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Understanding the information system of BT corn growers in Cagayan Valley, Philippines

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Abstract

Information system is an important component in maximizing agricultural production. It is in this mechanism that farmers are provided with the necessary information that can guide them in their farming activities. The agricultural information system of Bt corn growers was investigated based on the following factors; the information sources, usefulness of information and frequency of contact with the information sources. Such factors were used to analyze the total information score (IS) of the information sources which is an indicator of the strength of information exchange. The result showed that Bt corn growers in Cagayan Valley are married males, 48 years old on average and are mostly high school graduates. Membership to organizations is not a common practice to the majority. Most corn farms are owned, however, the potential yield on a per hectare basis is not yet maximized. The agriculture information system analysis showed that there is aa stronger degree of contact expressed in terms of information score was manifested in the personal sources of the Bt corn growers. A traditional agricultural information system exists where farmers depend on shared experiences or practices of other farmers. There is a weak link between the Bt corn growers and the public and mass media sources. The weak link reveals a limited interaction and dissemination of timely and relevant agricultural farming techniques. Therefore, there is partial or non-utilization of recommended Bt corn growing farming practices. No feedback mechanism where problems or information needs are forwarded to the researchers or experts. In this case Bt corn productivity could hardly maximized. Furthermore, age, educational attainment, land ownership and membership to organizations are some factors associated on the strength of information exchange with sources.

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Introduction

Bt corn has been developed to be resistant to Asiatic Corn Borer (ACB), *Ostrinia furnacalis* (Guenee), one of the nation's most destructive corn pests. The Bt corn technology has been adopted by a lot of corn farmers that made the Philippines self-sufficient in corn production (Isaac, 2019). Corn growers in Cagayan Valley are among the adaptors of the Bt corn technology with the highest production and have the largest area planted to Bt corn in the Philippines (PSA, 2018), although the potential productivity (i.e., yield per unit area) for Bt corn has not yet been realized. Deribe (2016) pointed out that in order to improve productivity, the transfer and utilization of agricultural information is of great help. As opined by Just and Zilberman (2020), farming is a knowledge-intensive industry. Farmers need to seek and process timely and relevant financial, climatic, technical and regulatory information to manage their farms. Such is in the form of agricultural information, which usually pose a great challenge to the farmers.

In the Philippines, it was reported that key actors in the delivery of information use several strategies to effect change and improvement on agricultural production systems. Also, farmers are now slowly shifting from the traditional practice to a combination of new trends by incorporating the use of information technology and proper communication management (Aquino *et al.,* 2020). Bt corn growing is an important agricultural undertaking in Cagayan Valley that necessitates a well-established information system so that the delivery of information on recommended farming practices to maximize production, is made better. However, there are no reports in terms of access from various sources and utilization of new, timely and relevant information among the corn farmers.

It is therefore the aim of this study to understand the agricultural information system in Bt corn production. It will assess the strength of information contact between the various sources and the Bt corn growers as the utilizers of the information, and the usefulness of information. It will further provide recommendations to improve the information system, the hub where farmers can access timely and relevant information, and feedback problems and information needs. This will eventually enhance productivity, thus maximizing Bt corn production in the valley.

Materials and methods

The Study Area

The study was conducted in 54 barangays randomly picked from the various towns of Abulog, Alcala, Amulong, Gattaran, Piat and Peñablanca in the province of Cagayan, Angandanan, Cauayan, Echague, Jones, Ilagan, Naguilian San Mariano, and Tumauini in Isabela, Bagabag, Diadi, and Quezon in Nueva Vizcaya; and Aglipay, Diffun, Nagtipunan and Madella in Quirion. A total of 1,279 Bt corn growers (BtCG) interviewed in the study.

Data Gathering

To be able to generate respondents of the study proper coordination with the local government offices was made. A consent form was clarified to the respondents for ethical reasons that their involvement was completely voluntary and that any details arising from the research would be treated with strict confidentiality.

The data were collected using the face-to - face interview to better understand the local dialects of the respondents using a pre-tested structured questionnaire. The main questions focused on the information system of the farmers, that included the information generated and sources (whether personal, public or mass media sources) related to corn farming, the extent of contact farmers had with the information sources, and degree of usefulness of the information generated.

Research Analysis

The information system of BtCG is analyzed using indices such as frequency of contact with information sources, usefulness of information generated, and total information score of information sources.

Frequency of contact was analysed using the scale and weights were given to each component according to the frequency of contact, were as follows:

Scale	Weights	Frequency of Contact/s
0	0	no contact
1	1	once a year
2	2	two or three times a year
3	4	four or five times a year
4	12	once a month
5	30	two or three times a month
6	52	once a week
7	130	two or three times a week and
8	365	contacts once a day

The degree of usefulness of information generated was weighted as follows:

Scale	Weights	Degree of Usefulness
0	0	not useful at all
0.25	0.01 - 0.25	little useful
0.50	0.26– 0.50	moderately useful
0.75	0.51 – 75.00	Useful
1.0	0.75 – 1.00	very useful

The information system was analysed using the total information score (TIS). Information scores for each component of the farmers' corn production information system was analyzed by multiplying the weights of information contact with degree of information usefulness (Adopted from Demiryurek *et al.*, 2008):

TIS = FC x IU

where: FC = the number of times farmers come in contact with

information sources;

IU = the usefulness of information

Descriptive statistical tool was used to analyze quantitative data. The Pearson Moment of Correlation was used to analysed relationships among variables.

Results

Demographic and Farm Characteristics

Demographic Characteristics

Table 1 a present some demographic characteristics of Bt corn gowers. Bt corn farms in Cagayan Valley are tended by a majority of married males (63.96%) with a mean age of 48 years. Completers of a particular educational level include 30.49 percent high school, 20.64 percent elementary and 8.20 percent college levels. Majority belongs to the Ilocano speaking group.

Membership to organizations is important, as this can be a venue for information exchange. However, only 27.53 percent are members of organizations, 10 percent among them are officers, and majority (72.20%) had been members for a period of 1-10 years.

Table 1a. Demographic and farm characteristics of BtCG in Cagayan Valley.

Profile	Specifics	Frequency	Percent
Sex	Male	818	63.96
	Female	461	36.04
Age (Years)	21-30	122	9.50
	31-40	222	17.35
	41-50	376	29.39
	51-60	345	26.97
	61-70	177	13.83
	71-80	36	2.81
	81-90	3	0.23
Civil Status	Single	64	5.00
	Married	1,137	88.89
	Widow/er	61	4.76
	Separated	7	0.54
Educational Attainment	Elementary Level	183	14.10
	Elementary Graduate	264	20.64
	High School Level	209	16.34
	High School Graduate	390	30.49
	College Level	126	9.85
	College Graduate	105	8.20
	With Masteral Units	2	0.15
Ethnic Affiliation	*Ilocano*	1,026	80.22
	Ybanag	45	3.52
	Itawes	48	3.75
	Ifugao	45	3.52
	Others	115	8.99
Membership to Organizations	Member	356	27.83
	Non-member	923	71.16
Nature of Membership	Plain Member	322	90.44
	Officer	34	9.55
Years of Membership	1-10	257	72.20
	11 and above	99	27.80
Major Source of Income	Farming	1,005	78.58
	Business	71	5.55
	Employment	117	9.15
	Part-time Labor	86	6.72
Monthly Income	>4,999.00	433	33.85
	5,000.00 – 9,999.00	414	32.37
	10,000.00 – 29,000.00	331	25.88
	30,000.00-69,000.00	71	5.71
	70,000.00 - 139,000.00	21	1.64
	<140,000.00	7	0.55

Farm Characteristics

The Bt farm characteristics of the respondents are presented in Table 1b. Land is a major source of livelihood for most especially in the rural areas. Majority (78.52%) of the BtCG owns the corn farm they till.

The mean area cultivated is 1.58 ha and majority (51.36%) are engaged in corn farming for more than 20 years producing a yield of 50 - 100 cavans per ha. Majority (42.22%) of them, gets a net income of below Php20,000 per corn cropping.

Table 1b. Farm characteristics of BtCG in Cagayan Valley.

Farm Characteristics			
Nature of Farm Ownership	Land is owned	854	66.77
	Land is lent	35	2.73
	Tenant	51	3.98
	Land is sharecropped	298	23.29
	Land is rent	41	3.20
Years in Growing Corn	< 5	194	15.16
	6-10	184	14.36
	11-15	130	10.16
	16-20	114	8.91
	>20	657	51.36
Total area cultivated for corn (ha) Mean 1.58 ha	< 1.00	355	27.75
	1.00– 1.99	538	42.06
	2.00 – 2.99	208	16.26
	3.00 – 3.99	90	7.03
	4.00 – 4.99	27	2.11
	5.00 and above	59	4.61
Corn Production (cavans/ha)	50 and below	293	22.90
	51-100	679	53.30
	101-150	219	17.12
	150 and above	86	6.72
Net Income per ha	>20,000.00	540	42.22
	21,000.00 - 40,000.00	342	26.73
	41,000.00 – 60,000.00	242	18.92
	61,000.00 – 80,000.00	68	5.31
	81,000.00 - 100,000.00	47	3.62
	<100,000.00	37	2.89

Agricultural Information System

BtCG Frequency of Contact with Information Sources

Table 2 presents the frequency of contact of BtCG with information sources. Exchange of corn farming knowledge and experiences are more frequent among the members of the BtCG personal information network, than with the PuIS and the MmIS. Frequency of information exchange occurs *once a week*.

Frequency of contact with the PuIS is on the average *2-3x a year* and with the MmIS *4-5x a year*. However, from among the PuIS, the BtCG had more frequent contact with agricultural technicians which occurs *4-5x a year*, while with the rest of the PuIS frequency of contact occurs *2-3x a year* only. On the other hand, TV, radio, farm journals, leaflets and posters were used *2-3x a month,* the rest are used *4-5x a year*. The internet is used once a year only.

Table 2. Information sources and frequency of consultation of farmer-respondents on Bt corn production.

Information Sources	Mean Score	Frequency of Contact
Personal/Public Information Sources		
Family Member	5.99	1x a week
Relatives	5.53	1x a week
Friends	5.45	1x a week
Co-corn grower	5.60	1x a week
Mean	*5.64*	1x a week
Public Information Sources		
Agric. Tech	3.13	4-5x/yr
Univ. Ag.Tech.	1.94	2-3 x/yr
Researchers	1.63	2-3 x/yr
Company Representatives/Technicians	1.82	2-3x/yr
Mean	*2.13*	*2-3x/yr*
Mass Communication		
Radio	5.21	2-3 x/mo
TV	5.13	2-3x/mo
Newspaper	2.15	4-5 x/yr
Farm Journals	1.68	2-3 x/yr
Farm primer	2.01	4-5x/yr
Brochure	2.27	4-5x/yr
Package of Tech	1.84	4-5x/yr
Leaflet	2.71	2-3 x/yr
Poster	2.75	2-3 x/yr
Internet	1.95	1 x/yr
Mean	*2.75*	*4-5x/yr*

Legend: Scale 7.13 – 8.00 Contacts Once a Day
2.68 – 3.56 Four or Five Times a Year
6.24 – 7.12 Two or Three Times a Week 1.79 – 2.67 Two or Three Times a Year
5.35 – 6.23 Once a Week 0.90 – 1.78 Once a Year
4.46 – 5.34 Two or Three Times a Month
0.00 – 0.89 No Contact
3.57 – 4.45 Once a Month

Degree of Usefulness of Information

Information generated was categorized into technical and economic components (Table 3). Result shows that the mean scores of the technical information generated from the three sources obtained a rating which fall under the *very useful* category. Specifically, seed variety, land preparation, weather forecast, soil management and fertilizer application were among the items with *very useful* ratings. The result implies that other Bt corn growers duplicate corn farming practices from co corn growers which had exhibited good results.

Table 3. Perceived degree of usefulness of information generated from personal information sources.

Information	Personal Information Sources		Public Information Sources		Mass Media Sources	
Technical Information	Mean	QR	Ave	QR	Mean	QR
Seed variety	0.83	VU	0.83	VU	0.86	VU
Land preparation	0.86	VU	0.84	VU	0.84	VU
Weather forecast	0.86	VU	0.84	VU	0.84	VU
Soil management	0.78	VU	0.81	U	0.77	VU
Fertilizer application	0.87	VU	0.84	VU	0.82	VU
Disease and pest control	0.71	U	0.64	U	0.64	MU
Use of machinery	0.71	U	0.72	U	0.70	U
Harvesting techniques	0.73	U	0.78	VU	0.76	VU
Storage methods and techniques	0.52	U	0.58	U	0.53	MU
Mean	*0.76*	*VU*	*0.76*	*VU*	*0.75*	*VU*
Economic Information						
Current market prices	0.82	VU	0.80	VU	0.75	VU
Future market Prices	0.68	U	0.61	U	0.58	U
Market locations	0.72	U	0.71	U	0.55	U
Budgeting methods	0.71	U	0.70	U	0.54	U
Credit sources	0.63	U	0.61	U	0.62	U
Procedure for credit procurement	0.64	U	0.66	U	0.52	U
Stock/record keeping	0.51	U	0.45	MU	0.54	U
Cooperative association	0.55	U	0.46	MU	0.52	U
Labor availability	0.71	U	0.69	U	0.69	U
Risk management in agriculture	0.60	U	0.68	U	0.55	U
Government policies	0.58	U	0.44	MU	0.48	MU
Government grants	0.58	U	0.57	U	0.60	U
Mean	0.74	U	0.62	U	0.58	U

Legend: 0 Not useful at all

0.01 – 0.25 Sightly useful

0.25 – 0.50 Moderately useful

0.51 – 0.75 Useful

0.76 – 1.0 Very useful

Disease and pest control, use of machinery and harvesting techniques were rated *useful* while storage methods and techniques is *little useful.* Accordingly, detasseling, a manual method of minimizing the incidence of pests is practiced. In addition, the informants reported that corn produced is not stored for a long time because it is sold immediately after harvest, or lending institutions or individuals directly haul their produce to cover the loans from farm inputs.

As to economic information, mean score obtained from the three sources PIS, PuIS and MmIS fall under the *useful* category. Only information on current prices was notably rated *very useful* This information could have helped them make decision on when and where they would sell their products.

Total Information Score (TIS)

In this study, TIS expresses the strength of information exchange between the BtCG and the sources of information, which can be strong, moderate or weak (Table 4).

Table 4. Total Information Score for each component of the farmer's Bt Corn information system in various provinces in Cagayan Valley.

Sources of Information	Total Information Score
Personal Information Sources	
Family member	210.08
Relatives	151.02
Friends	193.60
Co-corn growers	193.60
Mean	*187.07*
Public Information Sources	
Agric. Technician	9.12
Univ. Extensionist	3.71
Researcher	3.71
Experts	3.71
Mean	*7.60*
Mass Media Information Sources	
Radio	107.88
TV	98.20
Newspaper	7.85
Farm Journal	3.89
Farm Primer	4.71
Brochure	5.52
Package of Technology	4.67
Leaflet	6.09
Poster	4.68
Internet	2.35
Celfone	8.49
Mean	*23.83*

Legend: IS<74 – weak degree of information contact, 5<IS<149 – moderate degree of contact, IS>150 - strong degree of contact

The TIS mean score of the PIS is 187.07, which implies a strong degree of information exchange. This is an indication that there is more frequent contact and a high degree of usefulness of the information generated from the personal network of the BtCG. Hence, the personal network composes the communication network of the BtCG.

Mean TIS scores of 7.60 and 23.83 were obtained from the PuIS is and MmIS, respectively. Both results imply a very weak degree of information exchange. However, among the MmIS radio (107.88) and TV (98.20) had moderate degree of contact. These two mass media forms are sources of current information which may include market prices of products.

Relationship Between Demographic and Farm Characteristics and Total Information Score of Information Sources

Personal Information Sources

Tables 5 a, b and c present the correlation analysis between some independent and dependent variables. A significant relationship was obtained between sex of BtCG and TIS of relatives (p=0.038) and friends (p =0.025). This means that males which dominated the BtCG have strong information exchange relationship with their relatives and friends. Likewise, membership to organizations is correlated with the TIS of family members (p=0.040), friends (p=0.050) and co-corn growers (p=0.022).

Table 5a. Correlation matrix between demographic and farm characteristics and total information score of personal information sources.

Profile	TIS of Personal Information Sources			
	Family Members	Relatives	Friends	Co-corn Growers
Age	0.657	0.602	0.869	0.409
Sex	0.731	0.038*	0.025*	0.584
Civil Status	0.304	0.332	0.114	0.684
Ethnic Affiliation	0.451	0.048	0.077	0.696
Educ'l Attainment	0.921	0.830	0.487	0.683
Membership to Organization	0.040*	0.177	0.050*	0.022*
Years of Membership to Org.	0.023*	0.044	0.064	0.003**
Land Ownership	0.000**	0.020*	0.207	0.039*
Yield	0.190	0.839	0.122	0.107
Income	0.236	0.021*	0.014*	0.043*

Table 5b. Correlation matrix between total information score of PuIS and demographic and farm characteristics.

Profile	Public Information System				
	Municipal Agricultural Technician	University Extension Worker	Researchers/ Experts	Chemical Company Technician	Chemical Company Representatives
Age	0.983	0.426	0.314	0.826	0.208
Sex	0.572	0.017*	0.012*	0.316	0.001**
Civil Status	0.538	0.252	0.615	0.440	0.743
Ethnic Affiliation	0.854	0.711	0.380	0.417	0.389
Educ'l Attainment	0.950	0.833	0.199	0.902	0.266
Membership to Organization	0.943	0.239	0.219	0.429	0.394
Years of Membership to Org.	0.253	0.165	0.073	0.183	0.123
Type of Land Ownership	0.001**	0.327	0.617	0.638	0.922
Yield	0.584	0.346	0.060	0.699	0.052
Income	0.032*	0.111	0.062	0.183	0.366

Table 5c. Correlation matrix between total information score of MmIS and demographic and farm characteristics.

Profile	Mass Media Information System				
	Radio	TV	Print materials	Internet	Cellphone
Age	095.	0.007**	0.009**	1.00	0.887
Sex	0.565	0.072	0.029*	0.331	0.080
Civil Status	0.690	0.804	0.000**	0.676	0.766
Ethnic Affiliation	0.046*	0.034*	0.9711	0.183	0.323
Educ'l Attainment	0.736	0.960	0.041*	0.683	0.998
Membership to Organization	0.741	0.695	0.045*	0.155	0.148
Years of Membership to Org.	0.375	0.750	0.021*	0.649	0.358
Type of Land Ownership	0.267	0.488	0.727	0.005*	0.254
Yield	0.318	0.056	0.065	0.715	0.199
Income	0.968	0.338	0.257	0.192	0.943

Most of the members are owners of the land they till for corn production. There is a positive and strong relationship between land ownership and TIS of family members (p=0.000), relatives (p=0.020) and co-corn growers (p=0.039). Moreover, income is significantly associated with the TIS of relatives, friends and co-corn growers. This is probably a result of the frequent and useful information exchange between and among the personal network of the BtCG.

Land ownership is strongly correlated with the TIS of municipal agriculture technicians (p=0.000). This may imply that the information generated from the agricultural technicians could have been used and made an impact to the corn farming of BtCG who own their farms. Moreover, male BtCG have more access to information from university extension, researchers and chemical company representatives.

A strong correlation is recorded between age, and TIS of TV (p=0.007) and print materials (p=0. 009). This means that middle aged BtCG, are more likely to use and are benefitted from information generated from these two forms of mass media. Also, sex and civil status and TIS are prints materials are significantly related, an indication that married males tend to read information from print materials.

Ethnic affiliation is significantly associated with the TIS of radio (p=0.046) and TV (0.034), while educational attainment, membership to organization and years of membership to organization with the TIS of print materials, and land ownership with the TIS of internet. The rest of the variables did not show significant relationships.

Discussions

Demographic and Farm Characteristics

Btcorn growers in Cagayan Valley are dominated by Ilocanoes who are in their productive ages. These group of people depend on corn farming as the major source of their income. On the average corn yield of 50-100 cavans per ha/cropping which is approximately four tons /ha. Income per cropping is below P20,000.00 which is lower than the report of PAS in 2019 that the average income of corn growers in Cagayan Valley is Php 38, 130.41 per ha.

Agricultural Information System

Bt corn growers share their experiences or seek information related to corn farming more often from among their relatives, friends or co-corn growers. This is a manifestation that the Bt corn growers still resort to the traditional information system. This can possibly due to the proximity of the Bt corn growers with their relatives, friends and co-corn growers. There is an immediate exchange of useful information between and among them.

The above finding is supported by the high total information score indicating strong degree of information exchange between and among the Bt corn growers. They have strong ties with the members of their personal network, to whom they depend upon for or share information to. Strong ties can facilitate faster information spread. As cited further by Kee (2017) in Kee *et al.* (2016), that the repeated and prolonged exposure through frequent interactions, a convergence communication climate, a shared identity, a narrative history, and an anticipated future of still being together, the farmers may pay attention too, or adopt or pass on information from their strong ties who maybe are their friends, relative or co-farmers. Moreover, the frequent and continuous information exchange among them may have become patterned thus creating the personal information sources as their communication network. Communication network is the regular pattern of person to person contact as people exchange information in a human system (Rogers and Kincaid, 1981).

Among the communication network of the Bt corn growers, there may be important communication actors. There may be pinion leaders who may have strong influence in terms of knowledge and experience in corn farming. As pointed out by Kee, (2017), opinion leaders have the capability to influence informally opinion about an innovation within their social system. They have the ability to gain respect and trust from other members of the community. In other words, they represent the norms and belief system of a given community. Mackeracher *et al.* (2019), opined that the effectiveness of development programs aiming to improve livelihoods

may be enhanced by partnering with members of the target communities who are well-connected, respected, and influential within their community. There are individuals if trained can be effective conveyors, trainers or facilitators during capacity-building programs. In addition, they can be channels of new information or technologies from whom other co-corn farmers can

In addition, despite the traditional information, it has been noted that information generated from the PIS had been perceived useful. This is because the information sought or shared from their personal network particularly from opinion leaders may be the ones they practice in corn production. However, the information shared to the members of the communication network may not be the recommended practice in the corn farming technology. As opined by Churi *et al.* (2012) sharing of knowledge from farmer to farmer has remained to be the main methods despite of the inadequate reliability of information and experience shared among them. Just and Zilberman (2020), in their research showed that respondents find informal information to be very timely in most case, but they recognize that it may be inaccurate as well as biased.

Total information scores obtained from the components of the public information sources are low indicting a weak communication strength with the Bt corn growers. As pointed out by the farmers during the interview, they seldom seek information from outside sources. Accordingly, lack of time, and geographical location hampered them from visiting agricultural offices or other public information sources to seek for information. Also, agricultural technicians pointed out that they do not frequently visit corm farmers due to intervening tasks like preparation of reports and geographical location of corn farmers. This can be an indication that institutional support for information to the Bt corn growers is weak. Consequently, the potential of the public information sources such as the agricultural technician, university extension workers, researchers/experts as conveyors or sources of information related to corn farming is not optimized. Thus, limiting the corn growers' access to the package of technology or new trends in corn farming. The study on the agricultural information system in dairy farming of Demiryurek, *et al.* (2008) reported that raisers of dairy animals resorted to personal information sources due to the lack of information support from institutional sources. Vidanapathirana (2019), pointed out that the integration among people and institutions, particularly in the research-extension farmer relationship, has not been successful in many parts of the developing (and developed for that matter) world. He further noted that recent experiences show that, the human components of the system such as researchers, educators, extensionists and farmers are not connected together in the information flow.

In terms of the mass media sources, total information scores were also low. Only few information was generated from the broadcast media while print materials were seldom used. The use of information and communication technologies (ICT) in Bt corn production has not been taken full advantage of, yet. Bt corn growers have cellphones, however, they do not have access, or do not have the technical capability of browsing the internet.

As pointed out by Churi *et al.* (2012), the application of information and communication technologies (ICT) has inadequately given farmers ability to access information for improved crop productivity despite the increased benefit. It was further emphasized that studies have shown that the use of ICT including internet, mobile phones, emails, community radio, TV, telecenters, computers are not fully utilized by farmers, especially in rural areas. This limitation has been a result of high cost of ICT services, low literacy level, low income and limited number of service providers in rural areas. Likewise, Vidanapathirana (2019), pointed out that technological advances and software packages developed with the hope of promoting efficiency in the information dissemination practices of research institutions and universities, or even in the companies of developed countries have not in reality brought benefit to the farmers.

Relationship of Demographic and Farm Characteristics and Total Information Score

Some Bt corn growers do not just rely self- knowledge or experience in Bt corn growers. They depend on others such as relatives, friends and co corn growers for information. Bt corn growers who have higher literacy levels, are members of organizations for a long period of time and landowners read print materials for information. They also tend to use the internet for information. The high level of literacy makes them capable to seek and use information from print materials. They may also have the technical capability to source out information from the internet.

As members of the Ilocano community, Bt corn growers are fond of watching TV and listening to the radio. As such they had sought information such as market prices and locations, and future market prices from these two forms of mass media.

Conclusions

The agricultural information system is a venue for the generation and dissemination of information regarding agricultural production. Important actors in an agricultural information system include the sources and the utilizers. Sources of information are composed of the personal, public and mass media. Furthermore, the components of the agricultural information system are made up of the mechanisms by which the information is sought and shared, and its importance and utilization.

This study shows the feature agricultural information system of Bt corn growing in Cagayan Valley. A stronger degree of information contact with the personal sources is manifested than with the public and mass media sources. Most of the time Bt corn growers depend mainly on family members, relatives, friends and co-farmers for information, a traditional information system. Local experiences and traditional knowledge are the ones being shared among themselves. Dissemination of new, timely and relevant information from reliable sources is insufficient. This could be one of the factors that have affected Bt corn productivity. The potential yield and income of farmers are not maximized. Factors such as age, educational attainment, membership to organizations and land ownership of Bt corn growers are associated with the strength of information contact with most of the information sources.

Based on the results of the study, it is recommended that the information system of the Bt corn growers must be made more interactive. There is a need to strengthen the link between the Bt corn growers and public sources such as agricultural technicians, extension workers, researchers, experts, private agricultural company technicians and the mass media.

Local government units, research and development programs of state universities and colleges (SUC) and other agricultural institutions, must recognize the importance of intensifying information delivery systems. Agricultural technicians or extension workers must reach out the farmers so that diffusion of more relevant and timely information resource needs is better. Mass media outlets like TV, radio and print materials are important conveyors and must be extensively used for information dissemination. Information, communication technologies (ICT) which has become a modern method of technology dissemination must also be introduced and the use of which must be intensified.

Further research should be conductive to assess the degree of utilization of information generated so as to make a complete picture of the information system. A qualitative method of generating responses must be done in order to get a deeper understanding of the information seeking and sharing behaviors of the Bt corn growers.

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We declare that we have no conflict of interest

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