



BSU TALKnology: Touching Lives of Rural Communities in the Highlands of Northern Luzon, Philippines

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Abstract

The TALKnology program, a 15-minute radio program of the Benguet State University, is seen as an effective modality in the adoption of technologies among rural households in the highland communities of Northern Luzon, Philippines. To assess the efficacy of this program in bringing out social outcomes geared towards empowering farmers, there is a need to gather baseline information, hence this study. The study characterized the socio-economic status of the respondents; determined their attitude on the topics discussed in the program; categorized the technologies adopted by the respondents as influenced by the program; determined the positive results attained by the rural households after the adoption of the technologies, and identified the challenges encountered. Results showed that the TALKnology program contributed to the enhanced awareness of rural communities about appropriate technologies. In turn, the enhanced awareness has brought desirable changes among rural communities such as the adoption of BSU technologies that are mostly along agriculture. Such technologies include compost making, basic plant and animal pest and disease management, soil sampling and soil analysis, egg production, and postharvest technologies. Adopting the technologies accessed through the TALKnology program enhanced the livelihood opportunities of the rural households. Limited financial resources, however, hindered the adoption of some technologies.

KEYWORDS

TALKnology program
technology adoption
rural communities

Introduction

Provision of extension services is entrenched in the four-fold function of the Benguet State University (BSU). It primarily aims to contribute to the empowerment and ultimate development of communities through the delivery of various programs and services. These programs may involve dissemination of relevant information generated from the various researches of the university, conduct of trainings, and provision of

livelihood support services.

Guided by the university's goal of providing quality and client-responsive research and extension services, the Office of Extension Services (OES) institutionalized a 7-point Extension Agenda. Anchored with the word HERALDS, each letter stands for the following thematic areas: Holistic entrepreneurship and livelihood services; Education and information trading; Responsive technology promotion and

rural advisory services; Advocacy and policy support; Linkage and partnership; Development delivery support and training services; and Social and resiliency services (BSU Research and Extension Manual of Operations [REMO], 2015).

Among the programs under the thematic area, "education and information trading" is the BSU-on-the-Air Program, developed and being managed by the OES. The program, initially dubbed as "*Mannalon: Namnama ti Pagilian*" (Farmers: The Hope of the Nation), traces its history on January 14, 1997. Aimed at using the radio as the medium of disseminating agricultural breakthroughs to the rural areas of the Cordillera Administrative Region (CAR) and adjacent municipalities of Regions 1 and 2, BSU entered into an agreement with the DZWT, a local radio station of the Mountain Province Broadcasting Corporation (MPBC) for a 10-minute airtime from Mondays to Fridays. Over the years, the program evolved and underwent several changes to cater to the needs of the listeners. The topics expanded to include other issues confronting the locality. The original time slot of 5:45 am was moved to 6:00 am to coincide with the time when more farmers tune in to their radios. The airtime was also increased to 15 minutes to allow for more enriched topic discussions. In 2013, the program was structured to have three major components namely: *BSU TALKnology*, *BSU School-On-the-Air (SOA)*, and *Project DaMSung (Damag Mu Sungbatak)*. These operated under the OES-Technology Packaging, Publication and Information Division (OES Annual Report, 2016).

In CAR where farming is the major livelihood, one of the immediate needs of farmers is appropriate information and techniques on farming practices. Many farming villages in the region, however, are located in far-flung areas, far beyond the reach of the university's extension services. Capitalizing on the popularity and accessibility of radio in the rural areas and its capacity to reach a wider audience simultaneously, it is hoped that such information and techniques discussed in the radio program will eventually help them enhance their farming operations, and in effect, improve their lives.

Radio has been proven as the most effective tool in promoting agriculture and development in rural areas, especially as a tool of quick information delivery. It serves as a complementary

tool to existing approaches in reaching and interacting with farmers especially in areas that cannot be reached by extension workers. It also conveys vital information such as better farming methods, improved seeds, timely planting, agro-forestry, better harvesting methods, soil conservation, marketing, postharvest handling, and diversification (Nakabugu, 2001). Moreover, radio can reach a larger and more varied audience more quickly compared to other mass media, providing news to people who cannot read newspaper. The strength of radio as an effective channel of communication stems from its accessibility, credibility, availability, and the ability to provide timely information among a number of people at one broadcast. Radio is also cost-effective in terms of transmission, presentation, and portability as compared with other mass media modalities (Pherret, 1976). The same case in the Philippines, Quebral (1988) claimed that radio is one of the major sources of information in rural communities aside from extension workers. Furthermore, Battad et al. (2003) stressed that among the different mass media, radio is the most adopted medium in agricultural extension.

As the BSU TALKnology program reached its two-decade mark, there is a need to look back and assess whether the program has fulfilled its purpose of being a reliable source of varied information that is of importance and interest to its listeners. In the university, evaluation of research, development and extension programs, projects, or studies/activities is among the mandates of the Research and Extension sector. BSU REMO (2015) mandates the monitoring of research and extension projects in the university, both technically and financially.

As such, it is high time to evaluate the overall contribution of the TALKnology program in the lives of the listeners. As shown in the paradigm (Figure 1), the study would like to know the attitudes of the listener respondents on the various technologies diffused through the TALKnology; the applicability of the technologies learned and liked by the respondents depending on their resources; and, the challenges encountered along the adoption of the technologies. With the assumption that the respondents adopted the technologies as influenced by the TALKnology, it is also the intent of this study to determine if there were changes along the lives of the respondents.



The results of the study may become valuable inputs for strengthening the radio program of the university. Furthermore, the findings can give realistic information to higher education institutions with plans of utilizing the broadcast media as modality for their technology transfer programs.

Methodology

The study used a descriptive research structure, particularly survey. It employed both quantitative and qualitative methods. Data were gathered through triangulated approach along archival method, administration of survey questionnaire, interview, and focus group discussions. Data gathering was conducted in Tublay and La Trinidad, Benguet. Tublay is one of the adopted communities of BSU. On the other hand, La Trinidad is where the School-On-the-Air culmination ceremony was conducted. Respondents were interviewed after the culmination ceremony. Figure 2 shows the map of Benguet where the study was conducted. On the selection of respondents, a combination of purposive sampling and shotgun approach were used. The sampling is purposive since the study only considered those who are listening to the TALKnology program. A total of 1,060 listeners

were included as respondents of the study with 300 from Tublay municipality and the remaining 760 respondents were participants of the School-On-the-Air who are from various provinces of Northern Luzon. During the actual data gathering, the shotgun approach was used in two instances. First, the 300 respondents from Tublay, Benguet are members of the adopted communities of the College of Agriculture, BSU. As such, they were interviewed after the extension activities (e.g. trainings, seminars, and other conferences) conducted in the municipality. Every semester, Bachelor of Science in Agriculture (Major in Extension Education) and Bachelor of Science in Development Communication students are assigned in the eight barangays of Tublay. These students assisted in the conduct of the study. During the conduct of activities in the said barangays, questionnaires were distributed to the participants. In essence, the participants of the extension activities who are listeners to the radio program became respondents. Figure 3 shows the researcher orienting participants during a focus group discussion in Tublay.

On the other hand, participants of the School-On-the-Air who attended the culminating activities at the Benguet State University were also considered respondents. Questionnaires were distributed to the attendees during the culmination activity. This resulted into the

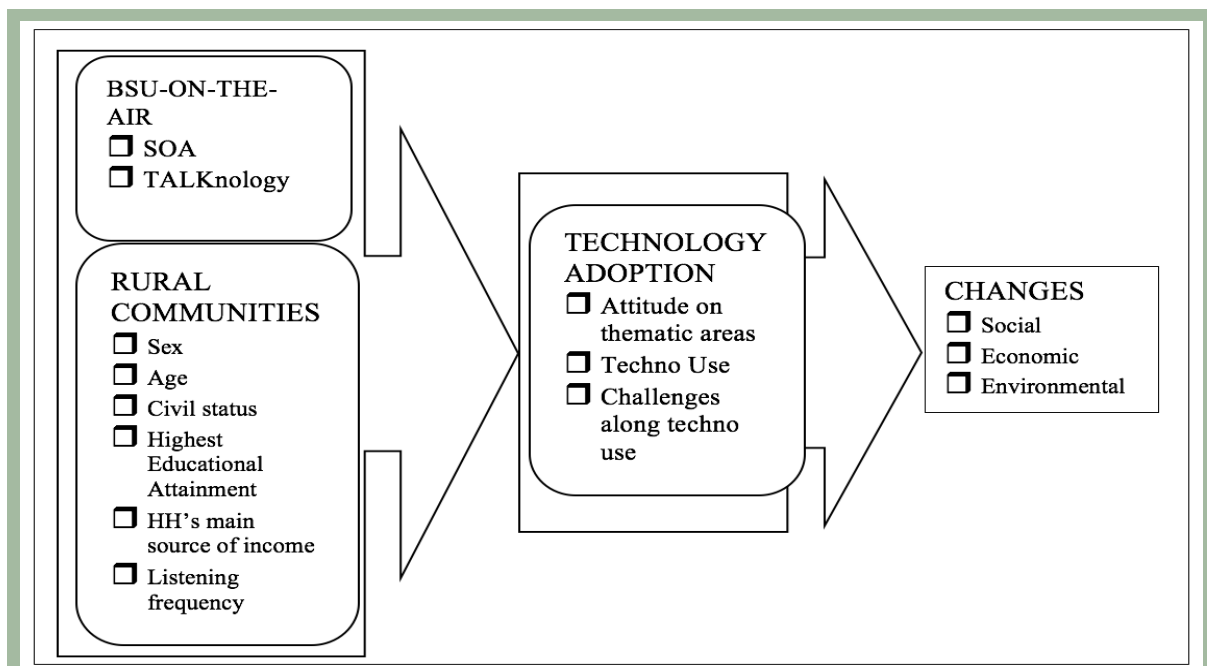


Figure 1. Paradigm of the study



heterogeneity of the respondents since they come from various provinces of Northern Luzon. Figure 4 shows the researcher conducting an interview during the School-On-the-Air Culmination.

Descriptive statistics such as mean, percentage, and ranking were used in analyzing the data gathered from the survey. A Likert scale adopted from Joshi et al. (2015) was used to interpret the results (Table 1). The result of the survey was substantiated from the interview and the focused group discussion.

Table 1
The Likert Scale Used in Interpreting Result of the Survey

Weighted Mean	Qualitative Description
1.0 – 1.74	Least
1.75 – 2.49	Fair
2.50 – 3.24	Much
3.25 – 4.0	Very Much

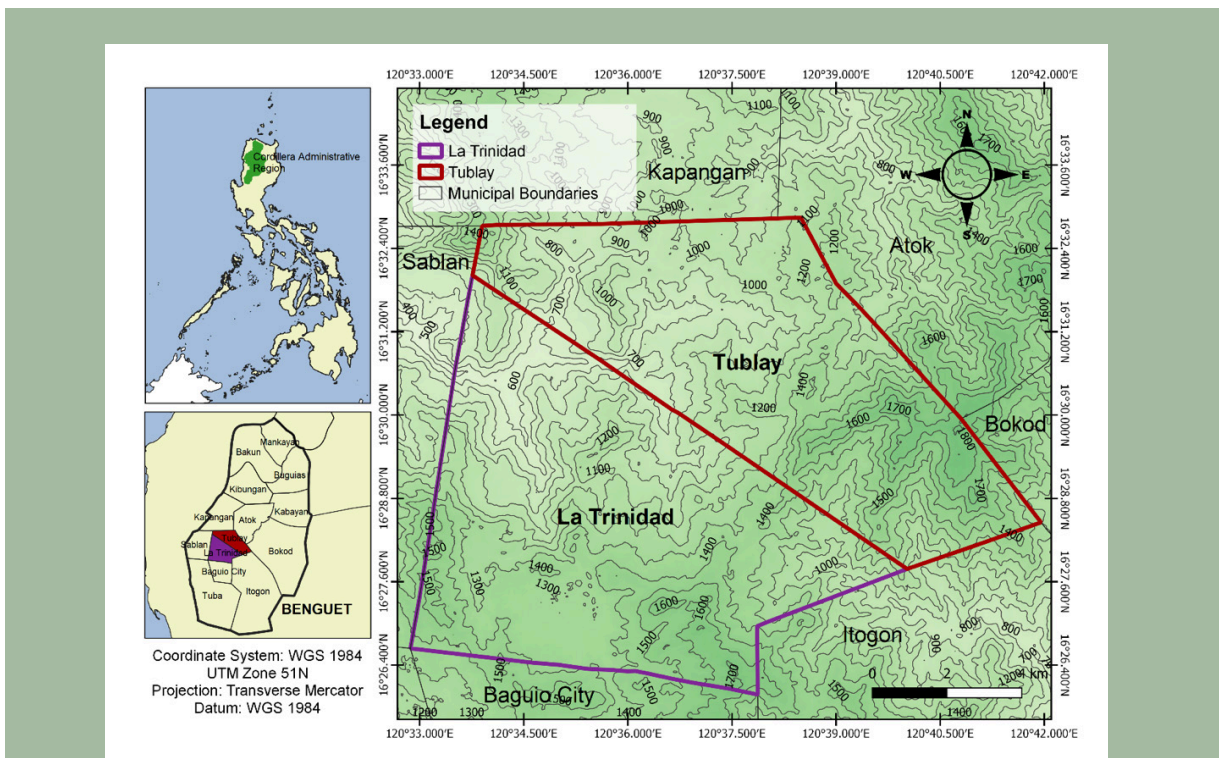


Figure 2. Map of Benguet Province showing the sites of the study



Figure 3. The researcher orienting participants of a Focus Group Discussion in one barangay of Tublay, Benguet



Figure 4. The researcher conducting interview during a School-On-the-Air Culmination



Results and Discussion

Profile of Listener Respondents

Characterizing the TALKnology listeners may serve as valuable input in the conceptualization of upcoming trainings and/or seminars. It is therefore, the aim of this characterization to present the socioeconomic profile of the listener respondents. These could guide community development workers in planning upcoming activities. Majority of the respondents are females (Table 2). Some respondents explained that since the airing time of the TALKnology program is at 5:45 to 6:00 am, the wife mostly listens to the radio since the husband is already out to see their animals in the field or to irrigate their crops. In addition, during the conduct of household interview in Tublay, the female family members are more assertive in answering the questions. These may have contributed in the higher number of female respondents. The listeners of the program belong to various age brackets. It is noteworthy that some listeners are more than 70 years old. The mean age of the respondents is 43 with greater percentage of older (>30 years old) respondents. On the other hand, majority of the respondents are married.

All the respondents underwent formal schooling with many respondents who are either graduate school students or graduates. This result of the study shows that even with the mushrooming of several communication technologies, several people still use radio and its use cuts across various level of formal education.

Majority of the respondents are involved in crop production. This supports the statement of Chapman et al. (2003) that the strength of the radio as an extension tool is in its ability to reach farmers and provide them with information about all aspects of agricultural production in a language they understand. Moreover, it also confirms that the radio conveys vital information such as better farming methods, improved seeds, timely planting, agroforestry, better harvesting methods, soil conservation, marketing, postharvest handling, and diversification (Nakabugu, 2001).

On the frequency of listening to the TALKnology program, most of the respondents

Table 2

Profile of Listener Respondents

Characteristic	Number of Respondents	Percentage (%)
a. Sex		
Male	410	38.68
Female	650	61.32
b. Age Bracket		
11 – 20	11	1.04
21 – 30	55	5.19
31 – 40	289	27.26
41 – 50	540	50.94
51 – 60	118	11.13
61 – 70	28	2.64
More than 70 years old	19	1.79
Total (Mean age = 43)	1,060	100.00
c. Civil Status		
Single	297	28.02
Married	673	63.49
Widowed	79	7.45
Separated	11	1.04
Total	1,060	100.00
d. Highest Educational Attainment		
Elementary undergraduate	66	6.23
Elementary graduate	117	11.04
High school undergraduate	97	9.15
High school graduate	439	41.42
College undergraduate	218	20.57
College graduate	76	7.17
Graduate school undergraduate	22	2.08
Graduate school graduate	25	2.36
Total	1,060	100.00
e. Household's Main Source of Income		
Wages/salaries	169	15.94
Pensions/allotments	45	4.25
Remittances from abroad	3	0.28
Crop production	638	60.19
Livestock raising	192	18.11
Entrepreneurial activities	13	1.23
Total	1,060	100.00
f. Frequency of Listening to BSU TALKnology		
Always listen	947	89.34
Most often listen	103	9.72
Often listen	8	0.75
Seldom listen	2	0.19
Total	1,060	100.00



claimed that they always listen. Many respondents elaborated that the program is very timely with their morning household chores. Further, they explained that listening to the program is done simultaneously with various household activities. These support the claim of Pherret (1976) that the strength of radio as an effective channel of communication stems from its accessibility, credibility, availability, and the ability to provide timely information among a number of people.

Attitude of the Listener Respondents

Updates and announcements about university programs top the most preferred topic of the listeners (Table 3). The respondents claimed that they are interested on the discussions about the various academic programs of the university since these are very informative. Accordingly, these guided them on what curricular programs may be availed by their family members who plan to enroll in the university.

Announcements on schedules of enrolments, examinations, and/or commencement exercises are very much appreciated by the listeners. These give them appropriate time to prepare for such important activities along the university's academic calendar.

Discussions on agriculture or agricultural production rank 2nd among the respondents' list of preferred topics. According to the respondents, lectures on organic agriculture systems, good agricultural practices, and crop production techniques are valuable and helpful.

An integrated feature of the TALKnology is the Project *DaMSung* (*Damag Mo Sungbatak* or translated as You ask, I answer) which is very much liked by the respondents. Project *DaMSung* is the established text line portal at the OES where the listeners can send their queries, comments, issues, or concerns. It also serves as a feedback mechanism for the program (BSU TALKnology Calendar of Activities, 2016). This affirms the findings of Catano (2010) that majority of the listeners in Tinoc, Ifugao liked the topics discussed in the radio programs since it provided answers to their questions on agriculture-related issues. The respondents, accordingly, claimed that the topics were very relevant.

The 4th and 5th thematic areas most liked by the listeners are BSU technology promotion portion; and, the Health, Food, and Nutrition. These findings agree with the claim of Paulino (2009) that listeners of the BSU-On-the-Air favor topics on how to produce better crops and

Table 3

Attitude of Respondents on Thematic Areas of TALKnology

Thematic Area	Mean	Qualitative Description	Rank
Agriculture	3.97	Very Much Liked	2
Birthday greetings portion	2.11	Much Liked	10
BSU technology promotion portion	3.78	Very Much Liked	4
Education/development communication	2.09	Fairly Liked	11
Environment and natural resources	3.11	Much Liked	7
Fisheries/aquaculture	2.19	Fairly Liked	9
Gender and development	1.79	Fairly Liked	12
Health, food and nutrition	3.49	Very Much Liked	5
Indigenous knowledge systems	3.21	Much Liked	6
Policy and governance	2.36	Fairly Liked	8
Question/Answer portion (Project <i>DaMSung</i>)	3.93	Very Much Liked	3
University programs, updates and announcements portion	3.98	Very Much Liked	1

Legend: 1.0-1.74=Least Liked; 1.75-2.49=Fairly Liked; 2.50-3.24=Much Liked; 3.25-4.0=Very Much Liked



technologies that are applicable in their locality. Moreover, the listeners tried encouraging other residents in the community to listen to the radio program because they also wanted them to gain additional knowledge on farm management towards increasing productivity. These results also affirm the statements of Pocdo (2003) that the topics aired through the university radio program were favored by the listeners in Kabayan, Benguet since it was very helpful in introducing new farming technologies and management. On the other hand, many respondents cited the lectures on health and nutrition being aired during the Nutrition Month celebration in July.

Technologies Adopted

The technologies adopted by the respondents as influenced by the TALKnology program ranged from product, process, service, or information (Table 4). The use of BSU-developed planting materials topped the list of technologies. The planting materials mentioned by most of the respondents include tissue-cultured strawberry

runners, tissue-cultured banana plantlets, potato cuttings, sweetpotato cuttings, cassava, legume seeds and others. According to the respondents, they gained information about these technologies through the radio program. Their queries were answered accordingly through the text line portal.

These findings of the study confirm the claim of Quebral (1988) that radio is one of the major sources of information in rural communities aside from extension workers. Furthermore, the results support the statement of Oakley and Garforth (1985) that the Food and Agriculture Organization (FAO) looks at extension as educational process that evolves along provision of indispensable elements needed by farmers to support and improve their agricultural productivity such as technical information and advice generated from researches as well as inputs and services.

Another worth-mentioning technology adopted by the respondents is on soil sampling and analysis. This may have resulted from the conduct

Table 4

Technologies Adopted by the Respondents as Influenced by the TALKnology Program

Technology	Mean	Qualitative Description	Rank
Basic beekeeping	2.22	Fairly Adopted	14
Basic pest/disease management on poultry and livestock	2.30	Fairly Adopted	13
Breaking potato dormancy	2.0	Fairly Adopted	15
BSU-developed farm structures	2.46	Fairly Adopted	12
BSU-developed planting materials	3.99	Very Much Adopted	1
Compost making	3.83	Very Much Adopted	6
Egg production	3.20	Much Adopted	9
Food processing	3.66	Very Much Adopted	7
Health, food and nutrition tips	2.48	Fairly Adopted	11
Mushroom production	3.11	Much Adopted	10
Organic management systems of plant pests/diseases	3.89	Very Much Adopted	3
Postharvest handling of semi-temperate crops	3.86	Very Much Adopted	4
Renewable energy technologies	3.22	Fairly Adopted	8
Soil fertility management	3.85	Very Much Adopted	5
Soil sampling and analysis	3.97	Very Much Adopted	2

Legend: 1.0-1.74=Least Adopted; 1.75-2.49=Fairly Adopted; 2.50-3.24=Much Adopted; 3.25-4.0=Very Much Adopted



of School-On-the-Air on Soil Fertility and Management. According to some respondents, they were more enlightened on the vital role of the soil as basic medium for crop production. Moreover, they understood that enriching the soil may lead to a productive farm that can bring higher income. This relates to the claim of Oakley and Garforth (1985) that new knowledge and ideas should be introduced into rural areas in order to bring about change and improve the lives of farmers and their families.

Organic management systems of plant pests and/or diseases is another very much-adopted technology by the respondents. This is most likely attributed to the strengthened advocacy of BSU on Organic Agriculture. The conceptualization and establishment of the BSU Internal Guarantee System (BIGS) as a Participatory Guarantee System (PGS) modality opened various opportunities that empowered farmers relative to effective management of plant pests and diseases without using synthetic pesticides. The protocols contained in the Internal Guarantee System of the BSU were patterned along the Philippine National Standards (PNS) on Organic Agriculture Systems. The creation of the BIGS was instrumental towards the establishment of organic demonstration farms at the BSU Experiment Station in Balili, La Trinidad; and the BSU Internal Guarantee Systems Center (BIGS Center). Eventually, it evolved into the conceptualization and establishment of the *Timpyyog dagiti Umanamong iti BSU Internal Guarantee Systems (TUBIGS)*, a legitimate organization of adopters of the BIGS (OES Annual Report, 2016). The findings relate to the claim of Catano (2010) that listeners of the radio program in Tinoc, Ifugao were enticed to adopt technologies along organic farming, pest management, and planting method as results of comprehensive discussions on air.

Most of the respondents also cited postharvest handling of semi-temperate crops as among the technologies that they have learned through the TALKnology program. Similar with the soil management technology, the respondents claimed that they were able to enhance their knowledge and skills on postharvest through the School-On-the-Air and the daily TALKnology program.

The results concur with the statement of Mosher (1979) that the main objective of agricultural extension is education and it should help farmers to gain and master new information and/or technologies towards the development of new skills.

Positive Results Attained by Respondents

The top three positive results attained by the respondents after adopting the technologies learned from BSU TALKnology program, in a descending order, are as follows: provision of wider linkage in and out of their community; enhanced skills; and, creation of more livelihood opportunities (Table 5). Adopters of the BSU Internal Guarantee Systems claimed that they were able to widen their horizon relative to organic agriculture.

They further explained that through Project DaMSung, they have established contacts with producers of soil amendments, planting materials, and other relevant concoctions. Results manifest the claim of the OES that technologies spawned from the various researches of the university and other relevant information are cascaded to the different stakeholders of the region's local agriculture industry through several channels (OES Primer No. 2, 2016).

Results of the study affirm the findings of Balegan (2012) that the frequency of short message services (SMS) received by the OES ranges from two to five per day. Topics of the text messages include general agriculture; religion and values; BSU concerns; employment opportunities; environmental concerns; health; acknowledgments, appreciation and encouragement; and, public service announcements.

Another positive result gained by the respondents is the enhancement of their skills when they applied the technologies they learned through the TALKnology program. A common example cited by the respondents is the fabrication and/or preparation of improvised traps for pests. As a result, the respondents claimed that they incur savings since they did not have to buy the materials. This finding affirms the claim of Pocdo (2003) that radio listeners in Kabayan, Benguet increased their crop productivity and minimized farm-related problems when they applied the technologies discussed in the radio program.



On the creation of livelihood opportunities, many respondents cited that they applied some of the food processing technologies they have learned from the radio program. Although minimal, the respondents claimed that they incur additional income through food processing.

Adopters of the BSU Internal Guarantee Systems also cited exposures to various trainings as one of the positive results they have gained. The respondents explained that their membership to the TUBIGS was of great help for they have a ready outlet for their farm produce.

This supports the findings of Nazari et al. (2010) that radio has been proven as among the most effective tool in promoting agriculture and development in rural areas, especially as a tool for quick information delivery. The radio package serves as a complementary tool to existing approaches in reaching and interacting with

farmers, especially in areas that cannot be reached personally by extension workers.

Similarly, results of this study confirms the claim of Van den Ban et al. (1996) that radio is the cheapest yet most important mass medium among farmers in developing countries for it conveys vital information such as better farming methods, soil conservation, marketing, postharvest handling, and diversification. Collectively, these lead to the improvement of the quality of life.

Challenges Encountered

Attitude towards adoption of technologies is considered as the most serious challenge encountered by the respondents (Table 6). The respondents explained that the adoption of a particular technology is dependent on the willingness and capability of an individual to accept. They further elaborated that even if the

Table 5

Positive Results Attained by the Respondents after the Adoption of Technologies

Technology	Mean	Qualitative Description	Rank
More livelihood opportunities	3.38	Very Much Attained	3
Enhanced skills	3.96	Very Much Attained	2
Wider linkage in and out of the community	3.98	Very Much Attained	1
Increased concern on environmental conservation	3.19	Much Attained	5
Closer family ties	2.98	Much Attained	6
Increased income	1.14	Least Attained	7
More training exposures	3.20	Much Attained	4

Legend: 1.0-1.74=Least Attained; 1.75-2.49=Fairly Attained; 2.50-3.24=Much Attained; 3.25-4.0=Very Much Attained

Table 6

Challenges Encountered along the Adoption of BSU Technologies

Technology	Mean	Qualitative Description	Rank
Attitude towards change	3.94	Very Much Serious	1
Limited financial resources to apply technology	3.85	Fairly Serious	4
Distance of technology to probable adopters	1.72	Least Serious	6
Limited monitoring of technology adoption	2.42	Fairly Serious	5
High competition in the market	3.91	Very Much Serious	2
Existences of risks in all ventures	3.89	Very Much Serious	3

Legend: 1.0-1.74=Least Serious; 1.75-2.49=Fairly Serious; 2.50-3.24=Much Serious; 3.25-4.0=Very Much Serious



technology is very appropriate if the farmer is hesitant to adopt then the technology remains at stake.

Adopters of the BSU Internal Guarantee System cited the existence of high competition in the market as far as organically-grown crops are concern. According to the respondents, the BIGS Center cannot cater to all their farm produce, particularly during peak months of production.

In their desire to bring their produce to high-end markets, they are limited by the third-party certification system as provided for in the Organic Act of 2010. In other words, they cannot compete with those farms which are third-party certified. Another very serious challenge claimed by the respondents is the existence of risks in all ventures of farming. They explained that agriculture is a risky undertaking; thus, it is not always a guarantee that crop production leads to a brighter future.

Conclusions

Results of the study showed that the BSU TALKnology has contributed to the enhanced awareness among rural communities along appropriate technologies; and, the enhanced awareness has brought desirable changes among rural communities. Adopted BSU technologies include compost making, basic plant and animal pest and disease management, soil sampling and soil analysis, egg production, and postharvest technologies. These adopted technologies have enhanced the livelihood opportunities of the rural households. Limited financial resources, however, hindered the adoption of some technologies.

Recommendation

Sustainability of the TALKnology program is highly recommended for it is helpful to the rural communities; and the establishment of BSU community-based demonstration areas should be intensified to showcase the technologies discussed in the TALKnology program.

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