International Journal of English Literature and Social Sciences
Vol-7, Issue-6; Nov-Dec, 2022

Journal Home Page Available: https://ijels.com/
Journal DOI: 10.22161/ijels

Production and Marketing of Agroforestry Products in the Municipality of Rizal, Kalinga

Clarisa L. Amoga

Received: 15 Nov 2022; Received in revised form: 18 Dec 2022; Accepted: 25 Dec 2022; Available online: 31 Dec 2022

Abstract— *This study was conducted to determine the status of production and marketing of agroforestry products in the Municipality of Rizal, Kalinga from February 10 to April 15, 2022. There were 53 respondents of the study. The descriptive statistics was used. Frequency counts, percent, means, ranks and correlation were used in the analysis and interpretation of data. Most of the respondents are Ilocano, males, married and at age bracket of 51 to 60 years old and had reached elementary level and supporting 5 and above family members. Most agroforestry farmers were cultivating their own sloping land with an area of 1 to 2 ha for more than 10 years and had used their own savings as capital in agroforestry farming. Majority were not affiliated with any organization. Many received financial assistance from government agencies to sustain their farming activities. Many farmers had generated an annual income of about ₱201, 000 and above from agroforestry farming. Generally, farmers' house distance to their farms was 500 meters and below and a distance of 1 km and below from their farms to the market. Farm produced were mostly marketed through word of mouth and usually sold wholesale in local market. However, prices of products mostly fluctuate during peak and lean seasons. From the different agroforestry systems they have adopted, the highest income was generated from their agrocrops. Problems in production, marketing and financial aspects were rated slightly serious. Findings show a significant correlation between annual income and educational attainment, farm size, organizational membership, length of farming experience, distance of house from agroforestry farm and market, and the topography of the farm. Likewise, a significant correlation existed between the seriousness of problems encountered by the respondents to farm size and distance of agroforestry farms to market.*

Keyword— ***Status, marketing of agroforestry products, agroforestry systems, production, intervention plan.***

I. INTRODUCTION

Background of the Study

Agroforestry is any land-use system, practice, or technology in which woody perennials are integrated with agricultural crops and/or animals in some form of spatial arrangement or temporal sequence. It is also a dynamic and ecologically-based natural resource management system. It refers to the deliberate introduction or retention of trees on farms to increase, diversify, and sustain production for increased social, economic, and environmental benefits (Atangana et al., 2013).

Additionally, agroforestry systems could generate income from various species, increase food security and timber; provide environmental benefits, including biological diversity, carbon dioxide fixation, watershed protection, and soil conservation, (Jongrungrot et al., 2014); increase the total farm income through more efficient plot management (lower maintenance and operating costs); increase yields of intercropped fruit trees (for example, more pollination of salacca); introducing other kinds of products in the plots to increase household income (for example changing from harvesting to grafting and selling more Gnetum); adding a source of income to compensate for the lower price of other crops or higher farm laborers' wages (Jongrungrot&Thungwa, 2013).

Traditional agroforestry systems, as one type of land use practice, have a long history of hundreds of years in practice and continue to play an important role in the world, especially in tropical and subtropical areas. In this era of globalization and food security, more and more governments and non-governmental organizations are paying attention to traditional agroforestry systems because of their economic, ecological, and socio-culture benefits. These traditional agroforestry systems have rich agricultural and associated biodiversity, multiple ecosystem services, and precious socio-culture values at a regional and global level (Weiwei et al., 2014).

Agroforestry also plays a complementary role in natural resource management (Jamnadass et al., 2014). It is also globally practiced by smallholder farmers. And to benefit these farmers, the public-private partnerships (PPPs) was created. It is viewed as a way of facilitating benefits to smallholders from market opportunities. There are many well-established agroforestry products, and others considered intermediary and underdeveloped but have the potential to bring livelihood and environmental benefits through further supply chain development

Evidently, within the Indian subcontinent, agroforestry includes a long history. The people's socio-religious fabric raising, caring for, and loving trees is deeply entwined with the subcontinent's culture. Trees suited to agroclimatic and other local variables are extensively incorporated within the region's crops and livestock production systems. Agroforestry's goal is to maximise positive interactions between components so as to come up with a more productive, sustainable, and/or diverse (in terms of land users' needs) system. The aim of agroforestry is to optimize the positive interactions between components so as to attain a more productive, sustainable, and/or diversified (in reference to the land users' need) output from the land than is feasible with other kinds of land use. Agroforestry as a discipline has the potential for taking a number one and catalytic role during this process of change, due to its inherent integrative and multidisciplinary nature, its optimization instead of component-maximization aims, and since of the nice interest shown in it today (Handa et al., 2020).

In the Philippines, agroforestry has been widely accepted mutually of the effective approaches in ensuring sustainability within the uplands. Agroforestry, as a forest management strategy, has been promoted by Community Based Forest Management (CBFM) in response to watershed and forest degradation and temperature change. CBFM cites at Liliw and Sta. Maria Laguna, farmers practiced multilayer tree gardens, shelterbelts/windbreaks-cum and live trellis system (Lalican, 2018)

Moreover, there are four agroforestry systems being practiced all told three Agroforestry Ecological Zones (AFEZ) within the province of Benguet. These are agrisilvicultural (combination of annual crops particularly squash, gabi, sweet potato, rice, or corn plus forest trees specifically Benguet pine or Alnus), agrisilvipastoral (combination of rice, corn, gabi or sweet potato including fruit trees and low plus stock typically native pigs, native chickens, and cattle integrated under Benguet pine or alnus), silvipastoral (combination of stock particularly cattle under Benguet pine or alnus) and, agrisilviculture plus sericulture, (combination of gabi, sweet potato, or rice planted in open areas with coffee planted under Benguet pine or alnus plus mulberry cultivated within the open areas for sericulture). Among these agroforestry systems, agrisilviculture was the foremost practiced. These agroforestry systems are situated in areas having greater than 100% slope (which is deemed very strong to very steep slope), have sandy loam soil, experience the kind 1 climate, with temperature range of 18-28.950 C and mainly rain fed. Coffee, sweet potato, gabi, cassava, corn, and chayote are the common crops cultivated while cattle, native pigs, and native chickens are the stock found in most of those agroforestry systems. On the opposite hand, alnus (Alnus spp.), and native ipil-ipil (Leucaenaleucocephala L) are the dominant nitrogen-fixing trees integrated while Benguet pine (PinuskesiyaRoyle ex Grodon) is that the most prominent forest tree cover. Meanwhile, the identified Non-Timber Forest Species (NTFS) are different bamboo species and "rono" (Miscanthussinensis) which are sold as pole or trellis, respectively. These are used for fuelwood and fencing. (Macanes et al., 2020).

Similarly, within the province of Kalinga, agroforestry has always been part of their traditional farming practices where they sometimes grow root crops and rice on slopes, supported by trees to forestall eating away. Animal waste and leftover foods also were used as fertilizers. Some tribes within the province plant high-value crops alongside nitrogen-fixing plants, like peanuts and beans. They also used land-management systems where trees and shrubs are grown around or among crops or pastures, as can still be seen within the municipalities of Balbalan, Pasil, Tanudan, Tinglayan and Lubuagan. With this technique, they were able to make the assembly of food, firewood and clothing sustainable, (Berry, 2020).

Furthermore, through CBFM, Kalinga upland farmers now practiced shelterbelt/ windbreaks, live fences, and tree/home gardens. The woody vegetation and fruit bearing crop species altogether the CBFM sites were dominated with rambutan (Nepheliumlappaceum), mango

(Mangiferaindica), nangka (Artocarpusheterophylla), pomelo (Citrus grandis), chico (Manilkarasapota), coffee species (Coffeaspp), pineapple (Ananascomosus), and banana (Musa sapientum). The forest tree species consists of yemane (Gmelinaarborea), mahogany (Swieteniamacrophylla), kakawate (Gliricidiasepium), ipil-ipil (Leucaenaleucocephala), dao (Dracontamelondao), tuai (Biscofiajavanica), narra (Pterocarpusindicus), and kalumpit (Terminalianitens). The agronomic crops raised were corn (Zea maize), taro (Colocasiaesculenta), cowpea (Vignaunguiculata), black beans (Phaseolus vulgaris), eggplant (Solanummelongena), and ginger (Zingiberofficinale) (Wilson & Lovell, 2016).

With the increasing patronization of adopting agroforestry because of its multiple benefits to both human and environment, many are switching from monocropping to some agroforestry systems. However, when it involves marketing, products produced cannot be assured to own the best price. Most of the markets for agroforestry products are imperfect. The markets for agroforestry products aren't effectively organized within the ground reality. Mostly traders and middlemen are the massive players within the market, whereas producers are simple price followers (Raj, n.d.). As such, a well-established market outlet for agroforestry products is important thanks to its significant role in enhancing production and consumption, and in accelerating the pace of economic development. Besides, farmers could gain plenty of income in marketing their agroforestry products. At the identical time, the marketing of agriculture and small-scale forestry products also plays a serious role in smallholders' economies which are both produced and consumed locally. These products are contributing a major role in developing countries because these products make a significant contribution to the Gross Domestic Product (GDP), and their consumption represents a vital a part of rural people's expenditure (Kazi et al., 2014).

Marketing is a vital component of tree domestication. Improving the productivity of agroforestry systems can help farmers improve their subsistence lifestyles. As a result, in order to improve the farmers' livelihoods and economic standing, their products must be sold. Farmers' marketing has received little attention and is poorly understood in the past. Understanding market linkages and interactions can help smallholder farmers improve their livelihoods by directing their agroforestry production toward market opportunities (Arinloye et al., 2014).

In the Philippines, the marketing system of agricultural commodities faces several issues and challenges that indicate inefficiencies, which have become even more difficult. a number of the common issues are: (a) the low prices received by farmers for his or her produce; (b) the multiple layers of market intermediaries in agricultural supply chains; and (c) the limited access to profitable markets (e.g., institutional and export markets). Of all the market actors within the agricultural marketing chain, the little farmers are often the foremost full of these problems (Sumalde&Quilloy, 2015).

But, if there's a marketing efficiency, it can benefit all the key actors during a market chain. Technically, an efficient marketing system is achieved when the resulting marketing costs (including losses) are minimized and therefore the profits or returns of market intermediaries are reasonable–that is, the marketing margin is simply enough to hide the prices of selling services and there aren't any unreasonable profits generated by the market intermediaries (Pabuayon et al., 2013). It ensures higher levels of income for the farmers reducing the amount of middlemen or by restricting the price of promoting services and therefore the malpractices, within the marketing of farm products (Nassè, 2021). Furthermore, the marketing structure and channels of agroforestry products are totally different from other agricultural products because of bulkiness and high weight of wood and other forest products. only a few research attempts had been made to review the assembly and marketing of agroforestry products. it's at now that continuing research efforts in assessing producers' group marketing performance vis-a-vis the whole marketing system must be pursued (Libredo&Tidon, 1996). Hence, this study takes the cause investigate the assembly and marketing of agroforestry products within the municipality of Rizal, Kalinga. The most goal of the study is to explore the marketing of agroforestry products and identify the problems/ constraints experienced by the agroforestry farmers in marketing their agroforestry products.

II. Conceptual Framework

The framework of the study employed an input-process-output model (Fig.1). The input variables are the socio-demographic profile of the key informants which comprised of the name, address, municipality, province, age, gender, civil status, ethnicity, educational attainment, number of members in the family, total land area of agroforestry farms, status of land tenure, source of capital, organization/association membership, annual income from agroforestry farming, distance of the house to the agroforestry farm, length of agroforestry experience, distance of agroforestry farm to market, topography of the

farm and assistance received. The status of agroforestry in terms of 4 Ps (product, price, promotion, place) was determined as well as the degree of seriousness of problems encountered by the respondents and the opportunities in marketing the products, and the correlation of the annual income and degree of seriousness of problems encountered to the socio-demographic profile.

Likewise, the process in conducting the study was collection of data, analysis, interpretation, write-up and documentation with the use of a questionnaire (Instrumentation). And, the output was the clear view of the status of production and marketing of agroforestry products in the municipality of Rizal, Kalinga and the most appropriate intervention plan.

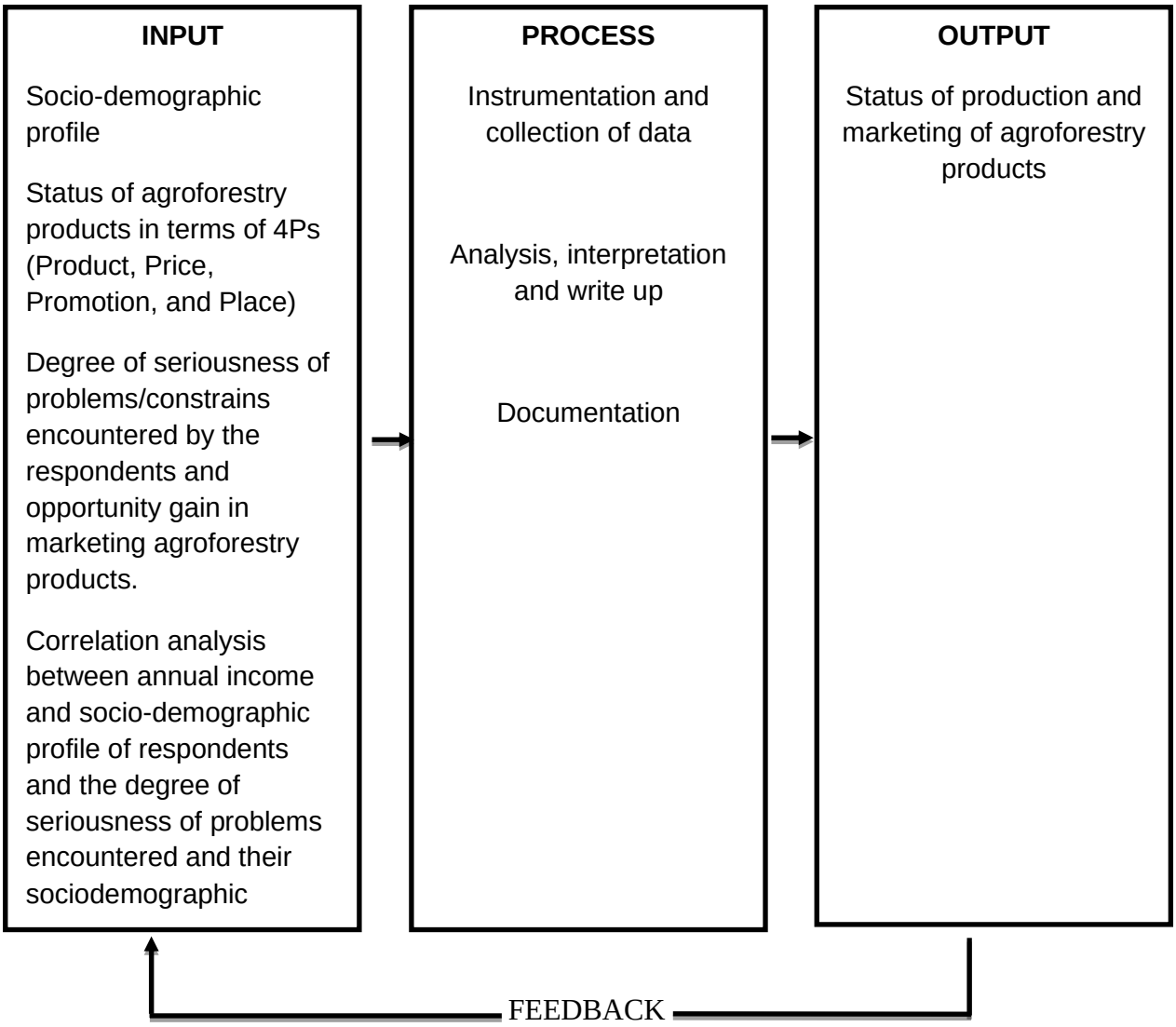

Fig. 1. Framework of the Study

Statement of the Problem

The study sought to determine the production and marketing of agroforestry products in the municipality of Rizal, Kalinga.

Specifically, it sought to answer the following questions.

a. What is the socio-demographic profile of the respondents?

b. What is the status of agroforestry products in terms of:

b.1. product;

b.2. price;

b.3. promotion;

b.4. place

c. What is the degree of seriousness of the problems/constraints encountered by the

respondents and the opportunities in marketing agroforestry products?

d. What are the correlation between some and among the socio-demographic profile of respondents; farm profile and seriousness of problems encountered by the farmer-respondents?

Objectives of the Study

The study sought to determine the production and marketing of agroforestry products in the municipality of Rizal, Kalinga.

Specifically, the study was guided by the following objectives.

1. To determine the socio-demographic profile of the respondents;
2. To determine the status of agroforestry products in terms of:

2.1. Product

2.2. Price

2.3.Promotion

2.4.Place

3. Determine the degree of seriousness of the problems/constraints encountered by the respondents and the opportunities in marketing agroforestry products;

4. To determine the correlation between some and among the socio-demographic profile of respondents; farm profile and seriousness of problems encountered by the respondents

Significance of the Study

Results of this study will show the flow of marketing of agroforestry products and reveal what problems seriously faced by the Agroforestry farmers and this will then serve as baseline data/inputs for future researchers, extensionists, policy-makers, and program planners who are directly or indirectly involved in promoting agroforestry products

Scope and Delimitation of the Study

This study was conducted to determine the Production and Marketing of Agroforestry Products in the Municipality of Rizal, Kalinga. It will be delimited in finding the agroforestry status in terms of 4Ps, the degree of seriousness of problems encountered, the correlation between some and among demographic profile of respondents; farm profile and seriousness of problems encountered by the respondents and the recommended intervention plan.

Review of Related Literature

Agroforestry system is a viable response to agricultural extensification and intensification problems because it exemplifies a nature-based solution that has the potential to enhance soil health and supply economic benefits (Legaspi et al., 2021). It bridges the gap that usually separates agriculture and forestry by building integrated systems that address both environmental and socio-economic objectives. It can improve the resiliency of agricultural systems and mitigate the impacts of temperature change, (Miller et al., 2017) and a serious climate-smart agriculture option because it combines sustainable production with adaptation and mitigation of temperature change (Vaast et al., 2015).

Apparently, soil improvement under trees and agroforestry systems is in great part associated with increases in organic matter, whether within the type of surface litter or soil carbon. Therefore, besides their role in above-ground carbon sequestration, agroforestry systems even have an excellent potential to extend carbon stocks within the soil and definitely merit consideration in mechanisms that propose payments for mitigation of gas emissions to cut back temperature change (Pinho et al., 2012). Moreover, it can sustainably managed non-forest land and has the potential to bring multiple benefits to farmers like increasing the contribution (decreasing negative effects of temperature change and increasing farm income) from agroforestry (Pandit et al., 2013); improve agronomic productivity, carbon sequestration, nutrient cycling, soil biodiversity, water retention, pollination; reduce eating away and therefore the incidence of fireplace and supply recreational and cultural benefits, (Sollen-Norrlin et al., 2020); has the best potential in mitigating global global climate change and for carbon sequestration of all the land uses analysed within the land-use and land-use change as reported by the IPCC (Jose &Bardhan, 2012).

Besides, some 100 distinct styles of agroforestry are practiced worldwide with farmers integrating trees or shrubs among annual herbaceous crops. These deliver a good range of advantages to farmers and to the encompassing landscape, including organic process (from the employment of legume tree-based farming systems), cost-saving by reducing the necessity for synthetic fertilization, and therefore the production of additional food, fruit, fuel, and fodder. A key advantage is that farmers can integrate trees without large financial investment. Where they're given support to try and do so, dramatic transformations are achieved at scale, like within the “regreening” (Agroforestry, 2019).

In Ethiopia, agroforestry is their ancient practice, thus farmers are too much familiarized with it. Agroforestry is the basic extension package that

contributes incredible benefits via socio-economic and environment (BekeleJiru, 2019).

Moreover, many farmers in Mindanao transformed their farming system from monocropping to agroforestry producing a variety of annual and perennial crops. The majority of smallholders falcata-based farmers practiced different agroforestry, but with different forest tree crops, agricultural crops and animals. It was perceived that growing different crops at the farm provides income stability and increases self-sufficiency. The agroforestry systems practiced in Northern Mindanao are somewhat similar to that of Nueva Vizcaya, Benguet, and Quezon where alley cropping and multi-storey systems dominate. In Southern Philippines, parkland system, natural vegetative strips, block planting, and border planting were commonly adopted (Palma et al., 2020).

The marketing system for agroforestry wood and non-wood products wasn't identical, and a completely non-commercialized marketing structure was found for non-wood forest products. These products were either sold on the farm gate or presented freely due to unawareness. The marketing channels of wood logs were found different from product to product. Farmers sold the entire trees or the blocks to some local assemblers, thus market exploitation situations prevailed, and that they offered fewer prices for wood logs (Peerzado&Magsi, 2018). additionally, smallholder farmers, who are mostly in rural areas, often don't have access to information regarding prices in urban areas; they mostly sell at farm-gate prices to local traders who on their part have access to cost and market information prevailing in other markets (Pandit et al., 2018).

A marketing system consists of other product flows called marketingchannels, a spread of firms (middlemen-¬private or public agencies), and various business activities (marketing functions). Market channels contain four primary components: products, agents, activities, and input. Many agents are involved in moving products along market channels. They include farmer-producers, collectors, local dealers, regional dealers, processors of stuff (produsenbahanmentah), processors of semi-processed materials (produsenbahanbaku), manufacturers (produsenbarangjadi), wholesalers, marketing agents and consumers. The activities conducted by these agents include: production, collection, transportation, sorting, grading, processing, manufacturing, storing and selling. Various inputs are required to maneuver the products along the market channel to rework them from stuff to a finished product and transfer it from the farmer-producer to the patron. These inputs include: labor, information, skills, knowledge and capital (Arinloye et al., 2014).

A marketing channel is described because the set of individuals, organizations, and activities that employment together to transfer goods (products and services) from the purpose of origin to the purpose of consumption. the first purpose of a marketing channel is to form a connection between the organization that makes a product or service and prospective customers who might want to buy it (Watson et al., 2015). Additionally, a marketing channel consists of people and firms involved within the process of constructing a product or service available to be used or consumption by consumers or industrial users. Marketing channels are the ways in which goods and services are made available to be used by the consumers. All goods undergo channels of distribution, and marketing depends on the way goods are distributed. The route that the merchandise takes on its way from production to the buyer is very important because a marketer must decide which route or channel is best for his particular product (Key, 2017).

III. METHODOLOGY

Locale of the Study

The study was conducted within the different barangays in the municipality of Rizal, Kalinga with existing agroforestry farms. The respective barangays covered in the study include Macutay, San Quintin, Liwan West, Bulbul, Kinama, San Pedro, and San Francisco.

Research Design

This study used a descriptive statistic in analysing the data. A structured questionnaire was designed as the primary tool to gather relevant data. Likewise, direct observation, field visitation and documentation were employed to collect accurate information not specified in the interview schedule

Respondents/informants/research participants of the study

The respondents of the study were the farmers engaged in agroforestry farming in the municipality of Rizal, Kalinga. Thirty percent of the total agroforestry farmers' population of each barangay was the respondents of the study composed of 53 farmers. The distribution of the respondents in each barangay is shown in Table 1.

Table 1. Distribution of Respondents per Barangay

Barangay	Population	Number of Respondents
Bulbul	30	9
Macutay	16	5
Liwan West	35	11

Kinama	21	6
San Pedro	31	9
San Quintin	24	7
San Francisco	21	6
Total	**178**	**53**

Instrumentation

The study made used of structured questionnaire. The first part contains the socio -demographic profile of the respondents and farm descriptions; the second part comprises the agroforestry production and marketing aspects in terms of 4Ps (product, price, promotion, place), and the third part contains the degree of seriousness of problems/constraints encountered by the farmer-respondents and the opportunities gained in marketing agroforestry products.

Data Gathering Procedure

Letters to the barangay captains in each study sites were distributed for the permission in the conduct of the study by floating questionnaires to the respective respondents in the identified barangays. The researcher personally conducted the interview and validated the agroforestry farms of the respondents.

Data Analysis

The responses obtained were tabulated, presented and analyzed through descriptive statistics that includes the use of frequency count, percent, rank and correlation/relationship between some socio-demographic and farm profile of the respondents

The data on the degree of seriousness of the problems encountered by the respondents in the production and marketing of agroforestry products were interpreted following the rating scale, range values and descriptive equivalent.

Range	Scale	Interpretation
5	4.20-5.00	Very Serious
4	3.40-4.19	Serious
3	2.60-3.39	Moderately Serious
2	1.80-2.59	Slightly Serious
1	1.00-1.79	Not serious

IV. RESULT AND DISCUSSION

Socio-demographic Profile of Respondents

Table 2 shows the socio-demographic profile of the respondents.

Age

The bulk of respondents was between the ages of 51 and 60 (30.19%), followed by 41-50 (28.30%), 31-40 (18.87%), 61 and above (15.09%), and 21-30 (7.55%). This result implies that most of the respondents are at the middle ages. According to the study of Dyussenbayev (2017), farmers within this age bracket, are knowledgeable in managing agroforestry farm. Also, Avit A, (2018) indicated that agriculture knowledge and skills such as production, operation, and management improve as people get older. Farmers can use the acquired knowledge and abilities to make the most of agricultural inputs like herbicides and fertilizers, as well as labor. On the contrary, Beyene et al. (2019) found out that, younger farmers, compared to older farmers, are more willing to take chances and as a result, adopt agroforestry, which they considered the most contemporary production systems and a risky investment in their study regions. On the same thought younger people are more positive towards newer technology and can adapt relatively easily than older ones. Hence, the young farmers should be provided with proper training and credit facilities to become entrepreneurs by adopting agroforestry (Jahan et al., 2022).

Gender

The data reveals that a great majority (67.92%) of the respondents are males and few (32.08%) are females. This concludes that males are more involved in agroforestry farming which implies that they are the bread winners of the family. The result also reconciles with the report of Mapa, (2018) indicating that agricultural labor force is still mainly composed of men.

With the result study conducted by Liliane et al. (2020), the coefficient of gender of -0.207 implied that the likelihood of adopting agroforestry was 0.207% less among women than men. They found out that men were more positive towards agroforestry adoption; Dhakal and Rai (2020). Further findings claimed that male household heads have better access to extension service than female household heads, making it more difficult for women to have adequate access to extension service in comparison to their male counterparts (Doss and Morris, 2011).

Civil Status

On the civil status, most of the agroforestry farmers are married (92.45%) and few are widowed (3.77%) and single (3.77%). This indicates that most of the agroforestry farmers are married and they have family to support. This is in consonance with the result of the study conducted by Kadon and Daude, (2020) that upland farmers were mostly males and married. In the findings of Okon, et al. (2019), marital status was also identified as one of the factors having positive and significant effects in the decision to adopt agroforestry. It also included farming

experience, educational level, land ownership, education level, farming experience which they concluded major drivers of households' decision making in agroforestry within in their study area.

Ethnicity

On ethnicity, a great majority of the farmers are Ilocano (62.26%), followed by Kalinga (32.08),Kankanaey (3.77%) and Tagalog (1.89%) respectively. The result denotes that majority of the respondents are Ilocano. Further, the result is in accordance on the report stated on the census of population and housing of Kalinga National Statistics Office (n.d) that there are 7,696 Ilocanos residing in the municipality of Rizal which made as the top ethnicity of the study sites.

In the findings of Minter et al. (2014) in the Sierra Madre (northeast Luzon, Philippines), ethnicity shows a little variation in terms of exploitation of available resources. Findings showed that regardless of ethnicity, the group were all engaged in the same kind of activities. But, the moment resources become scarcer and the population is offered opportunities for community forestry, ethnicity becomes a highly relevant factor for the future management of diminishing resources.

Educational Attainment

Based on the educational attainment, some of the respondents step up to elementary level (28.30%) and high school graduate (26.42%), few are college graduates (13.21%), elementary graduates and had some high school education (11.32%) with the same percentage of 11.32%, and only 9.43% had reached college level. This implies that the respondents are able to attend school, and competent and have the capability to widen their knowledge in the practice of agroforestry.

Meanwhile, the coefficient of educational status categories delineated that respondents with higher level of education are likely to adopt agroforestry. A similar outcome was reported in the studies of David et al. (2017). The findings revealed that agroforestry adoption may be less likely if the community is largely illiterate unless the extension program provides awareness, education, and capacity-building support about the importance and benefits of agroforestry. Similarly, educated people are more affluent and have the means to invest in riskier cropping systems. (Bruck and Kuusela, 2021) which had no information on agroforestry practices. This results also agrees with the findings of Jahan et al. (2022) from their binary logistic model delineated that people with higher education, greater household size, younger respondents, having training experiences, more visits, and better access to the market are more likely to adopt agroforestry.

Number of Members in the Family

A great majority (62.26%) of the respondents have 5 and above family members, some have 3 to 4 (30.19%) and few have 1 to 2 (7.55%) family members. The results imply that most of the respondents are supporting many family members. This means the greater the family size, the higher the likelihood of adopting AF.

In rural Nigeria, although family size is high, agricultural productivity is low, so with income derived. Almost all of the food produced by the household is consumed because productivity is low and family size is large. The net effect is a lower level of household income, little savings, and increased poverty (Omidey,1988).

Total Area of Agroforestry Farm

As to the area of the respondents' agroforestry farm, it revealed that many (39.62%) of the respondents are tilling 1 to 2 hectares, few (22.64%) have 2.1 to 4 hectares and less than 1 hectare (22.64%), and more than 6 hectares (9.43%), and the least is 4.1 to 6 hectares (5.66%). This implies that the respondents have medium-sized farm that is enough to cultivate for agroforestry farming.

More specifically, increasing farm size decreases output per unit of land while increasing farm size increases output per unit of labor. Moreover, income fluctuations decline with increasing farms size while the risk of aggregate production increases with increasing farm size. These results suggest that farmers benefit from larger farms, earning higher and more stable income while consumers suffer from lower and more volatile food supply (Noack& Larsen, 2019). This results align with study of (Ren&Gu, 2019) that increasing farm size has a positive impact on farmers' net profit, as well as economic, technical and labor efficiency with means coefficient of 0.005.0.02 and 2.25, respectively. However, the relationship between farm size and overall productivity, total factor productivity and allocated efficiency are still not well understood and hence require more researches. Meanwhile, increase in farm size is associated with statistically significant decrease in fertilizer and pesticide use per hectare, showing clear benefits from environmental protection. Therefore, issues concerning farm size should be implemented in an interaction between farmers, and the government to promote the green development of agriculture.

Status of Land Tenure

Almost all (88.68%) of the respondents own the land that they are tilling and few (11.32%) are tenants. This means that the respondents have the right to improve and adopt technologies in the practice of farming since they own their lands.

The land is a valuable natural resource and a key factor in agricultural production, and the tenure system that governs its administration, acquisition, and use is complex. Land tenure security has had a significant impact on farmland investment, encouraging long-term investment. As a result, land tenure insecurity among arable farmers is a barrier to adequate investment. (Adedayo et al., 2014).

For decades, land tenure distribution has been a contentious issue in the Philippines. Population growth and degradation of productive land have increased stress and tensions between smallholder farmers, wealthy landlords, and the state in recent years. Agriculture is an important source of income in the Philippines, and difficult access to land tenure is linked to poverty, which is primarily a rural phenomenon (Boras, 2009). Farmers' protests for land rights have frequently been met with violence from landlords and security forces.

Idoma& Muhammad, (2014) have also suggested that inalienability, insecurity of tenure system, land fragmentation and atomization of holdings due to customary law of inheritance have been responsible for the growing small scale and subsistence farming systems which no longer meet the food and industrial demand of the present growing population.

Further, the lack of secure access to land is closely linked to poverty, especially in rural Philippines (Ofam, 2014).

Moreover, not only security of land tenure is to be considered but tree tenure as well is also a concern, for the reason of the long term nature of agroforestry system. Thus requires the following conditions such as access to land where the farmer has the right to plant trees; rights over trees must be sufficient to justify the effort of planting them and the right to harvest and utilize trees must be exclusive enough to give a return on investment. If the farmer is denied of security of land ownership for a longer time, then he will not be interested in activities to improve the soil (Glover et al., 2013).

Source of Capital

On the source of capital, a great majority (65 %) of the respondents' capital is derived from their savings while few (15 %) comes from DENR for they are part of the organization recognized by the DENR as support in return of planting tree crops. In addition, 8.33 % of the respondents used bank loans for capital, 6.67 % borrows from money lenders and 5 % borrows money from the cooperative. The researcher concluded that most of the respondents used their personal savings as capital in farming. As the respondents mentioned during the interview conducted. They preferred using personal money earned from their farming and given by their daughters and sons who were employed to avoid high interest from loans and money lenders that might just cause loss in their part.

Capital or money is one of the most vital considerations when investing in farming or business. Without working capital, farms cannot reinvest in their crops. Farmers are then not able to pay out their employees, nor will they invest in new and reliable equipment. Farms are an industry in which having money leads to making money, and not having money makes it impossible to continue generating revenue. A working capital loan makes it possible for a farm to remain open during lean times and eventually recover. Even though having strong working capital is essential to farm business, many of them struggle to maintain this buffer. Even when working capital is achieved, it can be wiped out by issue s as they arise (Lynch et al., 2017).

The capital or the money the farmer has to invest in the farm, can be utilized to increase the amount of farm inputs into the farm such as machinery, fences, seeds, fertilizer and renewing buildings. If farmer can afford to invest capital, yields will rise and can create profits which can be used for more potential investments (Bosma et al., 2012).

In the Philippines, agriculture is a critical sector in the economic landscape which has an active role to national development particularly on rural development. It is regarded as a risky enterprise-financially and socially. It is first and foremost an economic activity as it requires capital regardless of its scale. Planting materials, fertilizers, pesticides and labor are only some of the investment needed to conduct farming activities. This is why farming decisions rely heavily on the capital at hand of the farmers. With limited financial capital and access to land rights, it is virtually impossible for ordinary farmers to prosper from their business. Moreover, in the Philippines, the small-scale family farm holdings is composed of majority of farmers who are poor with low education, vulnerable to physical and economic risk, and financially stressed with zero savings or worse, indebtedness. And since agriculture is in itself a risky financial and social enterprise, there's a need for an enabling policy and institutional support system on agricultural production through provision of credit facilities, and the various programs designed to carry out these policy objectives. There should be an effective interplay of other risk management tools to ensure less vulnerability of the farmers to economic and physical risk that include agricultural insurance cooperatives, improved production techniques, quality infrastructure and facilities shared resource management facilities, contingent funds for disaster relief, price guarantee/stabilization, input subsidies, and agricultural insurance programs to be

expanded depending on the implementers' mean to sustain them effectively and efficiently. Adequate assistance and supervision of farmers must be given utmost importance. Structural issues on landlessness and indebtedness should be addressed. Since agriculture is still perceived as a vehicle of effecting change in the country, therefore, polices should be formed in a context of sectorial change as holistic perspective is very much needed. There is a need to evaluate existing programs and policies to ensure that they are responsive and relevant to the needs of the Filipino agriculture workers (Lubang, 2019).

Organizational Membership

Regarding organizational membership, a great majority (61.89%) of the respondents were not affiliated with any organization, few (16.98%) were members of the San Pedro Association Cooperative, members of Battac Rang-ay Farmers Association and Asiga Farmers Association with the same percentage (5.66% each) and the least were members of Tabuk Multi-purpose Cooperative (1.89 %). This disclosed that majority of the agroforestry farmers were still unaware of the advantages of joining an organization of which it plays an important role to help members increase their access to various support such as information, capital, and technology that will benefit them promote production, enhance productivity, and increase income (Vu et al., 2020). Nkamleu et al. (2005) likewise mentioned that membership within framers' association is one of the factors affecting adoption of agroforestry in Cameroon. Other socio-economic factors included mentioned were gender, household family size, level of education, farmers' experience, contact with research and extension, security of land tenure, agroecological zone, distance of village from nearest town, village accessibility and income from livestock.

In agreement with the significance of farmer organizations, (Penunia, 2011) revealed that farmer organizations (FOs) are crucial institutions for the empowerment, eradication of poverty, and advancement of farmers and the rural poor.Politically, FOs increase farmers' influence by making it more likely that the public and decision-makers will take their needs and opinions into consideration. In terms of economics, FOs can support farmers in developing their capacities, gaining access to resources, establishing businesses, and processing and marketing their produce more profitably. By banding together, farmers can gain access to information needed to produce goods with added value, market their goods, and create strong connections with organizations like financial service providers and output markets. FOs can achieve economies of scale, which lowers costs and makes it easier for individual farmers to process and market their agricultural products. Marketing-focused FOs can help their members meet quality standards, purchase inputs and equipment, and manage the collection, grading, cleaning, processing, packaging, and transportation of produce. By doing this, FOs are able to sell more products at a higher price while also offering buyers a more dependable supply. In order to increase the profits that go to farmers directly rather than to middlemen and buyers, organized farmers have more negotiating power than unorganized farmers and are better able to negotiate with other more powerful market players. Farmers' organizations have a responsibility to support and encourage rural women's leadership.

Annual Income from Agroforestry Farming

Many (37.74%) of the respondents generate income ranging from ₱201, 000 and above, few (22.64 %) earn ₱ 50, 000 and below, 15.09% earn ₱ 151, 000 to 200, 000, 13.21% gain ₱101, 000 to 150, 000, and 11.32 % acquire an income of ₱ 51, 000 to 100, 000. The results denote that agroforestry producers are earning enough money to support their basic needs and they do not belong to below the government's poverty line category.

Among the economic parameters, family income, livestock possession and employment status were found to contribute more to total impact of agroforestry on farmers. With the adoption of agroforestry, farmers started getting more income by selling the fruits and timbers every year. Subsidiary activities like mat weaving, basket making, honey collection, sheep/goat rearing , are also taken up as an integral part of agroforestry which is also in turn contributed to the increase family income (Gangadharappa et al., 2003). Studies showed that agroforestry practices were able to generate more income and increased the standard of living through integrated farming system (Bugayong, 2003).

Likewise, Gangadharappa et al. (2022), stated that farmers were found earning at an average of $800 or Rs. 31466.20 yearly from one acre of agroforestry plot which is much profitable than any traditional crop. Additionally, the farmers were able to save extra cash in the bank, which is a positive indicator of long-term economic viability. He added that agroforestry is the preferred method for preserving India's social, economic, and ecological sustainability. They also found that social parameters they have investigated, such as celebration of festivals, migration and communication exposure contributed more to the total impact of agroforestry on farmers. While in the economic parameters, they found out family income, livestock possession and employment status contributed more to the total impact of agroforestry on farmers. They concluded that agroforestry has brought improvement in socio-economic and ecological conditions of farmers by generating

employment, increasing family income, enhancing the drop diversity and reducing dependency on natural forest. Therefore, development agencies can use the success story of agroforestry to stimulate other farmers to attain both natural resources and socio-economic sustainability.

Findings of Desmiwati et al. (2021) on the other hand, mentioned that despite the contribution of income of farmers, the effects were found still imbalanced due to the types of plant cultivated, motivation and skills, and age relative ability to manage land. In their regression analysis, age and land area were the two agroforestry factors that influence farmer's income. They suggested the need to increase land productivity by assessing profitable intercropped plant types in corresponding soil or land characteristics and minimum requirements of physical treatments. Additionally, FTSTRDC need to strengthen, equip and capacitate the farmers' group members technically by providing training of profitable agricultural practices, and facilitating the business model and market network of agroforestry products.

Distance of House to Agroforestry Farm

On the distance of home to agroforestry farm, almost half (41.51%) of the respondents have a distance of 500 meters and below from their house to agroforestry farm, some (28.30 %) are 2.1 kilometres and above, few (16.98 %) are 501 meters to 1 kilometer and a distance of 1.1 kilometers to 2 kilometers with 13.21%. This connotes that majority of the agroforestry farms is located near their respondents' houses and that makes them easy to visit, monitor and maintain their farms as they have stated during the interview. Moreover, the proximity of the farmers' houses to their farms is greatly an advantage for them because, the time spent in reaching their farms and the cost of transportation are spared and can be used for other profitable undertakings and more time is invested in managing their farms.

Distance of Agroforestry Farm to Market

With respect to the distance of agroforestry farms to market, majority (54.72 %) of the farmers have a distance of 1 kilometer and below, few (20.75%) are ranging from 3.1 kilometers and above, 16.98 % have a distance of 1.1 to 2 kilometers and only 7.55 % of the respondents are 2.1 to 3 kilometers away. This concludes that most of the agroforestry farms of the respondents are located near the market of the municipality where they can sell their products. As mentioned by Nanda et al., (2019), farms near main roads and main markets are more diversified as compared to those which are away, because it provides better opportunity to the farmers to market their farm produce.

According to Mukundente et al. (2020), farmers who have greater market access are more likely to adopt agroforestry practices. Their findings concur with those of Bruch and Kuusela (2021), who found that farmers in Tanzania are more likely to adopt agroforestry techniques when they have better market access. Farmers who live further away from markets must pay more for transportation and have less access to supply and output markets. Farmers might even be unable to pay for labor or buy the materials necessary to build treed systems. A more effective use of work time may also make nearby families more open to embracing new technologies.

Accessibility influence changes in AF practice and could facilitate farmers to carry out cultivation and harvest. Land accessibility would increase mobilization of farmers to practice AF. With land near roads, more farmers would choose to do AF. Road access can aid in agricultural trading and harvesting for farmers. Because it allows access to the AF area, whose varied topography is a part of the AF's continuity in Koto Tangah, it has an impact on changes in AF.

Length of Farming Experience

As presented on the table, 54.72 % of the respondents have 10 years and above on agroforestry farming experience, 20.75 % have 3 years and below, 18.87 % have 3.1 to 6 years and 5.66 % have 6.1 to 9 years. Result indicates that most of the respondents have 10 years and above experience in agroforestry farming that makes them well experienced and flexible in adopting new technologies. Lanamana&Supardi (2020) specified that the length of farming is positive and significant, in which the longer the farmers run farming activities, the more technically efficient they are in using production inputs. Similarly, Itam et al. (2015) also accounts that experience in farming contributes to the technical efficiency and leads to high productivity.

In the study conducted by Ainembabazi&Mugisha, (2014), where they both used non-parametric and parametric estimations on data from rural farmers in Uganda, their findings showed an inverted-U relationship between adoption of and experience with agricultural technologies in banana, coffee and maize. They concluded that farming experience is useful in early stages of adoption`` of a given technology when farmers are still testing its potential benefits, which later determine its extension of disadoption over time. As a result, they suggested the need for gradual advances in technology development and continuous retraining of farmers that essential for sustainable adoption of agricultural technologies for some crops.

Topography of the Farm

On the topography of the farm, majority (52.83%) of the respondents' agroforestry farms are sloping while others farm are slightly sloping (43.40%) and steep sloping (3.77%). This reveals that most of the respondents are cultivating a sloping or nearly levelled land. Sloping land is prone to soil erosion however; the respondents still cultivated and planted it with diverse products through agroforestry practices.

Integrating agroforestry practices on sloping land has the potential to halt and reverse soil degradation and improve local livelihoods, but its adoption is conditioned by the various social and cultural norms of various ethnic groups.

It's also worth considering the sort of timber and non-timber species or crops to be planted that are more adaptable in such a given topography for sustainable agroforestry farming.

Table 2. Socio-demographic Profile of Respondents

Profile	Frequency (f)	Percent (%)
1. Age		
51-60 yrs. Old	16	30.19
41-50 yrs. Old	15	28.30
31-40 yrs. Old	10	18.87
61 and above	8	15.09
21-30 yrs. Old	4	7.55
Total	53	100.00
2. Gender		
Male	36	67.92
Female	17	32.08
Total	53	100.00
3. Civil Status		
Married	49	92.45
Single	2	3.77
Widowed	2	3.77
Total	53	100.00
4. Ethnicity		
Ilocano	33	62.26
Kalinga	17	32.08
Kankanaey	2	3.77
Tagalog	1	1.89
Total	53	100.00
5. Educational Attainment		
Elementary level	15	28.30
High School Graduate	14	26.42

College Graduate	7	13.21
Elementary Graduate	6	11.32
High School Level	6	11.32
College level	5	9.43
Total	53	100.00
6. Number of Family Members		
5 and above	33	62.26
3 – 4	16	30.19
1 – 2	4	7.55
Total	53	100.00
7. AF Farm Size		
1-2 hectares	21	39.62
2.1-4 hectares	12	22.64
Less Than one hectare	12	22.64
More than 6 hectares	5	9.43
4.1-6 hectares	3	5.66
Total	53	100.00
8. Status of Land Tenure		
Owner	47	88.68
Tenant	6	11.32
Total	53	100.00
9. Source of Capital		
Personal Savings	39	65.00
DENR	9	15.00
Bank Loan	5	8.33
Money Lenders	4	6.67
Cooperative Credit	3	5.00
Total	60	100.00
10. Organizational Membership		
None at all	37	69.81
SPAC	9	16.98
Battac Rang-ay Farmers Association	3	5.66
ASFA	3	5.66
TAMPCO	1	1.89
Total	53	100.00

11. Annual Income from AF Farming		
201, 000 and above	20	37.74
50,000 and below	12	22.64
151,000-200,000	8	15.09
101,000-150,000	7	13.21
51,000-100,000	6	11.32
Total	53	100.00
12. Distance of House to AF Farm		
500 meters and below	22	41.51
2.1 km and above	15	28.30
501 meters to 1 km	9	16.98
1.1 km to 2 km	7	13.21
Total	53	100.00
13. Distance from AF Farm to Market		
1 km and below	29	54.73
3.1 and above	11	20.75
1.1 to 2 km	9	16.98
2.1 to 3 km	4	7.55
Total	53	100.00
14. Length of Farming Experience		
10 yrs. and above	29	54.72
3 yrs. and below	11	20.75
3.1 - 6 yrs.	10	18.87
6.1 - 9 yrs.	3	5.66
Total	53	100.00
15. Topography of Farm		
Sloping	28	52.83
Slightly sloping	23	43.40
Steep sloping	2	3.77
Total	53	100.00

16. Assistance Received	Given by DENR		Given by DA		TOTAL	
	Frequency	%	Frequency	%	Frequency	%
Financial Assistance	13	11.60	17	15.17	30	26.79
Planting Materials	12	10.71	9	8.03	21	18.75
Fertilizer	1	0.89	19	16.96	20	17.86

Technical Assistance	12	10.71	6	5.35	18	16.07
No Assistance received at all					18	16.07
Machineries	4	3.57	1	0.89	5	4.46

Assistance Received by the Respondents

Based on the result of the study, most of the respondents received assistance from the government, particularly from the Department of Agriculture and Department of Environment and Natural Resources, 26.79 % of them received financial assistance, 18.75% received planting materials, 17.86 % acquired fertilizer and 16.07 % got technical assistance. However, 16.07 % of the farmers were denied of receiving any assistance. This implies that almost all of the respondents received assistance from the government showing that the government is supportive to the farmers although some were denied. Proper monitoring and visitation is necessary to have equitable distribution of services to farmers to ensure improvement of their socio-economic lives through farming.

Due to their natural complexity, AF market system connections are not as clear or developed as in single, staple crop value chains. Thus there is a need for greater support of the establishment of farmer organizations of cooperatives and their ability to negotiate prices and access funding, training and input services as a collective across value chains. An inclusive market systems approach focus on connecting farmers to local and regional markets to local and regional markets for top quality/niche product. Once the producers can ensure a steady stream of a certain volume of products to, for example supermarkets, prices can increase (Laven&Ouma, n.d.).

Farms are primarily characterized as small hold and are managed and cultivated by small farmers. These smallholder farmers are important drivers of development in the countryside but are commonly marginalized and mostly vulnerable to the rapidly changing social, political, and environmental conditions. Hence in view of their significant contributions in achieving economic and sustainable development especially in the countryside, the Republic Act (RA) 7607 also known as the "Magma Carta of Small Farmers" was signed into laws on June 4, 1992. It is a creditable law aimed at improving the lives of the small farms by empowering them and harnessing their potentials and abilities. The law encourages greater participation of the marginalized sector in the government planning and program and project implementation to contribute to national economic development. The provision of incentives in the form of infrastructure and other physical assets, access to vital agricultural services and capacity building provide an avenue for the small farmers to improve their performance as drivers of development in the countryside. In the end, optimizing the promised purpose of the law requires the government's adherence to its provision of the necessary funding.

Agroforestry Product in Terms of 4 Ps (Product, Place, Promotion, Price)

Agrocrops and Tree Crops in Various Agroforestry Systems

Table 3 shows the AF systems and components adopted by farmers. Result reveals that most of the agrocrops planted by the respondents were corn (*Zea mays*) (21.73%), followed by rice (*Oryzasativa*) (13.04%), string beans (*Phaseolus vulgaris*) (13.04%), and banana (*Musa acuminata)* (9.57%). While most of the tree crops planted were yemane (*Gmelinaarborea*) (39.5%), followed by mango (*Mangiferaindica*) (17.7%), ipil-ipil (*Leucaenaleucocephala*) (9.68%) and citrus (*Citrus reticulata*) (9.68%). In the adoption of silvipastoral system, only few animals were raised such as pig (*Sus scrofadomesticus*), chicken (*Gallus gallusdomesticus*), duck (*Anasplatyrhynchos*), and goose (*Brantacanadensis*) with various tree crops namely, yemane (*Gmelinaarborea*), ipil-ipil (*Leucaenaleucocephala*), mulberry (*Morusalba*), mango (*Mangiferaindica*), coconut (*Cocosnucifera*), and narra (*Pterocarpusindicus*)). Further, the components of the agrisilvipastoral system were three agronomic crops such as bitter gourd (*Momordicacharantia*), bottle gourd (*Lagenariasiceraria*), and rice (*Oryzasativa*) and one tree crop called yemane (*Gmelinaarborea*).

Table 3. Agrocrops and Tree Crops in Various Agroforestry Systems

Agrisilvicultural	Percent	COMPONENTS	Percent

System	f	%		f	%
Agro-crops			Tree Crops		
Corn	25	21.73	Yemane	49	39.50
Rice	15	13.04	Mango	22	17.70
String beans	15	13.04	Citrus	12	9.68
Banana	11	9.57	Ipil-ipil	12	9.68
Pigeon pea	6	5.22	Mahogany	8	6.45
Monggo	6	5.22	Rambutan	7	5.65
Eggplant	5	4.35	Coconut	4	3.23
			Madre		
Okra	4	3.48	Kakawate	3	2.42
Peanut	4	3.48	Acasia	3	2.42
Onion	4	3.48	Bugnay	2	1.61
Cassava	3	2.61	Cacao	1	0.81
Siling Labuyo	3	2.61	Narra	1	0.81
Tomato	3	2.61			
Ube	2	1.74			
Sweet potato	2	1.74			
Patani	2	1.74			
Ginger	1	0.87			
Pechay	1	0.87			
Pineapple	1	0.87			
Taro	1	0.87			

Silvipastoral System

Animals/Livestock	f	%	Tree Crops	f	%
Pig	3	33.33	Ipil-ipil	2	22.22
Chicken	3	33.33	Mulberry	1	11.11
Duck	2	22.22	Yemane	2	22.22
Goose	1	11.11	Mango	2	22.22
			Coconut	1	11.11
			Narra	1	11.11

Agrocrops	f	%	Animals/ Livestock	F	%	Tree Crops	f	%
Bitter gourd	1	33.33	Goat	1	50	Yemane	1	100
Bottle gourd	1	33.33	Cattle	1	50			
Rice	1	33.33						

Status of Agroforestry Products from Marketing Outlets

Table 3a reveals the market outlet of agroforestry products. Results show that agrocrops (39.62%) and animals/livestock (9.43%) were all sold at the local market

while tree crops (5.66%) were sold to local market and outside the province (1.89%). Results indicate that the different agroforestry products were easily disposed/ sold due to the presence of several market outlets and the availability of buyers in the outlets. The nearness of the farms to the market was likewise and advantage to the farmers because of ease of transporting their products. It further implies that the various agroforestry products (agrocrops, tree crops, and animals) produced by the farmers derived from their adoption of agroforestry systems were at that time the needs of the buyers.

The accessibility to market is a major consideration in the decision making of the farmer. The intensity of agriculture and the production of crops decline as the location of cultivation get away from the marketing centres. This is particularly noticeable when a bulky but low value crop has to be transported to the market. It takes much time to sell the produce, especially at the peak time, to the market when the farmer could have been profitable employed in other activities. The marketing system also influences the decision making of the farmer. In most of the countries the agricultural commodity markets are controlled by the buyers rather than sellers.

Small scale farmers generally have weak market links and poor access to market information. Tree farmers can be more profitable than rice but uncertain marketing conditions deter farmers. The existence of accessible markets for tree products is a vial criterion on when planning for agroforestry in rice production landscape. In summary, the following factors seem to have strong bearing on the successful development of market-oriented agroforestry: a) secure land tenure; b) supportive government policies ; c) access to, and knowledge of the management of quality weeds and seedlings; d) tree management skills and information; and d) adequate market information and links (Laven&Ouma, n.d.).

FAO (2022) recognized that although the advantages of AF are gaining attention internationally and growing body of scientific literature providence evidence for them, it faces many challenges and obstacles such as delayed return on investment. That despite the fact that trees become profitable as they produce positive net present values over time, the breakeven profit for some agroforestry systems may occur only after a number of years. Another obstacle was under-developed markets. Markets for tree products are both less efficient and less developed than for crop and livestock commodities and value chains related to agroforestry systems receive little support. Faced with these challenges, FAO is taking initiative to act and address these issues.

World AF Center & ICRAF, 2017 disclosed that market surveys are the first step in understanding existing and future demand for agroforestry products. They recommend the use of rapid survey to identify and understand the following: (i) the agroforestry spp and products that hold potential for farmers (their specifications, quantities, seasonality, etc.; ii) the market channel that are used and which hold commercial potential; (iii) the marketing problems faced by farmers and market agents; (iv) the opportunities to improve the quantity and quality of farmers agroforestry products; v) market integration through vertical price correlation and price transmission elasticity and efficiency.

Findings of Achu, et al. (2020) on the other hand, found out that Cameroon's South west region has great potentials in the production of agroforestry products, but production and marketing are done using rudimentary technologies, which they found difficult to sustain the growing demand for the products in both domestic and international market. Difficulties in production have been found attributed to social, economic, environmental and other constraints which grossly affect production and marketing. According to their study, marketing of agroforestry products in Manyu Division and elsewhere in Cameroon can only play a significant role in poverty alleviation, if the government and other stakeholders could provide an enabling environment backed by packages of incentives and motivations that will significantly minimize production and marketing problems encountered by actors and stakeholders in the agroforestry value chain.

In agroforestry, marketing is unique for several reasons: many products typically lack established marketing institutions, market information, and grade, quality standards. All that is known about the market for many AF specialty products is that someone is growing the product and consumers are buying it. What happens to the product as it moves through the value chain from producer to consumer is unknown, the "black box" of AF markets to shed light on the black box and to stimulate adoption of agroforestry practices, successful marketing strategies must be developed (Gold et al., 2004).

Table 3a. Status of Agroforestry Products from Marketing Outlets

Market Outlet of AF products	COMPONENTS Agro-crops (f)	Percent %	Animals/ Livestock (f)	Percent %	Tree Crops (f)	Percent %
A. Local Market (Kalinga)	21	39.62	5	9.43	3	5.66
B. Outside the Province	0	0	0	0	1	1.89

Status of Promoting Agroforestry Products

Table 3b presents the strategies of promoting agroforestry products. Results revealed that 85.71 % of the agrocrops are promoted through word of mouth while 13.18 % used the social media and 1.09 % through the assistance of the Department of Agriculture (DA). The same with animals/livestock, 83.33 % are promoted through word of mouth and 2 16.67 % through social media. Likewise, 62.50 % of tree crops are promoted through the word of mouth, 25 % through social media and 12.50 % through the help of DA. This means that most agroforestry farmers are still promoting their products in the usual traditional way. However, though word of mouth is a traditional method, it is still considered effective for there are more people have the confidence that personal advertisement of products is more convincing for they can actually see and hear it from trusted and experienced people. As McMillen (2020) said, people love referrals and they tend to trust the opinions of their friends when making buying decisions.

Table 3b. Status of Promoting Agroforestry Products

Strategy	COMPONENTS Agro-crops (f)	%	Animals/ Livestock (f)	%	Tree Crops (f)	%
A. Word of Mouth	78	85.71	10	83.33	5	62.50
B. Use of social media	12	13.18	2	16.67	2	25.00
C. Assistance of DA	1	1.09	0		1	12.50
TOTAL	91	100	12	100	8	100.00

Status of Agroforestry Products in Terms of Market Price

Table 3c shows the pricing of agroforestry products. The top five products sold by the respondents were corn (Zea mays), rice (Oryzasativa), banana (Musa acuminata), string beans (Phaseolus vulgaris) and monggo (Vignaradiata). Market prices of AF crops vary or fluctuate and determined during the peak and lean seasons. For corn (Zea mays), the mark-up price during peak season is tagged at ₱1.75 per kilogram and ₱2.48 per kilogram during the lean season. Also, rice (Oryzasativa), has a mark-up price of ₱2.67 per kilogram during the peak season and ₱3.83 per kilogram during the lean season. For banana (Musa acuminata), the mark-up price is tagged at ₱13.6 at peak season and ₱23.7 on lean season. String beans (Phaseolus vulgaris) has a mark-up price of ₱5.91 at peak season and ₱12.27 during lean season, while monggo (Vignaradiata) has a mark-up price of ₱18 at peak season and ₱28 during lean season.

However, farmers can control the market by keeping their goods in cold storage or on farms until they are profitable. However, because there are fewer buyers than sellers and the cultivator does not have enough money to store the crops, the farmer's negotiating position is still weak. The price fluctuations of agricultural products frequently force farmers to alter their cropping practices (Priyadarshni, n.d.).

Table 3c. Status of Agroforestry Products in Terms of Market Price

Products	Quantity	Farm Gate Price		Market Price		Mark up Price	
		PS	LS	PS	LS	PS	LS
Agrocrops							
Corn	Kg	15.41	16.68	17.16	19.16	1.75	2.48
Rice	Kg	17.07	18.77	19.73	22.6	2.67	3.83
Banana	Kg	18.40	24.30	32.00	48.00	13.6	23.70
String beans	Kg	37.73	43.18	43.64	55.45	5.91	12.27
Monngo	Kg	66.00	73.00	84.00	101.00	18.00	28.00
Animals/Livestock							
Cattle	Head	30,000.00	33,000	35, 000	40, 000	5, 000	7,000.00
Chicken	Head	125.00	135.00	157.50	175.00	32.50	40.00
Duck	Head	150.00	160.00	167.50	185.00	17.50	25.00
Pig	Head	9,66.50	12, 675	16, 225	22, 100	6, 562.5	9,425.00
Tree Crops							
Rambutan	Kg	60.00	70.00	120.00	150.00	60.00	80.00
Mango	Kg	45.00	53.33	106.67	166.67	61.67	113.33
Coconut	Pc	15.00	20.00	25.00	35.00	10.00	15.00

Legend: PS- Peak season LS- Lean season

For animals/livestock, only four are marketed by the farmers which includes cattle (*Bos, Taurus*), chicken (*Gallus gallusdomesticus*), duck (*Anasplatyrhynchos*) and pig (*Sus scrofadomesticus*). Cattle (Bos Taurus) has a mark-up price of ₱5, 000 for peak season and ₱7, 000 for lean season. Chicken (*Gallus gallusdomesticus*), has mark-up price of ₱32.5 every season and ₱40 every lean season. Duck (*Anasplatyrhynchos*) has mark-up price of ₱17.5 during the peak season and ₱25 during the lean season. And, pig (*Sus scrofadomesticus*) has a mark-up price of ₱6, 562.5 on peak season and ₱9, 425 on lean season.

There are only three tree crops sold by the respondents namely, rambutan (*Nepheliumlappaceum*), mango (*Mangiferaindica*) and coconut (*Cocosnucifera*). For rambutan (*Nepheliumlappaceum*), the mark-up price is ₱60.00 on peak season and ₱80.00 on lean season. Mango (*Mangiferaindica*) has a mark-up price of ₱61.67 on peak season and ₱113.33 on lean season, and coconut (*Cocosnucifera*) that is sold per piece has a mark-up price of ₱10.00 during peak season and ₱15.00 during the lean season. These results showed that prices of the products are fluctuating wherein prices are low during peak season and high during lean season. This condition happens traditionally when the supply is low, the price is high and when supply is high the price is low.

Marketing Strategies of Agroforestry Products

The strategy in marketing AF products is presented in Table 3d. Results show that 65.43 % of agrocrops are sold as wholesale, 25.92% are sold direct to consumers, and 8.64% are sold in retail. On the other side, 60% of livestock/animals are sold directly to consumers, while the remaining 40% are sold as wholesale. Likewise, 71.43% of the tree crops are sold as wholesale and 14.29% each for retail and supplied directly to consumers. The result implies that most of the agrocrops and tree crops are sold wholesale and few are on retail and sold directly to consumer. In contrast, animals/livestock are mostly disposed to direct consumer.

Table 3d.Marketing Strategies of Agroforestry Products

Marketing strategies	COMPONENTS					
	Agro-crops (f)	%	Animals/ Livestock (f)	%	Tree Crops (f)	%
A. Wholesale	53	65.43	4	40.00	5	71.43
B. Direct Consumer	21	25.92	6	60.00	1	14.28
C. Retail	7	8.64			1	14.28

Annual Net Income

Table 3e shows the annual net income derived from the agroforestry production. Among the components of agroforestry farms in the municipality of Rizal, Kalinga, agrocrops generated the highest net income of ₱439, 205.34, followed by the animals/livestock (₱122,987.50) and tree crops (₱112,487.50). Agrocrops gained the highest net income because majority of the respondents practiced agrisilvicultural system where majority of the components are agronomic crops.

Table 3e. Net Income from Annual Production of the Respondents

AF Components	Gross Income (Php)	Cost Spent in Marketing (Php)	Net Annual Income (Php)
A. Agro-crops	556,489.00	117,283.66	439,205.34
B. Animals/Livestock	134,987.50	12,000.00	122,987.50
C. Tree Crops	134,987.50	22,500.00	112,487.50

Problems Encountered in the Production and Marketing of AF Products

Table 4 presents the degree of seriousness of problems encountered by the farmer-respondents in the production and marketing of AF products. Results showed that farmers have serious problems on the lack of post-harvest collection center and unpredictable prices of the products. Likewise, on the production aspect, respondents have serious problems on the lack of post-harvest facilities and occurrence of pests and diseases. Nonetheless, agroforestry farmers have moderately serious problems in marketing and production aspects and slightly serious in financial aspect.

On the overall mean of the degree of seriousness of the identified problems, result revealed that the respondents encountered slightly serious problems in marketing their products. This implies that the respondents can still cope with the prevailing problem on marketing. Nevertheless, it still requires to be addressed.

Table 4. Degree of Seriousness of Problems Encountered by the Respondents in the Production and Marketing of AF Products

Problem Category	Mean	Descriptive Rating
A. Marketing Aspect	2.61	Moderately Serious
Lack of post-harvest collection centers (3.49)		
Lack of standard system of selling product (3.28)		

Lack of transportation of products to the market (1.58)		
Poor/ lack of farm to market roads (1.32)		
Unpredictable prices (low price) (3.4)		
B. Production Aspect	2.62	Moderately Serious
Inadequate amount of water used in production (2.5)		
Inadequate knowledge in post-harvest (2.6)		
Lack of post-harvest facilities (3.5)		
Limited farm size for production (1.8)		
Low volume of agroforestry products sold (1.9)		
Occurrence of pest and diseases (3.4)		
Financial Aspect	1.93	Slightly Serious
High interest on loans (2.1)		
Long time to recover capital investment (2.6)		
Unavailability of credit (1.1)		
Overall Mean	2.38	Slightly Serious

In the findings of FAO (2017), the challenges affecting the adoption of agroforestry were the following: lack of capital which was ranked high 87.00% among the limitations preventing farmers from fully adopting AF practices, followed by lack of technical skills (766.4%, lack of quality seeds (67.8%), lack of manpower (57.5%), and market inaccessibility (27.8%).

Opportunities Gain by the Respondents in Marketing Agroforestry Products.

Table 4a presents the opportunities gained by the respondents in marketing their AF products. Results show that 69.92% of the farmers gained increased income in marketing their agroforestry products, 13.0% were able to establish good flow of marketing, 10.6% had established a standard price of selling products, 3.3% were equipped with knowledge/technical know-how on post-harvest handling, packaging and marketing their products and 1.6% attained better infrastructure (farm to market road) and were able to benefit the improved implemented policies in the marketing AF products.

Result implies that majority of the farmers claimed to have gained various opportunities in the marketing of agroforestry products and have increased their income due to the diversity of agroforestry products generated from their farms.

Table 4a. Opportunities Gained by the Respondents in Marketing Agroforestry Products

Opportunities	Frequency (f)	Percent (%)	Rank
1. Increased income	86	69.92	1
2. Good flow of marketing AF products	16	13.0	2
3. A standard price of selling in every product established	13	10.6	3
4. The farmers equipped with knowledge/technical know-how with regards to post-harvest Handling, packaging and marketing of their products	4	3.3	4
5. Better infrastructure	2	1.6	5

6. Improved policies with regard to marketing AF products	2	1.6	5
TOTAL	123	100	

Correlation Analysis between Agroforestry Farming and Socio-demographic Profile

Table 5 shows a significant correlation between annual income from agroforestry farming and some socio-demographic profile such as educational attainment, total area of agroforestry farm, organizational membership, length of farming experience, distance of agroforestry farm to market, and the topography of the farmlands.

The annual income of agroforestry farmers is attributed in their in their educational attainment implying that the higher is the level of education attained, the higher is the production resulting to higher income generated indicating a positive correlation. Their level of education had helped them better managed their farms via combining various inputs in a more desirable way. This relationship fits with Solomon's (2019) assertion that rural farmers' education is crucial for helping them comprehend and accept the complex scientific changes. Solomon (2019) made this claim in relation to agricultural productivity.By raising labor quality, increasing adaptability to disequilibrium through its impact on the adoption of innovations, and in a rapidly evolving technological or economic environment, education may directly increase farm productivity.

Additionally, farm size and length of farming experience affects the income, for the wider the farm area, the more products are produced and in turn generates more profit.

The same with the farming experience, for the higher the length of experience, the more they become flexible in adapting new changes due to the new knowledge gained from the past experiences in farming.

Further, organizational membership provides assistance to farmers in various forms such as provision of machineries, financial assistance and others that could help farmers spend less to increase more profits from the farm produce. As mentioned by Vu et al. (2020), farmers' associations play an important role to help members increase their access to support of information, capital, and technology; bring benefits to members; and partly promote production, enhance productivity, and increase income.

Moreover, the distance of agroforestry farm to the market is linked to the income of the farmers because the farther the distance of the farm to the market, the more expenses the farmer will incur due to the cost of inputs, increase transportation costs, and reduced effective price farmers receive from outputs. Also, the farmers will just wait for buyers to come pick their products, limiting them attain higher prices, and left no choice but to accept the prices set by the buyers which was the common problem mentioned by the farmers during the interview.

Topography of the farm likewise is correlated with the annual income of the farmers because the steepness of the land planted by the farmers is prone to soil erosion that washes off the nutrients to sustain plant growth and yield and consequently result to low yield and less profit.

Table 5. Correlation Analysis between Annual Income from AF Farming and Socio-demographic Profile of AF Farmers

Variables	Pearson *r*
Annual Income from AF Farming vs Educational Attainment	.324*
Annual Income from AF Farming vs Total area of AF Farm	.462*
Annual Income from AF Farming vs Organizational Membership	.502*
Annual Income from AF Farming vs Length of Farming Experience	.575*
Annual Income from AF Farming vs Distance from AF Farm to Market	.323*
Annual Income from AF Farming vs Topography of Farm	.272*

* Significant

Socio-Demographic Profile

Table 5a indicates that there is a significant correlation of the degree of seriousness of the problems

encountered by the respondents to the other socio-demographic profile like the total area of farm and the distance of agroforestry farm.

The degree of seriousness of problems encountered by the respondents from different barangays is also correlated with the farm size they cultivate and the distance from farm to market. Furthermore, respondents with larger farms have less major problems as a result of the volume of products they produced and marketed.

Likewise, agroforestry farms located distant from market have minimal degree of problem seriousness most especially on the size of farm, products produced and income for larger farms can be found away from market centers or residential areas.

Table 5a. Correlation Analysis between the Seriousness of Problems Encountered and Socio- Demographic Profile of AF Farmers

Variables	Pearson *r*
Problems encountered vs. the farmers from different barangays	-.495*
Problems encountered vs. total area of AF Farm	.368*
Problems encountered vs. distance from AF farm to market	-.289*

*Significant

V. CONCLUSIONS

Based on the results of the study, the following conclusions were deduced:

1. Many of the agroforestry farmers are in their middle ages and dominated by males, mostly married, and Ilocanos and had attained elementary level. Majority have 5 and above family members and cultivating 1 to 2 hectares of land they owned and using their own money as their source of capital used in farming. Most of them are not affiliated to any organization. They earned an annual income of ₱201, 000 and above. The distance of their farms to their residence/ house is about 500 meters and below and 1 kilometer and below from agroforestry farm to market. A great number of farmers have 10 years and above experience in agroforestry farming.

2. Majority have sloping farmlands and also had been provided by the DA and DENR with financial, farm inputs, and technical assistance.

3. Components of the agroforestry farm of the respondents are mainly composed of corn and yemane. Their farm products are mostly promoted through word of mouth and marketed locally on wholesale basis. Prices of products are low during peak season and high during lean season as seen on the mark-up prices (Table 3d) of the products. It was found that the agrocrops had gained the highest net income.

4. Respondents' problems in production, marketing and financial aspects was rated slightly serious and most of the opportunities gained from marketing agroforestry products was increased income.

5. The annual income of agroforestry farmers is significantly correlated with educational attainment, total area of the farm, organizational membership, length of farming experience, distance from agroforestry farm to market, and the topography of the farm. Similarly, seriousness of problem encountered is correlated to the barangay where they come from, area of the agroforestry farms and distance from agroforestry farms to market.

VI. RECOMMENDATIONS

Given the above mentioned conclusions, the following are recommended.

1. There should be an intervention plan pioneered by the faculty of Kalinga State University-Rizal Campus to address the problems encountered by the agroforestry farmers in the municipality of Rizal, Kalinga and other neighboring municipalities engaged in agroforestry farming.

2. Kalinga State University-Rizal Campus must initiate consultation and monitoring activities with the agroforestry farmers to organize, strengthen and encourage them to adopt more complex agroforestry systems that are adapted to changes in climate and to produce more diverse products that will consequently improve and increase their farm income.

3. There must be an organization/association of agroforestry farmers in the municipality of Rizal that is

linked to Department of Agriculture, Department of Environment and Natural Resource, Department of Trade Industry and other government and non-government agencies for an easy access related to the present and emerging farm technologies, financial, farm inputs, farm facilities and other assistance related to the production and marketing of agroforestry products.

4. Kalinga State University should establish agroforestry demonstration farms/ model farm that will serve as a show window that will encourage/motivate farmers and other interested individuals/prospects to intensify the promotion of agroforestry farming.

5. Empower/capacitate farmers by providing hands-on-trainings, and seminars to equip farmers with knowledge and skills to enable them to cope with various problems affecting the production, marketing of agroforestry products which is considered as the less focused/limiting aspect in promoting agroforestry technology.

REFERENCES

[1] Agroforestry.(2019). Sustainable Food and Agriculture. Retrieved on March 5, 2022 from https://www.usda.gov/topics/forestry/agroforestry

[2] Atangana, A., Khasa, D., Chang, S., &Degrande, A. (2013).Definitions and Classification of Agroforestry Systems. Tropical Agroforestry, 35–47. Retrieved on June 3, 2022 from https://doi.org/10.1007/978-94-007-7723-1_3 Retrieved on February 27, 2022 from https://link.springer.com/chapter/10.1007/978-94-007-7723-1_3.

[3] Arinloye, D.D.A.A., Pascucci, S., Linnemann, A.R., Coulibaly, O.N., Hagelaar, G. &Omta, O. S. W. F. (2014). Marketing Channel Selection by Smallholder Farmers. Journal of Food Products Marketing, 21(4), 337–357. Retrieved on March 27, 2022 from https://doi.org/10.1080/10454446.2013.856052.

[4] Avit A, C. A. (2018). Can Socio-Economic Incentives Improve the Livelihoods of Communities Surrounding Rehabilitated ecosystems? An empirical evidence of Kondoa Rehabilitated Rural Areas, Dodoma, Tanzania.Current Investigations in Agriculture and Current Research, 1(3). Retrieved on June 7, 2022 from https://doi.org/10.32474/ciacr.2018.01.000115

[5] BekeleJiru, E. (2019). Review on Agro-forestry System and Its Contribution in Ethiopia. International Journal of Sustainability Management and Information Technologies, 5(1), 8. https://doi.org/10.11648/j.ijsmit.20190501.12. Retrieved on March 16, 2022 from https://www.bing.com/search?q=Review+on+agroforestry+system+andits+contribution+Ethiopa&cvid=ra437a244f914dOda4084ae18d56b5fc&aqs=edge.69i57j69i59.1442j0j9&FORM=ANAB01&PC=U531.

[6] Berry, M. (2022). Coping with climate change through agroforestry: the experience of the Ykalingas in the Philippines.World Agroforestry Transforming Lives and Landscapes with Trees.Retrieved on March 4, 2022, from https://worldagroforestry.org/blog/2020/06/08/coping-climate-change-through- agroforestry-experience-ykalingas-philippines.

[7] Bugayong, L. A., &Carandang, W. M. (2003). Agroforestry Practices in a Community- Based Forest Management Site [Review of Agroforestry Practices in A Community-Based Forest Management Site]. Retrieved on June 7, 2022, from https://www.fao.org/3/XII/0447-B5.htm

[8] David, M., Bernard, B., &Aringaniza, I. (2017).Determinants of agroforestry adoption as an adaptation means to drought among smallholder farmers in Nakasongola District, Central Uganda.African Journal of Agricultural Research, 12(23), 2024– 2035. Retrieved on June 10, 2022 from https://doi.org/10.5897/ajar2017.12219

[9] Handa, A. K., Sirohi, C., Arunachalam, A. &Chavan, S.B. (2020). Agroforestry Interventions for Carbon Sequestration and mproving Degraded Lands. Climate Change and Environmental Sustainability, 8(1), 3. https://doi.org/10.5958/2320-642x.2020.00001.0. Retrieved on March 10, 2022 from https://doi.org/10.5958/2320-642x.2020.00001.0.

[10] Itam, K.O., Ajah, E.A., Ofem, U. I. &Abam, O.E. (2015). Technical Efficiency Analysis of Small Scale Cassava Farmers in Cross River State, Nigeria: A Stochastic Production Frontier Approach. Applied Economics and Finance, 2(4).Retrieved on Marh 28, 2022 from https://doi.org/10.11114/aef.v2i4.1028.

[11] Jamnadass, R., Langford, K., Anjarwalla, P. &Mithöfer, D. (2014).Public–Private Partnerships in Agroforestry.Encyclopedia of Agriculture and Food Systems, 544–564. Retrieved on March 12, 2022 from https://www.sciencedirect.com/science/article/pii/B9780444525123000267

[12] Jongrungrot, V. &Thungwa, S. (2013). Resilience of Rubber-Based Intercropping System in Southern Thailand.Advanced Materials Research, 844, 2429.Retrieved on March 3, 2022 from https://www.researchgate.net/publication/272051347_Resilience_of_Rubber-Based_Intercropping_System_in_Southern_Thailand.

[13] Jongrungrot, V., Thungwa, S. &Snoeck, D. (2014).Tree-crop diversification in rubber plantations to diversify sources of income for small-scale rubber farmers in Southern Thailand.BOIS & FORETS DES TROPIQUES, 321(321), 21.Retrieved on March 2, 2022 from https://agritrop.cirad.fr/575472/1/document_575472.pdf.

[14] Jose, S. &Bardhan, S. (2012). Agroforestry for biomass production and carbon sequestration: an overview. Agroforestry Systems, 86(2), 105–111. https://doi.org/10.1007/s10457-012-9573-x. Retrieved on March 1, 2021 from https://link.springer.com/article/10.1007/s10457-012-9573-x.

[15] Kadon&Daud D. (2020).Productivity And Ecological Sustainability of Upland Rice Farming in the Province of Maguindano Int. J. of Adv. Res. 8 (Dec).937-938] (ISSN2320-5407).Retrieved on March 11, 2022 from https://www.journalijar.com/article/35350/productivityandecologicalsustainability -of-upland-rice-farming-in-the-province-of-maguindano.

[16] Kazi K.I., Takahiro F., Masakazu T. & Noriko S. (2014). Marketing of Agroforestry Products in Bangladesh: A Value Chain Analysis. American Journal of Agriculture and Forestry. Vol. 2, No. 4, 2014, pp. 135-145. Retrieved on March 17, 2022 from http://doi:10.11648/j.ajaf.20140204.

[17] Lalican E.R. (2018). An Assessment of Agroforestry Systems in Selected Community Based Forest Management Areas in Laguna, Philippines. Philippine Journal of Agricultural Economics, 2(1), 1–1.Retrieved on March 18, 2022 fromhttps://ejournals.ph/article.php?id=12011.

[18] Lanamana, W., &Supardi, P. N. (2020). A Comparison of Economic Efficiency of Monoculture and Multiple Cropping Patterns: The Case of Cassava Farming in Ende, Indonesia. *CarakaTani: Journal of Sustainable Agriculture*, *36*(1), 69. Retrieved on March 17, 2022 from https://doi.org/10.20961/carakatani.v36i1.41784.

[19] Legaspi, R.M.B., Toribio, E.C.B., Yohanon, E.P.L., Predo, C.D. &Vergara, D.G.K.(2021). Assessing the profitability and sustainability of upland farmingsystems in Cambantoc subwatershed, Philippines. IOP Conference Series:Earth and Environmental Science, 892(1), 012066. Retrieved on February 28, 2022 from https://iopscience.iop.org/article/10.1088/1755-1315/892/1/012066/pdf

[20] Librero, A. &Tidon, A. (1996).Marketing of Agricultural Commodities by Producer Groups in the Philippines Edited by. Book Series No, 158. Retrieved on April 1, 2022 from https://idl-bncidrc.dspacedirect.org/bitstream/handle/10625/22022/113022.pdf?sequence=1.

[21] Macanes, V.L., Marquez, M.M., Perez, H.C., Wakat, J.A., Deponio, C.P., Abellera, C.D. & Amado, V.Y. (2020).Baseline Information Analysis for an Integrated AgroforestrySystems in Benguet Cordillera Administrative Region (CAR). Mountain Journal of Science and Interdisciplinary Research (Formerly Benguet State University Research Journal), 65, 1–22. Retrieved on March 25, 2022 from http://portal.bsu.edu.ph:8083/index.php/BRJ/article/view/104.

[22] Mapa, D. S. (2018.). PSA releases the 2018 Input-Output Tables [Review of PSA releases the 2018 Input-Output Tables]. Retrieved on June 10, 2022 from https://psa.gov.ph/content/psa-releases-2018-input-output-tables

[23] McMillen, J. (2020). Word of Mouth Marketing: Building a Strategy That Really Works. Yotpo. Retrieved on June 13, 2022 from https://www.yotpo.com/resources/word-of-mouth-marketing/

[24] Nanda, R., Peshin, R., Singh, A.K., Sharma, L.K. &Bagal, Y.S. (2019).Factors Affecting Non-farm Diversification among Farm Households in Jammu and Kashmir. Agricultural Economics Research Review, *32*(1), 125.Retrieved on March 18, 2022 from https://doi.org/10.5958/0974-0279.2019.00011.9.

[25] Nassè, T. B. (2021). The Concept of Equity: Definitions and Theories in a Marketing Perspective. *Academia Letter*.Retrieved on March 17, 2022 from http://jnkvv.org/PDF/10042020083748concept%20of%20ag%20markeing_EgEco_n530.pdf.

[26] Omidey , A.K. (1988). Family Ssize and Productivity of Rural Households in Nigeria. National Library of Medicine.Retrieved on June 7, 2022 from https://pubmed.ncbi.ncbi.nlm.nih.gov.

[27] Pabuayon, I.M., Catelo, S.P., Rola, A.C. & Paris, T.B.(2013). Agricultural policy perspectives from the Philippines and other developing countries.Diliman, Quezon City University of the Philippines Press.Retrieved on March 19, 2022 from https://nla.gov.au/nla.cat-vn6446062.

[28] Palma, R.A., Canencia, O.P., Tiongco, L.E., Boniao, R.D., Florida, E.J. &Dagonio, J.Y. (2020). Agroforestry systems and practices in hilly uplands of Misamis Oriental, Philippines. IOP Conference Series: Earth and Environmental Science, 449(1), 012046. Retrieved on March 19, 2022 from https://www.researchgate.net/publication/340537685_Agroforestry_systems_and_practices_in_hilly_uplands_of_Misamis_Oriental_Philippines.

[29] Pandit, B.H., Neupane, R.P., Sitaula, B.K. &Bajracharya, R.M. (2013). Contribution of Small-Scale Agroforestry Systems to Carbon Pools and Fluxes: A Case Study from Middle Hills of Nepal. Small Scale Forestry, 12(3): 475-487. Retrieved on March 2, 2022 from https://link.springer.com/article/10.1007/s11842-012-9224-080

[30] Pandit, B.H., Nuberg, I., Shrestha, K.K., Cedamon, E., Amatya, S.M., Dhakal, B. &Neupane, R.P. (2018). Impacts of market-oriented agroforestry on farm income and food security: insights from Kavre and Lamjung districts of Nepal. Agroforestry Systems, 93(4), 1593–1604. Retieved on February 26, 2022 from https://link.springer.com/article/10.1007/s10457-018-0273-z.

[31] Peerzado, M.B., &Magsi, H. (2018).Population and Causes of Agricultural Land Conversation in Hyderabad, Sindh, Pakistan. Indian Journal of Science and Technology, 11(5), 1–12. Retrieved on June 7, 2022 from https://doi.org/10.17485/ijst/2018/v11i5/119053

[32] Pinho, R.C., Miller, R.P. &Alfaia, S.S. (2012). Agroforestry and the Improvement of Soil Fertility: A View from Amazonia. Applied and Environmental Soil Science, 2012, 1– 11.Retrieved on March 1, 2022 from https://downloads.hindawi.com/journals/aess/2012/616383.pdf.

[33] Raj, V. (n.d.).Markets and Marketing of Aroforestry Products in India. Retrieved on March 11, 2022 from

https://www.academia.edu/6472448/Markets_and_Marketing_of_Agroforestry_Products_in_India.

[34] Solomon, H. (2019). The Effect of Farmers Education on Farm Productivity.Evidence from Small-Scale Maize Producing Farmers in North Bench District, Bench Maji Zone.In *www.grin.com*.Retrieved on March 17, 2022 from https://www.grin.com/document/1081232.

[35] Vaast, P., Harmand, J.M., Rapidel, B., Jagoret, P. &Deheuvels, O. (2015).Coffee and Cocoa Production in Agroforestry—A Climate-Smart Agriculture Model. Climate Change and Agriculture Worldwide, 209–224. Retrieved on March 10, 2022 from https://www.researchgate.net/publication/301256458_Coffee_and_Cocoa_Produc tion_in_Agroforestry-A_Climate-Smart_Agriculture_Model.

[36] Vu, H.V., Ho, H. & Le, Q.H. (2020). Impact of Farmers' Associations on Household Income: Evidence from Tea Farms in Vietnam. Economies, 8(4), 92.Retrieved on March 24, 2022 from https://doi.org/10.3390/economies8040092.

[37] Watson, G.F., Worm, S., Palmatier, R.W., &Ganesan, S. (2015). The Evolution of Marketing Channels: Trends and Research Directions. Journal of Retailing, 91(4), 546–568. Retrieved on March 13, 2022 from Marketing91 website:https://www.marketing91.com/marketingchannels/#:~:text=Definition%20of%20Marketing%20Channels.%20Marketing%20Channels%20can%20be.

[38] Weiwei, L., Wenhua, L., Moucheng, L., & Fuller, A.M. (2014). Traditional Agroforestry Systems: One Type of Globally Important Agricultural Heritage Systems. Journal of Resources and Ecology, 5(4), 306–313. Retrieved on March 4, 2022 from https://doi.org/10.5814/j.issn.1674-764x.2014.04.004