

BIBLIOGRAPHY

CHAMOLLOG, ROLLY M. APRIL 2008. Agroforestry Practices in Barangay Gawa-an, Balbalan, Kaligan. Benguet State University, La Trinidad, Benguet.

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ABSTRACT

This study was conducted to describe the traditional agroforestry farming practices of farmers in barangay Gawa-an, Balbalan, Kalinga.

The study used qualitative research where the researcher interviewed 49 key respondents in seven (7) sitios of barangay Gawa-an. The respondents were agroforestry practitioners. Thirty-four respondents belong to the age of 31 to 60 years old while 15 belong to the senior bracket which is 61 years old and above. Majority were males, married and reached grade school.

The respondents cultivated an average area of 600-1,500 m² which was irrigated by a river, creeks and springs.

The respondents practice agrisilvipastoral and agrisilvicultural systems in their traditional farming. All of them cultivated traditional varieties of rice, banana and majority grow corn, pigeon pea, sweetpotato, coconut, mango and coffee. Animals such as native pig, chicken, carabao, duck are common while a few raised tilapia. These plants and animals were integrated in the backyard gardens, swidden farms and even in the rice fields.

The researcher used a pre-structured questionnaire to gather information. In addition, actual farm visits were done to verify information from respondents. Gathering of secondary information from the local government unit was also done.

Results of the study showed that the traditional agroforestry practices of the farmers underwent some changes. Due to the increasing household need and education, farmers are forced to engage in pocket mining, decreasing the number of farm hand. Because of this, some families hire hand tractors to till their rice field instead of employing the aid of the carabao. Traditional farm rituals are seldom performed nowadays and could soon be forgotten by the younger generations. However, the farmers still retained the traditional “pango” that maintains their unity, cooperation and friendship.

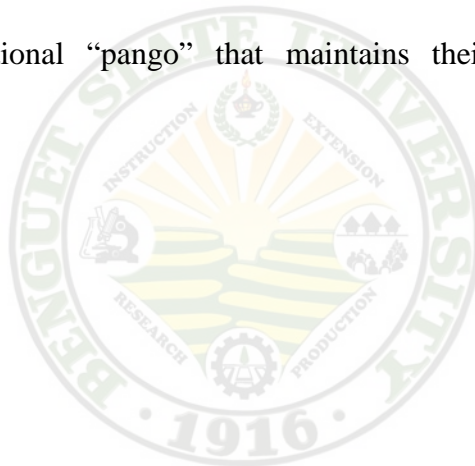


TABLE OF CONTENTS

	Page
Bibliography	i
Abstract	i
Table of Contents	iii
INTRODUCTION.....	1
REVIEW OF LITERATURE.....	4
METHODOLOGY	8
RESULTS AND DISCUSSION	
Profile of the Respondents.....	15
Farm Profile	17
Farm Area	17
Farming Systems and Practices.....	20
Farm Management and Practices.....	27
SUMMARY, CONCLUSION AND RECOMMENDATION	30
LITERATURE CITED	32
APPENDIX	
A. Letter to the Respondents	34
B. Guide Questionnaire	35

INTRODUCTION

Rationale

Agroforestry is a type of land use system that normally involves raising of agricultural crops, forest or fruit trees and livestock on the same unit of land. These different species supply and sustain the needs of the other in order to survive. Plants or trees provide food or forage for animal species while in return, animals provide fertilizer and carbon dioxide which is essential for the plant species to survive. This is one of the reasons why Agroforestry is said to be environmentally sound and more adoptable to upland and forest areas than any other land use systems. Agroforestry is more feasible for small farmer occupants. It can be used by rural population to provide many of their needs.

Agroforestry has long been practiced by early ancestors of the Cordillera region. It has been noted by the Cordillera Peoples Alliance (CPA, 2002) that the “*uma*” or swidden farming is an old practice among indigenous people of the Cordillera. This farming practice is integral to the ecological condition of the mountain terrain and the socio – cultural life of the people.”

Like in most places in the Cordillera, the “*payew*” or “*payoh*” in Ifugao is also common in barangay Gawa-an, Balbalan, Kalinga. These rice fields along the slopes of a mountain are irrigated with water coming from forested areas on top of mountains. Swidden farming and backyard gardening are also commonly practiced in the barangay. Swidden farm or “*uma*” is an important source of food. It is mostly located in the steep slopes of mountains which are terraced with either rocks or fallen logs to prevent soil losses through run-off. It is consistently planted with sweet potato, cassava, pigeon pea,



corn and banana. Some farmers abandon their “ uma “when the yield is drastically low. The most evident is backyard gardening since it is located near or around the houses. These gardens are mostly planted with fruit trees such as palm, mango, coffee, citrus and farm animals such as chicken, pigs, goats and ducks.

These days however, some farmers raise cash crops using commercial fertilizers to increase growth rate of their crops. The farmers engage in small scale mining or find work in other places to support their increasing household needs or education. These situations prompted a study about the situation of Agroforestry practices in barangay Gawa-an, Balbalan, Kalinga.

Statement of the Problem

This study was conducted to determine whether the farmers in Balbalan, Kalinga province are modifying their agroforestry practices. This study will answer the following questions:

1. What are the traditional Agroforestry practices of the farmers in barangay Gawa-an?
2. What possible solutions can be recommended to solve their problems in modifying their Agroforestry farms?

Objectives of the study

This study aimed to:

- a. Describe the traditional Agroforestry farming practices in barangay Gawa-an.
- b. Identify the problems and recommend possible solutions to problems encountered by the farmers.



Importance of the Study

The result of this study will help educate farmers so they will understand the meaning and impacts of their farming practices. It will serve as a benchmark data for traditional Agroforestry farming practices in barangay Gawa-an, Balbalan, Kalinga and as a reference for students and researchers involved in Agroforestry.

Scope and Limitations

This study considered 7 sitios of barangay Gawa-an. The respondents were Agroforestry practitioners.



REVIEW OF LITERATURE

Young (1997) defined agroforestry as a land use system in which trees or shrubs are grown in association with agriculture crops, or pastures and livestock. From its inception, it has contained a strong element of soil management. Well planned and manageable agroforestry systems have the potential to control runoff and erosion, maintain organic matter and physical properties and promote nutrient cycling.

PCARRD (1986) as cited by Macagne (2004) stated that agroforestry is “the sustainable management of land which increases overall production, combines agricultural crop and forest plants and/or animals simultaneously or sequentially, and applies management practices which are compatible with the cultural pattern of local production.

Lundgren and Raintree (1983) defined Agroforestry as a collective term for land use system and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land management unit as agricultural crops and/ or animals are combined in the same spatial arrangement or temporal sequence while PCARRD (1991) stated that it is a land use system whereby agricultural land crops, forest trees and livestock and animals are deliberately raised on the same unit of land either sequential or simultaneously and applies practices which are economically viable, technologically feasible and ecologically sustainable and compatible with cultural patterns of the local population.

Agroforestry practices contribute a wide range of benefits and services to the rural community. Trees may provide food, shelter, energy, medicine, cash income, raw materials for crafts, saving investments and resources to meet social obligation and also



provide a variety of services, such as the improvement of soil fertility for crop production, and the improvement of microclimate for crop growth and the control of crop pests. In addition, Agroforestry practices are often designed to protect and improve the quality of natural resources including soil, water, vegetation and wildlife and as a substitute to the destructive use of special environments, such as reverine forests, hill slopes and fragile rangelands (Rocheleau *et al.*, 1988).

Salam and Sreekumar (1991) stated that in Kerala, on the south – western coast of India’s most densely populated state, agricultural production has no where to go but up. In this setting, it is not surprising that home gardens are intensive, multi – storied combination of crops, trees and livestock are the many variations, but all are designed to supply family requirements of food, fodder, fuel, timber and to generate additional income through the sale of surplus products.

In 1986, the Philippine Council for Agricultural Research and Development stated that Agro forestry is an ancient practice or one of the indigenous early technologies employed by ethnic groups and “*kaingineros*”. However, it has not spread widely in the past decades, instead the destructive practice of shifting cultivation has prevailed, resulting in the rapid destruction of forest areas. Contrary to popular impression, a number of ethnic groups and upland dwellers are conscious of soil conservation. In their desire to make their “*kaingin*” productive in the longest possible time, they have developed and adopted farming practices that which promoted the productivity of land and reduced excessive erosion, although some of their practices are gradually fading out due to pressure from population and limited space.



Since the Philippines is in the tropics, systems of multiple cropping/ integrated farming are potentially very effective techniques for increasing food production and income especially as supplement to rice or other major crops. Also the average size of the farm per farmer in the country is generally very small, thus the systems are needed for the attainment of increased food production and income (PCARRD, 1976).

Steppler and Nair (1987) reported that a homestead home garden is an operational farm unit in which a number of tree species is raised along with livestock, poultry and/ or fish mainly for the purpose of satisfying the farmers' basic needs. Rocheleau *et al.*, (1988) added that Agroforestry practice in home gardens can range from fruit trees and shrubs in a small vegetable and herb garden to a dense multi-storied plot of fruits, vegetable herbs and cash crops with trees planted for timber, fuel wood and/ or fodder. A home garden may serve as a specialized plot with in a larger production system or it may represent the main cultivated lot and a major source of food and cash income, especially for a poor family with little available land.

According to the Foundation of Sustainable Development Inc. (FSDI, 1995) as cited by Aywan (2004), Agroforestry systems of the Ifugaos can be referred to as a production system which harmoniously integrated three traditional land use sub-components namely "*muyong*" (lot planted with trees and coffee), "*uma*" or traditional swidden, "*payoh*" or rice terraces. This is composed of second growth forest dominated by dipterocarp. The natural forest stand is kept intact, it is further explained that the "*uma*" or traditional swidden of the Ifugaos has always been sustainable. The keys to these are their cropping practices and fallow system.



Brett (1997) stated that the swidden gardens of the Bontoc people, which are located on steep mountain slopes are terraced with available rock or with fallen logs placed horizontally to prevent soil run-off during heavy rain storms. Their swidden gardens are consistently planted with a variety of root crops, legumes, fruits and some vegetables.

Camfili (2006) stated that traditional agroforestry farming practices of farmers in Guina-ang, Bontoc espoused the use of organic fertilizers particularly compost that maintain the fertility of the soil. The benefits derived from these practices includes more harvest, less expenses, soil conservation and strengthened unity among the people through the rituals and “ob-ubfu” that served as social glue that maintain unity and friendship of the community people.



METHODOLOGY

Locale and Time of the Study

This study was conducted in Barangay Gawa-an, Balbalan, Kalinga Province (Figures 1 and 2). Gawa-an is located in the central part of the Municipality of Balbalan. It is composed of seven sitios, namely: “Pipi, Uta, Ubel, Cudcudwe, Liglig, Dusok and Gawaan Proper” (Figures 3a and 3b). It has a rugged, hilly and mountainous terrains with steep slopes and has an altitude of 2,000 to 2,300 m above sea level. It has an average temperature of 24°C (75°F) and has two pronounced season which is dry during the months of February to May and wet season during the rest of the year (Municipal Planning and Development Council).

Agriculture is the main source of livelihood in Gawa-an, thus, it is classified as an agricultural land. The main source of irrigation is the river “*Saltan*”. The staple food here is rice and other crops like sweet potato, cassava, corn and banana from swidden farms. Their farming practices primarily include raising of woody perennials such as mango, coffee, citrus and coconut. Other source of livelihood is livestock production like chicken, swine and duck raising.



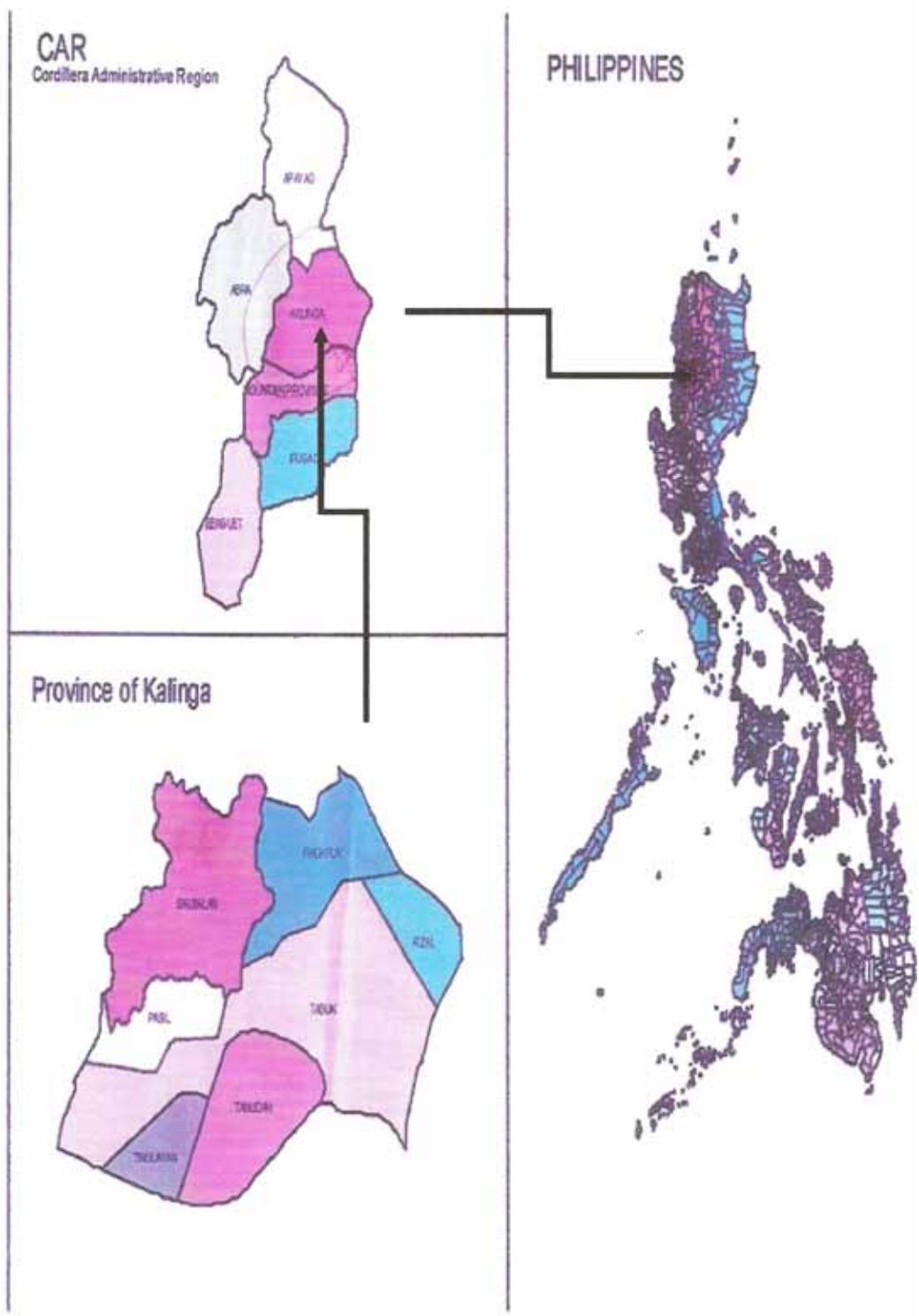


Figure 1. Location map of Kalinga Province



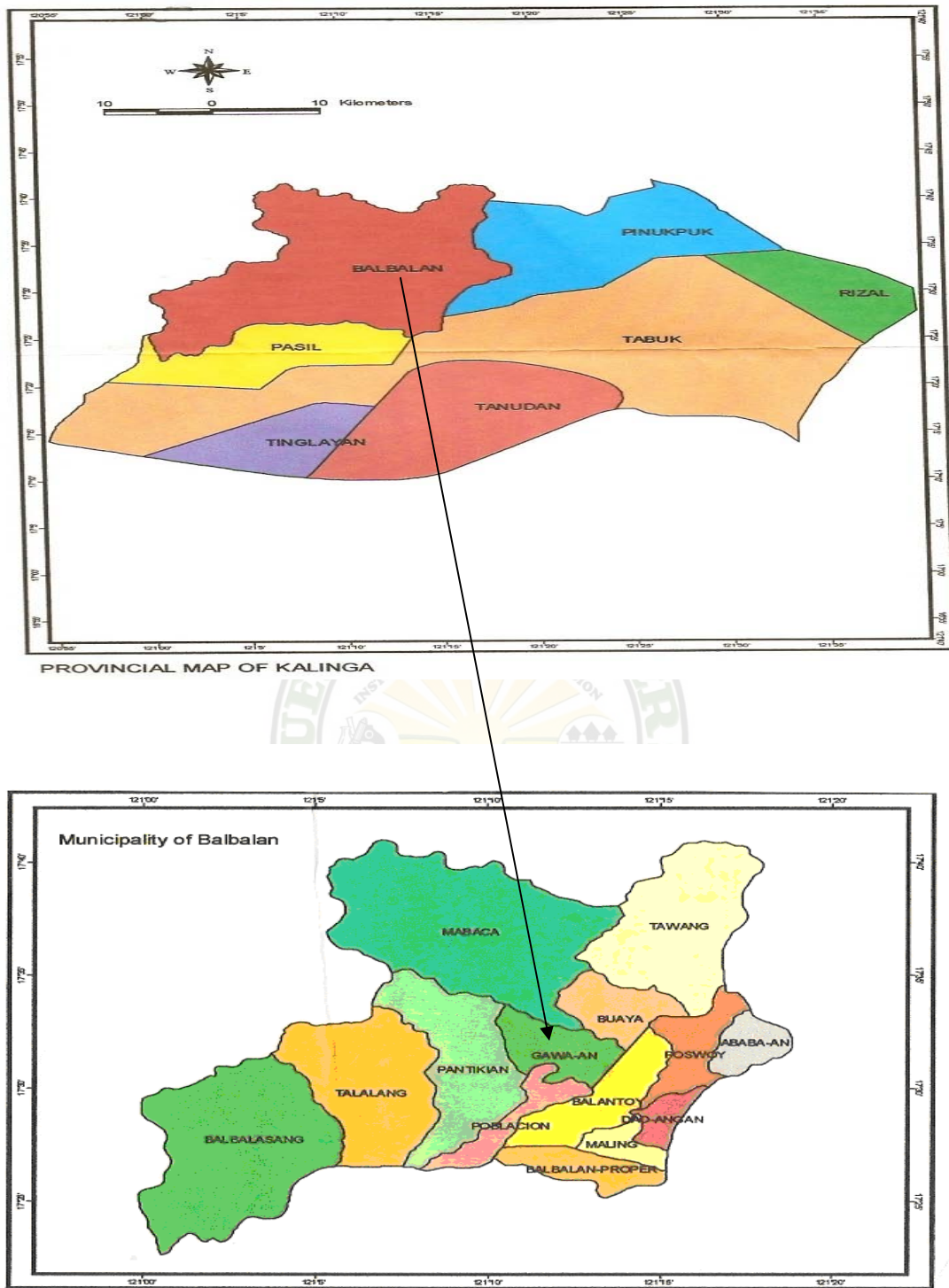


Figure 2. Location map of barangay Gawa-an





Figure 3a. Panoramic view of sitio Gawa-an



Figure 3b. Panoramic view of sitios Liglig and Dusok



Data Gathered

1. Transect map. The transect walk of the place was made and a map was drawn to reflect the general view of the area in terms of slopes of land, resources and land use.
2. Indigenous agroforestry farming practices of farmers. This was gathered from the key informants through interview.
3. Existing agroforestry system and practices. This was gathered through observation and interview of the respondents and farm visits.
4. Problems encountered by farmers in their agroforestry farms. This was gathered through personal interviews with the respondents.

Data Analysis

Data gathered was analyzed using descriptive statistics such as averages, means and percentages for the interpretation of results.



Figure 4. The researcher with two of the respondents



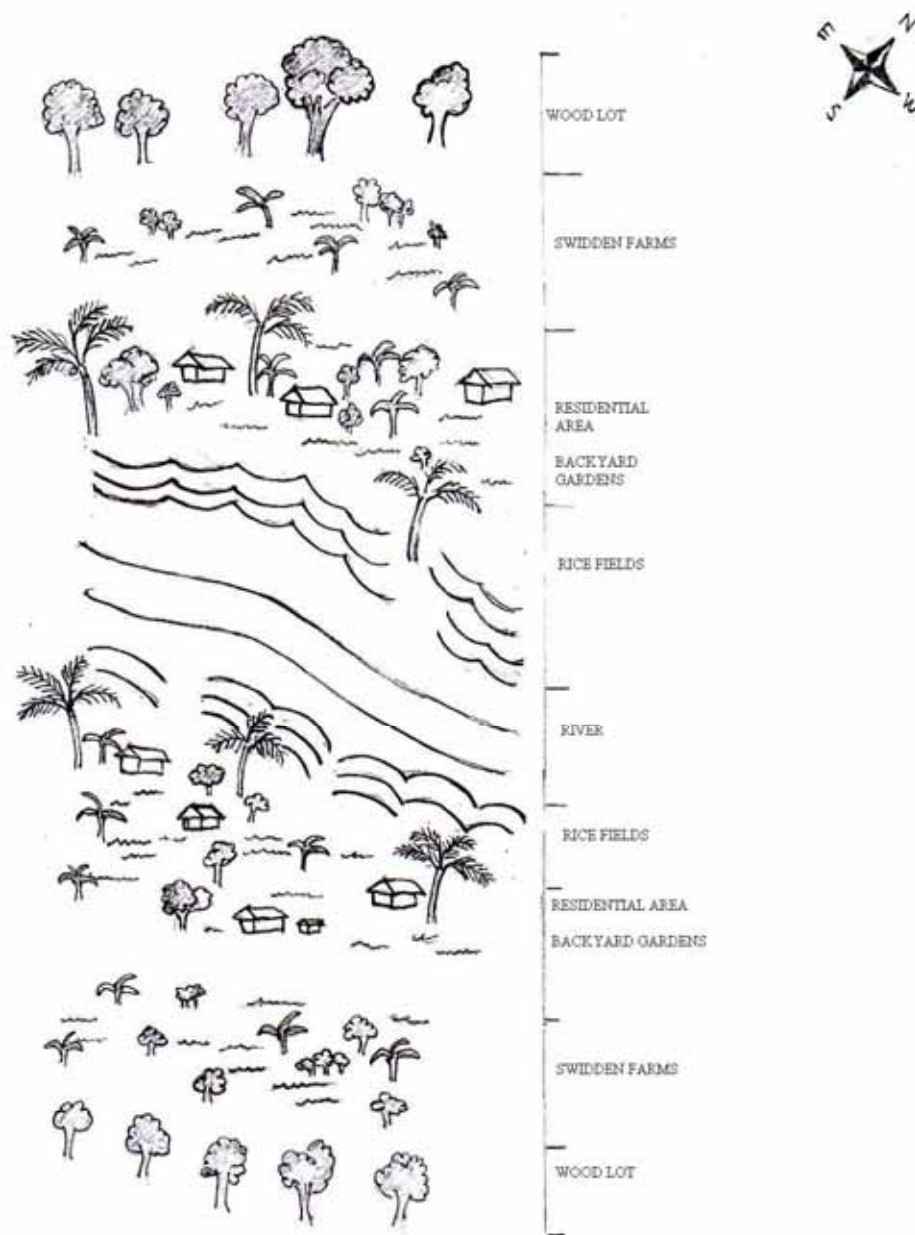


Figure 5. Transect map of barangay Gawa-an



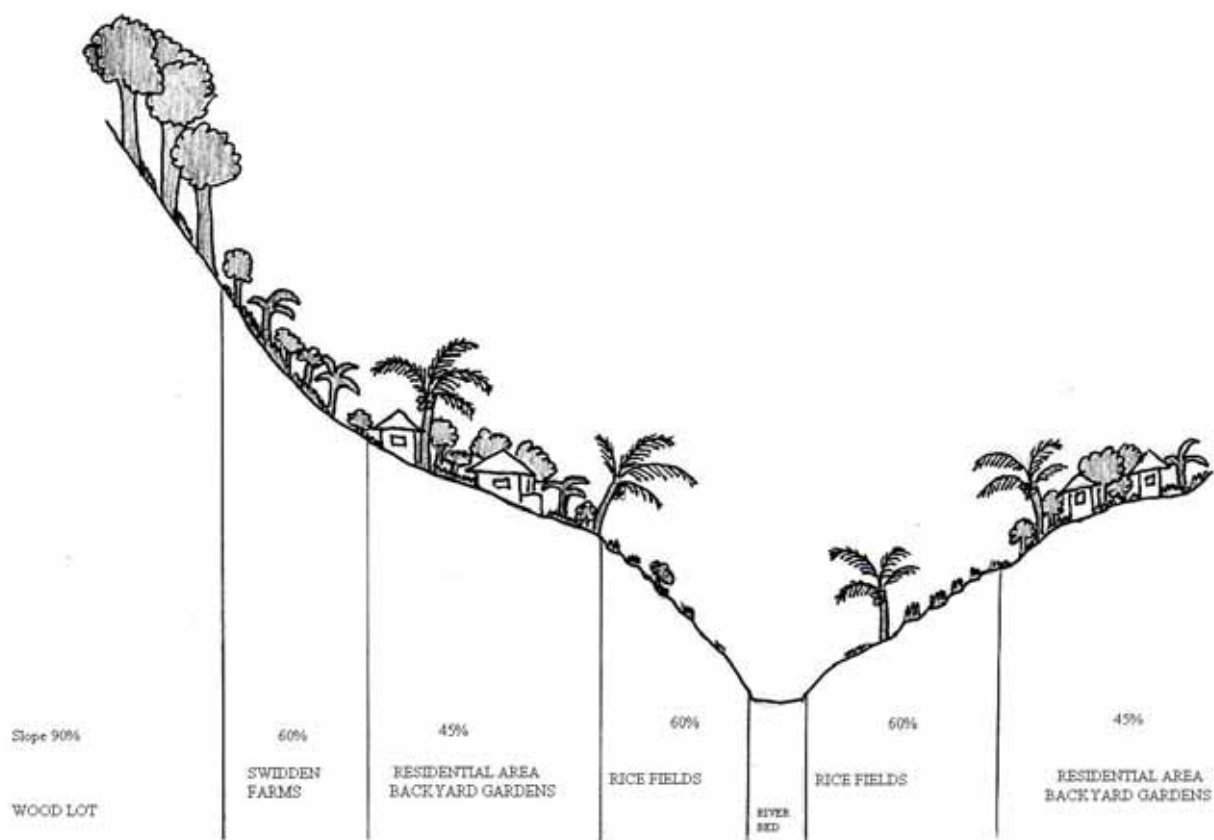


Figure 6. Profile map showing slope and land use



RESULTS AND DISCUSSION

Profile of the Respondents

The general profile of the respondents is shown in Table 1.

Age. The age of the respondents ranged from 30 to 82 years old. Seventeen (34.6%) were between 51 to 60 years old while fifteen (30.6%) belong to the senior bracket which is 61 years old and above. Eleven (22.4%) belong to the age range of 41 to 50 while six (12.2%) were between 31 to 40 years old.

Sex. Among the respondents, thirty four (69%) were males while fifteen (31%) were females. Men and women share equal responsibility in both farm and household chores. There is a division of labor wherein men usually do the plowing of the fields with the aid of a carabao and gathering and hauling of fuel wood. Women on the other hand, do the cleaning or weeding (“ga-at”). Both men and women help in planting, making and installing of scarecrows, maintaining the irrigation canal (“alak”), harvesting and hauling of palay.

Civil status. Thirty-six (73.5%) of the respondents are married while there were eleven (22.4%) widow/ers and two (4.1%) were single. The data shows that married farmers are more involved in farming activities because it is the main source of food for their families.

Number of children. Data shows that twenty four (49%) of the respondents have 6 to 9 children; twenty three (47%) have 1 to 5 children and two (4%) have no children at all. Big number of children in families of Gawa-an have been observed. The belief of old people that children is wealth maybe due to the fact that more children would mean more people to do the works in the farm.



Table 1. Profile of the respondents

PARTICULAR	NUMBER OF RESPONDENT	PERCENTAGE (%)
Age		
31-40	6	12.2
41-50	11	22.4
51-60	17	34.6
61-70	9	18.4
71 above	6	12.2
TOTAL	49	100.0
Sex		
Male	34	69.0
Female	15	31.0
TOTAL	49	100.0
Civil Status		
Married	36	73.5
Single	2	4.1
Widow/er	11	22.4
TOTAL	49	100.0
Number of Children		
0	2	4.0
1-5	23	47.0
6-10	24	49.0
TOTAL	49	100.0
Educational Attainment		
Elementary	28	57.1
High School	11	22.5
College	1	2.0
No formal education	9	18.4
TOTAL	49	100.0
Number of years Practicing Agroforestry		
1-20	14	28.0
21-30	16	33.0
31 years and above	19	39.0
TOTAL	49	39.0



Educational attainment. Twenty eight (57%) of the respondents reached elementary, 11 (22.5%) reached high school, one (2%) has reached college while 9 (18.4%) did not have formal education. Respondents were sent to school by their parents but were forced to stop to help in farm work. Some of the respondents said that the school was too far from their houses.

Number of years practicing agroforestry. Table 1 shows that nineteen (39%) of the respondents have been practicing agroforestry for 31 years or more, sixteen (33%) for 21-30 years and 14 for 20 years or less. The term agroforestry is not known to them however, the farmers agreed that they have been practicing it for years when the researcher defined and described agroforestry to them. This implies that the respondents were experienced in agroforestry practices.

Farm Profile

Farm Area

Table 2a presents the size of farms of the respondents. Twenty six (53%) of the respondents have a farm size of 500 m² to 1000 m² while twenty three (47%) have a farm of 1001m² to 1500 m². Given the fact that the farms of the respondents are small pieces of lands or terraces located in different areas, it is difficult to estimate the actual area.



Table 2. Farm profile

PARTICULAR	NUMBER OF RESPONDENT	PERCENTAGE (%)
a. Size of Farm		
500 – 1000 m ²	26	53.0
1001 – 1500 m ²	23	47.0
TOTAL	49	100.0
b. Irrigation		
Irrigated	49	100.0
Non-irrigated	26	53.0
c. Source of Irrigation		
Rain	26	53.0
Flowing water (rivers, creeks, wells and springs)	49	100.0

All of the respondents claimed to have irrigated farms but 26 or 53% claimed to have maintained non-irrigated areas, which is the “uma” or swidden farms.

Table 2c shows the source of irrigation of the respondents farm. All of the respondents claim that flowing water from the river, creeks and springs are the source of farm irrigation. The abundant water supply from these sources of irrigation implies that the farmers are able to maintain two rice cropping in one year. However, those 53% (26 respondents) who maintained swidden farms depend on rain as their main source of irrigation for their “uma”.





Figure 7a. A non-irrigated farm (“uma”) with mango pigeon pea and banana



Figure 7b. An irrigated farm with banana, mungo, papaya and coconut.
Water from the ricefields above irrigates this swidden farm.



Farming Systems and Practices

Agrisilvipastoral (agricultural crops + livestock + forage crops) system is commonly practiced by the respondents. Rice field with trees and draft carabao and backyard/home gardening with native pigs, chicken, ducks and fishponds are under agrisilvipastoral system (Figures 8a, 8b and 87c).

Another farming system practice observed in barangay Gawa-an is the agrisilvicultural practice which involves the combination of agronomic crops, vegetables and or fruit with forest trees (Figures 9a, 9b and 9c).

Table 3 shows that all (100%) of the respondents cultivated rice (*Oryza sativa*). Due to abundant source of irrigation water, farmers are able to plant rice twice a year. First cropping often starts during the month of February where farmers plant the traditional rice “piiyeen” or “furikan” which is harvested from June to July. Second cropping starts on the month of August and harvested from November to December. “Almusasa”, the red rice is usually planted during the second cropping.

All (100%) of the respondents cultivated pungent chilli pepper (*Capsicum frutescens*) locally termed as “sili” while forty-three (87.8%) cultivated sweetpotato (*Ipomea batatas*) or “camote”; forty-five (91.8%) corn (*Zea mays*); thirty-six (73.5%) cassava (*Manihot esculenta*) or “padpadle”, twenty-five (51%) pineapple (*Ananus comosus*) or “pingyen”, six (12.2%) mungbean (*Vigna radiata*) or “balatong”, and five (10.2%) gabi/taro (*Colocasia esculenta*) or “amlang”. For fruit crops, all (100%) cultured banana (*Musa sp.*) or “sola”, forty-three (87.8%) mango (*Magnifera indica*) or “manga”, forty-two (85.7%) coffee (*Coffea robusta*) or “kape”, forty (81.6%) coconut (*Cocos nucifera*) or “inyog”; thirty seven (75.5%) pomelo (*Citrus grandis*) or “simma”,



seven (14.3%) for star apple (*Chrysophyllum cainito*) or “kaimito” and three (6.1%) oranges (*Citrus sp.*) or “gayunan”. For animals, forty-five (91.8%) raise native chicken, forty-four (89.8%) native pig, thirty-two (65.3%) carabaos, seven (14.3%) ducks and two (4.1%) tilapia. Tilapia was introduced in Balbalan in the 1970s.

Results show that their main crop is rice while corn and sweet potato is grown as supplements to rice and at the same time is used as feeds to animals.

The respondents claimed to maintain their agroforestry farms because it requires simple and safe operation and lesser expenses are needed.



Agrisilvipastoral System



Figure 8a. Mango, coconut, Japanese guava, beetle nut, coffee, gabi with fish pond



Figure 8b. Mango, coconut, guava with native pig





Figure 8c. Coconut, coffee, gabi, pepper with native pig



Agrisilvicultural System



Figure 9a. Mango, banana, papaya and pineapple



Figure 9b. Banana, coffee, star apple, bamboo, gabi and sweetpotato in a backyard garden





Figure 9c. Banana, pigeon pea and sweetpotato



Table 3. Plants and animals commonly integrated in agroforestry farms

PARTICULAR	NUMBER OF RESPONDENT	PERCENTAGE (%)
Agricultural Crops		
Rice	49	100.0
Sweetpotato	43	87.8
Corn	45	91.8
Cassava	36	73.5
Pigeon pea	48	98.0
Balatong	6	12.2
Gabi	5	10.2
Pineapple	25	51.00
Fruit Trees		
Banana	49	100.0
Coconut	40	81.6
Mango	43	87.8
Coffee	42	85.7
Pomelo	37	75.5
Star Apple	7	14.3
Orange	3	6.1
Animals		
Pig	44	89.9
Chicken	45	91.8
Carabao	23	46.9
Tilapia	2	4.1
Duck	7	14.3



Farm Management and Practices

Most of the farmer still use the carabao in plowing their fields while some hired hand tractors from persons who own one. This was done by some respondents who prefer to work in private mines in a nearby town. All of the respondents however still practice “ga-at”, direct seeding and harvesting manually. Simple tools are used like the bolo. The farmers have practice the traditional exchange of labor or “Pango” during harvesting of rice.

In terms of farm inputs (Table 4) the farmers use organic fertilizers. This practice was handed to them by their parents, fellow farmers and agriculture technicians. Common organic fertilizers like animal manure, sunflower and rice stalks were used. During land preparation they slash sunflower and directly incorporate the young stems and leaves into the soil to serve as green manure. Some farmers admit to still practicing slash and burn in their swidden farms.

The respondents claimed that they do not use inorganic fertilizers. This is true since most of the farm products is mainly for family consumption and due to inavailability of inorganic fertilizers in their barangay.

As to the control of pest and disease in plants and animals, it was observed that animals such as pig and chickens are infected with pest and diseases are immediately butchered to prevent other animals from getting infected too with the disease. As for plants, they usually remove infected plant parts.



Table 4. Farm management and practices

PARTICULAR	NUMBER OF RESPONDENT	PERCENTAGE (%)
Cleaning		
Manual cleaning	49	100.0
Burning	5	10.2
*Multiple response		
Planting		
Direct planting	49	100.0
Transplanting	49	100.0
*Multiple response		
Fertilizer		
Organic	49	100.0
Inorganic	0	0
Both organic and inorganic	0	0
TOTAL	49	100.0
Way to control pests and diseases		
Chemical		
Physical	0	0
	49	100.0
TOTAL	49	100.0
Harvesting		
Manual	49	100.0
TOTAL	49	100.0



Farmers said that the technician assigned in Gawa-an visited their farms once a month or only when a problem bothers them particularly with their rice fields. Also, there is no introduction of new technologies and new varieties that could modify their farming systems.

On the other hand, irrigation is not a problem since barangay Gawa-an was blessed with the river Saltan which bisects the barangay. The virgin forests are conserved and farmers do not allow kaingeros or illegal loggers to touch the forest. However, due to increasing household needs and education, some farmers are forced to find other sources of income like pocket mining. Another problem arises when the children become professionals because of the fear that their children will abandon farming. One reason why farmers refrain from producing cash crops is due to the lack of farm to market roads. Transport of products to the market is too difficult due to road condition and the distance between barangay Gawa-an and Poblacion is far.

A common ritual practiced by the farmers is the “*damdamet*” (ritual before harvest), which is done by making a knot out of the leaves of a certain grass and reciting a prayer, and “*ulgad*” which is practiced before stocking their harvest in the rice granaries or “*alang*”. The “*ulgad*” together with the “*damdamet*” are now seldom practiced in the community due to conversion to Christianity.



SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study was conducted to describe the traditional agroforestry practices in Gawa-an, Balbalan, Kalinga.

The study used the method of a qualitative research. The respondents were agroforestry practitioners who were randomly selected. Thirty-four (34) respondents belong to the age of thirty-one (31) to sixty (60) years old while fifteen (15) belong to the senior bracket which is sixty-one (61) years old and above. Majority were males, married and reached grade school.

The respondents cultivated an average area of 600-1,500 m² which was irrigated by a river, creeks and springs.

The respondents practice agrisilvipastoral and agrisilvicultural systems in their traditional farming. All of them cultivated traditional varieties of rice, banana and majority grow corn, pigeon pea, sweetpotato, coconut, mango and coffee. Animals such as native pig, chicken, carabao, duck are common while a few raised tilapia. These plants and animals were integrated in the backyard gardens, swidden farms and even in the ricefields.

Traditional agroforestry practices in Gawa-an underwent some changes due to the introduction of Christianity and increasing household needs. Because of these needs, farmers are lured into pocket mining. This leads to the decrease in number of farm hands that is why some families hire hand tractors to till their ricefield instead of employing the carabao. Some farmers adopted fishpond into their farms when tilapia was introduced. Traditional farm rituals are now seldom performed and could soon be forgotten if not



restored. Farmers still retained the traditional “*pango*” that maintains their unity, cooperation and friendship.

Conclusion

The farmers maintain their tradition farming practices because it required simple and safe operation and need lesser expenses. So far, there were few changes in their farming practices. Some learned to make fishpond and raise fish when tilapia was introduced into their place. Participation of men in the farm works decreased because some farmers are lured to work in the private mines in order to support their increasing household needs and education of their children. Farm rituals are now seldom practiced. However, the local farmers still practice the “*pango*” which is a symbol of their unity and cooperation.

Recommendations

Based on the results gathered, the following are recommended:

1. Farmers should maintain their traditional and cultural practices including their farm rituals.
2. Promotion of products in the market and promote eco-tourism in the community through the continuation of Balbalan-Pinukpok road.
3. New varieties/cash crops maybe adopted as long as it is compatible with the climate and cultural practices and the existing indigenous varieties must be maintained and improved.
4. There should be trainings for the farmers in the locality in order for them to be educated on the proper management of their farms.



LITERATURE CITED

- AYWAN, I. B. 2004. Analysis of the Problems and Needs of Agroforestry Farmers in three Barangays of Lamut, Ifugao. Pp. 7-8.
- BRETT, J. P. 1997. Coping Strategies in Bontoc Highland Agro-ecosystem. The Role of Ritual. CSC Working Paper of Baguio City. Cordillera Studies Center, U.P. Baguio. Pp. 3-4.
- CAMFILI, C. A. 2006. Modifications in Agroforestry Practices of Farmers in Guinaang, Bontoc, Mountain Province. P. 33.
- CPA (CORDILLERA PEOPLES ALLIANCE). 2002. Rotational Agriculture of Indigenous Peoples in Asia, Case Studies Analysis and Recommendations. International Alliance of Indigenous Tribal People of the Tropical Forests (IAITPTF). Pp. 97.
- FSDI. 1995. "The Indigenous Agroforestry in Ifugao". Paper presented at the Symposium on Sustainable Alternative Livelihood. Diliman, Quezon City. Pp. 2-4.
- LUNDRÉN and RAIN TREE. 1983. Sustained Agroforestry. International Council for Research in Agroforestry, Nairobi, Kenya. p.2.
- MACAGNE, J. U. 2004. Arabica Coffee-based Agroforestry Practice in Sagada, Mountain Province. P. 12.
- PCARRD. 1976. The Philippine Recommends for Integrated Farming Systems. Philippine Council for Agricultural Resources Research, Los Baños, Laguna. P. 1.
- PCARRD. 1986. The Philippines Recommend for Agroforestry. Technical Bulletin Series No. 59. Philippine Agricultural Resources Research Foundation, Inc. p.4.
- PCARRD. 1991. Agroforestry Research in the Philippines. Los Baños, Laguna. p.4.
- ROCHELEAU; D. F. WEBER and A. FIELD – JUMA. 1988. Agro forestry in Dryland Africa. International Council for Research in Agroforestry. Nairobi, Africa. P. 32.
- SALAM, A. M. and D. SKREEKUMAR. 1991. Kerala Homegardens. A Traditional Agroforestry System from India Agro forestry Today. Vol. 3. P. 10.



STEPPLER, H. A. and P. K. R. NAIR. 1987. Agro forestry: A Decade of Development. ICRAF house, Limmum Road. Gigiri, Nairobi, Kenya. Pp. 125-126.

YOUNG, A. 1997. Agroforestry for Soil Management. Second Edition. P. 3.



APPENDICES

Appendix A

Letter to the Respondents

Benguet State University
COLLEGE OF AGRICULTURE
La Trinidad, Benguet

Date: _____

Dear Respondents:

I am an agriculture student of the Benguet State University, La Trinidad, Benguet and I am to conduct a study on the agroforestry practices in your barangay.

In this connection, may I request your cooperation and assistance by frankly answering all the items in this questionnaire. Be very much assured that your answer will be used solely as a reference to co-researchers, agriculture students and guide to young and would be farmers in the Cordillera.

Thank you very much for your trust and support.

God Bless!

Very truly yours,

ROLLY M. CHAMOLLOG
Researcher



Appendix B

Guide Questionnaire

I. GENERAL INFORMATION

Name (optional): _____

Age: _____

Sex: _____ Male

_____ Female

Civil Status: _____ Single _____ Married _____ Widower _____

No. of Children: _____

Educational Attainment:

_____ Elementary

_____ High school

_____ College

_____ Vocational

_____ Non – formal Education

No. of years practicing Agroforestry: _____

II. FARM INFORMATION

A. Type of Farm:

_____ Ricefield

_____ Swidden farm

_____ Backyard garden

B. Size of Farm:

_____ Less than 500 m²_____ From 501 to 1000 m²_____ From 1001 to 5000 m²_____ From 5001 to 10,000 m²

C. Irrigation:

_____ Rain

_____ Flowing water

_____ Others (pls. specify)

III. AGROFORESTRY FARMING SYSTEM AND PRACTICES

A. What Agroforestry systems were commonly practiced 20 years ago?

_____ Agrosilvicultural system (Agricultural crops + trees)

_____ Agrosilvipastural (Agricultural crops + trees + animals)

_____ Silvipastural (trees + animals)

_____ Others (pls. specify)



B. What are plants and animals commonly integrated in this Agroforestry system?

Agricultural Crops	Animals	Fruit Trees
<input type="checkbox"/> Sweet potato	<input type="checkbox"/> pig	<input type="checkbox"/> banana
<input type="checkbox"/> Rice	<input type="checkbox"/> carabao	<input type="checkbox"/> coconut
<input type="checkbox"/> corn	<input type="checkbox"/> chicken	<input type="checkbox"/> coffee
<input type="checkbox"/> cassava	<input type="checkbox"/> duck	<input type="checkbox"/> mango
<input type="checkbox"/> pigeon pea	<input type="checkbox"/> goat	<input type="checkbox"/> citrus
<input type="checkbox"/> others (pls. specify)	<input type="checkbox"/> others (pls. specify)	<input type="checkbox"/> others

C. At present, are you still employing this Agroforestry systems?

Yes No

If yes, what are the reasons for employing the Agroforestry systems?

- Increased production
 Incurred lesser expenses
 Required simple and safe operation
 Others (pls. specify)

If no, what systems are you employing now?

- Mono-cropping
 Others (pls. specify)

D. What farm management practice are you adopting now?

Practices	Adopting	No. of years adopting	Not adopting
1. Fertilizers			
a. Organic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Inorganic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Both (organic and inorganic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Pest and Disease Control			
a. Chemical control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Physical control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Others (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Who taught this farming practices?

- Parents
 People in the community
 Resource persons in seminars
 Agricultural Technicians
 Others (specify)



IV. PROBLEMS AND POSSIBLE SOLUTIONS

A. From your own observation, what possible factors contributed to the changes in the traditional farming practices? Why did you say so?

- _____ Need of immediate cash
- _____ Decrease in land areas
- _____ Lack of capitals
- _____ Others (pls. specify)

B. What are your recommendations / suggestions to enhance traditional practices in the area?

- _____ Attend / involve in seminars
- _____ Others (pls. specify)

