BIBLIOGRAPHY

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ABSTRACT

The study was conducted in November 2012 to December 2012 at Tinongdan, Itogon, Benguet. This study aimed; to identify varieties grown, to document rice production practices, to identify the major uses of rice grown in the area, to determine the social aspect of traditional rice varieties, to determine income derived from the rice production and to determine problems encountered in the production.

The data was gathered through the use of interview schedule and field observation. All data gathered from the respondents were tabulated and analyzed using frequency and descriptive analysis.

The rice varieties that farmers commonly planted in the area were Kintoman for traditional rice and R-5 for hybrid rice. Production practices include land preparation wherein all respondents used carabao in their rice fields, for weeding, farmers weeded their rice fields one and two months after planting. Few of the respondents sprayed their rice plants through the use of chemicals in controlling pest. Triple 14 and urea were the commercial fertilizers used by traditional and hybrid rice farmers.

Most of the traditional and hybrid rice farmers consumed their harvest, few of them sell and for the traditional rice farmers some used their harvest for town fiesta and for the special occasion like birthdays. Traditional rice were used for making native delicacies, rice wine and yeast. Almost of the respondents give some of their harvest to their friends, relatives and visitors.

Social dimension in traditional and hybrid rice production was the *atang* system in planting and harvesting, the traditional rice was used in special occasion like in *caňao* and *ufo*. *Atang* system was practiced to reduce cash cost for labor. When harvesting time the owner will call/ ask the people who plant to harvest.

Common problems encountered by the respondents on the rice production were the damages brought about by rats, a stray animals, insects, pest and diseases, lack of capital, calamities like typhoon and floods including weeds or grasses.

INTRODUCTION

Rationale

In Asia, rice is typically grown by poor farmers on farms averaging 1 hectare or less. In most countries, rice is a subsistence crop with about half of the harvest retained and consumed by farm household. Indeed, most of the rice crop is consumed within the country where it is produced; less than 5 of world rice production is internationally traded (Khush *et. al*., 1991).

Rice is semi-temperate plant scientifically known as *Oryza Sativa* Linn thrives in many tropical areas because of their warm and wet climate. It is the staple food of over 80% by our people with 70% of our population is directly dependent on rice farming and marketing for livelihood. However, rice which is our "bread life" production has not been able to consistently meet our needs (Anungan, 2000).

Heirloom rice usually commands a higher price than the ordinary rice. It is priced for its exceptional cooking quality, taste, texture, color, and most importantly, nutritional value. Heirloom rice grown in the Cordilleras is much sought locally and abroad particularly by health-conscious individuals. However, what could have been a lucrative farming activity is hindered by the inability of local farmers to produce this rice in greater quantities. As in other countries, heirloom rice is grown only in small family farms. It therefore bodes well for small communities in the Cordillera to come up with better rice farming technologies to enhance heirloom rice production for bigger profits (Argana, 2012).

The Cordillera is fast losing its numerous heirloom rice varieties because of the some agencies working on the rice varietal evaluation and hybridization are promoting and encouraging rice farmers to engage in hybrid rice production to ensure better incomes (See, 2011).

Tinongdan, is one barangay in Itogon who is also engaged in Heirloom rice production, initially for home consumption and for special occasions. Surplus is sold at a minimal quantity. However, with the strong promotion of hybrid rice varieties by the Department of Agriculture through the MAO office some farmers started producing the hybrid rice, but Heirloom rice is still there to stay because of some other reasons like social, culture and others.

It is in this context that this research is conceptualized to look into the Social dimension on rice production in Tinongdan, Itogon, whether heirloom rice or hybrid rice.

Statement of the Problem

This study sought to answer the following question in relation to the social and economic dimension of rice production:

1. What are the rice varieties grown?
2. What are the rice production practices in Tinongdan, Itogon,Benguet?
3. What is the major uses of rice grown in the area?
4. What are the social aspect of traditional rice varieties?
5. How much income is derived from rice production? and
6. What are problems encountered in the production?

Objectives of the Study

This study aimed to:

1. to identify rice varieties grown;
2. to document rice production practices in Tinongdan, Itogon, Benguet;
3. to identify the major uses of rice grown in the area;
4. to determine the social aspect of traditional rice varieties;
5. to determine income derived from the rice production; and,
6. to determine problems encountered in the production.

Importance of the Study

The study provide, necessary information about rice production, its importance to the socio-cultural aspects of the Ibaloi's culture and its economic importance to the farmer.

The information can serve as a guide for researchers, students and farmers who are interested to do further study along this line.

Scope and Delimitation of the Study

This study focused on the social and economic dimension of rice production in Tinongdan, Itogon, Benguet and the problems encountered in the production.

REVIEW OF LITERATURE

Rice Production Practices

Rice production in the Philippines has a bright future. With an increase of knowledge in nutrition, people cannot overlook the importance of rice as valuable food source. However farmers should be encouraged to produce and minimize the importation of rice to increase rice production and cultural management practices must be considered. However, commercial fertilizer are expensive and beyond the reach of farmers. An alternative then is through the use of indigenous materials that are readily and economically flexible (Awas, 1995).

Farming is the main source of livelihood in the rural areas. It can satisfy the needs of the family. Rice is the most important food crop of the world. If one has to consider the area of cultivation, rice production has the highest priority due to the number of farmers depending on the crop. To improve rice production, farmers have to work much harder, use better seeds and adopt more technologies particularly on fertilizer application, irrigation, and effective pest and disease management vest and post-harvest practices (Anonymous, 1995).

Ao-wat (1995), stated that the distance and spacing of rice seedling is important considering the numerous number of rice varieties available to farmers. It is a fact that some rice varieties have very numerous seedling compared to traditional varieties maintained by farmers. While the traditional spacing of farmers may be all right for traditional varieties of may also be the proper spacing for modern high yielding varieties.

Rice Varietal Characteristic

High yielding varieties are therefore recommended for the farmers in the locality even under farmer practice. However, due to the rat's infestation among the high yielding varieties must be done in such a way that harvesting must coincide with used by the farmers (Marcelino, 1995).

Vergara (1992), as cited by Waitan (2003), stated that modern varieties gave greater yield potential than traditional varieties over under the best conditions; traditional varieties cannot yield more than the modern varieties. Use of fertilizer and improved farming practices increase grain yield more in modern varieties.

IRRI (1991) reported that modern varieties that had been developed for transplanting were also used for broadcast seedling. Those varieties often performed similarly, but sometimes gave lower yield when broadcast seeded.

Problems Encountered in the Production

Basitao (1997), as cited by Patchel (2004), stated the farming problems in the rice terraces lowland community include the absence of farm to market road, foot path bridges, market centers, lack of technical skills, appropriate technology and the prohibitive cost of farm inputs. Many rice fields are affected by the so-called zinc deficiency, diseases, the attack of birds and rats, insect pest, insufficient irrigation, lack of farm labor, credit support, socio-economic, cultural problems and peace and order.

Philrice (2000), the golden apple snail (GAS) is one of the major problems in transplanted rice authority (FPA) registered mullusides still effective against GAS. The mullusides also damage lea kills and kills less native snails. But these are effective only up

to 2 days. These emerging snails after inactively were not killed. Basal application can also reduce the population of golden apple snail.

Definition of Terms

Social. the communication/ interaction of the individual or group characterized by friendly companionship (Harper, 2010).

Social dimension. refers to people involved, physical places, acts, activities/routines, events, objects, time, goals (Woodworth, 2009).

Economic. relating to a household or its management, profitable, financial, utilization of resources, production, distribution, and consumption of goods and services (Collins, 2009).

Economic dimension. refers to the scope of the development as to profitability or financially viable or cost effective.

Conceptual Framework

The study looked into the social aspect on the production and utilization of traditional and hybrid rice production as influenced by the culture and traditions of the people in the study area. Furthermore, it looked into the economic contribution to the farmer. *Atang* sytem was that whoever individual want or willing to work in planting rice and at the same time are also accountable to harvest. If an individual who comes to work harvests four bundles/ cans of palay in a day, the rice field owner takes three bundles/cans and gives him one bundle/ can as his share. This is still practiced until now by the farmers and few of the rice field owner pay in cash to those who plant and harvest.

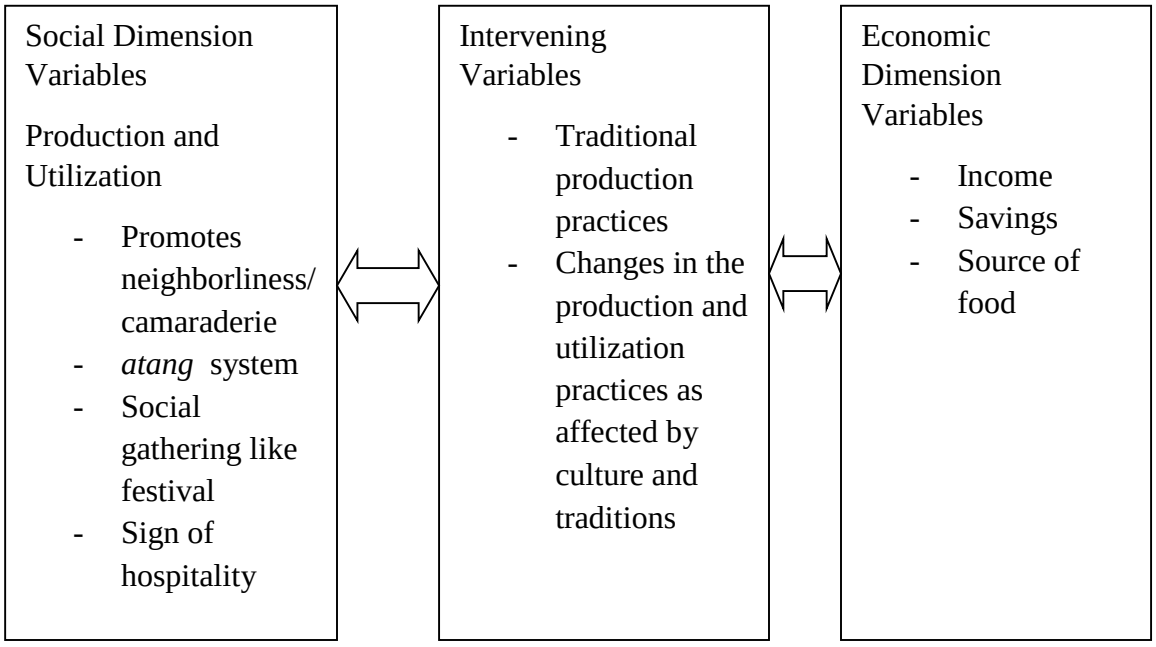

Figure 1. Conceptual framework of the study

METHODOLOGY

Locale and Time of the Study

Barangay Tinongdan is located in the municipality of Itogon. The barangay is 29 kilometers away from Baguio City. Its total land area is 12, 720.37 hectares and it is the second largest barangay in the municipality of Itogon. It is bounded North by Ambuklao, Bokod; South by barangay Dalupirip; East by Bisal, Bokod and Kayapa, Nueva Viscaya and West by barangay Poblacion and Loacan, Itogon, Benguet.

The residents in this barangay are Ibaloi's, Iowak's and Kalanguya's. The barangay was also declared as tourist spot or attraction because of "Binga dam" and "Mt. Ugo" one of the various scenic mountains in barangay Tinongdan, Itogon, Benguet.

The study was conducted on October to November 2012.

Respondent of the Study

Sixty farmers engaged in rice production were considered as the respondent of this study. Random sampling technique was used to identify the respondent.

Data Gathering Procedure

The respondent were interviewed using the interview schedule and field observation was done on their practices in rice production and land area they are cultivating.

Data Gathered

The data gathered were the rice variety grown, rice production practices, major uses of rice grown in the area, social aspect of traditional rice varieties, income derived from the rice production and problems encountered by the farmers.

Data Analysis

The data gathered from the respondents were tabulated and analyzed using frequency and descriptive analysis.

RESULTS AND DISCUSSION

Profile of Respondents

A total of sixty rice farmers were taken as the respondent of this study. Table 1 presents the profile of the study which includes; age, civil status, numbers of children, educational attainment and number of years in farming.

Age. The mean age of respondents is 54.75 years. It was found out that 25% belonged to the age of bracket 41 to 50; 18% or 11 belonged to the age bracket 51 to 60; 17% or 10 belonged to the age of 60 and above; 38% belonged to the age bracket 31 to 40; and 2% belonged to the youngest bracket of 30 and below. Most of the respondents were at their older age and were experienced farmer. Few of the respondents were at their younger age because they are more engaged in gold panning although farmers were engaged in gold panning when land preparation and planting of rice was already done.

Gender. Majority of the respondents were male with 62%, and 38% were female.

Civil status. Of the sixty rice farmers, majority of the respondents (76%) were married, 7% were single and 17% were widowed.

Number of children. Majority (57%) of the respondents had 1 to 5 children; and 37% had 6 to 10.

Educational attainment. Sixty two percent of the respondents reached elementary level, 30% reached high school, 2% college level, and 7% had no formal education. Most of the respondents had attended formal education but nobody had finished college because of financial problem and the location of school before was far. Some parents of the

respondent, did not send their children because they want their children to work/ help in the farm.

Number of years in farming. As to the number of years in farming, 67% of the respondents had been farming for 10 years and below, 23.3% had been farming for 11 to 20 years, 45%had been farming for 21 to 30 years, and 25% had been farming for 30 years and above. This implies that all the respondents had been engaged in farming for a long time.

Table 1. Profile of the respondents

PROFILE	FREQUENCY	PERCENTAGE
Age		
30 and below	1	2
31-40	23	38
41-50	15	25
51-60	11	18
60 above	10	17
TOTAL	60	100
Mean Age: 54.75		
Gender		
Male	37	62
Female	23	38
TOTAL	60	100

Table 1. Continued . . .

PROFILE	FREQUENCY	PERCENTAGE
Civil status		
Single	4	7
Married	46	76
Widowed	10	17
TOTAL	60	100
Number of children		
1-5	34	57
6-10	22	37
Educational attainment		
No formal education	4	7
Elementary level	37	62
High School level	18	30
College level	1	1
TOTAL	60	100
No. of years in farming		
10 and below	4	7
11-20	14	23
21-30	27	45
31 and above	15	25
TOTAL	60	100

Demographic Profile of the Farm

Land tenure status of the farm. Among the sixty respondents, 65% cultivated their own land and 42% were tenants. The findings show that majority of the respondents till their own land and at the same time they are also tenants because some of them till their own land that is mortgaged.

Size of the farm area planted by the respondents. Haft of the respondents had an area of 0.25 to 0.35 hectare of farmland, 33% had 0.25 to 0.35 hectare and 17% had 0.36 to 0.5 hectare. The rice fields/ rice terraces that the farmers are cultivating were built by their forefathers.

Source of water supply. All of the farm respondents irrigate their rice fields through irrigation canal and at the same time they depend on rainfall. Hybrid rice was irrigated through rain and irrigation. Water supply is from the brooks in mountain and it is not enough to irrigate their rice fields. Paddies nearest the source of water are irrigated first before to the succeeding paddies.

Different varieties of palay planted by the respondents. There are different varieties of palay being planted by the farmers in the area. The traditional rice variety that the farmers commonly planted was Kintoman with a 43.3% of the respondents and for hybrid ricewere R-5 and C-1 with a 18.3% and 16.7% of respondent, respectively. Other varieties planted were Bongkitan, Libwagan, Ortok, RC-10, Milagrosa, C-18 and C-4.

Terrain/topography of the farm. All the respondents/farmers were cultivating terraced lands. This shows the unity, diligence and cooperation of the people in the community in building their rice terraces. Benguet ancestors tried their best just to put up rice terraces for rice production.

Cropping per year. Majority (57%) of the respondents planted rice one cropping per year and only 43% of the respondents planted rice twice cropping a per year. This finding shows that the respondents plant rice one cropping per year because of lack of water, they plant rice during wet seasons and this starts from June to September.

Table 2. Demographic profile of the farm

PROFILE	FREQUENCY	PERCENTAGE
Tenurial status *		
Owner	39	65
Tenant	25	42
Area planted		
0.25 ha. below	15	25
0.26-0.35 ha.	30	50
0.36-0.50 ha.	15	25
Source of water *		
Irrigation	60	100
Rain	32	53.3
Varieties of palay planted *		
Kintoman	26	43.3
Bongkitan	5	8.8
Libwagan	1	1.7
Ortok	1	1.7
Rc-10	5	8.3
Milagrosa	1	1.7

Table 2. Continued . . .

PROFILE	FREQUENCY	PERCENTAGE
R-5	11	18.3
C-18	6	10
C-1	10	16.7
C-4	2	3.3
Topography/ Terrain		
Terraces	60	100
Cropping per year		
1 cropping	34	57
2 cropping	26	43
TOTAL	60	100

*Multiple response

Planting and Harvesting Season

Month of planting. Table 3 shows that 35% of the respondents planted their rice in January and few planted in December and February which were the month of first cropping. The second cropping is June to September. Eleven percent planted in June, 25% planted in July, 31.7% in August, and 1.7% in September. The months of June and July are the time for planting rain-fed lands or wet seasons and January to February for dry season.

Month of harvesting the palay. In first cropping, 36.7% harvest their palay in June, 5% harvest in April, 6.7% harvest in May, and 11.7% harvest is July. In the second cropping, 40% of the respondents harvest their palay in November, 10% in October, and

40% in November. Harvesting was done in the months of September, October and November, this depend on the month they plant.

Table 3. Planting and harvesting seasons

PARTICULAR	FREQUENCY	PERCENTAGE
Month of planting		
First cropping		
December	7	11.7
January	21	35
February	2	3.3
Second cropping		
June	7	11.7
July	15	25
August	19	31.7
September	1	1.7
Month of harvesting		
First Cropping		
April	3	5
May	4	6.7
June	22	36.7
July	7	11.7
Second Cropping		
October	6	10
November	24	40
December	11	18.3

* Multiple response

Management and Cultural Practices Employed on Rice Production

Land Preparation. Table 4 presents how the farmers do land preparation. Both the traditional and hybrid rice farmers prepared their area by plowing with the use of carabao. They do land preparation before transplanting the seedlings.

Method of planting rice. Most (93%) of the traditional rice farmers used transplanting and only 7% used direct method. All hybrid rice farmers used transplanting method of planting rice.

Distance of planting. Majority of traditional rice farmers used a distance of 20 x 20 centimeters, 43% used a distance of 15 x 15 centimeters, and 3% used a distance of 10 x 10 centimeters while in hybrid rice, most (84%) used a distance of 15 x 15 centimeters, 13% used 20 x 20 centimeters and only 3% used a distance of 10 x 10 centimeters. It is important to consider the distance and spacing in planting rice because it increases the number of panicle per hill.

Weeding. Majority(71.1%) of the hybrid rice farmers weed their rice fields two months after transplanting and 43% of traditional rice farmers weed their rice fields after one and two months of planting. Few of the respondents do not weed their rice fields by 12% of traditional rice farmers and 6% of hybrid rice farmers.

Management of pest and diseases. Table 4 shows the respondents manage pest and diseases. Out of 60 respondents, there were only 16 respondents who sprayed pesticide to their rice plants whether traditional or hybrid rice farmers. Four percent of traditional rice farmers sprayed pesticides to their rice plants before the attack of pest and diseases and another 4% sprayed after the attack of pest and diseases. For the hybrid rice farmers, 38% sprayed pesticide to their rice plants after the attack of the pest and diseases. Most of the

respondents do not sprayed pesticides to their rice plants due to lack of spray materials and chemicals.

Application of fertilizer. All hybrid rice farmers and half of the traditional rice farmers apply synthetic fertilizer to their rice fields. There were half of traditional rice farmers do who not apply fertilizer to their rice fields.

Kind of fertilizer used. Forty one percent of traditional rice farmers used urea fertilizer and 13% used ammonium sulfate and triple 14 (14-14-14). Some traditional rice farmers apply fertilizer to the seedlings. Most (87%) of the hybrid rice farmers used urea as a source of nitrogen and 41% used a triple 14.

Frequency of irrigation. Most (82%) of the traditional rice farmers and majority (66%) of the hybrid rice farmers irrigated their rice plants every other day because of limited supply of water.

Pest control method. For traditional rice, most (93%) of the respondents do not control pest and 7% control pest by the use of chemicals while in hybrid rice, 44% of the respondents control pest through the use of chemicals.

Table 4. Management and cultural practices employed on rice production

ACTIVITIES	TRADITIONAL		HYBRID	
	F	%	F	%
Land preparation				
Plowing by carabao	28	100	32	100
Method of planting				
Direct method	2	7		
Distance of planting				
10 x 10 cm. apart	1	4	1	3
15 x 15 cm. apart	12	43	27	84
20 x20 cm. apart	15	54	4	13
Weeding				
After 1 month of planting	2	43	4	12.5
After 2 months of planting			23	7.9
After 3 months of planting	12	43	2	6.3
Done at anytime			1	3.1
No weeding	4	14	2	6.3
Spraying				
Spray plants before the attack of pest	1	4	2	6
Spray plants during the attack of pest	4	4	12	38
Fertilizer application				
Apply fertilizer	14	50	32	100
Do not apply fertilizer	14	50		
Kind of fertilizer applied				
Triple 14 (14-14-14)	4	13	13	41
Urea	13	41	28	88
Ammonium Sulfate	4	13		

Table 4. Continued . . .

ACTIVITIES	TRADITIONAL		HYBRID	
	F	%	F	%
Irrigation				
Every other day	27	96	23	72
Weekly	1	4	9	28
Pest control				
Control	2	7	14	44
Do not control	26	23	18	56
Control measure practice				
Use of chemicals	2	7	14	44

Harvesting Method and Post Harvesting Method

Method of harvesting the palay. Most of the respondents in traditional rice farmers harvested their palay by pricking or *ani* and only 2 or 7% harvested their palay through the use of sickle or *gapas* while all respondents in hybrid rice farmers use sickle or *gapas* in harvesting their palay. The common method of harvesting traditional rice is pricking or *ani*, harvesting the rice individually at the panicles. *Gapas* method is generally used for the hybrid rice due to absence of mechanical harvesting equipment.

Frequency of drying. This shows on how many times the respondents dry their palay before it is ready to mill. The harvesting time of traditional rice is wet season, June to July so what they do is smoke drying. While in hybrid rice, most (84.4%) of them dry their palay three times, this depends on the heat of sunlight.

Method of drying. All of the respondents of hybrid rice and 7% respondent of traditional rice practiced sun drying their palay after threshing.

Threshing/kind of thresher used. Majority (62.5) of respondents of hybrid rice used pedal thresher and 37.5% of respondents used threshing machine with fuel. In traditional rice, threshing is manually through pounding.

Cleaning. All respondents both traditional and hybrid rice farmers cleaned their palay manually. For the hybrid rice, they use winnower in cleaning or the *lina-ed* method, throwing the grain into the air over the canvass while wind is blowing.

Storing. All respondents practice storing their palay.

Storage practices. Both respondents of traditional and hybrid rice farmers stored their rice within the premises of their houses and make sure that it is properly stored to maintain its good quality.

Packaging material for rice. For the traditional rice, only 8 respondents used plastic sacks to pack their harvested rice and the rest of them do not use any packaging material because after harvesting they prepare it for smoke drying although sometimes they use sack, whereas in hybrid rice all respondents used plastic sacks to pack their rice for the reason that it is available and more convenient.

Table 5. Harvesting method and post harvest method

ACTIVITIES	TRADITIONAL		HYBRID	
	F	%	F	%
Harvesting method				
By hand pricking "ani"	26	93		
By use of sickle "gapas"	2	7	32	100
Drying				
Once			3	9
Twice	6	21		
Thrice			27	84
Four times			3	6
"smoke drying"	22	79		
Drying of palay				
Before threshing				
After threshing	2	7	32	100
Threshing/ kind of thresher used				
Threshing machine with fuel			12	37.5
Pedal thresher			20	62.5
Cleaning				
Through thresher			1	3
Manual method	28	100	31	97
Storing				
Practice	28	100	32	100
Do not practice				
Storage used				
House	28	100	32	100
Storage container				
Plastic sack	28	100	32	100

Purpose in Planting

Purpose in planting. The purpose of the respondents in planting traditional rice was to sell, for the household consumption and to serve during special occasions like *cañao*, festivals and others. For the traditional rice, most of the respondents consumed their rice; 7% or 2 of the respondents sold some of their rice if there are excess; 11% or 3 of the respondents served their rice during special occasions. For the hybrid, most of the respondents consumed their rice and only 3% respondent sells some of his/her harvest. Selling of harvest was only practiced if there are surplus and when they cash. This finding explains that not all of their yield were for sale and for special occasions because of limited area for product, most harvest were kept for consumption.

Table 6. Purpose in planting

PURPOSE	TRADITIONAL		HYBRID	
	F	%	F	%
Purpose in planting				
To sell	2	7	1	3
For household consumption	23	83	31	97
To serve during special occasion	3	11		

*Multiple response

Percentage of Utilization

Percentage of harvest sold. Seven percent of traditional rice respondents sold 15 percent of their harvest and only 3% hybrid rice respondents sold fifty percent of his harvest.

Percentage of harvest consumed. Most of the respondents of hybrid and traditional rice farmers consumed all their harvest but few sold some their harvest if they need money.

Uses for special occasions. Three respondents of traditional rice used their harvest for *caňao*, served at the fiesta and for birthdays. In *caňao* rice wine or *tapey* is always served and traditional rice variety are used in *tapey* production referred to as traditional wine and the pig as the traditional animal.

Table 7. Percentage of utilization

PERCENTAGE	TRADITIONAL		HYBRID	
	F	%	F	%
Percentage of harvest sold				
50%			1	3
15%	2	7		
Percentage of harvest consumed				
All harvest	23	82	31	97
50%			1	3
85%	5	18		

Table 7. Continuation . . .

PERCENTAGE	TRADITIONAL		HYBRID	
	F	%	F	%
Use for special occasion				
Town fiesta	3	11		
Caňao	2	7		
Birthdays	1	4		

*Multiple response

Reasons for Planting Traditional Rice

Reasons for planting. Aside from the food benefit, natives process kintoman as rice wine. The rice wine, which is commonly known as *tapey* among the natives, is served during special occasions like rituals, fiestas and can be given as gifts for visitors and dignitaries, used for native delicacies and making yeast.

The traditional rice farmers revealed that not all of their harvest is for household consumption. Some used it for native delicacies, used for rice wine, used in preparing yeast, for special occasion and given to friends or relatives. Some of the respondents used their harvest for native delicacies; 27% of the respondents give their harvest as a gift to their friends/relatives; 27% of the respondents used it for rice wine; 17% used their harvest for special occasions and only 5% for yeast making.

Social aspect. It is where the interaction of people in the community is seen. In *caňao,* there is a rice wine to be served and also in our town fiesta. One activities in our barangay/municipal fiesta is pounding traditional rice, it shows the lifestyle of locality before. There was Kintoman festival in our municipality, the municipality of Itogon is in

fear of losing these varieties. Kintoman refers to native or traditional rice variety with red color grown in rice paddies. The other used of traditional varieties is for *ufo*. *Ufo* is an Ibaloi culture where relatives and friends provide traditional rice varieties to a family who is mourning because of loss in the family. This is one of the reason why until now despite of the new varieties of rice, traditional varieties are still planted.

The *atang* is also a culture where friends and neighbor help in planting and the person who helped in planting will also be the one to help in harvesting palay and from the harvest that person will get a share. If the person was able to harvest four bundles/ cans of palay his share is one bundle/can. Because of these culture and practice, it promotes camaraderie. Traditional rice are also given to visitors as gift or way of showing gratitude and hospitality to visitors.

Table 8. Reasons for planting traditional rice

REASONS	FREQUENCY	PERCENTAGE
Reason for planting		
Used for rice wine	21	75
Used in preparing/ making yeast	5	16
Used for native delicacies	28	100
For special occasion	17	61
Given to friends/ relatives	27	96

Table 8. Continued . . .

REASONS	FREQUENCY	PERCENTAGE
Social aspect		
Caňao	13	46
Gift to visitors	28	100
For fiesta/ festival	23	68
Promote neighborliness	28	100
Ufo (given to relatives/ friends especially when somebody is dead)	9	32
Sharing of seeds and variety	28	100

*Multiple response

Cost and Return of the Respondents

Income derived from the production. Table 9 shows the income and expenses of the traditional and hybrid rice farmers for the one cropping per year only in a 5,000 sq. meter. The income of a rice farmer depends on the land area they are tilling. All respondents had a small land area. The maximum yield of a rice farmer is 240 cans of palay and for traditional rice is 300 bundles for those who had a large land area (5000 sq meter). For those had less than 5000 sq. meter of farmland usually practice the *atang* system. *Atang* sytem was that whoever individual want or willing to work in planting rice and at the same time they are also accountable to harvest. If an individual who comes to work harvests four bundles/ cans of palay in a day, the rice field owner takes three bundles/cans and gives him one bundle/ can as his share. This is still practiced until now by the farmers and few of the rice field owner pay in cash to those who plant and harvest. The rent of carabao used for

land preparation depends on the land area, either the carabao's owner will pay in cash (1500 minimum) or palay. The field owner feeds those who work in his field. Return to cash expenses was estimated at 13% for hybrid rice and 14% for traditional rice.

Table 9. Cost and return of the respondent (5,000 sq. m)

PARTICULAR	TRADITIONAL	HYBRID
Income		
Sales: 240 cans of palay 200/ can		48,000
300 bundles 100/ bundle	30,000	
TOTAL	30,000	48,000
Expenses		
Fertilizer	1250	4250
Seeds(opportunity cost)	200	1500
Labor for land preparation (rent of carabao used and hand tractor)	6000	5000
Labor for planting	2000	2000
Labor for harvesting	3000	2000
Rent for thresher used		4800
Miscellaneous expense	1300	1300
TOTAL EXPENSES	12900	20850
NET INCOME	17100	27150
ROCE	14%	13%

Problems Encountered by the Respondents and Perceived Solution

Problems encountered by the respondents. Almost all of the respondents revealed that they encountered common problems which are the following; lack of capital, calamities, damages brought about by rats, stray animals, insects, pest and diseases, weeds or grasses, and lack of knowledge about modern agriculture.

Solutions to the problem. All respondents stay on the farm to drive the birds during ripening of rice panicles. Farmers build strong foundations for their rice fields to prevent from falling/ slides during calamities and construct fences around their farms to prevent the entrance of stray animals. Few of the respondents use racumen for rats because it is poisonous and not good for the health and 15% of the respondent adopt new agricultural technologies (short maturing and high yielding varieties) on rice production.

Table 10. Problems encountered and perceived solution

PROBLEMS/ PERCEIVED SOLUTIONS	FREQUENCY	PERCENTAGE
Problems encountered		
Lack of capital	52	86.7
Calamities like typhoon, and floods	60	100
Damages brought about rats	58	96.7
Damages brought about by insect, pest and diseases	60	100
Damages brought about by stray animals	42	70
Weeds or grasses	60	100
Lack of knowledge about agriculture specially in rice production	36	60
Unavailability of irrigation/ lack of water	40	66.7
Perceived solutions		
Spraying use of chemicals like insecticides and weedicide	16	26.7
Construction of fences around the farms to prevent the entrance of a stray animals	18	78.3
Use of racumen	9	15
Adoption of agricultural technologies on rice production to increase profit to have more capital	9	15
Stay on the farm to drive away the birds during ripening of rice panicles	60	100
Building strong foundations of rice fields to prevent from falling during calamity	60	100

*Multiple response

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to determine the social and economic dimension of rice production in Tinongdan, Itogon, Benguet. It was conducted to identify varieties grown in the area, to document rice production and practices, to identify the major uses of rice grown in the area, the income derived from the rice production and to determine problems encountered in the production.

The study showed that majority of the respondents were: male, married with a range of 1 to 5 children, literate with low educational attainment , and had a mean age of 54.75. The findings showed that the respondents were at their old age and strong enough to do all the activities on the farm. Majority of the respondents were engaged in farming for so long with experiences of 21 to 30 years. All of the respondent cultivated an area of less than one hectare and majority of the respondent cultivated their own land planted primarily with rice. All of the respondent depended on canal irrigation. Majority of the respondents planted once a year. The months of planting was January for the first cropping and June as well as August for the second cropping. The months of harvesting the palay was June for the first cropping and August for the second cropping.

Production practices included land preparation, transplanting, distance of planting, spraying, weeding, fertilizers used and irrigation. For land preparation both traditional and hybrid rice farmers used carabao for preparation. After the land preparation, transplanting followed which most of the traditional and all hybrid rice farmers used. Majority of the traditional rice farmer used a distance of 20 x 20 centimeter apart in planting and most of the hybrid rice farmer used a distance of 15 x 15 centimeter apart. In weeding, majority of

the hybrid rice farmer weed their rice field after two months of planting and most of the traditional rice farmer weed their rice fields after one and two months of planting. Few of the respondent spray their rice plants through the use of chemicals in controlling pest. Triple 14 and urea were the commercial fertilizer used by hybrid and traditional rice farmers. Irrigation was a problem since the water is not enough to irrigate their rice fields. Most of the traditional and hybrid rice farmers thresh and harvest their palay manually. Harvested palay were dried three times before it is ready to mill and for traditional rice, farmers used smoke drying. The hybrid and traditional rice farmer cleaned their palay manually and were packed on plastic sack for hybrid rice which were stored inside their houses.

Most of the traditional and hybrid rice farmer consumed their harvest, few of them sell and for the traditional rice farmer some used their harvest for town fiesta and for the special occasion like birthdays. Traditional rice are used for making native delicacies, rice wine and yeast. Almost of the respondent give some their harvest to their friends, relatives and visitor.

Social dimension in traditional and hybrid rice production was the *atang* system in planting and harvesting, the traditional rice was used in special occasion like in *caňao* and *ufo*. *Atang* system was practiced to reduce cash cost for labor. When harvesting time the owner will call/ ask the people who plant to harvest. Common problems encountered by the respondent on the rice production were the damages brought about by rats, a stray animals insect, pest and diseases, lack of capital, calamities like typhoon and floods including weeds or grasses. Farmers usually stayed in the fields to drive away the birds;

and they built strong foundation for the rice fields and fences to prevent the entrance of a stray animals.

Conclusions

Based on the findings of the study, the following conclusion were made:

1. Most of the respondents were receptive in adoption of new technologies because out of 60 respondents, 32 respondents were already planting improved varieties;

2. The introduction of short maturity and high yielding varieties had changed the production practices from traditional to conventional, because farmers learned to use synthetic inputs like inorganic fertilizer and chemical spray. The new technology had changed the post harvest practices like threshing instead of the traditional or manual pounding of palay. It had also made production easier and had also two cropping instead of usual one cropping;

3. The new changes may also cause the loss of traditional varieties in the cultural value and it may also loss because of changes in culture of younger generation.

Recommendations

From the findings and conclusions, the following recommendation were made:

1. The traditional method of production should be promoted (re-introduced) because the trends now was organic or safe foods which had elite market for health and nutritious conscious. The changes in the production practices had change the way the people value the traditional rice varieties which was part of their culture like Kintoman variety that was prepared into rice wine or *tapey* and other varieties were use for native

delicacies. Changes may also reduce the social aspects in the farming like the *ufo*, where the neighbors give native rice with one pig to their friends/relatives during mourning which this culture promote geniuses neighborliness where there was sharing among neighbor; and,

2. Changes in living standard of farmers should not be forget the value of these varieties to the culture of Ibalois. Besides the traditional varieties were colored, thus, asides from its aroma it is more delicious and nutritious as reported by (FNRI,2000).

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