology or studies with pictures and designed for easy assessment to the readers particularly the farmers. It is being distributed to various interest groups.

The print channel was also used due to some of its advantages such as it could be left by the clientele, can be used during free time and be used as a ready continuous reference.

Moreover, RANGTAY, the official extension magazine which features matured technologies for public consumption, was also utilized.

Techno-guides from the Extension Services office, printed materials which are usually book manual which deals with specific crop with all its experiment or procedure of how this specific product is being produced, were also utilized. This production guide entails

all the findings on such practices in a certain crop. It was written step by step to provide guidance who wanted to follow, try, or adopt the technology.

Distribution of IEC materials were usually done during trainings, seminars, workshops, and to walk in visitor's clients. It includes pamphlets, brochures, flyers, manuals, magazine, and techno-guides among others.

According to Ruttan and Hayami (1973) as cited by Fellizar Jr. (1990), design transfer is one of the phases in technology transfer which means the transfer of information in the form of blueprints, formulas, journals, books, and related software.

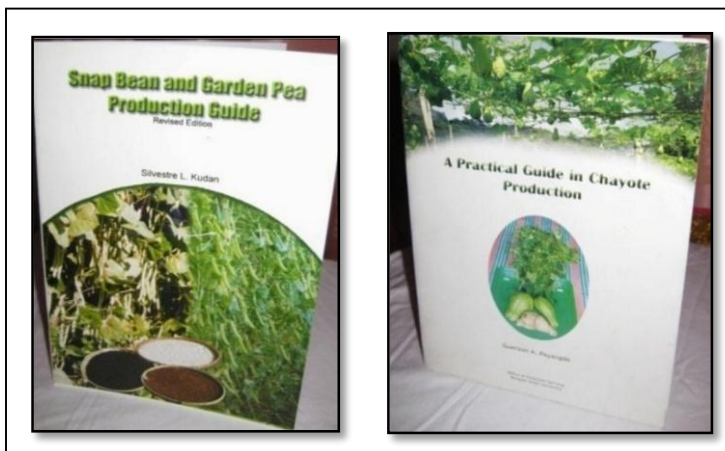


Figure 12. Sample photos of Book Production Guide of Extension Services Office

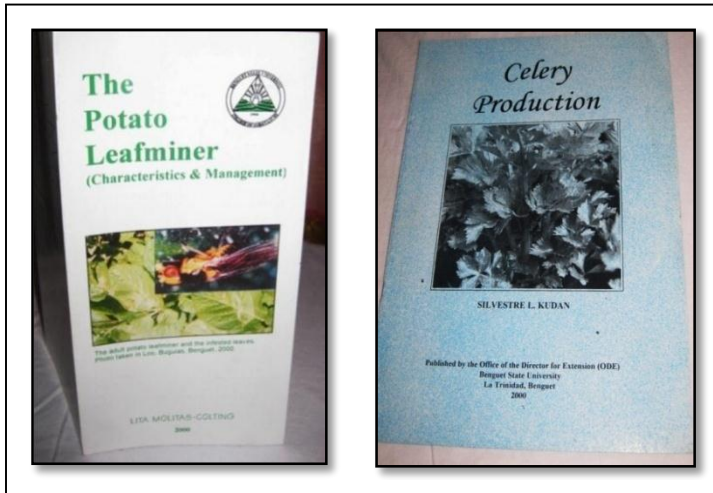


Figure 13. Sample photos of leaflets and manuals of Extension Services Office

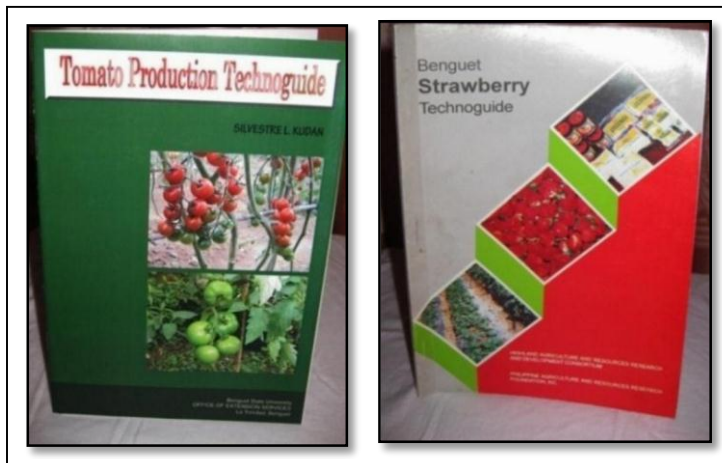


Figure 14. Sample photos of techno-guides of Extension Services office

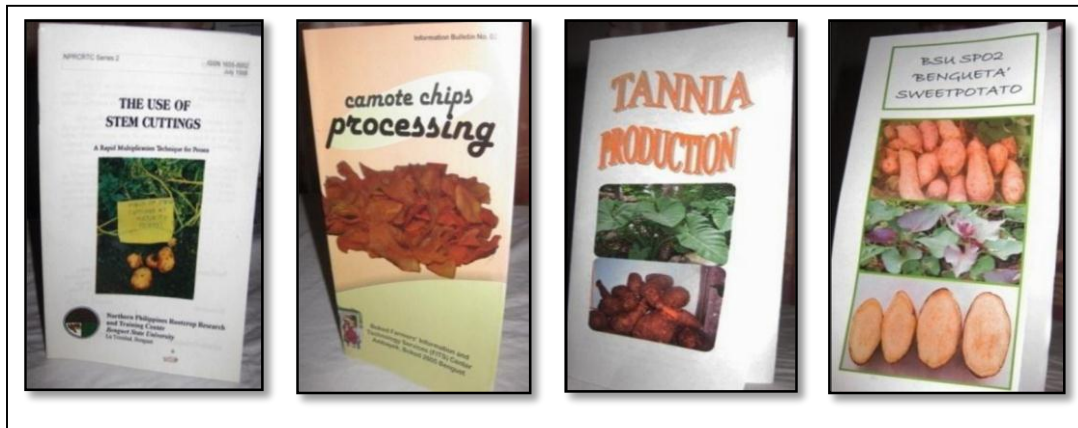


Figure 15 . Sample photos of the IEC materials of the Northern Philippines Root Crops





Figure 16 . Photos of the RANGTAY magazine

Local publications of technologies. Popularization of these technologies for general audience was also done by the office. Popularizing these technologies was being done by selected writers in the university (usually from the University Public Affairs Office) with background in Development Communication or in science writing in general. These articles were being published in local publications like Sunstar-Baguio and Baguio Midland Courier. RDE staff were encouraged to disseminate or publish their matured promising RDE results through regular publication of the center/university which is the Shamag. Descriptions of certain technology including matured technology are given to the University Public Affairs Office (UPAO) for publication.

Aside from writing articles, other local and national writers also conducted interview the researchers directly and published their articles in their respective publications. This was usually done when a certain technology created an impact to the community.





Figure 17. Photo of the BSU Shamag newspaper

Scientific journal. Matured Technologies were also published in scientific publication/organizations like the BSU Research Journal and even to the local and international scientific journals including scientific conference proceedings.



Figure 18. Photo of the BSU Research Journal

TV program. Dissemination of technologies which include matured technologies was also noted in TV, seldom in ABS-CBN- Baguio or Northern Luzon and GMABaguio. According to one researcher-respondent, these stations conducted interview with researcher from the BSU while others requested for documentation concerning the technologies being developed within the university.



Mass campaigns of matured technologies/information caravan. Disseminate research generated technologies through information caravan by distributing varieties, clean planting materials and information pamphlets was also conducted. It primarily aimed to create awareness about the existence of the center or technological services it offers.

In the case of the Northern Philippine Root Crops Research and Training Center (NPRCRTC) institute, it was done ones using a techno caravan where group went to growing area distributing samples and gifts certificate of products to be claimed by winners. This is also being done through house to house. This channel is being applied by the BSU agricultural researchers.

Organizational Communication. Discussed below were the noted activities under this method.

Tying up with other agencies. According to the key informants, technical staff were tapped by other agencies (Go's/NGO's/Po's) to provide technical assistance to local agencies and farmers groups. This was done through first coordinating with the DA people to disseminate output to the farmers.

office

From the above results, it can be noted that communication channels applied by the Research and Extension include interpersonal, group, organizational, and mass media.



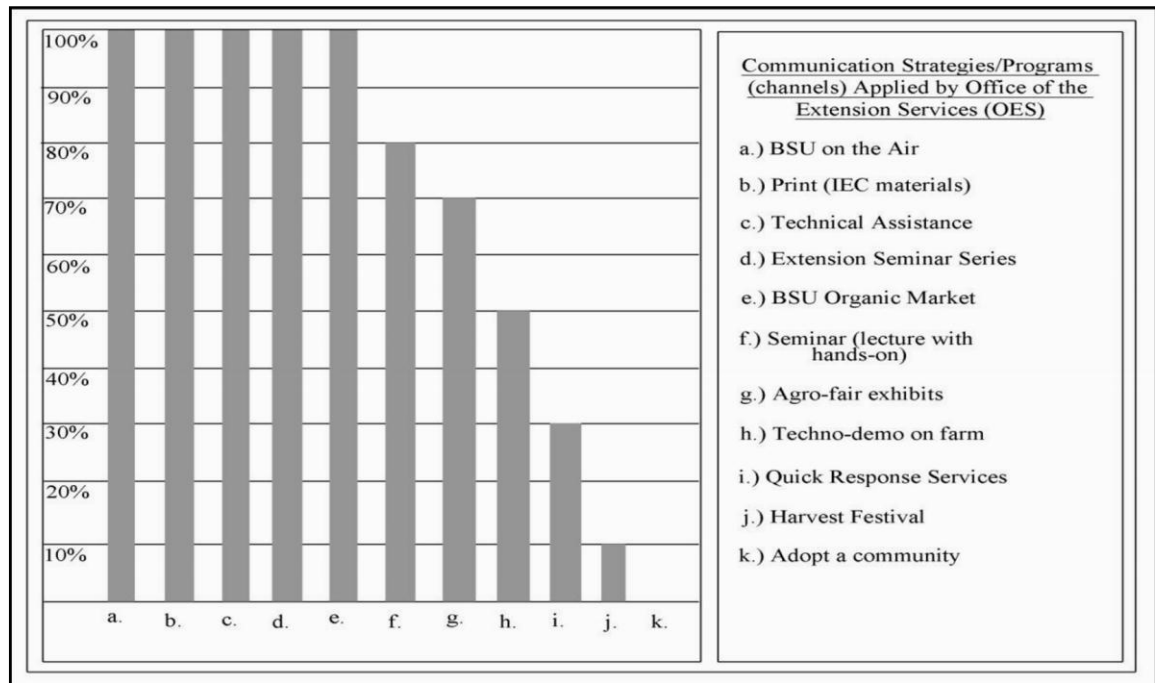


Figure 1 9. Ranked communication programs/methods applied by Extension Services Hence, communication channels have their own advantages and disadvantages or special features that when it used properly then communication would be effective.

The use of different methods was further explained in the study of Bucu (1989) explaining that the different communication channels substantially differed in their degree of usefulness in creating awareness, in influencing attitude and behavior, and in encouraging clientele to adopt recommended technology.

In other words, a certain communication channel may be effective in one aspect but not in other areas as it was supported by the statement of Perrett (1976) as cited by Bucu (1989) claiming that almost any medium, if used in the right situation and used well, will work.

Bucu (1989) reported that communication studies support the fact that mass media are generally quite capable of handling the basic tasks of informing and reinforcing development efforts. Interpersonal sources, on the other hand, are better in changing strongly-held attitudes, beliefs and social norms in the individual level.



Receivers of the Message

Based on the consolidated information from the interviews, the research and extension sector served the following clientele: farm households, local government units, development workers and technicians, GOs and NGOs, business sector, faculty and students, (out-of-school youths) youth and elderly, and other stakeholders who may be in need of the University research and extension services.

Beneficiaries' Awareness of the Disseminated Agricultural Technologies

Table 4 shows the different Agriculture technologies including matured technologies which were disseminated by the BSU Research and Extension as recalled by the beneficiaries-respondents.

A great majority composed of thirty-eight (84.4 %) of the respondents attended the dissemination session of the Organic Farming. Eighteen of the respondents (40%) on the other hand attended the dissemination session of the Integrated Pest Management while eleven of the respondents (24.4%) claimed that they attended the dissemination session of Soil Fertility Management. Meanwhile, only one respondent (2.2%) for each attended the lecture seminar about Yellow Sticky Trap (leafminer) and who inquired about tissue culture.

Table 4. Disseminated agricultural technologies which include matured technologies by BSU Research and Extension



AGRICULTURAL TECHNOLOGIES WHICH INCLUDE MATURED TECHNOLOGIES	FREQUENCY (n=45)	PERCENTAGE %
Organic farming	38	84.4
Integrated Pest Management	18	40
Soil Fertility Management	11	24.4
Strawberry Production	8	17.8
GAP	7	15.6
Strawberry Runner Production	5	11.1
Fertilizer	7	15.6
Pesticide	6	13.3
Foliar Strawberry Pesticide	2	4.4
Yellow Sticky Trap (leafminer)	1	2.2
Tissue culture	1	2.2

*Multiple responses



Table 5. Beneficiaries-respondents sources of information

RESPONDENTS INFORMATION	SOURCES	OF FREQUENCY (n=45)	PERCENTAGE %
	Farmers Organization (letter, meeting, text message)	31	68.9
	Farmers organization (required)	8	17.8
	Notice (BSU Research and Extension)	8	17.8
	Co-farmer	4	8.9

*Multiple responses

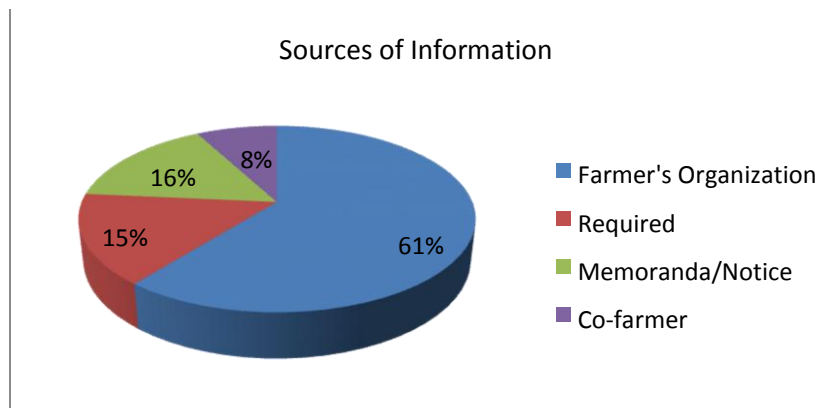


Figure 20. Beneficiaries-respondents sources of information

Beneficiaries-respondents sources of information. Table 5 shows the different sources of notification of the farmers for the lecture and hands-on seminar, exhibit, open forum, and training they attended for the dissemination of agriculture technologies which include matured technologies.



In the case of the organic farmers in Balili composed of eight respondents (17.8 %), they were required to attend such dissemination activities while a great majority composed of 31 respondents (68.9%) of the respondents responded that they were notified through their Farmers Organization.

Table 6. Perceived communication methods used in the dissemination of agricultural technologies which include matured technologies by the beneficiaries-respondents

COMMUNICATION CHANNELS	FREQUENCY (n=45)	PERCENTAGE %
Seminar (lecture and hands-on)	25	55.6
Lecture seminar	16	35.6
BSU on the air	16	35.6
Techno demo	13	28.9
IEC	9	20
Farm visit	5	11.1
Training	4	8.9
Exhibit	3	6.7
Open forum	3	6.7

*Multiple responses

Perceived communication methods used. Table 6 shows the communication channels used by BSU Research and Extension in the dissemination of agriculture technologies



including matured technologies as perceived by the beneficiariesrespondents. A great majority (55.6%) identified that agriculture technologies were disseminated to them through seminar (lecture with hands-on). Sixteen respondents (35.6%) for each also conclude that these agriculture technologies were disseminated to them by way of pure lecture and through radio. Only three respondents (6.7%) of each on the other hand claimed that these technologies were disseminated to them through exhibit and open forum.

Communication methods preferred by the beneficiaries-respondents. Table 7 shows the ranked communication methods (channels) preferred by the beneficiariesrespondents. A great majority (62.2 %) prefer techno-demo on farm strategy to be used by the technology disseminators. They have the common reason which is for the farmers

Table 7. Communication methods preferred by the beneficiaries-respondents

COMMUNICATION CHANNELS	FREQUENCY (n=45)	PERCENTAGE %
Techno-demo-on farm/station	28	62.2
Farm visit	18	40
Seminar/training seminar (lecture with hands-on)	13	28.9
Lecture seminar	10	22.2
Group discussion	8	17.8



IEC	6	13.3
Open forum	3	6.7
Radio	2	4.4
TV	1	2.2
Exhibit	1	2.2

*Maximum of 3 choices

to see in actual the technologies which is being disseminated to them. As it was mentioned by one respondent out of these 62.2%, —to see is to believe attitude of the farmers (beneficiaries) came to be the basis for them to accept or adopt.

This preferred method was supported by the statement of one of the respondents in the study of Velasco (2012) that —the good thing in there is that we are at the field and so we see what the expert is talking about. Another respondent of Velasco’s study stated that there are many instances after the lecture that they will go out to the fields and prove whatever they learned from the lecture.

Farm visit was the second preference as it was identified by eighteen respondents (40%) with the reason that these agriculture technologies including matured technologies will be determined if it is applicable in that specific area. Also, some prefer this strategy to create close support relationship within the farmers and the experts.

Furthermore, seminar (lecture and hands-on) was ranked as third preference by thirteen respondents (28.9%). They emphasized that lecture with on-hands training will enhance the dissemination activities for the beneficiaries to acquire knowledge effectively. They



further explained that lecture or hands-on training alone will be less effective compared if the two would be mutually done. Only one respondent (2.2%) for each preferred the use of television and by way of exhibit.

The finding revealed that the most communication channel preferred by the respondents was ranked accordingly: interpersonal, print, and media.

Perceived Problems Encountered in the Dissemination Process

Perceived Problems within the Beneficiaries by the Beneficiaries-respondents

Table 8 shows the problems within the beneficiaries and the BSU Research and Extension in the dissemination process according to the beneficiaries-respondents.

Problems were discussed based on the categories of the problems identified as narrated by the beneficiaries-respondents.

Personal behavior. It came out that the lack of interest was the most observable undesirable attitude of some of the beneficiaries particularly during lecture seminar and hands-on seminar among others as it was identified by thirty two respondents (71.1%).

All of the thirty two respondents (71.1%) explained that during seminar, some of the participants are telling story to their seatmate, while others are noisy and sleeping. One out



of the 71.1% respondents also explained that some participants will go to comfort room and takes an hour for him/her to come back.

One out of the 71.1% respondents also claimed that other participants join the dissemination session just for food the fact that they go home half-day despite that the dissemination session is scheduled for whole day.

These common attitudes however might be normal but it has really a big effect to the dissemination of these technologies.

As stated by Bucu (1989), receiving mechanisms will be ineffective if farmers are not organized.

In the case of the Organic Farmers in Barangay Balili wherein they are required to join such training seminar, three out of the 71.1% respondents pointed out that some only join the training seminar for compliance.

Moreover, five respondents (11.1%) conclude that other beneficiaries are ashamed and have no courage to raise up their questions. According to them, some tend to ask her/his seatmate to ask his/her questions.

Two respondents (4.4%) on the other hand claimed that some beneficiaries choose to be busy in the field rather than to attend such dissemination session of these agricultural technologies.

On the part of the IEC materials, one of the respondents (2.2%) claimed that some beneficiaries are not taking the advantage to learn from the printed materials thus they put



it in their pocket folded and just throw it away. According to him, he often observes this behavior during and after seminars.

Attitude. Thirteen respondents (28.9%) on the other hand conclude that some beneficiaries' doubt on the technology being discuss by the experts particularly during seminars and lectures. This response however is only assumption by the respondents saying that some of their co-participants give arguments criticizing the said technology.

One respondent out of this 28.9% further stated that the —to see is to believe attitude is always been a basis for the farmers to believe or adapt the technology.

Moreover, one respondent (2.2%) also conclude that it is true that many farmers are really listening in radio specifically the BSU on the air program but it seems that they don't believe because they don't apply it and to him, the information is being wasted nor it is useless.

Same cases were observed by two of the respondents (4.4%) during the technodemo on farm method wherein some of the beneficiaries have early negative assumption as they doubt on the technology being disseminated even they see it in actual demonstration by the experts.

This finding partially corroborates to the study of Bucu (1989) that one commonly felt reason by most of the respondents was the clientele —wait and see attitude. This very attitude makes the clientele passive and uncooperative and hence, makes way for their (farmers) being difficult to organize. Since they are not willing to accept new ideas at face value, it becomes very difficult to make them participate.



Eleven of the respondents (24.4%) on the other hand claimed that some beneficiaries are intentionally ignoring such dissemination session even they are available.

Level of knowledge/literacy. On the part of the IEC materials as one way of disseminating such technologies, six respondents (13.3%) claimed that farmers who are illiterate can't acquire knowledge from the printed materials.

For the BSU on the air program, one of the respondents (2.2%) claimed that beneficiaries can hardly understand the technologies which are being aired in radio especially if they have no background on that certain technology being discussed.

Other concerns that were determined by two respondents (4.4) include the varied suggestions from the farmers due to misunderstanding on the views of the topic while others give comments which are not related, and there are many ideas from the Table 8. Problems within the beneficiaries and the BSU Research and Extension in the dissemination process as perceived by the beneficiaries-respondents

IDENTIFIED PROBLEMS	FREQUENCY (n=45)	PERCENTAGE %
Problems within the beneficiaries		

Personal behavior



i. lack of interest (sleeping, talkative, noisy, telling story, lack of discipline, to avail food, poor participation during discussion, for compliance sake)	32	71.1
ii. some will just throw it away	1	2.2
iii. some farmers choose to work than to attend dissemination of technologies (busy in the field)	2	4.4
iv. lack of confidence to ask questions/ashamed	5	11.1
Attitude		
i. to see is to believe attitude/doubting	13	28.9
ii. ignore dissemination session of technologies	11	24.4
Level of knowledge/literacy		
i. farmers who are illiterate can't acquire knowledge from the printed materials	6	13.3
ii. some beneficiaries can hardly understand the technology because they have no background	1	2.2
iii. varied remarks from other participants due to misunderstanding of the topic/giving comments not related to the topic/repetition of discussion	2	4.4
Time management		
late (not time conscious)	8	17.8
Other		
unavailability of radio	5	11.1

Table 8. Continued...

Problems within the technology disseminators
(BSU Research and Extension)

Pre



Lack of needs assessment	27	60
Poor notification	2	4.4
<hr/>		
During		
<hr/>		
Problems within the resource speaker/s		
i. too much formality/boring/technical term	4	8.9
ii. not suitable speaker/not approachable	1	2.2
iii. can't answer participants question		
iv. they don't start on time	1	2.2
v. basic	1	2.2
	1	2.2
Problems on the Print (IEC materials)		
i. lack of IEC materials	9	20
ii. technicality of words (not explained in layman's term)	6	13.3
iii. contain outline only (incomplete procedure)	1	2.2
Lack of materials and supplies	1	2.2
Problems in time (BSU on the air)		
i. limited time	12	26.7
ii. too much greetings	1	2.2
Lack of technical assistance	7	15.6
<hr/>		
Post		
<hr/>		
Poor follow-up support in the farmers farm (support services)	22	48.9
	6	13.3
Discontinuance of dissemination activities		
Problems within the technology being disseminated		
i. costly (lack of capital)	8	17.8

Table 8. Continued...



ii. not applicable in field conditions)	10	22.2
<hr/>		
Other		
<hr/>		
Less priority	1	2.2
<hr/>		
*Multiple responses		

beneficiaries which also sometimes make the topic more complicated during dissemination session particularly for seminars.

One out of these two respondents explained that in the case of uneducated participants, resource speaker must repeatedly simplifying the information which somewhat time consuming on some of the beneficiaries.

Time management. Eight of the respondents (17.8%) noted that during dissemination session particularly for seminar, there are no instances that there are some who will be coming late.

Other. Five respondents (11.1%) claimed that some famers don't take interest to buy radio even they can afford.

Problems to the BSU Research and Extension as Perceived by the Beneficiary-respondents

Problems were discussed based on the categories of the problems as narrated by the beneficiaries-respondents.

Lack of needs assessment. Twenty seven respondents (60%) claimed that there's no needs assessment being done by the BSU Research and Extension.



Poor notification. Two respondents (4.4%) claimed that sometimes BSU

Research and Extension don't early notify the farmers' organization which is commonly for seminar, lecture, and meetings.

Problems within the resource speaker/lecturer. Four respondents (8.9%) agreed that some resource speakers or disseminators are boring that affect the dissemination process. They further explained that there is too much formality by the speaker.

Sometimes there are also speaker who doesn't suit for lecturing and speaks tagalong or English language according to one of the respondents (2.2%). One respondent (2.2%) also claimed that he encounter such dissemination session wherein the expert/s can't answer some of the questions of the participants.

One respondent (2.2%) also commented on the some of the resource speaker/lecturer or expert that start his/her lecture from the basic which according to him, it somewhat consume time.

Though, finding of this study shows that majority of the respondents agreed that resource speakers or lecturers from the university are good on how they disseminate information concerning agriculture technologies.

Lack and technicality of IEC materials. Nine respondents (20%) claimed that there are no enough IEC materials that are being distributed to the farmers even during some of the seminars they attended. Sometimes, there was also scarcity of IEC materials being distributed during seminars and lectures.



On the side of the Organic Farmers, three respondents out of the 20% conclude that complete organic hand outs were not given to them.

This corroborates to the statement of Jamias (1967) as cited by Bengwayan that —information on agricultural innovations is lacking in the Philippines. Reading sources are obtained predominantly from personal sources (extension workers, agricultural dealers, laborers and landlords) and to a more limited extent, institutional or extension channels.¶

It is further supported by the study of Velasco (2012) that limitation or scarcity of printed materials was a problem within the technology disseminators.

Moreover, six respondents (13.3%) commented that IEC materials particularly leaflets among others are being packaged or presented technically. They said that it is hard to understand because it was not simplified in layman's term.

This finding corroborates to the study of Velasco (2012) that farmers in Tublay Benguet are having a hard time in comprehending the contents of hands outs given to them because of the level of English used.

One respondent (2.2%) also claimed that they present the printed materials with outline only containing incomplete presentation of procedure of certain technology.

Lack of materials and supplies. One respondent (2.2%) claimed that BSU

Research and Extension don't give free ball pen and paper for the participants to take note during seminars (lecture).



Limited time. On the part of the BSU on the air program, there were twelve respondents (26.7%) of the respondents agreed that the time is very limited. One of the respondents (2.2%) also commented on the anchor that his greetings consume too much time.

Lack of technical assistance. Seven respondents (15.6%) claimed that they haven't avail technical assistance from the BSU technology experts. With respect to this study, the problem in technical assistance is moderately fair because of the accessibility of the municipality from the institution compared to other municipalities and provinces.

Poor follow-up support. Twenty two respondents (48.9%) claimed that BSU Research and Extension were lacking of follow-up support. Fifteen respondents out of these (48.9%) from the farmers in Swamp area claimed that extensionists/researchers will go to the field but not take time to visit the whole field. They only visit a part of the area and they will just follow you in farms unless you request.

On the side of the Organic Farmers in Balili, seven respondents out of the 48.9% claimed that inspections being done in their field are only for rules and regulation not to see the improvement of crops/vegetables or to see the results of technology being applied by the farmers that they disseminated.

Discontinuance of dissemination activities. Six respondents (13.3%) agreed that there's no continuance of dissemination activities being done by BSU Research and Extension.

Problems within the agriculture technology which are being disseminated that include matured technology. Eleven respondents (24.4%) conclude that agricultural technologies being disseminated don't solve their problems in their farms or the technologies are not applicable in their field condition. Five respondents out of the 24.4% from the swamp area



claimed that some technologies are not applicable to their farm/area letting them to rely on their traditional practices.

One respondent out of the 24.4% from Timoy, La Trinidad commented on the price of the tissue culture product of BSU which is being promoted that is expensive than the tissue culture product from the Department of Agriculture.

These some factors within the agricultural technologies which are being disseminated identified by the respondents are supported by Elliot's (1984) statement as cited by Bengwayan (1987) that —the reasons influencing the adoption of an indigenous technology from one culture to another is dependent on the technology's acceptability, it's being harmless, and its fitting to the hands, minds and lives of the people who will make use of it.¶

It is further supported by the implication of Elliot (1984) as cited by Bengwayan (1987) that —for a technology to be adopted, it must be effective and certified to work.¶

It is also important to internalize that these statements somewhat relate to what matured technology is as defined by the BSU Agricultural Researchers.

Furthermore, six respondents out of the 24.4% from the Organic Growers in Balili claimed that the major problems in the technologies that they applied include the limitation of resources and capital. One out of this 24.4% also claimed that organic products are not that in-demand in the market and he claimed that production of needed organic chemical cost them so much. In fact in his case, he even said that you can't survive if you have no other jobs besides of planting organic vegetables.



This finding corroborates to the finding of Baucas (2002) that problems with product/output include the following: lack of appropriate and affordable inputs necessary for the adoption of new technologies; lack of appropriate research results (Arnon, 1989) as cited by Baucas (2002); limited market outlet; low income derived from the technology; low price of the product; great dependence on other inputs and seasonal conditions; and inadequate raw materials.

Less prioritization. One respondent (2.2%) claimed that some technologies are being disseminated to the farther places without disseminating to the most nearer locality particularly the town of La Trinidad.

Hence, the discussed problems within the BSU Research and Extension as identified by the beneficiaries-respondents mostly agree to what Bengwayan (1987) stated in his study that there are numerous recommended technologies which have been proven by researchers in agricultural colleges and research institutions in the region, but these are not made available to the end-users, because of inappropriate extension and communication strategies, uncommitted agency-workers and inadequate financial and technical assistance for field workers who are in constant with most famers.

Problems Encountered by the BSU Research and Extension in the Dissemination of Matured Technologies

Problems encountered by the Extension Services Office. According to the Office of the Extension Services personnel, the problems or challenges encountered by the office in disseminating matured technologies include the lack of fund to be used in the dissemination, unavailability of resource speakers needed to discuss or lecture their



research mostly during seminars being conducted and for the program BSU on the air, logistics wherein staff use their own money, and BSU extension activities not properly coordinated.

Problems encountered by the BSU researchers. The following were some of the problems encountered by the BSU Agriculture Researchers in the dissemination of Matured Technologies as identified by the ten BSU researcher-respondents. It was discussed according to the communication methods used.

Lack of funds/budget. Majority of the researcher-respondents agree that there is a lack of fund to be used in the dissemination that even the production of IEC materials is limited due to lack of funds.

One of the respondents admits that there is reluctance among the researchers to ask support from higher office of university.

Finding of Bucu (1989) further agree that scarcity of other resources like budget and facilities such as hardware equipment and other amenities necessary for speedy and timely operation and implementation of communication projects were likewise commonly experienced as constraints.

Poor management support. One of the respondents' claimed that besides of the inadequate financial support, poor management is also a constraint for disseminating such technologies. He added that funding is a problem as activity is usually done by the institute or research center.



Time conflict. One of the respondents noted that time is conflict with other partner agencies during dissemination process and limited time due to lack of funds.

Limited manpower. One of the respondent noted that there is no proper collaboration of the resource speaker, coordinator, and organizer. Resource speakers needed are oftentimes busy or not available. Resources to organize such dissemination activities are minimal.

Lack of support from LGU and other cooperating agencies. One of the respondents emphasized that researchers do not get sufficient support from agency partners in term of implementation/dissemination of technologies. She added that there is also weak participation of the partner agencies during the dissemination, monitoring and evaluation of the technologies which include matured technologies.

According to Bucu (1989), collaborative projects with other agencies for institutions should be covered with a formal memorandum of agreement. The agreement should clearly spell out the sharing of resources, the complementation of expertise of personnel, each roles, functions, responsibilities and accountabilities.

Series of consultations, policy sessions and workshop should be the feature of the memo. If need be, functional committees should be organized at various levels in the organization.

One respondent further noted that the impartiality of LGU is also a constraint in disseminating such technologies.

Venue. One of the respondents noted that most of the demo-farms are not in strategic places enabling other farmer's not to observe such dissemination session. One respondent further



added that some techno-demo farm is too far. One respondent on the other hand also noted that some technologies are not appropriate under local conditions.

In the case of La Trinidad, it is understandable that demo-farm is in strategic place more so because the institution is within the municipality.

Identified problems within the BSU Research and Extension corroborates to the study of Baucas (2002), that some problems associated with the implementing units

(sometimes referred to as the delivering system) include the following as cited by Baucas (2002): limited manpower, facilities and budgetary resources (PCARRD, 1997); inadequate data base for agricultural commodities; inadequate public information, education and communication campaign on new technologies; lack of easily

understandable translation of highly technical research outputs; inadequate skills training and facilities (National Agenda for Productivity, 1996); limited role of farmers in developing research agenda (Narayan-Parker, 1991); deficient linkages between research and extension and agricultural researches conducted in isolation from the needs of the farmers (Arnon, 1989).

Perceived Problems within the Beneficiaries by the BSU Research and Extension

The following were the problems within the beneficiaries/end-users and it was not limited only to the Municipality of La Trinidad during the dissemination process according to the Extension Services Office and BSU Agriculture researcher-respondents.



Almost all of the respondents agreed that beneficiaries practice Filipino time wherein they came late particularly in seminar for example. Majority of them also agree that beneficiaries have lack of time, poor attendance, poor cooperation, and beneficiaries are oftentimes or not always busy in the field.

Major concern which was mentioned by almost all of the researcher-respondents was that the unwillingness or the lack of interest for the beneficiaries to learn and adopt which is being recommended.

Kudan, further stated that some of the beneficiaries or farmers do not believe the worth of the technology being disseminated. He said that they don't have the courage to try even at once the technology to see the difference. He testifies with his experience that he even got higher profit with organic farming which he mentioned that it is one of the matured technologies existing or developed in the university.

He also added that they do not have initiative to visit the offices which can provide them technical assistance if needed. He then explained that those farmers who take initiative to seek technical assistance from the expert are those who gain more income.

He also commented on the misinterpretation of the farmers on the non-financial technical assistance wherein they brought up their problems to the office concerning their problem in transportation among others which is not absolutely related to their information needs.

Fagyan, also pointed out his observation that husband send their wives in the dissemination session. He said that the husband should be the one to attend for they are the one who mostly work in the farm.



He added that confirmed attendance will likely be less than during the dissemination proper and farmers has many reason not to attend such dissemination session.

Gayao also emphasized that there are seldom beneficiaries who take initiative to avail IEC materials from the different centers/institutes. One more concern she was mentioned is that they don't know if the beneficiaries are really reading the printed materials being distributed.

Suggestions for the Improvement of the Dissemination Process

Suggestions from the Beneficiaries to their Co-beneficiaries

Table 9 shows the suggestions to the problems within the beneficiaries and BSU Research and Extension for the improvement of the dissemination process according to the beneficiaries-respondents.

Personal behavior. There were some noted suggestions that fall under personal behavior as discussed below.

Be interested/willingness to participate. Thirty six of the respondents (80%) suggested that beneficiaries must take interest and be sincere to learn technologies which are being disseminated for the reason that it somehow helps them to improve their practices. In doing such, nine respondents out of the 80% suggested that they should participate and listen eagerly during the dissemination session particularly during seminars or lecture. They



emphasized that having self-discipline also contribute to the success of the information being disseminated.

In the case of the Organic Farmers in Barangay Balili, one respondent out of the 80% suggested that members of the organization must be those interested to plant organic which is a matured technology. Still on the part of Organic Farmers, three respondents out of the 80% suggested that they must not get absent and show interest to learn not just for compliance sake.

Nine respondents out of these 80% on the other hand agree that beneficiaries must fully participate during actual demonstration (techno-demo method) to fully understand the procedure.

Moreover, five respondents (11.1%) agreed that beneficiaries should take courage to raise up their questions for them to understand and that it may be answered by the experts.

On the part of radio, six respondents (13.3%) suggested that beneficiaries must take advantage the nature of radio which is affordable and provides free information. Three respondents out of these 13.3% suggested that beneficiaries must take interest to listen on the technologies being discussed in the program to help their farm practices.

One respondent out of these 13.3% also emphasized that beneficiaries must grab the opportunity to avail information as it doesn't disturb you in your work hence it give a good habit while doing something.

This result is corroborated by the finding of Perret (1976) as cited by Bucu (1989) pointing out that aside from circumventing geographic, climatic and even human barriers, radio can multiply the effects of any development field extension worker in the area. Moreover, it is



an effective communication carrier because of its accessibility, credibility, availability and ability to provide timely information.

On the part of the printed materials, one respondent (2.2%) also suggested then that beneficiaries must have the initiative to look the meaning of the technical terms in the dictionary as he emphasized that you must also help yourself in order to learn.

Hence, fifteen respondents (33.3%) also pointed out that beneficiaries shouldn't ignore such dissemination of technologies. The emphasized that busyness in the field must not be the reason for you to gain knowledge about technologies designed for the improvement of farming practices.

Let the experts answer the questions of co-participants. In cases of seminars, one of the respondents (2.2%) on the other hand suggested that let the experts be the one to answer such questions from the beneficiaries not the co-beneficiaries even they already know the answer considering its credibility. This respondent claimed that even he already know the answer, he should let the experts to be the one to answer as a respect.

Attitude. In terms of their attitude, several suggestions were also noted.

Do not doubt on the technology without trying. Sixteen respondents (35.6%) suggested that beneficiaries must not negatively criticize the technology without applying or trying it first. Two respondents out of this 35.6% agreed that these technologies are being developed to help farmers not that perfect solution but it however helps at some point.

Level of knowledge/literacy. In terms of their level of knowledge to the technology, the following was suggested.



Seek assistance to your fellow beneficiaries. Four respondents (8.9%) encouraged beneficiaries to seek assistance to their co-farmers who are more literate and knowledgeable concerning the content of IEC materials which include leaflets, brochures among others.

This finding corroborates the study of Velasco (2012) that some farmers would let others or the experts to explain it for them.

Time management. Seven (15.6%) of the respondents suggested that beneficiaries-participants during seminar and other dissemination session should be time conscious emphasizing that all participants are generally busy. Thus, one of the respondents noted that being on time shows the willingness of that certain person to learn.

Avail radio. Furthermore, five respondents (11.1%) also encouraged beneficiaries to avail radio with their common reason that you can really learn such technologies which are being introduced only if you only sincere to listen and if you are interested to learn.

Table 9. Perceived suggestions to the beneficiaries and to the BSU Research and Extension for the improvement of the dissemination process by the beneficiariesrespondents

SUGGESTIONS	FREQUENCY (n=45)	PERCENTAGE %
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Suggestions to the beneficiaries

Personal behavior

Be interested/willingness

i. be interested to learn the new technologies (participate in the discussion/techno-demo and hands-on, listen eagerly, don't attend just for compliance sake)	36	80
ii. have the courage to raise up your questions or comments	5	11.1
iii. take advantage the nature of radio (take interest to listen on the technologies being aired to help your farm practices)	6	13.3
iv. have an initiative to look in the dictionary of the technical terms	1	2.2
v. Don't ignore such dissemination session of matured technologies	15	33.3
Let the experts answer the questions of your participants even you already know the answer	co- 1	2.2

Attitude

Make sure that you applied first the technology before you doubt	16	35.6
Level of knowledge/literacy		
Seek assistance to your co-farmers concerning the content of IEC materials	4	8.9

Time management

Do not be late/attend the whole dissemination session	7	15.6
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Other



Table 9. Continued...

Avail radio	5	11.1
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*Multiple responses

Suggestions to the BSU Research and Extension
By the Beneficiary-respondents

Suggestions to the BSU Research and Extension by the beneficiary-respondents was shown in Table 10.

Conduct needs assessment. Twenty-four respondents (53.3%) suggested that there should be needs assessment to be conducted by the BSU Research and Extension to identify the technology needed by the farmers to recommend such technologies applicable and needed by the specific beneficiaries.

One respondent out of the 53.3% explained that extension workers must go out to the field/farm visit for needs assessment. According to him, the work of an extensionists should as follows a.) Extensionists will go out to the farmers field to check plant disease for example, b.) schedule possible dates for the farmer to go and see the results c.) go back to office and refer to the experts or examine studies that could be related to the problem then let it be disseminated.

This finding exactly corroborate to the study of Bucu (1989) that they felt that they should be consulted and be made to participate in communication planning. Some respondents mentioned their active participation in the implementation of a particular project on technology dissemination and utilization. But their participation accordingly could be more meaningful with prior consultation. This response was corroborated by the finding of



Parker (1977) as cited by Bucu (1989) who pointed out that without communication, development efforts cannot be sufficiently responsive to local needs and conditions.

It is also corroborated by Schramm (1964) as cited by Bucu (1989) who stressed that information must not only flow to the clientele who must be informed, persuaded and educated as well but also from them. According to Flores (1978) as cited by Bucu the people must participate if not directly at least by feeding back to the development workers their thoughts, their own feelings, their felt needs, and their anxieties as well as their aspirations.

This finding was further supported by Rosario-Braid (1983) stating that a communication strategy should be judged by its ability to feel the pulse of the people, to distinguish —needs‖ from —wants‖ and to effectively communicate these needs to policy makers. When more mechanisms for frequent dialogue between planners at the central level and the masses exist, and when the needs and problems of the people become the primary focus of change, that is when it can be said that the strategy is user-oriented.

One respondent (2.2%) also suggested that extension units must notify the farmer's organization as early as possible when conducting seminar, lecture, and meetings among others for the participants to prepare.

Suggestions to the resource speaker/lecturer (techno-demo, seminar lecture with hands-on, training). Four respondents (8.9%) suggested that resource speaker must train their self to speak in Ilocano which is the common language in the Municipality of La Trinidad. Finding of the study however shows no problem on the medium being use by the resource speaker form the university as perceived by majority of the respondents.



Respondent even appreciate the language being use in the BSU on the air program.
 Table 10. Suggestions to the BSU Research and Extension office

SUGGESTIONS	FREQUENCY (n=45)	PERCENTAGE %
Pre		
Conduction of needs assessment	24	53.3
Early notification (seminar, lecture etc.)	1	2.2
During		
Resource speaker for seminar etc.:		
i. speakers must speak in Ilocano	4	8.9
ii. he/she must be knowledgeable in theories and application	2	4.4
iii. he/she must be approachable	1	2.2
iv. must be prepared to explained the certain matter in layman's term	1	2.2
v. avoid too much formality/choose suitable speaker	1	2.2
vi. be direct in lecturing	1	2.2
vii. start on time	1	2.2
Distribution of IEC materials (print)		
	9	20
i. explained in layman's term, printed in Ilocano or Tagalog	7	15.6
ii. there should be IEC materials to be distributed to the farmers for further learning of the technologies		
iii. content must not be outline only but it should contain complete description	1	2.2
iv. needs assessment for IEC materials	1	2.2
Time (BSU on the air)		
i. it should be at least one (1) hour	10	22.2
ii. it should be aired in the afternoon	iii. 3	6.7
it should be 45 minutes	1	2.2
iv. avoid too much greetings	1	2.2



Provide Materials and Supplies (seminar etc.)	1	2.2
Prioritized interested beneficiaries	1	2.2
Table 10. Continued ...		
Technical assistance in the farmers' field	8	17.8
Post		
There should be a support services from the experts to see if the certain technology is applicable in that specific area	17	37.8
Continuance of dissemination activities	5	11.1
Inspection should not only for rules and regulations	3	6.7
Others		
Recommend need and applicable technologies	11	24.4
Dissemination must always be equal for lecture and hands-on	4	8.9
Separate seminar for the literate and the illiterate	1	2.2
Prioritize the municipal capital in disseminating technologies	1	2.2

*Multiple responses

Two respondents (4.4%) added that speakers must be knowledgeable not only in theories but it should also have firsthand experience in application.

Furthermore, one respondent (2.2%) suggested that resource speaker must be prepared to explain the certain matter in layman's term. Another respondent (2.2%) suggested that speakers must avoid too much formality hence he/she must include jokes to energize the audience.



This finding partially make connection to the study of Bengwayan (1987) that technicians should therefore improve their relationships and communication skills so they will be approached more freely by farmers in the verification of farm information. No less than Consolacion (1974) said as cited by Bengwayan (1987) that —technicians should be provided not only with proper technical skills but with communication skills as well as to be able to appropriately relate to farmers their information needs.¶

One respondent (2.2%) on the other hand suggested that expert must not look the farmers as no knowledge at all because farmers has a lot of experiences thus he must be direct in lecturing. He further elaborated that the basic application must be assumed that the farmers are already exposed and considering that the country is behind when it comes to technologies.

On the part of the organizer, a respondent (2.2%) suggested that they must tell that the dissemination session will be starting in 7:00 though it will really start on 8:00 considering the Filipino time habit of the beneficiaries. Hence, he further suggested that resource speaker must not tolerate the late participants for them to be disciplined.

Suggestions to the IEC materials (print). Nine respondents (20%) suggested that printed materials should be explained in layman's term and printed in Ilocano or Tagalog while seven respondents (15.6%) suggested that printed materials should be distributed to the farmers for further learning of the recommended technologies.

This finding corroborates the study of Velasco (2012) to the suggestions of the Palay Farmers in Tublay that printed materials are better if it is translated into Ilocano and that each of the farmers be given copies of the materials.



A respondent (2.2%) also suggested that printed materials should be in the form of manual or brochures to provide complete data. It should also contain sufficient information when presenting certain procedure.

One significant finding of this study also concerning IEC materials was explained by the suggestion of one of the respondents (2.2%) that disseminators must facilitate or conduct needs assessment concerning the medium to be used in those printed materials which is preferred by the farmers.

This finding supports the finding of Bengwayan stating that another reason identified by the respondents was highly technical information which was very evident in many print sources. Librero A. (1980) as cited by Bengwayan (1987) said that the

—failure to communicate to farmers in layman's language the results of researchers has a lot of bearing in the transfer of technology.‡

She added that —most technologies being transferred are worded in technical terms that if these are not transferred into simple form of literature, they will be useless to most farmers.‡

Addition of time on the BSU on the air program. Ten respondents (22.2%)

suggested that it is more effective if the program will have a time slot of at least one hour.

Two respondents (4.4%) also suggested that it is better if it will be aired in the afternoon.

They explained that farmers rest time is commonly during afternoon.

This identified suggestion corroborates to the study of Bengwayan (1987) that repetition and delicate elaboration of information needs must be guaranteed continuity to attain an



effective impact. Radio broadcasts on agrotechnology transfer which are short lived are not expected to instill learning to listeners.

However, one respondent (2.2%) commented on the anchor that his greetings consume too much time. This respondent suggested then that he must not use the time slot just for greetings to the specifically for birthday celebrators hence she said that it is not bad but he must do it in once in for all. All of the topics however are significant and helpful according to the respondents and the language being use by the anchor can be understood.

Provide materials and supplies. A respondent (2.2%) also suggested that they should give ball pen and paper to the participants for them to take note if they will not be distributing handouts or any printed materials during dissemination session for seminar, lecture among others.

Prioritization. A respondent (2.2%) suggested that they must prioritize interested participants when using the techno-demo on farm method of disseminating agriculture technologies.

Technical assistance in the farmers' field. Eight respondents (17.8%) suggested that experts must have time to share their knowledge in the farmer's field. These respondents claimed that their field is accessible enough by the experts which don't need to cost them.

This finding significantly implies that technical assistance of BSU Research and Extension is still poor despite the fact that the Municipality of La Trinidad is accessible.



Thus, this finding was supported by the study of Bengwayan (1987) that —commitment and dedication, service-oriented and friendliness, respectfulness and courtesy were ingredients of a good farm news communicator as it was identified by Agricultural researchers.

Provide support services. Seventeen respondents (37.8%) identified that dissemination must not be done in a single way. One respondent out of this 37.8% stated that what's normally happen is just like only business because they don't do follow up services in the farms to at least observe if farmers are learning. This finding of the study shows that follow up support services from the extensionists or researchers are poor. Respondents claimed that this would not be difficult job for the BSU disseminators or extensionists of agricultural technologies because the Municipality of La Trinidad is accessible.

One respondent out of this 37.8% agreed that there must be a support services from the experts until that technology will be developed in that farmers field/farm. They must assess the farmer's field that they may see the real impact of the recommended technology if its applicable not just they insist in recommending but it's not applicable.

Thus, it will be proven if it's applicable in that certain area.

On the side of the farmers in the swamp area, two respondents out of the 37.8% suggested that extensionists/researchers should go to the field and take time to visit the whole field if possible to at least observe the condition of the plants.

Continuance of dissemination activities. Five respondents (11.1%) agreed that there should be a continuance of dissemination activities being done for the farmers to understand the benefit of the technology being disseminated.



Inspection should not only for rules and regulations. On the side of the Organic

Farmers in Balili, three respondents (6.7%) suggested that inspections being done by the BSU Research and Extension should not be done only for rules and regulation but to see the applicability of the technologies or to see the results of technology being applied by the farmers.

Recommend need and applicable technologies. Eleven respondents (24.4%) of the respondents agree that needs assessment is really a need to recommend applicable technologies to the farmers. One of the respondents out of this 24.4% explained that he however tried some of the technologies but it seems that it doesn't applicable. According to him, experts on the other will just opt to say that they didn't follow the complete procedure. Thus they suggest that these technologies fully developed before recommending or disseminating.

This finding of the study implies the relevance of matured technology to be disseminated as supported by the statement of Prof. Basalong (2013) that BSU researches must take the consideration to do research according to the needs of the farmers not just to research further researches that doesn't cater the problems of the farmers.

The finding corroborates a finding of Sajise (1980) as cited by Bengwayan (1987) that —effective transfer of technology requires a good Lock's key fit.¶ This means that a systematic process is needed for classifying the target clientele, as well as their biophysical exponent, which will result to the identification of an adaptable technology scheme. In other words, there's should be a patterned relationship between the user and the technology transferred on the matter of what technology should be transferred. Moreover, the farmer



or user should have a say on what technology should be introduced to him in consideration of his physical and natural environment.

It further agrees to what Bengwayan (1987) said in his study that there's a need for technology generators to look deeper into the reasons for some farmers still using indigenous technology despite the recommended technologies. He further stated that probably, the indigenous technology is a good supplement to the recommended technologies; in which case, it should be preserved and strengthened not discarded.

Dissemination must be always equal lecture and hand-on approach. Four respondents (8.9%) suggest that dissemination must always be done with equal lecture and hands-on training.

For the lecture, it was supported by the study of Velasco (2012) that there is really a need for lectures because it was there that participants learned the basics, and anyway the lectures were short.

Results of Velasco's (2012) study also support this finding as it was stated by one farmer that the knowledge she acquired from the lecture and the group workshop expanded when they presented their outputs to their co-farmers in a way that they were able to have an exchange regarding their experiences during the monitoring period such as what are their strategies on how to identify insects.

There must be separate seminar between literate and illiterate. One of the respondents (2.2%) suggested that there should be separate seminar or training within the literate and illiterate. According to him, level of education somewhat affect the effectiveness of



dissemination while he further explained that illiterate farmers are not being prioritize during discussion.

Prioritize the municipal capital in disseminating technologies. A respondent claimed that there are technologies being disseminated in farther places while in fact according to her, it's their priority or rather she suggests that it is better for them to developed first in the locality where they are.

Suggestions by the BSU
Agricultural Researcher-Respondents

Suggestions by the Researcher- respondents to
the Research and Extension Office

Participatory communication strategy. Introduce more participatory approaches instead of implementing a new strategy. Find a quick and more effective way to commercialize the technology. There is a need for more efficient ways or reaching more farmers/potential adaptors. In doing so, it was suggested by one of the respondent that extension activities of the university should be coordinated by the office of Extension Services Office.

One of the respondents noted that matured technologies have to be disseminated by way of demo, direct in the field and invite the farmers to view the result while another respondent added that information dissemination of technologies must be directed to the right group recipients. One respondent also suggested that there should be an establishment of demonstration farms in strategic places.



This finding accurately corroborates the study of Bengwayan (1987) and Bucu (1989) that demo farm satisfies the —kita ko, pati koll attitude of farmers. Thus, actual demonstrations on farms provide more sufficient information to the farmers.

Bucu (1989) further stated that interpersonal communication is extremely useful especially when messages are difficult and the purposes are important. As a medium, it allows maximum feedback that enables development workers to improve and become more effective.

One respondent suggested also that there should be a refinement of IEC materials and the publication of IEC materials in vernacular languages so that it would be understood by the farmers. Simple presentations are also recommended so that it can be easily understood by the farmers. It should be presented in forms that will catch the interest of the farmers. Beneficiaries should be given reading materials but more in pictures because they don't have much time to read.

Hence Bucu (1989) pointed out that pictures, charts, graphs, brochures and other printed materials can illustrate and supplement the technicians' tasks. These can help create a condition of receptivity for an innovation. According to Cuyno et al. (1975) as cited by Bucu (1989), instructional technologies make teaching more effective.

One of the respondent also suggested that information dissemination should be supported with the sustained availability and affordability of the technology.

On the part of the Extension Services Office which has a big role in disseminating matured technology, it was suggested by one of the respondents that dissemination must be more on exchange field visits. One respondent added that there should also be additional time



slot in the BSU on the air program to fully communicate the technologies effectively. Another respondent further suggested that program of Extension Services Office should be based on existing research activities in the university because there are several technologies that could be piloted, demonstrated, and advertised.

Still, on the part of Extension Office, it was suggested by one of the respondent that existing IEC materials must be updated and there should be more additional of IEC materials.

One significant suggestion on the other hand revealed that BSU Research and Extension should own a radio station and printing press. A program in television is also high recommended if possible the fact that farmers are dependent in mass media.

Proper coordination. One of the respondents noted that notification of beneficiaries for such dissemination session must be coordinated with the Municipal

Agricultural Office. He further elaborated that activities should be coordinated with the Municipal Agriculture Office (MAO), Barangay or Local Government Unit or LGU and these agencies should always be informed about activities in their respective areas.

Another respondent support this statement wherein he explained that BSU Research and Extension must strengthen the involvement of other agencies like NGOs to disseminate agricultural technologies. He added that this will result in better relationships with farmers to have more efficient and effective use of resources and benefits from farmer's insights and observations.

On the part of the Extension Office, it was suggested by the respondents that there should be more improvement on their coordination. One of the respondents emphasized that



extensionist should fully coordinate to the researcher. She further explained that Extensionist should come, coordinate and encouraged the researchers.

This respondent added that extensionist from the Extension office should have the vital role to disseminate matured technologies because researchers has a limited capacity e.g. some researchers have to teach, and that's why somebody has to disseminate in farther places.

Additional personnel/manpower. On the part of the Extension Office, three of the respondents suggested that there must be addition of manpower in the Extension Services Office. One respondent noted that personnel must also be non-teaching. Thus, one respondent noted that extension personnel should maintain the role to go for needs assessment in the nearby and outside places.

A respondent further emphasized that Extension Office personnel should take courage and initiative to address their needs to the Vice President of Research and Extension if it is needed.

Furthermore, another respondent emphasized that managing body of the BSU Research and Extension should fully provide the extension services arm with credible manpower, incentives, supplies, materials, and vehicles to use and to implement the equivalent teaching load for extension activities.

Thus, a respondent noted that there must be identified persons to coordinate and monitor implementation of the whole process of dissemination.



Time. One of the respondent noted that beneficiaries are usually busy during day time. Hence, time of such dissemination must be done when farmers are available likely afternoon or evening.

Fund/budget. A respondent suggested that there should also be generation of funds thru partnership and linkages.

Agricultural researchers. A respondent strongly suggested that all BSU agricultural researchers must also take courage and to learn how to help disseminating its own research especially to those who needed it. She added that researchers should take initiative to serve as resource speaker to disseminate their researches which include matured technologies in any dissemination sessions.

Hence, Kudan, who is the anchor of the BSU on the air program encouraged the BSU researchers from the different colleges within the university especially the College of Agriculture and other institutes or centers where Agricultural researches are being developed which include matured technology to have time to lecture or discuss these technologies in the BSU on the air program. He sadly stated that the College of Nursing and Veterinary Medicine are only some who actively join the program.

Researcher and extensionists. Researchers and extensionists should be visible in the farmer's field. There should be close- collaboration within the researchers and extensionists. There should be incentives for the researchers and extensionists.

Suggestions by the Researcher-respondent to the Beneficiaries



The following were some of the suggestions of the Extension Services Office and some of the BSU researchers to the beneficiaries for the improvement of the dissemination process in general: they must be determined to learn and adopt the technology being introduced, have the initiative to avail IEC materials from the different offices for references and for learning, visit the Extension Services Office and other offices/institute for technical assistance if needed, actively involved in any dissemination sessions of such technologies that includes matured technologies being done by the university, and take time and interest to understand the worth of the technologies being disseminated through the different communication strategies (channels) being used.

Moreover, Kudan elaborated that technical assistance as one of the methods in disseminating matured technologies is a relevant sharing of skills or knowledge which can answer the problem of the end-user concerning farming practices or other concerns.

He concluded that it's not about funding or giving financial to farming or agricultural concerns.

Fagyan on the other hand explained that the husband should be the one to attend for they are the one who mostly work in the farm.



SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The study on the communication strategies applied by BSU Research and Extension in the dissemination of matured technologies, was conducted to describe and determine how these matured technologies are being identified; characterize the latest agriculture matured technologies; enumerate the communication strategies, identify the awareness of the intended beneficiaries; determine the problems encountered by the beneficiaries and the BSU Research and Extension during the dissemination process and their suggestions for the improvement of the dissemination process.

The study was conducted in Benguet State University (BSU) Research and Extension, and in the Municipality of La Trinidad, Benguet. An interview schedule was used in gathering information from the 45 beneficiaries-respondents. Interview and questionnaires were used to gather information from the eleven (11) BSU Agricultural Researchers-respondents. Directors of Research and Services Offices are included in the eleven respondents as well as key informants together with two staff from the two offices.

The study was conducted on December 2012 to February 2012. Data gathered were organized, tabulated, categorized, summarized and presented according to the objectives of the study.



The general understanding of matured technology is that, it is a technology proven effective based on results of repeated trials or results under varying conditions and has been tested in multi fields in which it is a problem or development-oriented technology.

BSU researchers agree that agricultural technologies which are considered as matured technology should have undergone several trials on-station and on-farm and was validated research results on-station and on the farmer's field in which it is a reliable technology.

Moreover, there were seven (7) latest matured technologies existing or developed within the university which was identified in the study for the scope of year 2010-2011.

Communication strategies applied by the Research and Extension were generally apply formal and informal approach using interpersonal communication as categorized as interpersonal, group, mass, organizational or combination of the different categories.

The following were the communication channels being applied by the Research and Extension Office: techno-demo on farm; agro/agri-fair exhibits; BSU on the air; technology packaging and publications (IEC materials, newspapers, scientific journal, techno guide); BSU sa Barangay (technical assistance and quick response services); seminar (lecture and hands-on); harvest festival (BSU organic market; adopt a community; open forum (farmer forum), home visit/farm visit; panel discussion; piloting; TV program, group discussion, symposium/conferences, mass campaigns of matured technologies/information caravan, technology field day, participatory technology development (PTD), farmers field school (FFS), sale of basic seeds, information services, tie up with other agencies, students undergraduate thesis, students as a channel of dissemination between parents and the experts, and walk-in clientele.



A great majority composed of thirty-eight respondents (84.4%) were aware about Organic Farming. Majority of the beneficiaries-respondents (68.9%) sources of information for the dissemination session they attended was through their Farmer's organization.

A great majority composed of twenty five respondents (55.6%) identified that agriculture technologies were disseminated to them through seminar (lecture with handson).

A great majority composed of twenty-eight respondents (62.2%) prefer technodemo on farm strategy to be used by the technology disseminators considering the accessibility of their place.

Problems within the beneficiaries in the dissemination process were as follows: thirty two beneficiaries-respondents (71.1%) claimed that the lack of interest and this major problem was also identified by a great majority of the researcher-respondents; thirteen beneficiaries-respondents (28.9%) revealed the —to see is to believe attitude; six beneficiaries-respondents (13.3%) claimed that farmers who are illiterate can't acquire knowledge from the printed materials; mismanagement of time was identified by eight respondents (17.8%) and; five respondents (11.1%) claimed that some famers don't take interest to buy radio.

BSU researchers added that beneficiaries have a poor attendance, poor cooperation, and beneficiaries are oftentimes or not always busy in the field.

Problems on the other hand within the BSU Research and Extension in the dissemination process were identified. They were as follows: twenty seven respondents



(60%) claimed that there's no needs assessment being conducted; four respondents (8.9%) agreed that some resource speakers speak in technical terms; nine respondents (20%) claimed that IEC materials are lacking; twelve respondents (26.7%) agreed that the time is very limited for the BSU on the air program; seven respondents (15.6%) claimed that there's a lack of technical assistance; twenty two respondents (48.9%) claimed that follow-up supports were lacking; six respondents (13.3%) agreed that there's no continuance of dissemination activities; eleven respondents (24.4%) conclude that agricultural technologies being disseminated are not applicable and; one respondent (2.2%) claimed that BSU technology disseminators are not prioritizing the Municipality of La Trinidad.

Moreover, suggestions to the beneficiaries were as follows: thirty six respondents (80%) suggested that beneficiaries must be interested to learn matured technologies and this major suggestion was also identified by almost all of the researcher-respondents; sixteen respondents (35.6%) suggested that beneficiaries must not doubt on the technology without trying it; four respondents (8.9%) suggested that beneficiaries should take initiative to seek assistance from the knowledgeable concerning the content of the IEC materials; seven respondents (15.6%) suggested that beneficiaries must learn to manage their time and; five respondents (11.1%) suggested that beneficiaries may avail radio.

Researcher-respondents added the following: beneficiaries should have the initiative to avail IEC materials from the different offices for references and for learning; visit the Extension Services Office and other offices/institute for technical assistance if needed; actively involved in any dissemination sessions of matured technologies being done by the university and; take time and interest to understand the worth of the technologies being disseminated through the different communication method being applied.



Suggestions to the BSU Research and Extension were as follows: twenty four respondents (53.3%) suggested that they must conduct needs assessment; four respondents (8.9%) suggested that speakers during seminar must speak in common language which is Ilocano; nine respondents (20%) suggested that IEC materials must be explained in layman's term and be printed in Ilocano; ten respondents (22.2%) suggested that time slot for BSU on the air may be one hour; one respondent (2.2%) suggested that they must provide materials and supplies during seminars; one respondents (2.2%) suggested that interested beneficiaries must be prioritized for the techno-demo method; eight respondents (17.8%) suggested that there must be technical assistance to be provided in the farmers field; seventeen respondents (37.8%) suggested that there should be a follow up support; five respondents (11.1%) suggested that there should be a continuance of dissemination activities; three respondents (6.7%) suggested that inspection must be done to asses if the technology is applicable; eleven respondents (24.4%) suggested that the office must recommend applicable technologies; four respondents (8.9%) suggested that dissemination method must be done through lecture and hands-on; one respondent (2.2%) suggested that there must be a separate seminar between literate and illiterate and; one respondent (2.2%) suggested that the municipality of La Trinidad must be prioritize in disseminating technologies.

Challenges encountered by the BSU Research and Extension in the dissemination of matured technologies were as follows: lack of funds/budget to be used in the dissemination; poor management support, conflict of time for the needed resource speakers; limited manpower; lack of support from LGU and other cooperating agencies during the dissemination process and; demo farm are not in the strategic place.



Another suggestions to the BSU Research and Extension by the BSU researcherrespondents were as follows: introduce participatory communication strategy; there should be a proper coordination by the office; there should be additional of personnel to the Extension Office, there must be an adequate support of fund; dissemination session must be done during the availability of the farmers; researchers must help to disseminate its own research and; extensionists and researchers must be visible in the farmer's field.

Conclusion

Based on the findings of the study, the following conclusions were drawn:

1. While there was no well-defined written document to base of what criteria to be considered as matured technology even in the BSU R and E manual, BSU agricultural researcher-respondents have a general understanding of what consideration should matured technology have.
2. With the agricultural technologies being developed and disseminated by the university, it can be said that not all are considered as matured technology as it was identified by the beneficiaries-respondents that some are not applicable in their field conditions, it is costly, don't cater the problems of their farm, and proven not effective.
3. Several communication methods can be applied in disseminating matured technologies depending on its appropriateness
4. Problems are still unavoidable in the dissemination process both from the technology generator and the beneficiaries which stems from lack of needs assessment of the institution.



5. Suggestions in the dissemination process stem from the problems that were noted in the study.

6. Effectiveness of message being disseminated depends on the varying factors within the different elements of communication which include the source, channel, and receiver.

6. There are more researches being conducted in the university than those disseminated research technologies.

7. Researchers at the same time act as extensionists in terms of disseminating matured technology while the Extension Services Office of BSU works as coordinator in the dissemination process.

8. Given the identified problems by the beneficiaries, some of the disseminated technologies did not meet the definition of what matured technology is based on the definitions given by the researcher-respondents.

Recommendation

1. Since matured technologies are defined by the researchers-respondents as a problem- or development oriented, it must then be prioritized to be disseminated by the Extension Services Office and other disseminator units of the university.

2. Considering the recommendations of the researcher-respondents, further study concerning the effectiveness of the dissemination channel used by the BSU Research and Extension in disseminating matured technologies should be conducted.



3. The Research and Extension may consider balancing research activities and the dissemination of these researches.

4. Based on the recommendations from the beneficiaries, on the part of the BSU researchers, it may be better if matured technology will be developed properly, proven enough and is ready for adaptation before its dissemination to really cater to the needs of its clientele.

5. The concerned offices may also consider the problems raised in this study for future purposes.

6. As recommended by some of the beneficiaries, a policy or memorandum of agreement should be required for these matured technologies developed to be utilized by the beneficiaries or farmers of the farm land owned by the institution and that beneficiaries must be required to join any dissemination session of these matured technologies.

7. BSU Research and Extension may consider strengthening partnership with local government units for financial assistance needed for the dissemination of these matured technologies.

8. Suggestions for the improvement of the dissemination process presented in this study must be considered by the concerned stakeholders.

9. Given the fact that the Municipality of La Trinidad is in the strategic place for techno-demo method, BSU technology disseminators may still maintain this method.



13. Given the fact that the Municipality of La Trinidad is accessible from the BSU institution, seminar (lecture with hands-on) must be maintained and enhance considering the suggestions of this study provided in the results and discussion.

14. On the part of the beneficiaries, it is recommended for them to take advantage of getting or availing technology information from the different agricultural center within BSU the fact that it is accessible.



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