BIBLIOGRAPHY

CAGA, ANIE D. APRIL 2011. Oyster Mushroom Production and Marketing by Members of Ampucao Forest Products Center Association Incorporation. Benguet State University, La Trindad, Benguet.

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ABSTRACT

The study was conducted to (1) describe the production and marketing practices of the farmers involved in mushroom production; (2) identify their market outlets; (3) evaluate the profitability of the mushroom and fruiting bag production; and (4) identify the problems encountered by the respondents in production and marketing of mushroom.

There were two sets of respondents; 9 mushroom growers and 4 fruiting bag producers. The data and information were gathered by means of a survey questionnaire and supplemented with a personal interview of the respondents. The data gathered were tabulated and analyzed using frequency counts and percentages. Cost and return analysis was employed in the analysis of the profitability of mushroom production.

Result shows that mushroom growers and fruiting bag producers were of middle age. Majority of them reached college level.

Findings show that most of the mushroom growers have concrete and galvanized type of mushroom house and they used straw instead of nylon strings in hanging their fruiting bags. They sprinkle their mushroom fruiting bags once a day after harvesting. Majority of them harvest daily during the first 1 to 3 months of growing. All of them were selling their produced

mushrooms. Cellophane is their common packaging material and most of their market outlets were their neighbors and they personally deliver the fresh mushroom to their buyers. Most of them sold on cash basis upon delivery and they set their own price based on the prevailing market price.

The major problem of the mushroom growers in production was the occurrences of pest and diseases. In marketing, they cannot meet the demand of their customers due to small volume of harvest.

In the production practices of fruiting bag, all the respondents used drums as a substitute for autoclave. Their markets for the fruiting bags were the members of the association as well as non-members and farmers in other areas who were interested in producing mushroom. They also deliver their products, to their customers by hiring vehicles to transport their products.

Contamination of fruiting bags was their serious problem in producing fruiting bags. As to their problem in marketing, limited market outlet was the major problem. As shown in the result of cost and return analysis, the fruiting bag production had higher net income as compared to mushroom production which has lower net income.

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INTRODUCTION

Rationale

Itogon is a first class municipality in the province of Benguet with a total population of 48,778 people in 8,588 households. The town is bounded on the northwest by the municipality of La Trinidad and Tublay, on the northeast by the municipality of Bokod, on the southwest by the province of Nueva Viscaya, on the south by the province of Pangasinan, and on the west by the municipality of Tuba and Baguio City. It has nine barangays which Ampucao is included and it was generally inhabited by Ibalois. The main source of livelihood is mining and secondary to mining is agriculture.

Fifty years ago, some parts of Philex Mines were the hunting ground of some of the indigenous inhabitants of the outlaying sitios. Later, these became their pasture lands and at the same time their kaingin sites. They planted crops such as camote, camoteng kahoy, gabi and others.

Most, if not all of the indigenous inhabitants earned their living by backyard gardening, animal raising, kaingin, farming, hunting and fishing for family consumption. Gold panning along the river gave them extra family income especially for the residence of Sal-angan, Banget, Piaki, 745, and Nayen. According to the old folks of the place, water supply was abundant and clean before the establishment of the Philex Mines. Moreover, they used to enjoy the undisturbed environment, preserved natural resources, the peaceful wildlife habitats, and the original land configuration and the freshness of the air (Panawan, 2010).

The environment has changed when the Philex Mines started its operation. The people who are affected in the operation formed an organization to claim their stakes in

the company. In 1984. the company gave them "sloshing canal" as source of extra income. However, in 1997 the amount of gold produced from the sloshing canal started to dwindle so the people of Itogon negotiated with Philex Mines for other economic supports. They organized the TIHCAPOSI, an association of the people of Itogon living at the outlaying areas of the Philex Mines. The association made a MOA with the company to help them establish livelihood projects. The company committed to provide the needed materials and capital under its Social Development and Management Program (SDMP) through its Community Relations Department and the Municipal Agriculture Office of Itogon, Benguet.

The SDMP-Philex Company distributed the Income Generating Projects in Barangay Ampucao. Sitio Sal-angan for the aquaculture, sitio 745 for coffee production, Ampucao Proper for beekeeping and sitio Cruz for mushroom production. Since the projects are willing within the barangay Ampucao, they decided to form an association to oversee these IGPs. The name of the association is Ampucao Forest Product Center Association, Incorporation (AFPCAI).

On November 2008, banana mushroom production was first started by sitio Sal-angan but the project failed because there is no source of banana for mass production. This discouraged the people to continue. The association wanted to transfer the project site to sitio Sta. Fe but the residence opposed it so it was brought to sitio Cruz. The mushroom production project started in December 2008 with a small room until the members of the association decided to put up a production building. The building was planned as a production center and at the same time a training center for members and other farmers who are interested to produce mushroom. The construction of the building

which is 18 by 24 square feet structure started on July 14, 2010 through Bayanihan by the local residents of the place. The production of mushroom is continues even though the building construction is on going because the association sell its produced fruiting bags to the interested members and other farmers through package deal.

Importance of the Study

The result of the study would provide benchmark information on mushroom production in Sitio Cruz, Ampucao, Itogon, Benguet. The information gathered from the study would serve as a guide for those entrepreneurs who are interested in producing and buying substrates; for the association to improve their operation; for the other researchers who will conduct related studies; and extension agents that can make use of the valuable information for workable strategies influencing mushroom production.

Furthermore, the overall result of the study could provide important insights to concerned groups involved in the development of mushroom production and those who plan to buy only substrate from the producers.

Statement of the Problem

The study was conducted to find out the profitability of mushroom production by the association, farmers and members of the association engaged in mushroom production. Thus, the study aimed to answer the following questions:

1. What are the production and marketing practices of the association and the farmers?
2. Where are the market outlets of the product?
3. Are the farmers gaining profit from mushroom production?

4. Is mushroom fruiting bag production profitable?

5. What are the problems encountered by the association and the farmers in the production and marketing of mushroom?

Objectives of the Study

The study aimed to:

1. Describe the production and marketing practices of the association and the farmers involved in mushroom production;

2. Identify market outlets of the producers;

3. Evaluate the profitability of mushroom production by the farmers;

4. Evaluate the profitability of mushroom fruiting bag production by the association; and

5. Identify the problems encountered by the association and the farmers in the production and marketing of mushroom.

Scope and Delimitation of the Study

The study focused on the mushroom production and marketing in Sitio Cruz, Ampucao. It evaluated the profitability of mushroom production and marketing by the farmers and the profitability of fruiting bag production by the association.

REVIEW OF LITERATURE

Historical Background

Long ago, people discovered certain kind of mushrooms were delicious to eat. Four thousand years wild mushrooms were gathered at royal banquets and valued by poor folks as well because they were not only good to eat but free for picking. The cultivation or artificial planting of mushroom began in Europe about 220 years ago. Although many different kinds of mushrooms are good to eat, one kind is the field mushroom that grows particularly well under cultivation. The modern cultivated mushroom is closely related to the common field mushroom. Also the cultivated mushroom belongs to the fungi, fungus plant group (Yerkovish, 1968 as cited by Taynan, 2008).

Many places adopted the cultivation of mushroom in Southeast Asia which Philippines is included. Banganan and Gumihid (1999) cited that mushroom cultivation in the country is considered as one of the income generating industries. Aside from providing employment throughout the year, it also yields high economic returns at the earliest possible time. They also added that the potential of mushroom production in the Philippines is big because of its good climate condition in some areas of the country that is suited for mushroom cultivation.

Recognizing the potential of growing mushrooms as a small business or cottage industries that can provide additional income and requiring low capital investment but fast return on investment, some international development organization such as FAO, UNESCO, IRRI, ADB, ATI (Appropriate Technology International) and CDG (Carl Duisberg Geselchaft), provided seed funds to help promote mushroom production

especially for small scale business both in urban and rural areas of the Philippines (Quimio, 2002).

In the Cordillera, production of mushroom is very limited despite of the prevailing environment. Local farmers are reluctant to engage into the venture because of the lack of local-specific technologies and because of the virtual lack of substrates aside from sawdust. However, oyster mushroom business in the region has been proved to be profitable venture and locally sustainable with all the local specific technologies identified and support system to be in place, can gradually become an industry for the region in the future. The Shiitake counterpart would need more time when oyster mushroom entrepreneurs would develop confidence to expand (Banganan and Gumihid, 1999).

Benguet is one contributor in mushroom production. Luis (2006) stated as cited by Carino (2010), "Benguet is the best environment to raise mushrooms because of its temperate climate. Growing them also makes a high pitch for organic farming since mushroom need no fertilizer or other chemicals."

Types of Mushrooms

Identification of mushroom is not easy. Even there are many field guide that show pictures of mushroom, it is very necessary to examine mushrooms on the hand very carefully before conclusion as to its identify is made (Quimio, 2002).

Chang and Miles (2004) wrote that there are about 74,000 number of known describe species of fungi. There are about 14,000 mushroom species that we currently know, 50% or 7,000 mushroom species are considered to posses varying degrees of edibility and more than 3,000 species from 31 genera are regarded as prime edible

mushrooms. Only 200 of them were experimentally grown, 100 economically cultivated, approximately 60 commercially cultivated, and about 10 have reached an industrial scale of production in many countries. Furthermore, about 2,000 are medicinal mushroom with a variety of health attribute.

Quimio (2002) mentioned that Pleurotus is one of the choice edible mushrooms which can be cultivated in the tropics. It has gained importance only in the last decade and is now being cultivated in many countries in the subtropical and temperate zones. In Europe, it is known as the oyster mushroom (P. ostreatus) in China it is called as the abalone mushroom (P. abalanusor and P. cystidiosus).

One reason for the great interest in species of Pleurotus is its great taste and nutritional appeal and also it secrete a wide range of enzymes which can degrade all the three key categories of polysaccharides. It is also capable of growing on a wide range of substrates and the strains of this species are plentiful and easy to grow (Chang and Miles, 2004).

Stamets (1993) stated that Shiitake as a counterpart of Oyster mushroom pronounced as “shee ta’kay” are traditional delicacy in Japan, Korea and China. For at least a thousand years, Shiitake mushrooms have been grown on logs, outdoors in the temperate mountainous region of Asia. It is also the most popular of all the gourmet of mushrooms. Only in the past several decades have techniques evolved for its rapid cycle cultivation indoors, on supplemented, heat-treated sawdust-based substrates.

Shiitake comes from Japan ‘shii’, which means oak and ‘take’ which means mushrooms and it is the second largest cultivated mushrooms species in the world (Anonymous, 2006).

Nutritional Value

One of the main health problems in our country is malnutrition which usually increases the fatality rate. Being aware of nutritious foods and eating them during daily meals would help lessen the problem. In terms of nutritional content, mushroom is very much recommended (Galeng, 2002).

As cited by Garmonnac (2005), mushrooms are very healthy source of nutrients. Base on daily weight, oyster mushrooms have substantial protein ranging from 15-35% and contain significant quantities of free amino acids. They are replete with assorted vitamins such as vitamin C (30-144 mg per 100 grams) and vitamin B, niacin (1098 mg per 100 grams).

Oyster mushroom (*Pleurotus ostreatus*) is extremely delicious as well as conferring various health-giving properties. Traditionally, it has been used to strengthen veins and relax tendons. In China oyster mushroom is indicated for joint and muscle relaxation. A product containing oyster mushroom, called "Tendon-easing powder," is effective in the treatment of lumbago, numbed limbs, and tendon and blood vessel discomfort. In the Czech Republic, extracts have been made from the fruiting bodies of the main ingredient in dietary preparations recommended for prevention of high cholesterol. The dried oyster mushrooms are said to be high in iron, so they are potentially good blood builders. The recommended dose is 3-9 grams daily (Hobbs, 1998).

Log-grown Shiitakes are more nutritious than commercial grown Shiitakes grown on sawdust blocks. It is perfect for vegetarians, gourmets, gardeners and health. Shiitakes are low in fat, high in protein, vitamins and minerals. Fresh and dried shiitake

mushrooms are used nutritionally to fight cancer, fibrocystic breast disease, high blood pressure and viruses, to strengthen the immune system, improve circulation, and reduced cholesterol (Williams and Williams, 1992).

Quimio (2002) stated and Buya (1999) cited that mushrooms are also good sources of essential minerals such as calcium and phosphorus. It is also low in cholesterol and calories and it is often referred to as "slimming food".

Market Consideration

Moraa (1979) as cited by Dulagan and Crescini (2000), marketing is viewed in two dimensions; either simple operational or a highly complex one.

Panaloyou (1985) as cited by Dulagan and Crescini (2000), that an efficient marketing system is expected to provide efficient and economic services and ownership, transfer in the movement of commodities from the producers to the consumers an effective price-making mechanism. Agricultural marketing services in many less developed nations are costly and exhibit low productivity.

Taynan (2008) revealed that one of the critical decisions is whether the mushroom will be marketed fresh or dried. Once the market has been defined, decisions can be made concerning the fruiting strategy and the amount of capital and labor that can be profitably invested.

The process of drying is not only to make it possible to preserve for a long time, but also enhances its flavor with a unique taste. Dried mushroom has the long storage life, can endure long shipping times without losing quality. It can be produced seasonally in large quantities and sold throughout the year. Dried mushrooms most especially Shiitake brings lower price than an equivalent weight of fresh mushrooms sold in the wet

markets. Mushrooms have shelf life about two weeks, long shipping times can result in mushroom deterioration and loss of revenue.

METHODOLOGY

Locale and Time of the Study

The study was conducted in Sitio Cruz, Itogon, Benguet, where the mushroom project of the SDMP-Philex Company Income Generating Project is located. It was conducted from December to January 2010.

Respondents of the Study

The respondents of the study were the members of the association engaged in mushroom production and marketing and the officers of the association including those that are involved in fruiting bag production. Complete enumeration was employed in the selection of respondents with a total number of 13 consisting of mushroom producers and fruiting bags producers.

Data Gathering Procedure

The primary data were collected through a semi-structured survey questionnaire supplemented with personal interview. The researcher did participatory observation by staying with the workers while doing the mushroom production. Copies of the questionnaires were distributed personally to the respondents.

Data Gathered

The data gathered were the following; production and marketing practices; market outlets; production cost and returns and problems encountered by the farmers and association in mushroom production and marketing.

Data Analysis

The data gathered were tabulated and analyzed using simple statistical tools such as frequency counts and percentages, descriptive analysis. Profitability analysis in mushroom production was done using cost and return analysis.

RESULTS AND DISCUSSION

Profile of the Respondents

Table 1 contains the profile of respondents as to age, civil status, occupation, highest educational attainment and membership to association. These are discussed in detail in the following sections.

Age. The age of respondents ranges from 21-56 years old. Most of them (46.15%) belonged to age bracket 30-38 years old. This was followed by the age bracket ranging from21-29 with 30.76%, ages 48 -56 with 15.40% and ages 39-47 with 7.69%.

The result shows that there was a wide distribution in the age of respondents. This implies that young and old people can engaged in mushroom production.

Civil status. Most of the respondents were married that composed 84.62% and 7.69% are single and widowed. It implies that most married farmers are more active in livelihood activities.

Occupation. Majority of the respondents have no occupation or they were plain housewives and they claimed that they considered mushroom production as their occupation. The other respondents make mushroom production as their secondary occupation or sideline. The result proved that mushroom cultivation could provide employment for people who are jobless despite of age, sex and educational attainment.

Highest educational attainment. Most of the mushroom growers (61.54%) reached college level and they claimed that mushroom production is a good source of income for their family.

Membership to association. Eight or 61.54% of the respondents were member of the association and five or 38.46% are non member of the association.

This implies that most of the respondents love to participate in livelihood activities to support their association.

Table 1. Profile of respondents

CHARACTERISTIC	FREQUENCY	PERCENTAGE
Age (years)		
21 – 29	4	30.76
30 – 38	6	46.15
39 – 47	1	7.69
48 – 56	2	15.40
TOTAL	13	100.00
Civil status		
Single	1	7.69
Married	11	84.62
Widow	1	7.69
TOTAL	13	100.00
Occupation		
None (housewife)	8	61.54
Farmer	1	7.69
Vegetable retailer	2	15.39
Business woman	1	7.69
Government employee	1	7.69
TOTAL	13	100.00
Highest educational attainment		
Elementary	1	7.69
High school	3	23.08
College	9	69.23
TOTAL	13	100.00
Membership to association		
Member	8	61.54
Non-member	5	38.46
TOTAL	13	100.00

Type of Mushroom House Used by the Growers

Type of Farm. Table 2 shows the farm profile of the respondents according to type of farm. Only one or 11.12% of the respondent have used veranda and four or 44.44% have concrete and galvanized mushroom house.

Farm Assets and Production Practices of Mushroom Growers

All of the respondents have mushroom house and used weighing scale in term of their assets (Table 3).

This implies that all of the growers protecting their mushroom from insects and strong typhoon that may destroy their products. Mushroom needs a clean and well maintained surrounding to maintain a good quality of product because mushrooms are very sensitive.

Table 2. Type of mushroom house used by the growers

CHARACTERISTIC	FREQUENCY	PERCENTAGE
Concrete mushroom house	4	44.44
Galvanized mushroom house	4	44.44
Veranda	1	11.12
TOTAL	9	100.00

Materials used

Most of the respondents have used straw instead of nylon strings as a holding material for the fruiting bag if they hang it. They used straw because it is more economical than nylon strings and it can reduce the waste problem.

Watering

Majority of the respondents states that they sprinkle their mushrooms once a day and the rest says that they water twice a day considering the temperature in their area. Some also added that they scraped the fruiting bags as a part of cleaning before watering the bags. Scraping the black portion of the fruiting bags is to encourage mushroom to sprout.

Harvesting

The respondents claimed that daily harvesting is from the first to third months while the rest says that during the last months of growing, they experienced twice to thrice a week harvesting time. The reason why there is a decreased in the volume of their harvest in the last few months is because the fruiting bag reached its maximum capacity to produced mushrooms and the fruiting bags are turning black which indicates composition of the mixed materials. In addition most, most of them says that the fruiting bags lasts from 6 – 8 months of growing. Some also claims that the life span of the fruiting bags depends on the way they care. They said that if both side of the bags were opened, the life span of the fruiting bag decreases but they harvest higher volume of fresh mushroom on the first months of growing.

Table 3. Assets and production practices of mushroom growers

PARTICULAR	FREQUENCY	PERCENTAGE
Equipment		
Mushroom house	9	100.00
Weighing scale	9	100.00
Materials used		
Straw	8	88.88
Nylon	1	11.12
TOTAL	9	100.00
Watering		
Twice a day	3	33.33
Once a day	6	66.67
TOTAL	9	100.00
Harvesting		
Daily	5	55.56
Every other day	4	44.44
TOTAL	9	100.00

Distribution of Harvest

All of the respondents stated that they sold 89% and consumed at home 7% of the total produced mushroom. Four of them mentioned that 4% of the total harvest were given to their friends (Table 4).

Table 4. Distribution of harvest

DISTRIBUTION	FREQUENCY	PERCENTAGE	VOLUME (kg)	PERCENTAGE
Sold	9	100.00	704.82	89
Home consumption	9	100.00	55.43	7
Given to friends	4	44.44	31.68	4

*Multiple response

Table 5. Distribution of total volume of harvest

DISTRIBUTION	VOLUME	PERCENTAGE
Sold	704.83	89
Home consumption	55.43	7
Given to friends	31.68	4

Mushroom Producers Marketing Practices

Packaging materials. One hundred percent of the respondents make used of cellophane as one of their packaging materials, 44.44% make used of Styrofoam, 22.22% have used banana leaves and 11.12% have used paper plate.

This implies that the growers are not acquainted with the proper used of packaging materials that are non-toxic and safe to the health of the consumers.

Market outlets. Table 5 shows that most of the market outlets of the mushroom growers are their neighbors (66.67%), next is retailer (55.56%) and the wholesaler (11.12%).

The result shows that the produced mushroom is in adequate to supply a bigger market.

Product disposal. One hundred percent of the farmers delivered their produced products to their outlet. This implies that the growers have this strategy to establish a good impression to their customers.

Mode of selling. All of the respondents are practicing cash on delivery basis in selling their produced mushroom to avoid credit and loss of revenue.

Problems Encountered by Mushroom Producers

Table 7 shows the different problems of the mushroom growers. Most of the mushroom growers (88.88%) claimed that occurrence of pest and insects such as beetles, white worms, black worms, bugs and fruit flies are their number one problem. Three (33.33%) of the respondents mentioned that lack of capital is one of their problem. One (11.12%) of them stated that lack of skill is another problem; as a result there is a small volume of harvest. they mentioned that one method of eliminating the pest is “pis-itox” or they pinch the pest using their hand to avoid multiplication of the insect pest.

Marketing

Majority of the mentioned problems in marketing of mushrooms is they cannot meet the demand of their costumer because they have small volume of produced mushrooms. The respondents added that if they can only produce a bigger volume of harvest to supply a bigger market, then they can establish a permanent market outlet like restaurant, stores and others. One of the respondent reason out why there is limited

market outlet is because the volume of harvest is less than 1 kilo so she cannot sell the product.

Table 6. Mushroom producers marketing practices

PARTICULAR	FREQUENCY	PERCENTAGE
Packaging materials used*		
Cellophane	9	100.00
Styrofoam	4	44.44
Paper plate	1	11.12
Banana leaves	2	22.22
Market outlets*		
Wholesaler	1	11.12
Retailer	5	55.56
Neighbors	6	66.67
Mode of selling*		
Delivered	9	100.00
Pick-up	2	22.22
Mode of payment*		
Cash on delivery	9	100.00
Credit	1	11.12
Basis of pricing		
Prevailing market price	9	100.00
TOTAL	9	100.00

*Multiple response

Table 7. Problems encountered by mushroom producers

PROBLEM	FREQUENCY	PERCENTAGE
Production*		
Lack of capital	3	33.33
Occurrence of pest and diseases	8	88.88
Lack of skill	1	11.12
Marketing		
Limited market outlets	1	11.12
Lack of knowledge in packaging	1	11.12
Cannot meet the demand of consumer	7	77.76
TOTAL	9	100.00

*Multiple response

Production Practices of the Fruiting Bag Producer

Equipment and Asset. All of the respondents have used drums as their substitute for autoclave because they stated that buying an autoclave requires a high cost of return and they have only limited capital as a starting venture. The respondents also mentioned that they have inoculation chamber and these are divided into small dark rooms where the substrate will be incubated.

Materials. All of the respondents have used these materials as follows; sawdust, rice bran, manila lime, planting spawn, plastic bag, rubber band, hose-ring, rags and weighting scale. They stated that mixing different level of percentage of the materials has made in experimental way before they come up of their preferred mixture. Most of them

learned the process from the association. It is also mentioned that they attended some seminars which involved mushroom production to acquire more knowledge on how to do the process well.

Procedures

1. Sift the sawdust, lime and rice bran as well.
2. Mixed well the sawdust and rice bran
3. Pour water and lime in a jar and stir and add to the mixed rice bran and sawdust.
4. Pot the mixture in the plastic bags and weight 1.25-1.50 kg per bag.
5. Put the hose-ring on the mouth of the substrate bag and make a hole at the center of the hose-ring.
6. Put the rags at the center of the hose-ring, cover it with paper or newspaper and prepared for cooking.
7. Pile the substrates to the drum, cover the top of the drum and steam for 10 hours.
8. Removed from the drum and prepare for planting.
9. Plant every substrate bag and put into the incubation room.

Production Data

All the respondents claimed that they produced fruiting bag every month with a total average of 1,088 fruiting bags produced per time. Every fruiting bag cost 33.44 pesos on average. Two of the respondents (50%) says that they sell their fruiting bags at 35.00 pesos, one (25%) mentioned that they sell at 33.33 pesos each fruiting bag, while

25% stated that they used their fruiting bags to produce mushroom. All the respondents stated that they were producing per month

Table 8. Production practices of fruiting bag producer

PARTICULAR	FREQUENCY	PERCENTAGE
Equipment and assets*		
Drums	4	100
Incubation chamber	4	100
Weighing scale	4	100
Materials*		
Sawdust	4	100
Rice bran	4	100
Manila lime	4	100
Spawns	4	100
Plastic bag	4	100
Rubber band	4	100
Hose ring	4	100
Rags	4	100

*Multiple responses

Table 9, Production data

PARTICULAR	FREQUENCY	PERCENTAGE
Frequency of production of fruiting bags		
Every month	4	100
Fruiting bag produced per month		
700	1	25
1,000	1	25
1,250	1	25
1,400	1	25
TOTAL	4	100
Price per bag		
None used for own production of mushroom	1	25
33.33	1	25
35.00	2	50

Marketing Practices of the Fruiting Bag Producers

Market outlets. Table 10 shows that the market outlets of the fruiting bag producers are the mushroom producers that are member of the association (75%), one of them (25%) claimed that they used for their own mushroom production.

This implies that there are few people in the area who are interested in producing mushroom. This also proved the statement of Banangan and Gumihid that local farmers are reluctant to engage in production of mushroom

How the product will be disposed. Most of the fruiting bag producers (66.66%) stated that they deliver their products to their customer. Also, they added that not all of them owned vehicles so they hire the vehicles used in delivering their products to their customer.

Mode of selling, pricing determination and basis of pricing. The respondents are practicing cash on delivery in selling their products and as to their pricing determination are all set by the producer based on the prevailing market price.

Table 10. Fruiting bag producers marketing practices

PARTICULAR	FREQUENCY	PERCENTAGE
Market outlets*		
Members of association	3	75
Non-member of the association	1	25
Producers in other areas	1	25
Used for own mushroom production	1	25
Product disposal		
Delivered	2	66.66
Pick-up	1	33.34
TOTAL	3	100.00
Mode of selling		
Cash basis	3	100.00
TOTAL	3	100.00
Price determination		
Set by farmer	3	100.00
TOTAL	3	100.00
Basis of pricing		
Based on prevailing market price	3	100.00
TOTAL	3	100.00

Problems Encountered by the Producers of Fruiting Bags

Production. The respondents' entire problem in the production of fruiting bag is the contamination of fruiting bags. They stated that the causes of contamination were eaten by rats because of the contained rice bran and also reckless potting that the substrates will be having holes. They added that out of 1,000 fruiting bags, there are 200 that are contaminated. This implies that contamination is a serious problem in the production of fruiting bags.

Marketing. Most of the respondents' problem in marketing is limited market outlet (66.66%) because the people are not very well acquainted about mushroom production. In relation, there are few farmers that cultivated mushroom.

Table 11. Problems encountered by the fruiting bags producers

PARTICULAR	FREQUENCY	PERCENTAGE
Production		
Contamination of fruiting bags	4	100.00
Limited sources of materials	2	50.00
Lack of capital	1	25.00
Insufficient skills and knowledge in producing fruiting bags	1	25.00
Marketing		
Limited market outlet	2	66.66
Lack of promotional activities	1	33.34
TOTAL	3	100.00

Cost and Returns Analysis for a Six Months Mushroom Production and a Monthly Fruiting Bag Production

As shown in the table12, the average net income of the mushroom growers in 6 months is P15, 041 while the average net income of the fruiting bags producer in a month is 92,646. The fruiting bag producer have higher net income of P85.14 in term of per fruiting bag basis in 6 months while the mushroom grower have only P43.88 per fruiting bag in 6 months.

The result implies that the fruiting bag producer have higher net income as compared to those who are producing mushroom. The cost of production in producing mushroom is much higher than the cost of the production in producing bags. The result proves that oyster mushroom business in the Cordillera region is a profitable venture, most especially in Benguet province where raw materials are available and also the good climate condition.

Table 12. Cost and return analysis for mushroom and fruiting bag production per month

PARTICULAR	MUSHROOM PRODUCTION		FRUITING BAG PRODUCTION	
	Per producer	Per fruiting bag	Per producer	Per fruiting bag
Gross Revenue	118,789	91.38	220,426.50	202.59
Cost of Production				
Fruiting bags	43,968.88	33.82		
Labor	15,415.88	11.86	39,780	36.56
Straw	302.88	0.23		
Depreciation	2,060.94	1.59	37,687.50	34.64
Transport cost			3,300	3.03
Sawdust			10,150.50	9.33
Rice bran			10,989	10.10
Planting spawn			17,082	15.70
Manila lime			663	0.61
Plastic bag			7,440	6.84
Rags			258	0.24
Rubber band			430.50	0.40
TOTAL COST	61,748	47.50	127,780.50	117.45
NET INCOME	57,041	43.88	92,646	85.14

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted in Ampucao, Itogon, Benguet. Study sought to attend to the following objectives; 1) describe the production and marketing practices of the association and the farmers involved in mushroom production; 2) identify market outlets of the producers; 3) evaluate the profitability of mushroom production by the farmers; 4) evaluate the profitability of mushroom fruiting bag production by the association; and 5) identify the problems encountered by the association and the farmers in the production and marketing of mushroom.

There were two sets of respondents; the oyster mushroom producers and the fruiting bags producers. Total enumeration was employed in the selection of respondents.

Most of the respondents ages ranges from 21-56 years old. Majority are married and have reached college level. As to their occupation, most have no occupation or plain housewives and also most of them are member of the association.

All of the mushroom growers have mushroom house and majority of them have concrete and galvanized type of mushroom house. They have also weighing scale and most of them have used straw instead of nylon strings in hanging their fruiting bags.

They sprinkle their mushrooms once a day after harvesting. Majority were harvesting daily during the first months of growing. All of them sold their mushrooms and consuming 7% of the total harvest at home.

As to the marketing practices of mushroom growers, they make used of cellophane as one of their major packaging materials. Most of their market outlets are

their neighbors and they disposed their mushroom through personal delivery. All of the mushroom growers have practiced cash on delivery basis in selling their products and they also set their own price based on the prevailing market price.

The problems encountered by the mushroom growers in terms of production and marketing were; occurrences of pest and diseases, lack of capital, lack of skills, cannot meet the demand of their customer and lack of knowledge in packaging.

In the production practices of the fruiting bag producers, all of them have used drums as a substitute for autoclave. They have also used the same materials as follows; sawdust, rice bran, Manila lime, planting bag, rubber band, hose-ring, rags and weighing scale.

As to their marketing practices, they sell their produced product to the mushroom producers that are member and non-member of the association and producers in other areas who are interested in producing mushroom. Most of them were delivering their produced fruiting bags to their customer. All of them were practicing cash basis upon delivery and they sell their fruiting bags based on prevailing market price.

The problems encountered by the fruiting bags producers were; contamination of fruiting bags, limited sources of materials, lack of capital and insufficient in knowledge in producing fruiting bags. As to their problem in marketing, limited market outlet was the major problem.

For the cost and return analysis for the fruiting bag and mushroom production, the fruiting bag production have higher net income while the mushroom production have lower net income. Also, the cost for fruiting bag production is lower as compared to the mushroom production.

Conclusions

Based on the findings, the conclusions drawn are:

1. Most of the respondents belonged to middle age group, married and plain housewives. Majority had reached college level and most are members of the association.

2. Most of the mushroom growers have concrete and galvanized type of mushroom house. All fruiting bag producer had used drums as a substitute for autoclave. Both mushroom growers and fruiting bag producers are delivering their products to their customers and they were practicing cash on delivery.

3. The mushroom growers were selling their products to their neighbors, retailers and wholesalers while the fruiting bag producer sell their products to the members and non-members of the association, producers in other areas who are interested in producing mushrooms.

4. Mushroom growers has higher cost of production and lower net income or profit while the fruiting bag producers has lower cost of production and higher returns or profit.

5. Occurrences of pest and diseases was the major problem of the mushroom growers in production while marketing of fresh mushrooms, they cannot meet the demand of their customers.

In the production of fruiting bag, their major problem was the contamination of fruiting bags while in marketing, they have limited market outlets because there are few mushroom growers.

Recommendations

1. Mushroom growers and fruiting bag producers should participate and be aware of seminars and trainings regarding production and marketing of mushrooms to enhance their knowledge managing their business.

2. Mushroom grower must be encouraged to learn how to produce fruiting bags so that their cost of production will be reduced.

3. The farmers involved in the production of mushroom must be encouraged to produce more fresh mushrooms to supply the demand of their customer and to have stabilized market outlets.

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APPENDIX A

Survey Questionnaire for Mushroom Producer

Respondent No. _____

I. Personal Profile
Name (Optional) _____
Age _____Civil Status ( ) Single ( ) Married ( ) widow
Occupation _____
Educational attainment_____
Are you a member of the association? ( ) Yes ( ) No
If member, What association? _____

II. Farm Profile
A. Type of farm
( ) with mushroom house
( ) without mushroom house
( ) concrete mushroom house
( ) galvanized iron mushroom house
( ) others, specify _____
Size of mushroom house_____
B. Production Practices and Cost
1. Cost of equipments and assets

PARTICULAR	QUANTITY	UNIT COST	LIFE SPAN	DEPRECIATION
Mushroom House				
Others, specify				

2. . Cost of inputs/materials cost

PARTICULAR	QUANTITY	UNIT COST	TOTAL COST
Fruiting bags			
Others, specify			

3. Labor cost

ACTIVITY	NO. OF MAN-DAYS	UNIT COST	TOTAL COST
Preparation of the area (including put-up of the fruiting bags			
Watering			
Harvesting			
Packaging			
Others, specify			

4. Production data

PARTICULAR	FREQUENCY OF HARVESTING	VOLUME HARVESTED PER TIME	TOTAL VOLUME PER MONTH OR YEAR	VALUE (per kilo)
Fresh mushroom				

5. Distribution of harvest

PARTICULAR	QUANTITY	VALUE
Total harvest		
Sold		
Consumed at home		
Given to friends/neighbors		
Others, specify		

B. Marketing

1. Packaging materials used and cost

PACKAGING MATERIALS USED	QUANTITY	UNIT COST	TOTAL COST
Cellophane			
Styrofoam			
Others, specify			

2. Market outlets
( ) wholesaler
( ) retailer
( ) neighbors
( ) others, specify _____
_____

3. How do you disposed your product?
( ) Delivered
( ) Pick-up
( ) Others, specify _____
_____
_____

4. Mode of selling
( ) Cash on delivery
( ) Credit
( ) Consignment

5. Pricing determination
( ) Set by farmer
( ) set by buyer
( ) Others, specify _____

6. Basis of pricing
( ) based on production cost
( ) based on prevailing market price
( ) others, specify_____

C. Problems Encountered
1. Production
( ) lack of capital
( ) occurrences of pest/insects
( ) insufficient in knowledge in producing mushrooms
( ) others, specify _____
2. Marketing
( ) delay of payments
( ) limited market outlet
( ) lack of promotional activities
( ) others, specify _____

APPENDIX B

Survey Questionnaire for Mushroom Fruiting Bag Producer

Respondent No. _____

I. Personal Profile
Name (Optional) _____
Age _____Civil Status ( ) Single ( ) Married ( ) widow
Occupation _____
Educational attainment_____
Are you a member of the association? ( ) Yes ( ) No
If member, What association? _____

II. Production Profile

A. Production Practices and Cost
1. Cost of equipments and assets

PARTICULAR	QUANTITY	UNIT COST	LIFE SPAN	DEPRECIATION
Sterilizer				
Autoclave				
Inoculation chamber				
Others, specify				

2. . Cost of inputs/materials cost

PARTICULAR	QUANTITY	UNIT COST	TOTAL COST
Sawdust			
Rice bran			
Fertilizer			
Spawns			
Plastic bag			
Others, specify			

3. Labor cost

ACTIVITY	NO. OF MAN-DAYS	UNIT COST	TOTAL COST
Preparation of media			

4. Production data

How often do you produce mushroom fruiting bags?_____
How many mushroom fruiting bags do you produce per time?_____
How much do you sell per bag?_____

B. Marketing

1. Market outlets

( ) mushroom producers in the area who are members of the association
( ) Other mushroom producers in the area who are not members of the association
( ) other mushroom producers in other areas
( ) others, specify _____
_____

3. How do you disposed your product?

( ) Delivered
( ) Pick-up
( ) Others, specify _____
_____
_____

4. Mode of selling

( ) Cash on delivery
( ) Credit
( ) Consignment

5. Pricing determination

( ) Set by farmer
( ) set by buyer
( ) Others, specify _____

6. Basis of pricing

( ) based on production cost
( ) based on prevailing market price
( ) others, specify_____

C. Problems Encountered

1. Production
   - ( ) lack of capital
   - ( ) limited source of materials
   - ( ) insufficient in knowledge in producing fruiting bags
   - ( ) others, specify _____
2. Marketing
   - ( ) delay of payments
   - ( ) limited market outlet
   - ( ) lack of promotional activities
   - ( ) others, specify _____