WOMEN'S PARTICIPATION IN THE PRODUCTION AND PRODUCT DEVELOPMENT OF HEIRLOOM RICE IN SADANGA, MOUNTAIN PROVINCE

HAZEL S. FAGYAN

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La Trinidad, Benguet

OPEN UNIVERSITY

This thesis hereto attached, entitled "WOMEN'S PARTICIPATION IN THE PRODUCTION AND PRODUCT DEVELOPMENT OF HEIRLOOM RICE IN SADANGA, MOUNTAIN PROVINCE", prepared and submitted by HAZEL S. FAGYAN in partial fulfillment of the requirements for the degree of MASTER IN COMMUNITY DEVELOPMENT, is hereby accepted.

ARLENE L. FLORES, Ph.D
Member
Date Signed: _____

CARIDAD B. FIAR-OD, Ph.D.
Member
Date Signed: _____

MARLOWE U. AQUINO, Ph.D
Adviser, Chairperson
Date Signed: _____

LITA MOLITAS- COLTING, Ph.D
Director
Date Signed: _____

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ABSTRACT

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Adviser: Marlowe U. Aquino, Ph.D

Rural women play a significant role in the rice-based farming system including the socio-cultural and socio-economic life in the society. Their contributions as repositories of indigenous knowledge on rice production, socio-cultural and socio-economic activities are considerable particularly in their participation in decision making in the production and product development of heirloom rice in Sadanga, Mountain Province.

A total of 130 women were involved covering the 8 barangays of the municipality. Pertinent data were collected using an open - ended questionnaire through personal interview to identified respondents who belong to rice farm family.

Results show that women participated in all pre-harvest and post-harvest activities of heirloom rice production. Their participation was 100% on seed selection and seed sowing but very minimal on hauling, land preparation, water management and pest and disease management activities. In addition, the

participation of women in the transplanting, harvesting and hauling were found to vary from one barangay to another.

Activities on seed varietal selection, seed bed preparation, seed exchange and sowing obtained the highest degree of involvement of women in rice production. It also appears that both wife and husband were involved in decision making on the production activities but the women took the final decision because they are more knowledgeable and in the end they do the job.

Furthermore, home-based responsibilities particularly reproductive role/child care, economic activities and family responsibilities like food preparation and animal feeding were the most influential factors affecting the level of participation in the production and development of heirloom rice.

Also there were 23 heirloom rice varieties identified existing in the municipality but women commonly grow seven (7) *kadaanan* rice varieties aside from the eight (8) varieties introduced from other provinces and municipalities. The other six (6) varieties that are not planted were lost due to the erosion of the plant genetic resources.

Heirloom rice has a high regard in the socio-cultural traditions of people in the community specifically used as offerings in bundled palay. On the other hand, processed products like *tupig*, *patopat* and *saliket* are used as *supon* for socio-cultural events like weddings, wakes and community festivals like *fhegnas*. Other processed products like fermented rice (*karkarwak/binobodan*) and rice wine

(*tapuey*) are commonly used as offering as this is a symbolic *kabunyan* - inspired drink.

Moreover, staple rice varieties are highly esteemed by women in Sadanga as staple food during celebration of cultures and kept sacred the glutinous rice varieties and its products because they are valued during rituals and social gatherings.

As part of their socio-economic activities, women also sell glutinous and staple rice in exchange for cash to augment income to the family. *Waray* and *kotinao* are the most saleable glutinous rice that commands the highest price among all the glutinous varieties thus all the 130 farm women grow *waray*in their rice terraces. These are marketed in the municipality of Bontoc and other areas like Baguio. *Kotinao* and *Gumiki* on the other hand are export varieties being marketed by women directly to Revitalized Indigenous Cordilleran Entrepreneurs (RICE).

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INTRODUCTION

Background of the Study

One of the most important crops contributing to food security is rice. Rice is the staple food of more than half of the world's population, most of whom lived in less developed countries. In order to meet the needs of the future generations, it is globally required that rice production must be increased by 70% (Huvio, Undated). This can be attained by maintaining the existing indigenous farming practices like sustainable management of natural resources for food production and consumption.

In the Cordillera, traditional farming in rice terraces is treasured because it is a living indigenous infrastructure for food production, soil and water conservation and lately for tourism (Concepcion and Hernandez, 2003 and Aquino, 2009).

In addition, the rice terraces of Ifugao considered by the United Nations as cultural heritage are now recipient of financial support if only to preserve the rice terraces and the heirloom rice developed. While rice farming makes Tabuk, Kalinga the rice granary of the Cordillera, its farming systems is more of flat paddies and the products are for commercial purposes with heirloom rice raised only for certain cultural attachment (Fiar-od, 2010).

In recent years, the national and local government agencies and non-government organizations have been pooling their resources to support the

sustenance of the rice terraces in the Cordillera region if only to preserve the cultural heritage. Furthermore, in keeping with the goal and objectives of economic and cultural revival while preserving the rice terraces in the Cordillera, policy on environment and technology development related to heirloom rice production must therefore respond to the realities of the critical people involved in producing, providing and managing food supplies - both men and women (Huvio, Undated).

The indigenous cultivation of the native heirloom rice variety by the rural folks in the rice terraces of Benguet, Kalinga, Ifugao and Mountain Province helped conserve the region's rice terraces that are a living legacy from their forefathers.

In a news article (Anonymous 2, undated) Abraham Akilit cited that Mountain Province has the most extensive rice terraces in the Cordillera but this have been polluted with chemical inputs thus farmers need to rehabilitate their farms at least three years through organic farming.

In Sadanga, Mountain Province, people in the community still maintain the indigenous system of rice cultivation. Heirloom rice had never been sold commercially as these are used only in the cultural community festivals until the founding of the Cordillera Heirloom Rice Project in 2005, that seeks to increase production, improve processing yet maintaining its being heirloom and link

organic rice products to international market for the benefit of heirloom rice farmers.

The rice paddies have been maintained throughout the centuries because farmers developed their rice farming practices from pre-harvest, post-harvest practices. These are also said to be environment-friendly contributing to sustainable production and socio-economic development (Akilit as reported by Catajan 2007).

In this specific activity, the women mostly decide which heirloom rice is best suited for such product and how it should be preserved considering the women's imparted knowledge of seed keeping. Women farmers retain the ability to identify and characterize the rice varieties through their uses (Paris, 2009).

Rural women play a significant role in the socio-economic life of the society. They perform crucial role to the rice-based farming system. Men and women's responsibilities however, in the rice-based farming systems may vary between different regions, societies and culture.

In Sadanga, Mountain Province, women were reported to be more involved in all stages of heirloom rice production but there are no studies that documented their involvement.

Moreover, many different traditional rice varieties are grown and locally processed by Sadanga women as part of their socio-economic activities. These women add value to rice by preparing them into food products for consumption

and sharing them during family and community occasions. More importantly, different rice varieties either glutinous to staple rice are used in different festivities or rituals.

While it is true that there are many rice varieties being grown and processed, not all are suited for product development. The concept of strengthening the product development and its introduction to the market would further motivate farmers to conserve their indigenous plant genetic resources.

Although these farming activities have expressed different views on how women and men participated, the participation of women in the traditional practices on the production of heirloom rice and the socio cultural attachment of its products are not well documented thus the conceptualization of this study.

Statement of the Problem

Women are productive partners in agriculture. They are farmers whom families and communities depend for food production. History shows that women have played and continue to play an important role in rice based- farming system (Huvio, undated). They are engaged in almost all areas of rice production and are responsible in the development of rice products. However, their roles in the rice-based farming systems are not well recognized in the world (Subedi, 2008)

Based on the concept concepts of development as gender balance in all activities, this study is sought to answer the following questions.

1. To what extent are the women able to participate in the production practices and product development of heirloom rice?
2. What are the factors affecting the participation of women in decision making in the production practices and product development of heirloom rice?
3. What are the rice varieties grown by the women, the products developed from these varieties and its utilization relative to the cultural significance and socio-economic development in the locality?

Objectives of the Study

Generally, the study aimed to know the present status of women‘s participation in the production practices and product development of heirloom rice in Sadanga.

Specifically the study was conducted to:

1. Determine the socio-economic profile of the respondents;
2. Know the extent of participation of women in the production practices and product development of heirloom rice;
3. Identify the factors affecting the extent of participation of women in the production practices and product development of heirloom rice; and

4. Identify and characterize the heirloom rice varieties grown and the products processed by women, and give reasons for varietal choice and utilization in terms of:
    a. Cultural relevance
    b. Socio-economic development

Importance of the Study

It has always been expressed that man are sovereign in the agriculture industry, despite the truth that there is always a woman working behind a man (NAFC, 2003).

There is a need to recognize the contributions of both genders to the family decision-making process that will bring better performance and improve the livelihood of the rural community.

Of the value systems among Igorots in general and the people of Sadanga in particular, cooperative work like *ob-obo* in the different agriculture-related activities like land preparation, planting and harvesting, special family and community occasions like house construction, weddings, death wakes and other community rituals like *fhegnas* had long been practiced by both genders but had always been dominated by females. During the *fhegnas* activity women cook heirloom rice, prepare drinks from heirloom rice and bring it to the men and children in the *ator* (Provincial Profile, 2010).

Many by-products are derived from heirloom rice such as rice *patopat/tupig, saliket, sinab-ang* and other pastries; fermented rice and rice wine but not all heirloom rice varieties are suited for the processing of said products.

Knowing the varieties best suited for such products will also give priority for women's access to income generating activities and networks particularly to the production and development of rice products that requires female labor and in the end development of more products encourage competition for excellence.

Considering that Sadanga farmers maintain their heirloom rice production, this study that documents women's participation and decision making in the production process and development of heirloom rice by products may serve as a good practice for others to learn. Likewise, this documentation is one way of preserving the cultural heritage in terms of heirloom rice production that stood the test of time.

It is also hoped that the involvement of women in the research will obtain the vision of heirloom rice project in the region that seeks to bring back the best indigenous varieties and practices that sustained the rice terraces in the province and throughout the region.

As such, this documentation research would be important as a means to encourage and define the participation of both genders especially women towards increased productivity.

More specifically, it will provide policy makers in the government and non-government organizations with database information to support development strategies that aim to increase the participation rates of women in decision-making positions; provide the development practitioners or Agricultural Extension Workers (AEW's) guide to emphasize the need for special programs in agriculture to improve and strengthen women to programs that will help increase the knowledge and skills of women which enhances vital path to increase the efficiency of the women farmers in the municipality or province; and provide precise information on women's as well as men's contributions to rice production not only to understand the importance of their work but to support more effective production planning.

Lastly, to the Sadanga people, this research which documented the gender role in heirloom rice production practices and the cultural significance of product development, may serve as means of preserving and appreciating their indigenous plant genetic resources.

Scope and Delimitation of the Study

The researcher was inclined to conduct a study on the extent of women's participation in the production and product development of heirloom rice in the municipality of Sadanga, Mountain Province with the consideration that Sadanga is one of the major producers of heirloom rice in the province.

Majority of the population in the area are farmers who are engaged in heirloom rice production where it was viewed that most of the labor force in the heirloom rice production are shared by women. Worldwide, the role and participation of women in agricultural production contributed to the rural economy. Women are keepers of indigenous knowledge from socio-culture to the rice based farming system--seed selection, storage, production, product development and utilization--which have been passed from generation to generation. This implies that the participation of women decision making in the production and product development of heirloom rice is vital towards increased productivity.

Thus, the scope of the study focused on the significant involvement of women in the rice production activities and development of rice products which eventually lead in the preservation of heirloom rice and the socio culture and economic development.

The study was undertaken in the municipality of Sadanga, Mountain Province covering all the eight (8) barangays of the municipality. At least ten (10) respondents were chosen based on the recommendation of the office of the Municipal Agriculturist since they are the best source of development information. Most specifically they were chosen for the following reasons:

1. They are a resident in any of the eight (8) barangays of the municipality.

2. They are growing rice & knowledgeable in the customs & traditions associated in rice production.
3. They have been processing native delicacies from heirloom rice.
4. They are available during the interview.

CONCEPTUAL FRAMEWORK

Women's participation is a significant aspect in development. Their active role and responsibilities in the socio-economic activities could be observed in rural and urban development activities. As such, they need the necessary recognition for economic growth and development.

Based on the present research interest, agricultural development plays a vital role in describing the situation and participation of women in rice production and rice product development in Sadanga, Mountain Province.

The study as presented in Figure 1 shows the relationship between the independent, the intervening and the dependent variables.

Independent variables specifically refer to some factors concerning rural women and the society's cultural beliefs, traditions and practices. The intervening variables include the indigenous production practices, rice varieties, product developed and utilization. The dependent variable on the other hand, is the preservation of heirloom rice and their culture towards socio-economic development.

The study is anchored on the concept that the higher the extent involvement of women in the production and product development of heirloom rice, the higher the sustainability of heirloom rice is considering the gender ratio of which more are women. Likewise, the more frequent the women participate in

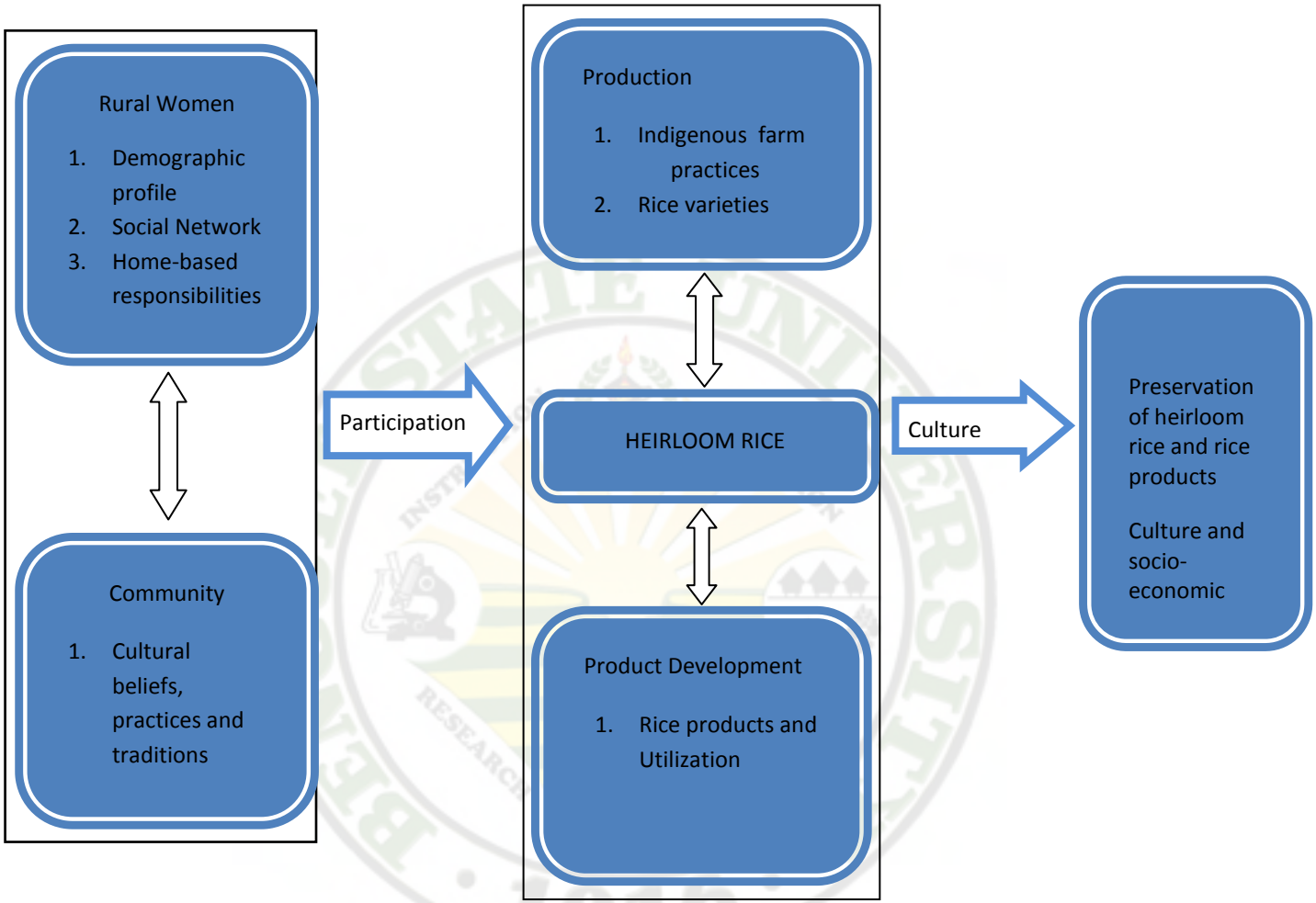

Figure 1. The interrelationship of the variables in women's participation in the production and product development of heirloom rice

decision making as to the stages of heirloom rice production and product development, the higher is their extent of participation.

On the contrary, the higher the level of cultural significance of heirloom rice and processed product, the less tendency of commercialization hence the variables reflects that the extent of sustainability of heirloom rice towards socio-economic development is dependent on the participation of women in the pre and post production practices with consideration of the varieties grown and the utilization of rice products developed.

Operational Definition of Terms

The following terms are defined as to how they were used in the study.

Customs refers to unwritten practices of the people that are particular in a certain community that is innate to the people with conscience of such violation.

Domestic activities refer to household responsibilities performed daily by women.

Fermented Rice refers to a food product processed from fresh glutinous rice under a shorter fermentation process. With this, it is generally viewed as food specifically for women because it is moderately sweet.

Heirloom Rice refers to the original rice varieties called *kadaana/kinaysan,* that have been grown by the people in Sadanga for more than 50 years with seeds that have been passed down from one generation to another and are grown naturally using the indigenous farming systems by the rural folks.

Indigenous knowledge refers to the agriculture practices that have been practiced for generations and still hold promise in meeting the food demands of a growing population. Most of these practices are suited to the agro-ecological condition in a given community.

Involvement of women refers to the participation of women in the whole heirloom rice production process, from pre-harvest to post-harvest activities.

Offering refers to giving or sharing of palay and rice products in times of need during family and community rituals.

Post-harvest Practices refers to rice cultural practices from drying, storage, food processing or product development to marketing.

Pre-harvest Practices refers to rice farming practices from seed selection to harvesting.

Processed products refer to native delicacies processed from milled rice by women in the locality.

Product Development refers to the processing of milled rice to produce processed native delicacy.

Rice Wine refers to an alcoholic beverage made from milled glutinous rice under fermentation process with the use of *bobod*. Rice wine is a traditional drink for men because it has higher alcohol content.

Rural Women refers to women respondents ages 20 years and above from the municipality of Sadanga

Socio-cultural activities refers to customary beliefs and agricultural traditions that is being observed in the community

Socio-economic activities refers to the phases of rice agricultural activities: from production; pre-harvest and post-harvest practices; product processing, marketing and consumption with a practical application in relation to economy and culture of the family and community respectively.

Social Network refers to the social background of women including their responsibilities at home and outside the home.

Traditions refers to the set of practices in the community that seeks to inculcate certain norms and values. Each municipality has its own tradition.

REVIEW OF LITERATURE

Sadanga and its People

The people of Sadanga are indigenous people from Mountain Province - the land of the proud and independent tribes located in the central portion of the Cordillera Mountains in northern Luzon. Sadanga has the most extensive rice terraces in the province spreading in the slope of the mountains forming curve terraces along the mountain backsides. These terraces are a living infrastructure for food production to the mountain people (Domoguen 2010).

Today, Sadanga is growing in popularity as it is becoming a favorite destination of both local and foreign visitors because of their culture that includes the preserved man made rice terraces; Sadanga and Focong rice terraces.

Sadanga is a home of indigenous living traditions with four tribal clusters that comprises the whole domain of Sadanga namely: *Yuma-a* from barangays Sacasacan, Poblacion and Demang; *Masun-ay* from barangays Anabel and Betwagan; *Awangan* from barangays Bekigan and Belwang and *Walitan* from Saclit. Each of the tribe has its own distinct dialect with its own peculiar intonations but generalized as belonging to the Bontoc tribe. The language that is predominantly spoken is classified as *Kankana-ey*. Other languages spoken in the locality are Ilocano, Tagalog, English and other cordillera dialects (Provincial Profile, 2010).

Sadanga has a population growth rate of 2% per annum with a total population of 9,706 in a 1,690 households with an average of 5 members per household (NSO, 2007).

The people of Sadanga are by nature hospitable and friendly. They are also known for their unselfish act of taking the responsibility of providing physical security and food for visitors and strangers who visit their families and community. Usually the accommodation is borne by the family who has invited or who has first offered food or water to the visitor and stranger. After partaking food, the visitor or stranger is confident for his security from any physical harm as long as he is within the community (Provincial Profile 2010).

The people are also noted for their strict observance of their customs and traditions. Their community remains to be peaceful which is basically due to the influence of value systems, beliefs, practices and indigenous social institutions. The people of Sadanga largely depend on agriculture as their main industry, with rice as their main crop and legumes, the second crop.

Customs and Traditions

The customs and traditions in the community of Sadanga are rich. The people have been able to preserve over the centuries their cultural heritage. These can be seen in their observance of their customs and traditions.

Peace in the community is basically due to the influence of value systems, beliefs, practices and social institutions. Old folks as collaborated by reports from barangay officials mentioned that their indigenous institutions, their justice and belief systems and values continue to influence people live. And to some extents it helps in keeping them in unity, peace and order in the community (Municipal profile, 2010). The indigenous political and economic institution called the *ator* is a venue for education and crafting and announcing of customary laws. The *ator* is where community rituals are performed (Fiar-od, 2000)

A peace pact where tribe forges with their neighboring tribes is called *peden*. This agreement is innate with the various rules and regulation that are agreed by both parties in a signed document called *pagta*. Peace pact system was developed to establish friendly relations and to bring binding tribes together and put to and end the head hunting ventures of the tribal people (Provincial profile, 2010).

Aside from their indigenous farming practices, belief systems associated with farming activities are still being practiced in the community. These have been preserved by the old folks over the centuries.

According to Baltazar Chinalpan, Evelyn Dangiwan and Leonor Chaluyen (personal interview, 2010), elders from Sadanga elaborated the following rest days called *te-er***.** *Te-er* is a religious holiday compulsory for the whole town. It is observed accompanying the agricultural cycle, during social occasions like

community gatherings, burials and even emergencies and for important family events; marriage and others that maybe declared by the elders of the *ator* or the barangay officials.

During *te-er* no one is allowed to work in the farms and no visitors and strangers are allowed to enter the community even the local residents are not allowed to go out of town but due to family needs, people can be allowed to travel outside the community.

Te-er di Panar is a 3 day rest declared before sowing rice seeds in the months of November to December. Women are allowed to go to the rice fields and sow seeds on the third day (which is declared as an ordinary day) only if nobody in the community broke any rule and no untoward incident happened during the *te-er*. *Te-er di erag* is observed when the palay seeds are ready to be transplanted. This is done with the belief that the rice seedlings will grow robust and will not be preyed by rats and other insect pests. *Te-er di Saray-at* is also observed when the rice plants is at its booting stage. It is believed that the rice plants will bear more grains. *Te-er di mamokayan di pagey* is a rest day to ensure that the grains of the palay will keep hold of an abundant harvest. *Te-er di kilkilao* is observed to ensure that rice birds will not prey on the ripening palay. *Te-er di sangba or ap-apoy* is done by butchering chicken in the rice fields to ensure early ripening of palay. Chicken or pig head is offered in the granary. *Te-er di fegnas***,** is a rest day to all the *ators* which usually lasts for 3-5 days and celebrated twice a

year before and after harvest. Only the men (adult, children and unmarried) are allowed to feast the meat of carabao and pig which was contributed by the community. Women prepare steamed native rice, *tupig* and bring it to the *ator*for the men and children to eat. Women don't eat in the *ator* but they participate in dancing while men play gongs. *Fhegnas* is done to thank the *Kabunyan* for a good harvest and to ask for another bountiful harvest. *Te-er di saracmot* is a rest day to culminate the rest days, visitors and strangers are now allowed to enter the community.

Te-er are celebrated with a maximum of 9 days. After 9 days they celebrate *ngilin* a cultural community festival of thanksgiving and sharing of their blessings and they eat together with their heirloom rice (Chinalpan, 2010, Personal Interview). The religious purpose of these rituals during the *te-er* is to thank the *Kabunyan* for a good harvest

Ob-obfo is an indigenous practice of cooperative/group work among two or more neighbors or community folks who have voluntarily joined together to achieve a customary socio-economic endeavor in terms of services or in kind in house construction, marriage rituals, wakes and community festivities like *fhegnas* and agricultural related activities especially during transplanting and harvesting (Fiar-od 2008).

Above all, their customs, traditions and beliefs adheres to the word *inayan* as a factor to community development. Community success may also view

adherence to *inayan* as cultural integrity for survival was invoked along the attainment of spirituality, peace, prosperity and abundance, either personally, morally, socially, religiously and purposely. As it is said that there is development in areas where there is peace. (Fiar-od, 2008).

Women's Productive Roles and Contributions in Agriculture.

Women are involved in almost every task and activities that generate income. They play important roles in agricultural production all over the world. According to Moser (1993) as cited by Abalos (1998) women include work in both the formal and informal sector. In urban areas, productive activities engaged in by women are usually in the informal sector which is positioned in the home or neighborhood. In the rural areas, this mostly takes the form of agricultural work.

The women are the backbone of agricultural workforce but worldwide her hard work has mostly been unpaid (Jatinder, 2007). She does the most tedious and back breaking tasks in agriculture, animal husbandry and homes. Women actually perform almost all the work done in agriculture.

In terms of total labor input, women's role in the economy is as important as that of men. This was proven in a study by Ilo (1985) that women contribute about as much time as their husbands to direct productive income-earning activities.

In Asia, women's contributions ranges from 25 – 80% of the total labor use in rice production, rice operations are dominated by women (Paris, 2007).

The Food Agriculture Office (1998) also cited that in Cote d'lvoire, Africa, women provide 80% of the labor for food production and are responsible for 60% of its marketing.

Women do all the work in rice production like sowing, weeding, harvesting and gathering, although in the south and eastern central areas, men help in sowing.

In rice-based agriculture, the roles of women had been recognized since 1990 through the Women in Rice Farming System (WIRFS) network based at the International Rice Research Institute (IRRI). Women's contributions in rice production ranged from 27-84%. Women work 3,485 hours a year in a hectare farm compared to 1,212 hours for men. In rice production, women provide one half of the labor from planting to harvesting and post-harvest operations.

Women dominate all rice operations except land preparation, irrigating the rice fields and spraying chemicals and in post-harvest. In addition, they dominate the job of seed cleaning, selection, de husking the grains, cooking rice or preparing rice into products for home consumption and for sale.

In the Philippines, specifically the women's participation in rice production is particularly high in transplanting/planting, manual weeding, fertilizer application, and care of crops, harvesting, drying and marketing (Bureau of Agricultural Statistics, 2004 as cited by FAO 2008; and Anonymous 4, Undated).

In addition, there are more women workers in the agricultural than in non-agricultural economic activities. Although women are extensively involved in agricultural activities the extent of their involvement in rice farming varies from region to region, and even within the regions (Huvio, undated).

In the Philippines, men, women and children of the Tidurays of Upi, Maguindanao share the role in transplanting, weed management, hauling and harvesting. Land preparation, soil and water management, hauling seedlings and "palay" are men's sole responsibility although the children or youth help their father in drying the "palay" (Neyra, 2009)..

On the other hand, women execute traditional roles of seed selection; Apart from that practice, women dominate sowing of seeds and pulling of rice seedlings.

In Benguet, the work of women farmers in vegetable farming is the same as the men. Women share with men the work from cleaning the land, fertilizer application, pesticide application to harvesting and trading (Lu, 2010).

In Mountain Province, Fiar-od (2000) indicated that the women of Besao, Bontoc and Tadian, dominate activities on weeding the field and its surroundings, weeding and thinning, sowing seeds in the seed bed, pre-fertilizer application, rice planting, irrigating of rice paddies, driving away birds that prey on the palay, and setting of rat traps while men do only plowing and furrowing.

The only activities shared between men and women is on seed bed preparation, plowing narrow field using a modern spade, rice harvesting and the drying of the harvested bundles of "palay" and the planting of sunflower and other shrubs as a means to control soil erosion and to be used as organic fertilizer when trimmed.

There are also reports, that women in Sadanga, Mountain Province do seed selection and application of fertilizer using composted forest litter, leaves, grasses, sunflower, and pig manure in their heirloom rice production (Agribusiness Week, Undated).

Moreover, a report from the Agri news by Domoguen (2008) stated that in Barlig, Mountain Province, like most of the womenfolk participate in almost every work needed to produce heirloom rice from cleaning the rice fields, seed selection, seed bed preparation, sowing, transplanting, weeding, harvesting, drying, storage and rice pounding, while the men go outside the town to look for work during the growing season.

Factors Influencing Women's Participation in Rice Farming

Rural Women as Preservers of Indigenous Agricultural Knowledge

Women are preservers of seeds, thus the lose of such knowledge will be a lose to the gene pool of the country (Mukhim, 2005). This is because there have

been no attempts at certification or of protecting the intellectual property rights of the farming communities.

Paris (2009) reported that women are repositories of indigenous knowledge of crop and natural resource management. In Tajikistan, Mamadalieva (2010) similarly reported that women are keepers of traditional knowledge thus women's right to the land should be supported because this will promote women's stewardship to the land and the traditional knowledge of local communities.

According to Bertuso (2011), women do seed selection and maintenance of biodiversity in the conservation of plant genetic resources. They are guided by a set of selection criteria like cooking and eating quality. After harvesting, women have special containers to store seeds for the whole year without being destroyed. Women also have knowledge on the specific details about a plant when they do seed exchange.

Women are also said to be carriers of indigenous knowledge of crop and natural resource management (Paris, 2009). Processing rice into food products for home consumption or for sale is women's domain.

Scientist though recognizes indigenous knowledge as a major resource for developing sustainable agriculture due to the hazards of conventional agriculture.

IDRC (Undated) reported that traditional or indigenous farming practices were being used in rice and sweet potato production but is slowly being lost because of the changing interest of the younger generation and the influx of new

technologies claiming better and higher production. Researchers recommended the establishment of a highland rice program to select and evaluate varieties suitable to specific needs and conditions; and encourage organic rice farming, especially in the use of fertilizer.

One of the traditional farming practices by women in the production of traditional rice is the utilization of green manures such as sunflower leaves, weeds, grasses and legume pods as source of plant nutrients (Faroden, 2006). Rice hulls are also applied in the terraces before land preparation.

To produce quality, safe organic rice and vegetables and ensure the preservation of the rice terraces as a cultural heritage of the next generation, the indigenous farming practices in the rice terraces of the Cordillera should be promoted (Saquing, 2004 as cited by World Bank, 1998).

According to the World Bank (1998), indigenous knowledge is an integral part of the development process of local communities. This is because when knowledge is solicited from the local people about their needs, sharing knowledge with the poor is effective. Indigenous knowledge is unique to a particular culture or society it is embedded in community practices, institutions, relationships and rituals. Local knowledge is vital for preserving traditional cultivars in local communities. Preserving the plant genetic traits and the indigenous knowledge of these local rice varieties is an integral part of the local ecosystem

In Columbia and Rwanda, women farmers who possessed valuable indigenous knowledge about bean cultivation planted two to three varieties they selected to be promising outperformed by 60 to 90% those selected by scientist.

Overall, indigenous knowledge provides the basis for problem solving for local communities. This is because learning from indigenous knowledge by investigating first what local communities know and have can improve understanding of local conditions and provide a productive context for activities designed to help the communities

Home-based Responsibilities and Socio-economic Activities

Socio-economic activities include activities that have economic value like group labor or self-help; group contributions; socio-cultural community beliefs or activities; agricultural related activities; entrepreneurial activities; and other intervening home practices. These activities are done regularly as part of the people's culture (Fiar-od, 2008).

According to Karki (2009), rural women grow most of the crops for domestic consumption and are responsible for preparing, storing and processing food. Moreover, they handle livestock through food collection and feeding, fetch water, and gather fuel for domestic supply. Women do most of the labor force in post-harvest activities.

To sustain the family women produce food from backyard gardening or from food processing for home consumption and whatever is not consumed by the family is for the community's market (Moller, 1993).

Tuyen (1997) said that one of the factors that prevent women from participating in production activities is time. They divide their time between ast in the home and in agriculture. In the evening women prepare the feed fopr the pigs for the next day. Beside their farm activities and housework, women often work to earn the extra income needed by doing off-farm activities such as trading and wage labor.

Heirloom Rice Varieties

"Traditional rice varieties ones grown and nurtured by indigenous peoples are making a come back because of the importance of their genes that are necessary in breeding rice for the future (Bengwayan, 2010)".

According to Bengwayan (2010) production of traditional varieties is essential because these are critical for food security and in providing future genetic material necessary in breeding rice for the future. For some time, there was a growing fear that hybrid rice will altogether eliminate traditional rice varieties.

Today, current conditions prove that traditional rice varieties are here and are necessary for rice development. Traditional rice varieties were suddenly

forgotten in the past decades, yet they are the “hearts and soul of rice”. They require minimal organic fertilizer and no pesticide inputs so that these varieties are rich in nutrients, tastier and friendly to the soil, allowing farmers to protect their soil, ecosystem and had control of their seeds their forefathers have nurtured for centuries.

Chinalpan (Personal Interview, 2010) added that heirloom rice is a gem to the Sadanga community because these are used in the cultural festivals to celebrate thanksgiving and sharing of harvest. These festivals increase bonding and camaraderie among the people such that if farmers shift to HYV’s this community practice will definitely stop. Preserving our cultural heritage therefore sustains community development.

Traditional rice varieties or Heirloom rice are rice that have survived more than 50 years of cultivation says Akilit (2008) as reported by Carino (2008). These rice varieties are grown using the technology of indigenous knowledge.

Heirloom rice is highly nutritious, aromatic and have good taste that it can be eaten without viand (Galingan, 2011), distinctively delicious, visually beautiful and cooks in 20 to 25 minutes (Eight wonder, Undated) that is preferred by health-conscious foreign customers. These characteristics of heirloom rice are the reason why they are still producing these varieties all these years (Galingan, personal interview, 2011). In addition, most heirloom rice can be stored in the

rice granaries for as long as 10 years without significant change in taste and the longer the storage the more it expands when cooked.

Eight Wonder Inc. (undated) reported that they are promoting the heirloom of Mountain Province to Italy and US market. This export venture will make local farmers take great pride in their heirloom rice and will inspire them to revitalize and sustain the rice terraces.

Mountain Province is now included as one of the production areas of heirloom rice for export (Aro, 2008). There are about seven heirloom rice varieties recognized for export by the Cordillera Heirloom Rice Project (CHRP) namely: *senyora* red, *senyora* white, *kintoman*, *ginulot* or *uskil*, *korel*, and *Gumiki* which are grown in the rice fields of Barlig, Besao, Bauko, Bontoc, Natonin, Sagada and Sadanga (Carino, 2008).

The inclusion of the seven varieties could boost the RICE's (Revitalized Indigenous Cordillera Enterprise) quota to export 40 to 50 metric tons of heirloom rice says Akilit as reported by Carino (2008). The RICE organization exported 8.9 MT in 2006 and 17 MT in October 2007 that all came from Kalinga and Ifugao.

A total of eight tons heirloom rice will come from Mountain Province which will be sourced from the different municipalities broken down as follows: Tadian, 0.5 ton; Bauko, 1 ton; Natonin, 1 ton; Sadanga, 2 tons; and Barlig, 3.5 tons (See, 2010).

In Sadanga, the old folks used to grow more than 15 heirloom rice varieties but now there are about 5 to 10 varieties (Anonymous, Undated). A documentary report (Fagyan, 2010), however show that there are about 21 rice varieties that are grown in the rice terraces of the municipality. Fifteen of which are grown as daily staple food and 6 glutinous rice varieties are used specifically for processing of rice wine and rice pastries.

Product Development

Rice is more than a staple food. In the Philippines, rice can be processed into snack items such as *puto*, *suman*, *bibingka*, *calamay*, *espaso*l, *puto bumbong*, *sapin-sapin*, *palitaw*, and *bihon* and rice-based drinks or beverage to include tea, coffee, and wine (http://en.wikepidia.org).

Rice wine or popularly known as *tapuey* is a traditional beverage that originated from Banaue and the Mountain Province and *pangasi* in Mindanao. This is used for important occasions such as weddings, rice harvesting ceremonies, fiestas and cultural fairs (http://en.wikepidia.org). Rice wine is produced from either pure glutinous rice or a combination of glutinous and non-glutinous rice together with a powdered starter culture locally called *bobod*.

Fagyan (2010) reported that only 6 heirloom rice varieties in Sadanga can be used in processing rice wine. These are *waray*, *kinabogawan*, *kinogo-ong*, *kingking*, and *kotinaw*.

METHODOLOGY

Time and Locale of the Study

The study was undertaken in the municipality of Sadanga from October 2011 to April 2012. Sadanga - the place called the land of the braves is a 5th class municipality, located in the Northern front of Mountain Province adjacent to Kalinga Province. Mountain Province is situated in the Cordillera Administrative Region (CAR) in the island of Luzon.

Sadanga, a home of indigenous living traditions has a population of 9,706 people in 1,628 households (NSO, 2007), most of which largely depend on agriculture as an industry. It is politically subdivided into 8 barangays namely; Anabel, Bekigan, Belwang, Betwagan, Demang, Poblacion, Sacasan and Saclit (Municipal Profile 2006).

The municipality is dominantly mountainous characterized by steep slopes (50%) with elevation ranging from 600 to 2,168 meters above sea level (Chinalpan 2003).

Sadanga has a total land area of 32,198 ha of which 149.5 ha is devoted to rice production with an estimated produce of 2.8 tons/ha (ADSDPP), 2007). Each household has an average land holding of 450 sq.m. which are cultivated with heirloom rice (Faroden, 2010).

Figure 2 shows the map of the Cordillera Administrative Region showing the location of Mountain Province highlighting the research site.

Respondents of the Study

The municipality was chosen as the site of the study after having been considered as one of the major heirloom rice producers in the Province.

One hundred thirty (130) women farmers representing the eight barangays in the municipality were interviewed in this study. In each barangay, respondents were selected based on the degree of their involvement in rice farming and as to the recommendation of the Office of the Municipal Agriculturist. Table 1 presents the distribution of respondents from the eight barangays of Sadanga with numbers ranging from 11 to 23 per barangay.

Anabel and Saclit had the highest number of respondents with 23 (17.70%) followed by Betwagan with 21 (16.5%).

The lowest number of respondents was taken from Belwang and Demang with 11 or 8.5%. This low participation was due to the unavailability of the identified respondents.

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Table 1. Distribution of respondents from the eight barangays covered by the study.

Location	No. of Respondents	Percentage (%)
Anabel	23	17.70
Bekigan	13	10.00
Belwang	11	8.50
Betwagan	21	16.15
Demang	11	8.50
Poblacion	13	10.00
Sacasacan	15	11.23
Saclit	23	17.70
TOTAL	130	100%

Methods of Data Gathering

Before the data collection was carried out, a formal letter requesting the conduct of the study was prepared and delivered to the municipal mayor of Sadanga and the Municipal Agriculturist of the Office of the Municipal Agriculturist (OMAG). The office of the Municipal mayor responded in approval of the request. Then the researcher coordinated immediately with the Office of the Municipal Agriculturist and gave a brief rationale of the research study and plan of activities.

Lists of names of rice women farmers in the eight barangays were taken from the OMAG. The Municipal Agriculturist together with her staff assisted in the arrangements for interview to the key participants.

The interview was conducted individually, house to house or where the participant's location is, so even right in the rice fields. With the assistance of the staff from the Office of the Municipal Agriculturist, the researcher conducted personal interview. The interview was conducted from October to December 2011.

One set of a close ended questionnaire was prepared for this study. The questionnaire was structured to provide quantitative data on the background of the women respondents, extent of involvement of women in the production and product development of heirloom rice, factors influencing women's involvement in the production activities, and the socio-cultural significance of heirloom rice and its products, ,

Reports and other related materials were gathered from the OMAG. Additional data from thesis books (published or unpublished) journals and other sources from the internet were used to support the findings in the study.

Data Analysis and Interpretation

This study basically employed descriptive statistics to include frequency distribution, percentage and weighted means in analyzing and interpreting the data.

RESULTS AND DISCUSSIONS

Socio-economic Profile of Respondents

The salient features of the seven identified characteristic of the women respondents are shown in Table 2 that includes age, marital status, educational attainment, number of years in farming, farm size, land tenure and organizational affiliation.

Age. The ages of the 130 respondents in the study range from 20 to 99 years and had a mean age of 51. Ranging in age from 50 to 59 are the largest in frequency. The results indicate that most of the respondents are considered as old women.

Marital Status. Majority (103 0r 79.23%) of the respondents are married while 26 or 20.80% are widowed. Only one is single. This means that more married women have involved themselves to participate in the rice production activities which are treated as the major economic activity in the municipality. Customarily, land is preferably given to heirs by parents only after marriage.

Educational Attainment. The educational attainment of the respondents ranges from no education to college graduate. Based on the results, majority of the respondents (43 or 33.07%) have reached the elementary level while 35 or 26.92 % have not attended school. Respondents who did not touch schooling claim that they were hindered by their parents because they have to care for

Table 2. Socio-economic profile of the respondents

CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
Age		
20 - 29	15	11.53
30 - 39	21	16.15
40 - 49	29	22.30
50 - 59	31	23.85
60 - 69	16	12.30
70 - 79	14	10.76
80 - 89	2	1.53
90 - 99	2	1.53
TOTAL	130	100.00
MEAN		
Marital Status		
Single	1	0.77
Married	103	79.23
Widow	26	20.00
TOTAL	130	100.00
Level of Educational Attainment		
Has not gone to School	35	26.90
Elementary Level	51	39.23
High School Level	25	19.23
College Level	19	14.62
TOTAL	130	100.00

Table 2. Continued…

CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
Number of years in Farming		
5 - 10 years	18	13.84
11 - 20 years	26	20.00
21 - 30 years	26	20.00
31 - 40 years	20	15.38
41 - 50 years	20	15.38
51 - 60 years	20	15.38
TOTAL	130	100
Farm Size		
100 – 200	18	13.84
201 – 300	25	19.23
301 – 400	30	23.10
401 – 500	17	13.10
501 – 600	13	10.00
601 – 700	2	1.53
701 – 800	5	3.84
801 – 900	2	1.53
901 – 1000	8	6.51
above 1000	10	7.69
TOTAL	130	100
Land Tenure		
Owned	68	52.30
Leased	21	16.15
Owned and Leased	41	31.53
TOTAL	130	100.00

Table 2.continued…

CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
Organizational Affiliation		
Women's Organization		
RIC	18	13.84
KANSAS	15	11.53
WALITAN	21	16.15
Provincial Heirloom Rice Growers Federation	8	6.15
No Membership	68	52.30
TOTAL	130	100.00

their siblings as well as to help in the rice farming. This implies that as young as the women were they were already involved in rice farming. They affirmed saying *engkana sa kaonga mi, en donodono kami as ka payew, sha na nan viag di vavai* (As young as we were, we started working in the rice fields, that is the life of a woman).

There are however 16 or 12.31% who finished high school and 13 or 10% finished college. Only 8 or 6.20% and 9 or 6.92% graduated elementary and touched high school respectively.

Family land holding. Out of the 130 respondents, their rice farm ranges from 100 to more than 1000 sq.m per household. This is close to the report of the municipal ASDP (2008) that each household in Sadanga owns an average of 885

sq.m of rice land although Faroden (2010) mentioned that from this 885 sq.m area each household tills an average of 450 sq.m for heirloom rice.

Number of years in farming. Most (60) of the respondents have been in rice farming for 31-60 years while 52 are within 11-30 years bracket. The lowest number of 18 said they did farming from 5-10 years. This high number of years in farming by the respondents can be attributed to the findings (Table 2) that most of them are old women.

Land tenure. Majority of the respondents, (68 or 52.31%) own the farm they cultivate while few (21 or 16.15%) lease lands. Some 41 or 31.53 % women lease rice fields of relatives and siblings to cultivate aside from their farms thus no rice field are left idle. Owners of this rice field migrated to the cities for a better living.

Organizational affiliation. Most (68 or 52.30%) of the women, are not affiliated to any organizations while the rest are members of barangay based or municipal wide organizations (Table 3). Only eight (8) women respondents from barangays Demang and Poblacion are members of the Provincial Heirloom Rice Growers Federation (PRGF), a provincial wide organization. This low membership is attributed to the slim information dissemination during the organization of the PRGF federation. The membership slightly increased only when the federation started to sell their heirloom rice to RICE Inc.

Non-members of the PRGF however are members of their own barangay based organization like CANSAS in Sacasacan and WALITAN women farmers'

organization in barangay Saclit. These two organizations specifically caters to women's access to micro enterprises and have already availed of small livelihood projects like backyard range chicken and swine raising.

Extent of Women's Participation
in the Rice Production Activities

One of the main objectives of the study was to know the extent of women farmers participation in the various pre-harvest and post-harvest activities in heirloom rice. The information related to this objective is presented in Table 3.

Since the municipality of Sadanga is rice growing area, activities on rice production are treated as major socio-economic activities. With this, women, men and even children all take part in the farm production process with both distinct and shared roles.

The findings of the study show that women in Sadanga contribute 96.15 % of the labor force in rice production. Women highly participate in both pre harvest and post harvest activities compared to men. This finding supports the claim of FAO (1998) and Paris (2007) that women dominate all the works in rice production as rice farming is a female dominated role. And as purposed by IRRI (1990), women's contribution in rice production ranges from 27-84% where they provide half of the labor force from planting to harvesting and post-harvest operations.

Table 3. Extent of Women Farmers Participation in the Rice Production Activities.

ACTIVITIES	Female		Male	
	Frequency	%	Frequency	%
A. Pre-harvest				
Seed selection	130	100.00	0	0
Seed exchange	115	88.46	18	13.84
Seed sowing	130	100.00	0	0
Seed bed preparation	119	91.53	11	8.46
Pulling/bundling of seedlings	120	92.30	7	5.38
Land preparation	25	19.23	105	80.76
Transplanting	110	84.61	20	15.38
Pest & disease management	46	35.38	84	64.61
Weed management	90	69.23	40	30.76
Water management	30	23.76	100	76.92
Nutrient Management	90	69.23	40	30.76
Harvesting	88	67.69	42	32.30
Hauling	23	17.69	107	82.30
Post-harvest				
Drying	93	71.53	37	28.46
Seed & palay storage	92	70.76	38	30.00
Pounding/milling	92	70.76	38	29.23
Marketing	104	80.00	26	20.00
Product processing	105	80.76	25	19.23

Seed Selection, sowing and seed exchange. Women start sowing their seeds in the months of December to January. After one to one and a half months, women transplant their seedlings with one seedling per hill, planting more than one will produce lesser tillers.

According to Chinalpan (Personal Interview, 2010), an elder in Demang, women's significance as seed holder is acknowledged in the ritual of sowing the very first seed. Seed sowing is associated with the community's cultural belief where women are allowed to go to the rice fields and sow seeds on the third day after the *te-er* (PPDO, 2010). This is done with the belief that rice seedlings will grow robust and will not be preyed by rats and other pests.

Some women in Sadanga practice the soaking of the whole panicle during sowing but use only the ones in the middle of panicle during pulling because these are believed to be stronger and have a better growth than those at the tip or apex of the panicle. Women know the best sowing date and ecosystem of the seed variety. They are also responsible for choosing which varieties are to be planted in the next season.

Women respondents indicated that widowed men hire for women siblings, relatives or neighbors to do the seed selection, sowing and even transplanting for them. Ms. Taryachen (personal interview, 2011), an elder from Betwagan quoted: *"Na laraki ay balo en ayag da si babai ay en pili si bonobon, en erag ya en panar, tay nan chadlo inin-a nan mangamo"* (Widowed men call for women to do seed selection, sowing and transplanting for them because old women are the one's knowledgeable). This finding study proves the findings of Debono (2007) that women are repositories of indigenous knowledge of crop and natural resource management.

Women know the specific details about a plant, especially the good qualities of each variety. Women farmers retain the ability to identify and characterize the rice varieties through their uses either for daily staple food, for ceremonies and for cash and their features like; good eating quality, aroma, tillering, easiness in harvesting, pounding, yield, resistance to pests; lodging and non shattering.

Seed exchange is a traditional practice of rice farmers in Sadanga which is mostly done by women. In the study majority (115 or 88.46 %) of the respondents are responsible in swapping seeds (Table 3). Seeds are exchanged to neighbors in the barangay and even to other barangays, municipalities and provinces. Other women in Sadanga also practice the giving or sharing of seeds to friends and relatives from nearby municipalities and even in the province. This activity is a traditional cooperation (*ob-obfo)* that is innate – where they are obliged to pay back in the form of seeds in the next cropping without being told.

Pulling and bundling of seedlings. Majority of the women dominate pulling and bundling of seedlings. Seedlings are ready to pull after one to one and a half month from sowing. Women usually go early in the morning to the rice fields to pull seedlings, pack them in sacks or to other containers like basins and bring them to the rice fields for transplanting. Female children may help in the pulling and male children help in hauling seedlings.

Transplanting. Table 3 shows that transplanting is a women's designated role. Furthermore, 100 % of the women respondents in barangays Bekigan,

Sacasacan and Saclit claim they solely do transplanting (Appendix Table 1). This result is attributed to the traditional culture and social norms that historically transplanting is a women's designated role in the agriculture sector. Men in these three barangays do not transplant rice even if their counterparts just gave birth.

The results indicate that women are disadvantaged because of traditional culture and social norms that confer power and privilege to men (Damisa and Yohanna, 2007). During the study, it was found out that most of the time the *ob-obfo* or the cooperative work is done when needed by the rural folk. *Ob-obfo* is where women siblings, relatives or neighbors in the community come together to provide services to each other especially during transplanting, land preparation and harvesting without pay in cash, thus when the mother is strong enough after birth she will pay back in the form of services. According to the women, *ob-obfo* maximizes their time thus they could attend to other home responsibilities and is similar to the information of Fiar-od (2006) that women in the municipalities of Besao and Tadian practice *ob-obfo* to help each other in transplanting and harvesting without being paid in cash but exchange of labor services which gives time for women to attend to other home responsibilities and in the end leads to farm productivity and social bondage.

Land and seed bed preparation. Table 3 reveals that land preparation is a male dominated role. However, 19.23% of women still assist men in plowing and preparing the dikes using grab hoe, spading fork and *sanggap.* Men use carabao in plowing the fields while women do it manually. Women informants cited during

the interview: *"Achi in samar na laraki mu achi in-usar si nowang",* (men do not prepare the land if there is no carabao).

Preparing the seed bed is the role of women because seeds are sown in a small parcel of land (50 to 100 sq.m) where carabao can not be used. This finding does not conform to the report of Neyra (2006) that in Maguindanao, seed bed preparation is a task of men considering their flat and wide paddies where men can always use carabao and other machineries to reduce their workload.

Pest and disease management. Pest and disease management is the task of men although 35.38 % women respondents said they are involve by assisting their male counterparts (Table 3). Sadanga employ traditional practices in controlling pests and diseases like the use of scare gadgets, *kilkilaw* (scarecrow) and *kerwag* which are installed in the rice fields to drive away birds that prey on the ripening palay. Men together with male children gather wood materials while women gather old clothings and plastics and assists men in making the scarecrow and *kerwag*. Scarecrows are man like figures made out of old clothing's or rags while *kerwag* are lines of cellophane tied in a string and set along the rice fields. This is believed to drive away rats and birds.

Rat control is men's responsibility, rat traps are installed in the rice granaries and in the rice fields early in the morning or late in the evening. On the other hand, Fiar-od (2000) reported that in the municipalities of Besao and Tadian control of rats is women's responsibility. These findings support the report of Huvio (undated) that involvement of women in farming varies from region to

region or within the region. To control *kohol* women in Sadanga hand pick these shell and use it as feed for the animals or cooked as viand. Young children of both sexes also assist in *forew,* These are one among the many indigenous practices farmers do to control pests in their rice farms.

Heirloom rice varieties are resistant to insect pests and diseases but are susceptible to birds and rats because of its aroma.

Weeding and nutrient management. Weeding is women's role in most of the rice farming industry. In this study, Sadanga women do most of the weeding which includes cleaning of the surroundings of the rice field during the rice vegetative stage. Fertilizers using indigenous materials are applied to the rice fields at least one month before transplanting to allow enough time for the green manure materials to decompose. They use indigenous materials like sunflower, weeds and grasses around the rice fields, rice hay and rice hull, legume trimmings and crop residues as fertilizers. This result conforms to the findings of Fiar-od (2000) that women (of Besao, Bontoc and Tadian, Mountain Province) dominate activities on weeding the field and its surroundings.

Water Management. Findings of the study revealed that irrigation is a complementary role of both men and women. Although, irrigation is mostly done at night and very early in the morning, still women do irrigation if men are out from the community. In as much as men do the irrigation if the woman just gave birth, male children also help in irrigating the rice farm.

Harvesting and Hauling**.** Towards the middle of June to end of August (6 months after planting), rice is deemed ripe for harvesting. Findings show that majority (88 or 67.69%) of the women respondents said they dominate harvesting of rice and 100% of the women respondents in barangays Belwang and Bekigan, said harvesting is the role of women (Appendix Table 1). The results indicate that harvesting activity vary from one barangay to another. Another role of women during harvesting is the bundling of palay. Accordingly, if ever men help in harvesting, men require a woman to be near them (at their back or beside) so they could easily hand the palay they harvested for the women to bundle. Men leave the palay in the rice field for the women to bundle before they are hauled by them.

In the hauling of harvest majority (107 or 82.30 %) of the respondents claimed that men dominate the activity while 23 or 17.69 % said they assist men. A woman never goes home from the field with her *awit* (woven basket) unfilled. . One woman affirmed saying *"Maasi kami sin laraki ay mangawit amin sina pagey, songa tumulong kami karkaro no es esa weno dodowa da"* (We assist in the hauling of palay because we pity our husbands especially if there is only one or two men). Another woman in barangay Belwang said: *narigat nan viag nan in ina, mang aagto si tayay nan umey men ani, en a agto kasin si pagey no sumaa. Nan lalaki, assiw ya lakem nan awit da* (the life of a woman is hard, they carry on their heads a heavy load of packed lunch to the rice fields and carry back again a load of palay when they go home while the men go to the field with their *assiw*

Plate 1. Men use indigenous material *assiw* to haul palay. (Photo by Hazel Fagyan, 2011)

Plate 2. Women assist in hauling using *awit* to carry palay. (Photo by Hazel Fagyan, 2011).

and *lakem* only. But in barangays Demang and Sacasacan all (100 %) of the respondents claimed that women do the hauling. The results imply that hauling of palay harvest vary from one barangay to another which supports the claim of Huvio (undated) that although women are extensively involved in agricultural activities, the extent of their involvement in rice farming varies from region to region and even within the region.

Drying, seed and palay storage**.** Drying of harvested palay and storing of dried palay in the rice granaries is dominated by women (Plate 3). Only 28.46 % of men assist women in the hauling of palay during drying. Female children are

Plate 3. An old woman seriously performs her role of guarding the palay under solar drying (Photo, Hazel Fagyan, 2011).

also tasked to guard the palay from chicken and other astray animals while left for solar drying.

Selected seeds during the harvest are stored by women to be planted in the next cropping season. Women are responsible in managing the storage of the seeds to be viable. Selected seeds for the next cropping are kept in their own respective containers to secure a stock for the next planting season while grains for consumption are placed in the rice granaries or piled in a corner inside the house.

Plate 4. Dried palay piled and stored by women inside the house or granary. (photo by Hazel S. Fagyan, 2011)

Pounding/Milling**.** Hand pounding is still a very popular practice in the community of Sadanga, thus the indigenous mortar and pestle that was inherited from their forefathers are kept secured by every household. Generally, pounding is a female dominated role (92 or 70.76 %) as shown in Table 3.

But in barangays Bekigan and Saclit as shown in Appendix Table 1, rice pounding is a designated role for women. Female children help in pounding if the women just gave birth or they are out of town. With the availability of mechanical milling shops now a days, men bring palay to the milling shops.

Women do the daily pounding and winnowing of rice for daily consumption. It is the women who make certain that there is enough food for the next mealtime.

An old woman, Ms. Apopot, (Personal Interview, 2011) relates *Rayraydek ay mangvayo ashnan pagey ko olay maisasag-enak ash nan kiskisan tay nan adi kadeg ash ay vinayo et navanglo ya adi ta kanayon mavitil olay padongen na kasin pinangan, adi amo na lalaki na songa menpavayo da ash nan kiskisan* meaning, I prefer to hand pound my rice though the rice mill shop is just a meter away from my house because unpolished rice are very aromatic and when eaten will never let someone go hungry until the next meal. This is what the men are not familiar with so that they prefer to bring palay to the milling shop, she noted. This affirmation clearly shows that women are not only a fundamental contributor to food security but also to safe and nutritious food.

Plate 5. Old woman prefers to pound her rice for unpolished rice are believed to be nutritious. (Photo by Hazel S. Fagyan, 2011).

Plate 6. Young females exchange labor in pounding rice (Photo by Hazel S. Fagyan, 2011)

Marketing and product processing**.** Like other agricultural activities women's participation in the non-agricultural activities like product processing and marketing are relatively high. Table 3 presents that majority of women does marketing (80.0 %) and product processing (80.76 %). Aside from its cultural significance, *patopat* is the most common products processed by women for market. Surplus rice is sold by women for basic household needs and for education of children.

Men only assist in the marketing of products by hauling milled rice to the nearest road while women travel them to nearby local markets.

Above all, result of the findings indicates that women in Sadanga like the other municipalities of Mountain Province dominate the pre and post harvest activities in rice production.

Extent of Women's Participation in Decision Making
in the Pre and Post Harvest Activities

The system of a traditional patriarchal society still exists in the Philippines where within a household, farm decisions are usually made by the male members of the family. Part of the study was to know the extent of participation of rural women in decision making in the various production activities of heirloom rice.

Table 4 presents the extent of participation of women in decision making in the activities of rice production. The data reveals that a total mean perception of the respondents; 36.15 % and 32.30% women and men respectively participate

Table 4. Extent of Women's Participation in Decision-making in the Rice Production Activities.

Decision making areas	Who Dominates decision making Process						
	Female	%	Rank	Male	%	B oth	%
Pre harvest Activities							
Preparing the land	11	8.46	16	106	81.53	13	10.0
Preparing the seed bed	71	54.61	2	23	17.69	36	27.69
Exchanging seeds	66	50.76	3	49	37.69	15	11.53
Variety selection	76	58.46	1	25	19.23	29	22.31
Time of pulling	57	43.84	9	31	23.84	38	29.23
Time of sowing	66	50.76	4	23	17.69	41	63.07
Time of transplanting	59	45.38	7	15	11.53	56	43.07
Fertilizer and time of application	48	39.92	10	28	21.53	54	41.53
Pest Management	20	15.38	15	67	51.53	38	29.23
Weed Management	62	47.69	5	28	21.53	40	30.76
Irrigation	21	16.15	14	66	50.76	43	33.07
Hiring of laborers	38	29.23	11	40	30.76	52	40.00
Time of harvesting	28	21.53	12	49	37.69	53	40.76
Post harvest Activities							
Storage, conservation	60	46.15	6	41	31.51	29	22.30
Marketing of excess products	21	21.53	13	50	38.46	59	45.38
What to process	58	44.61	8	40	30.76	57	43.84
MEAN		36.15		32.30			30.76

in decision making in the pre and post harvest activities in rice production.

Accordingly, men before dominates decision making in the activities of rice production, but now a days even if women are dictated by men, women has the final decision because in the end she does the job except for land preparation, pest and disease management, irrigation and time of harvesting because these are men dominated role.

In addition, women make the final decision on hiring of laborers because women lead the group labor practices related to agriculture or the *ob-obfo* system especially in the activities in transplanting and harvesting.

On the other hand, a mean perception of 30.76% revealed that both communicate to come up with a final decision in the activities of heirloom rice.

These findings do not conform to the findings of most researches that men dominates most of the decision making process.

Factors Affecting the Extent of Women's Participation in Decision Making in Rice Production

The extent of women participation in farm management decision making process depends on several factors. Table 5 shows some factors characterizing the extent of participation of women in the farm management decision making.

Reproductive role or child care. Table 5 show that majority (76 or 58.46 %) of women indicated reproductive role or child care responsibilities as the number one significant obstacle faced by women in their participation in decision

making regarding farm management because their role as mothers takes much of their time. Women have to divide their time between tasks in the home and in agriculture (Tuyen, 1997). In the evening, women prepare feed for the pigs the next day. Time is costly for women with small children who can't help carry out household responsibilities.

Table 5. Factors Affecting the Extent of Women's Participation in the Rice Production Activities.

FACTORS	FREQUENCY	PERCENTAGE	RANK
Social Network			
Land tenure	45	34.61	5
Family land holding	30	23.07	8
Number of years in farming	50	38.46	4
Age	40	30.76	6
Norms, customs and traditions	49	37.69	7
Home-based responsibilities			
Reproductive role/child care responsibility	76	58.46	1
Family Responsibilities -food preparation for the family and animal feeding	53	40.76	3
Economic activities -product marketing	66	50.76	2

Economic activities. More than 50 % of the women respondents cited economic activity as the second factor that affects their participation in the decision making process. This result can be attributed to more time spent by

women in their backyard gardening and marketing of agriculture products outside their community. Men are shy to do marketing so that women do most of selling products in exchange to other basic needs. During the interview, respondents qouted; *mavain na lalaki ay men ilako ka malkit ya mid anos cha ay mang ivantay sina lako* (men are shy and have no patience in selling).

The findings conform with the study of Leyesa (2006) that women in agriculture spend as much as eight to eleven hours in carrying out planting activities and marketing their primary crop and backyard produce to provide their household a daily survival needs. Beside their farm activities and housework, women often work to earn extra income by doing off-farm activities like backyard piggery, vegetable farming like legume production and other crops that could either be sold or fed to the family and other wage labor. Almost all women raise pig in their backyards which is usually a woman's activity. One to three pigs are raised per household. Pigs are fed with camote leaves, rice bran and left over food. The pigs then are used for rituals or sold. Women, during the lean months of rice farming go outside the community like in the municipality of Sagada for daily wage labor.

Family responsibilities. Women are occupied with family responsibilities, ranked as the third obstacle of women's participation in decision making process. Family responsibilities like collecting and preparing food for the family and animals take much of their time such that their participation in deciding farming activities and community activities are minimized.

Land Tenure. In regards to tenancy, respondents who are leasing rice fields, claimed that most of the time they do not make significant participation in farm management decision making because they are dictated by the land owner especially when it comes to what variety to plant. The field owner selects the variety of their choice. The sharing of 50:50% between field owner and the tenant is the usual practice. The result indicates that land ownership influence the women's decision making process. This is one of the effects of migration where people migrate outside the community for a better living while they leave their valuable inherited property to their siblings or relatives to till and rent.

Number of years in farming. Table 5 reveals that experience positively increased the participation of women in farm management decision making process. This might be attributed to the high level of knowledge and experiences acquired by older women. Thus experience is increased with increasing age as age was ranked by the participants to be the 6^{th} influencing factor. Older women gather and keep knowledge from experiences.

According to the women respondents, the younger the women farmer, her experience is less considered thus influencing her involvement in decision making. Neyra (2006) supports this finding that women sometimes refer the conduct of activities to the older women who are carriers of cultural and agricultural traditions in the community.

Although Table 4 reveals that women were ahead in decision making, their involvement is very slim because they are occupied with home responsibilities on top of their farming activities.

Rice Varieties Commonly Grown by Women Farmers

Sadanga is rich with rice germ plasm. This is because the folks especially the women have passionately preserved their plant genetic resources up to the present. Women's role in the conservation and storage, seed selection and exchange of plant genetic resources generally relates to varieties grown. Women are guided with the inherent indigenous knowledge they posses in seed selection and conservation or storage of plant genetic resources and in choosing rice variety to be planted in the next cropping season.

Based on the results, a total of 23 staple and glutinous rice varieties exist in the municipality of Sadanga with 15 identified as *kadaanan* and 8 introduced rice varieties (Table 6). The findings support the claim of Godoliva Galingan as reported in the agriculture business week (http://www.agribusinessweek.com, Undated) that old folks in Sadanga used to grow more than 15 original varieties.

Among these indentified varieties, only 9 *kadaanan* varieties (7 staple rice and 2 glutinous rice) are ranked as commonly grown by women and 5 (4 staple, 1 glutinous) for the ITVR's. *Kabayan/Binnayo, Sinagayo, pastillas* are mostly

Table 6. Rice varieties commonly grown by women farmers.

RICE VARIETY	FREQUENCY	PERCENTAGE	RANK
KADAANAN			
Staple Rice			
Podawan/kosimay/binelwang	125	96.15	1
Tepa	60	46.15	2
Binuga	52	40.00	3
Gumiki	45	34.61	4
Tokpar	36	27.69	5
Kurot	33	25.38	6
Kinedpayan	23	17.69	7
Ginanay	10	7.96	8
Pedped	3	2.31	9
Pak-ang	1	0.76	10
Glutinous Rice			
Kinogoong	50	38.46	1
Kotinao	30	23.07	2
Kitneban	10	7.69	3
Pokor	3	2.31	4
Raprapey	0	0.00	5
INTRODUCED TRADITIONAL RICE VARIETY			
Staple Rice			
Kabayan/Binayyo	65	50.00	1
Sinagayo/Sagayo	36	27.69	2
Pastillas	30	23.07	3
Songdowan	20	15.38	4
Tinonglayan	10	7.69	5
Sagaga	6	4.61	6
Glutinous			
Waray	130	100.00	1
Manmansa	12	9.23	2

grown in the barangays of Anabel, Sacasacan and Belwang; *Songdowan* in Demang, Poblacion Bekigan; and *Tinonglayan* and *sagaga* in Betwagan.

Women respondents ranked variety *podawan* as number 1 and was found to be mostly grown by all the barangays followed by *tepa. Binuga, gumiki.tokpar, kurot and kinedpayan.* According to the respondents *gumiki* were only grown by few farmers because it is a low tillering variety. However, more women now were growing this variety since its introduction to the world market by the Revitalized Indigenous Cordillera Enterprise Inc. (RICE) in 2005. The RICE Inc. buys the *gumiki* and *kotinao* rice of Sadanga at 80 per kilogram following the required standard of the organization. The least grown varieties are *ginanay pedped, pak-ang, kitneban*, *pokor* and *raprapey*, indicating that these varieties are becoming extinct. The reduction in the number of growers according to the respondents are either these varieties are endangered or have slowly disappeared because of the need for cash by women to augment family income thus the erosion of the plant genetic resources.

All (100 %) of the respondents are growing *waray* since this is considered the most saleable product for cash and the best variety for processing into rice wine because it produces the most juice for wine.

The data also shows that some of the rice varieties are named differently by other barangays like *podawan* is called *kosimay* in barangay Betwagan and Binelwang in barangay Belwang.

Varietal Description and Origin of Heirloom Rice

Table 7 shows the different rice varietal description according to their strengths, weaknesses and origin. Women in Sadanga plant at least 4 varieties in their rice field every season. Accordingly, this is to ensure enough supply the next harvest season. Culturally and socially these varieties are for festivities and rituals, ranging from staple rice to glutinous rice varieties regardless of where it originated.

Generally speaking, *kadaanan* rice varieties have a good eating quality, aromatic, high expanding tendency when cooked and does not easily spoil, and can be stored in the rice granary for as long as ten years without significant change in taste.

Grains of *Podawan, binuga, tokpar*, *kinedpayan*, and *ginanay* are white in color while *gumiki* and *tepa* have red to reddish brown grain. In addition, most of the heirloom varieties are resistant to lodging and to pest and diseases except rat, indicating that these are good genetic resources. Bengwayan (2010) reported that production of traditional rice varieties is essential because these are critical in providing future genetic material necessary in breeding rice for the future.

The introduced rice varieties (ITVR) presented in Table 7 are *kabayan*, that originated from Kabayan Benguet and was brought to Bayyo, Bontoc before Sadanga, the reason why some barangays name it as *bayyo* or *binayyo* rice; *sinagayo* or *sagayo* rice originated from Ifugao and was introduced by Mr. James Sagayo to Bontoc before it went to Sadanga; *songdowan* from Hungduwan,

Table 7. Rice varieties commonly grown by women, their characteristics and origin.

Rice Variety	VARIETAL CHARACTERISTICS		ORIGIN and DESCRIPTION	
	RANK	STRENGTHS	WEAKNESSES	ORIGIN
STAPLE RICE				
Kadaanan Varieties		white; short & stout grain , very aromatic, good eating quality, *makabelad* , resistant	Susceptible to rats, long awn	Sadanga
Podawan/Kosimay	1	to pest, diseases & lodging, high tillering(4-7) long panicle easy to pound, good eating quality, soft roots & deep rooting, soft stalks, high yielding, good eating quality		
Tepa	3	red, long and thin grain, medium tillering (3-4), resistant to pest, diseases and lodging, *makabelad*, high yielding	no aroma, long awn, hard to pound, hard cooked rice, hard stalks, deep rooting, hard straw thus hard longer decomposition, short panicle	Sadanga
Binuga	4	white; short & stout grain, very aromatic, *makabelad*, easy to pound, high tillering (4-5), non shattering, resistant to insect pest, medium panicle, no awn, resistant to lodging, shallow rooted	Susceptible to rats	Sadanga

Table 7. continued…

Rice Variety	VARIETAL CHARACTERISTICS		ORIGIN and DESCRIPTION	
	RANK	STRENGTHS	WEAKNESSES	ORIGIN
STAPLE RICE				
Kurot	8	red; long thin grains, good eating *makabelad* quality, high tillering, non shattering, resistant to pest , diseases and lodging	Small grain, short panicle, hard to pound	Sadanga
Gumiki/Kintoman	5	brown to reddish brown elongated stout grain, good eating quality, medium tillering (2-3 tillers), easy to pound, soft stalks, long panicle	susceptible to rats, low yielding	Sadanga
Kinedpayan	10	high tillering (4-5 tillers), low shattering, shallow rooted, soft stalks & easily decompose, soft rice, long panicle,	Susceptible to rats, low yielding	Sadanga
Ginanay	12	Good eating quality, non shattering, soft rice, long panicle, high yielding, *makabelad*, easy to pound, shallow rooted, high tillering (5-7)	low tillering, susceptible to rats	Sadanga

Table 7. continued…

Rice Variety	VARIETAL CHARACTERISTICS		ORIGIN and DESCRIPTION	
	RANK	STRENGTHS	WEAKNESSES	ORIGIN
STAPLE RICE				
ITRVs Kabayan/Binayyo	2	shallow rooting (straw easily decomposes), soft, good eating quality, long, close distance of grains long panicle, resistant to pest, stout grains, white, highly expand, high yielding	Susceptible to rats, easily consumed	Kabayan, Benguet Bayyo, Bontoc
Sinagayo	6	soft to pound, long panicle, med tillering (3-4), high yielding, long panicle	Susceptible to rats	Bontoc
Songdowan	11	soft rice, good eating quality, resistant to rats high yielding, *makabelad*	short panicle, susceptible to *rats* diseases	Hungduan, Ifugao
Pastillas	10	Soft rice, good eating quality, resistant to rats, high yielding	Susceptible to rat diseases, short panicle	

Table 7. continued…

Rice Variety	VARIETAL CHARACTERISTICS		ORIGIN and DESCRIPTION	
	RANK	STRENGTHS	WEAKNESSES	ORIGIN
GLUTINOUS RICE				
Kotinao	3	moderate aroma, long panicle, easy to pound/mill, good eating quality, shorter maturity	low tillering (1-2 tillers), moderate expand, hard rice	Sadanga
Kinogoong	2	aromatic, moderately sticky, high tillering (4-5), long panicle, good eating quality, intermediate yielding, soft stalks s easy to decompose		Sadanga
Kitneban	5	aromatic, medium tillering (2-3), long panicles, soft, good eating quality,	Susceptible to birds and children harvest them for *kotim*	Sadanga
Waray*	1	High tillering (4-5), no awn, early maturing, (matures 1 month ahead) very sticky, intermediate yielding	Short panicle, hard to pound, deep rooted, stalks hard to decompose	Bontoc
Manmansa*	4	Shallow rooted, short awn, high tillering (4-5), easy to pound/mill, violet grain	Short panicle, deep rooted	Tadian

*Introduced Traditional Rice Varieties (ITRVs)

Ifugao; *pastillas* from western part of Mountain Province but respondents could not specifically identify the municipality; *Waray* originated from Bontoc and Tadian while *manmansa* came from Barlig and Tadian but are called o*mininio* and *balatinao* respectively by the municipalities. These varieties are now popularized by the rice farmers who are members of the Provincial Heirloom Rice Growers Federation, a provincial organization that caters the RICE Inc who market heirloom rice products of the Cordillera to the United States of America.

Women farmers in Sadanga grow an average of 3-5 varieties in their rice fields be it glutinous or staple rice as long as it fits with the varied ecosystem requirement of the variety. This finding proves the report of the agribusiness week (http://www.agribusinessweek.com) that on the average, each farmer plants at least 4 to 5 varieties in terraced paddies.

Reasons for Varietal Choice

Women folks are repositories of indigenous knowledge (IK) in crop production which is unique from one society to another (Bengwayan, 2010). These IK of women are good source for local decision making in agriculture, health, food preparation and natural resource management.

Accordingly, women choose crop varieties based on the different rice characteristics namely: number of tillers produced, pest and disease resistance,

length of panicle, maturity period, yield, non-shattering, ease in harvesting and pounding, eating quality, specific uses of each variety, and originality (Table 7).

Rice is highly esteemed by the women in Sadanga not only as a staple food but because it has a high regard on their culture. With this, women select varieties of rice seed stocks as primary staple food and others for ritual purposes or special occasions.

Farmlands in Sadanga are operated by the farm women with the usual indigenous farming practices that were inherited in the olden days. The introduction of hybrid varieties by government agencies alarmed the women that hybrid rice will eliminate their traditional rice varieties. Mrs. Yakao (Personal Interview, 2011) relates; *achi mi am amonya an na pagey mi men abono kami lang si lukam. Songa achi kami men mura si hybrid tay achi machaker no mid afono na, si amonya,* meaning, rice farmers do not plant high yielding varieties because it entails the use of inorganic fertilizers and without these fertilizers the rice will not grow well. On the other hand, indigenous varieties can be fertilized with local fertilizer materials.

Women also consider their labor in varietal selection, varieties that have soft stalks and shallow rooting are highly considered by women because of its easiness in pounding, harvesting and land preparation. Most of the *kadaanan* varieties are soft to harvest and easy to pound except for *waray* and *tepa* thus these varieties are commonly brought by men to the rice mill shop.

The unique characteristics of the indigenous rice as presented in Table 7 defines the active role of women in the conservation and development of plant genetic resources (PGR). Women are largely needed to select good seed varieties because they are familiar with the unique characteristics of each rice variety, as such, they carry it as a life time objectives in seed selection for rice production while eventually conserving their rice plant genetic resources for the generations to come.

Indigenous Native Delicacies Commonly Processed by Women and its Cultural Significance

Sadanga is a home of indigenous traditions. Their customs and traditions continue to influence their lives and to some extent help in keeping unity, peace and order in their community (PPDO, 2010). With the observation and celebration of their belief systems they celebrate community and family rituals.

Based on the findings, heirloom rice in bundled panicles and processed food products are used for offerings in family and community rituals (Tables 8 and 9).

The indigenous food and drinks commonly processed by women are rice wine, fermented rice, *saliket, tupig, patopat* and *sinab-ang* (Table 8). These products are used for offering in the performance of community festivals like *fhegnas* which have been preserved by the folks over the centuries and are being

practiced until this time. Women cook *tupig* and bring it to the *ator* for men and children to eat.

Sinab-ang/champorado on the other hand is commonly prepared as food and snack especially during land preparation, transplanting and harvesting while s*aliket*, and *patopat* are prepared and offered for hospitality during wakes and weddings. *Patopat* is the common product prepared as pasarabo or baon when attending wakes and weddings of relatives to other barangays and communities. The people can not attend vigil to another barangay without any of these processed products to share as *pasarabo*.

Saliket (glutinous rice cooked plane without sugar or coconut milk) are more often offered to wakes by a very a close relative.

Tapuey (rice wine and fermented rice) are also commonly prepared for *baon* and a drink to quench thirst while it makes someone cool during harvest. *Tapuey* according to the women is an indigenous food that can't be exempted as *baon* during rice harvest. They quipped that no one starts to go to the rice field without rice wine because *tapuey* invites good spirit to drive away bad lucks while they harvest their palay. Rice wine and fermented rice are also drank and eaten by the men and women after hauling the palay to the rice granaries. Accordingly, drinking rice wine and eating fermented rice will make them relaxed after a tiresome work.

Table 8 . Indigenous products commonly processed by women from heirloom rice and their cultural uses.

Products Commonly Prepared	Cultural Implications				
	Family Occasion	Wakes	Wedding	Traditional Agricultural Practices	House Construction
Rice Wine	0	40	42	33	5
Fermented Rice	30	29	34	30	2
Tupig	11	20	25	50	5
Patopat	10	37	42	39	2
Saliket	20	43	34	16	17
Champorado/Sinab-ang	50	0	0	67	13

Women do more of the product processing and bringing of *supon* or offering to the occasions. Palay are offered during wakes and weddings in bundles, usually 1 to 2 *itings* (5 bundles per *iting*) or depending on how much the family can afford. It is very interesting to note that the traditions and culture in Sadanga are preserved and strictly observed by the folks.

Ms. Farcinen Lugawe relates: *na pakey ash na sha nan maisupon ash nan makasar ya ash ka nateyan, mafefedfed na pakey*, meaning, its only the kadaanan variety that can be offered in bundled panicles. Threshed palay and milled rice are only offered during house construction.

Staple rice is only sold by the women if there is extra after keeping for the family. Recently with the inclusion of Mountain Province heirloom rice to the lucrative United States (US) market, women farmers were motivated to sell more of their traditional rice specially the varieties, *kotinao* and *gumiki* which passed the quality standard of RICE Inc.

It was also noted in Table 6 that all (130) women respondents are planting variety *waray*. This is because *waray* is the best variety to be processed into food products especially for rice wine and patopat. *Waray* produces more juice which is the wine itself and a quality patopat as compared to other varieties. Although, the rest of the varieties have their own respective uses but above all, heirloom rice is highly regarded because of its significance to the custom of the people.

Table 9.Heirloom rice varieties commonly grown and their uses.

RICE VARIETY	USES			
KADAANAN	Rank	For Cash	Offerings/ Hospitality purposes	For Product Processing
Staple Rice				
Podawan/Kosimay/Binelwang	1	35	40	4
Tepa	3	36	36	0
Binuga	4	26	26	0
Gumiki /Kintoman	5	31	15	25
Tokpar	7	15	20	0
Kurot	8	0	18	0
Kinedpayan	9	0	18	0
Ginanay	12	6	13	0
Glutinous Rice				
Kinogoong	2	20	20	16
Kotinao	3	30	19	23
Kitneban	5	4	12	8
INTRODUCED TRADITIONAL VARIETIES				
Staple Rice				
Kabayan/Binnayo	2	33	15	0
Sinagayo/Sagayo	6	10	5	0
Pastillas	10	15	5	0
Songdowan	11	12	5	0
Glutinous Rice				
Waray	1	120	50	98
Manmansa	4	30	5	26

Socio-economic Development of Heirloom Rice

Part of the objectives of the study is to explore the socio-economic development of heirloom rice as a socio-economic activity of the farm women.

The participation of women in the socio-economic activities related to rice productivity influence their high participation in the various rice production activities. The group labor or *obobo* system where they come together to lend a helping hand in times of need especially during harvesting and planting reduces women's time in the farm activities and thereby can engaged in non-agricultural activities like store keeping and other handicrafts but is not enough to improve their personal income.

Table 8 presents the products processed from heirloom rice by women. Processed foods are more used for offerings to rituals related to agricultural and community activities. Only 10 and 5 out of 130 respondents claim that they process rice wine, *patopat/tupig* and fermented rice for sale. Selling or giving of these products is only done during big events like Lang-ay festivals. Rice wine, *tupig*, *patopat* and fermented rice is prepared by women to show case their indigenous rice and offered free to all visitors and the people of Mountain Province because they believe that offering their indigenous products out of practicing their culture makes them sturdier as they continue to promote their cultural heritage -- their rice terraces while preserving their plant genetic traits and indigenous farming practices.

Pounded rice is sold at 80.00 per kg while glutinous rice is sold at 130 to 150 per ganta. RICE Inc buys the *gumiki* and *kotinao* rice varieties of the farmers in Sadanga at 80.00 per kg but it has to pass a certain quality standard requirement of the incorporation. Farmers claim they could hardly meet the standard thus they prefer to sell their staple rice like *gumiki* and *kotinao* (malagkit) and their glutinous rice specifically *waray* to Bontoc and Baguio.

The respondents claim that their produce in an average of 500 sqm is not enough to sustain a family with more than 5 members per household especially if they lease what they cultivate. The reason why they sell some of their indigenous rice is to exchange it with commercial rice. Ms Warasen said: *Irakok na waray ko si siampoo na esa kilo isukat ko Isabela rice si dowa kilo ta umanay na kanen mi tay ado kami afong ya akit samarek* (I sell my waray in exchange for commercial rice so I can buy 2 kg to sustain my big family because I only cultivate a small parcels of land.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study focused on rural women's participation in the production and product development of heirloom rice in Sadanga, Mountain Province. Premised on the idea that women are repositories of the indigenous knowledge on the cultural practices on crop production, this study was undertaken primarily to determine the participation of women in the rice production practices and product development of heirloom rice.

A total of 130 rice women farmer respondents were chosen purposively from within the 20 – 99 age bracket group. It is assumed that individuals within this age group have their own family, are considered as one household, rice growers, and are able to participate in the communication or interview process.

The data were gathered through an individual interview using a set of questionnaire to provide quantitative data on the socio-economic profile of the respondents, to know the extent of participation of rural women in the production practices and development of heirloom rice, identify the factors affecting the extent of participation of rural women in the production practices and product development of heirloom rice and to identify and characterize the heirloom rice varieties grown and the products developed by women and the reasons for the varietal choice and utilization in terms of cultural significance and socio-economic development.

The researcher employed observations, photo documentations, individual interviews and discussions with the respondents. The data were analyzed employing the descriptive statistics to include frequency distribution, percentage and weighted means in analyzing and interpreting the data.

The salient findings of the study were:

1. Women respondents are rice farmers and considered adults, majority of who belong within the age bracket of 40 to 59. Most of them are married and have reached elementary level. Although 35 are illiterate they were able to participate in the communication process.

The respondents had been into rice farming within 20 to 40 years cultivating an average of 500 sqm. Majority (52.31%) of the respondents own the farms they cultivate, 16.15% lease rice farm lands and 31.53% lease farm on top of their own farms. Five (5) organizations exist in the community but 68 or 52.30% are not a member of these organizations.

2. Women participate nearly in all the pre and post-harvest rice production activities. Majority (67.73%) of the pre-harvest activities are dominated by women. Only land preparation, hauling; pest and disease management; and water management are men dominated role.

Drying seed and palay storage, pounding/milling, food processing, and marketing of products are women's dominated role (74.76%). The participation of

women in the pre and post harvest activities, however differ from one barangay to another.

The traditional cooperative work called *ob-obfo* is led by women and it is extremely practiced in the locality during transplanting, harvesting and in community rituals.

3. Reproductive role and child care responsibility is viewed as the most significant obstacles in the involvement of women in the farm management decision making.

4. Twenty three (23) heirloom rice varieties existed for more than 50 years but only 17 staple and glutinous rice are commonly grown. Heirloom rice are planted from January to March and harvested in July to August.

Women farmers are resistant to the introduction of High Yielding Varieties (HYV) since these are not used as offering to the community's cultural beliefs, practices and traditions. Moreover, replanting the same variety without the application of commercial fertilizers means reduction in yield.

Aside from the heirloom rice varieties there are 8 Introduced Rice Varieties (ITVR) from outside that are found promising in the community namely: *kabayan, sagayo, pastillas, tinonglayan, mamansa, waray, songdowan* and *sagaga.*

Some *kadaanan* varieties are becoming extinct due to farmers need for

cash. These have been sold and shared without keeping for themselves.

Glutinous rice varieties are kept secured because they are valued during family and community rituals especially when they are processed into native recipes hence there seed stock are reserved perennially.

In addition, staple rice varieties which are maintained for the non-shattering varieties are offered in bundled panicles during family and community rituals, while milled rice regardless of variety (commercial or *kadaanan*) are shared as a gift during house construction.

Waray are also sold for cash to augment family income since it is the most popular and saleable of all the glutinous rice followed by *kotinao* which was only recognized in 2008 by RICE Inc. for export to the US of America.

Women farmers retain the ability to identify and characterize the rice varieties through their uses (for processing, for cash, offerings for ceremonies, gift to visitors, *pasalubong*) and their features (maturity, tillers, eating quality, aroma, easiness in pounding and harvesting, rooting system, length of panicles, resistance to lodging and pest/diseases, expanding tendency, storage) indicating that these are good genetic materials in breeding rice for the future.

Conclusions

Based on the findings, the following conclusions are derived:

1. Most of the women involved in rice farming are adults and married, have reached at least elementary to high school level and some have not gone to school thus their livelihood is generally tied down to agriculture especially on rice farming and legume production. More than 50 % of women farmers are not members of any organization existing in their barangays.

2. The women in Sadanga hold the input in conserving their heirloom rice genetic resources and Indigenous knowledge on rice production practices and processing of rice products into native delicacies.

Women assist only on land preparation, water management, pest and disease management and hauling but their main domain is on sowing, seed selection, weeding, transplanting, seed conservation and storage, processing and marketing that requires the knowledge and skills of women.

3. Although women participated in almost all the pre and post harvest activities their participation in decision making is limited by their primary responsibility at home as mother and their role in economic activities and as farmer.

Women grow heirloom rice because of its cultural significance. They prepare native delicacies and make certain that these are available during family and community rituals. Women are the ones responsible in bringing the *supon* and offerings to occasions. Men dictate the women in what to process during incoming rituals.

4. A total of 23 indigenous staple and glutinous heirloom rice varieties had been cultivated in the community for more than 50 years but only 17 are commonly grown now.

Some indigenous varieties are endangered or slowly becoming extinct because of the need for cash by the rural women although elders believed that these varieties are still found in the community. Women identify rice through their uses and its good features, are kept by them as basis for decision making on what to plant the next cropping. Women maintain a minimum of three varieties of rice for each planting time to ensure rice supply, cash and for ritual ceremonies and special occasions.

Heirloom rice is a gem to the community people. Only the heirloom rice varieties are kept secured because they are valued during family, community rituals and other social gatherings to celebrate thanksgiving and sharing of products. No ritual ceremonies can proceed without these varieties; hence their stocks in bundled palay are reserved perennially in the rice granaries. Shifting to high yielding varieties, the socio culture practices will definitely stop.

People in the community believed that practicing the cultural beliefs promote peace and order, strengthen family ties and promote prosperity. Violating the customary law is anchored in the sense of *inayan* as reported by Fiar-od (2008) *inayan* is contributory to community development. The concept of *inayan,* is "to do this"for goodness sake. Anchored in this concept, change is merely putting what should be there and removing what should not be there.

Every household plant *waray* because it is the only glutinous variety that was kept secured, best variety that can be processed in native delicacies, and effortless for cash. Additional income to pay for education of children and other basic needs are sourced from selling of milled rice at nearby municipalities and Baguio City. *Gumiki* and *kotinao* are export varieties sold to the United States of America by RICE Inc.

Waray and other glutinous rice including staple rice are also shared as gift to visitors and *pasalubong* to friends and relatives.

The different stages of heirloom rice production are accompanied with rituals which are intended to invoke the blessings of the Supreme Being for productivity and food abundance. Heirloom rice as a cultural heritage is deeply associated to the belief systems and practices of the Sadanga tribes which are distinct in every stage of the production cycle.

Recommendations

Based on the findings of the study and the conclusion made, the following recommendations are forwarded specifically to the following:

Policy Makers

1. Recognition of women who contributes a significant role in domestic and socio-economic life of the society and as potential partners in development;

a. Policy makers in the national and local government agencies and non-government organizations to formulate policies in the conception, development and implementation of programs and projects giving women equal access to resources, strategies and development as means of carrying out desired change in the community.

b. Policy makers to include policies in educating people about the role of women and how we can contribute to helping those rural women improve and decrease their workload in the rice farming industry.

c. Formulate appropriate strategy to assist the heirloom rice farmers in development through providing appropriate trainings like local plant genetic resource management that might increase there knowledge and skills in conserving their rice plant genetic resources while increasing their participation in socio economic activities.

Community Development Workers

1. To immerse themselves to the rural community and learn from the rural people about the way they live to be able to bridge gap that exists between them and to be able to facilitate better coordination that would ultimately generate sustainable development.

2. To enhance the production of heirloom rice varieties through the development of export quality packaging for their products while maintaining the good traditional practices for improved production.

3. To involve women as equal partners in the whole process of development, they should be involved in planning and enjoin them to actively participate as sources of information.

Researchers

1. That a study be done to further document the indigenous knowledge systems or traditional practices to conserve the rice plant genetic resources such as distinct rice varieties and the indigenous methods of production.

2. The need to preserve the indigenous farming systems and rice varieties before they get extinct and to further document and characterize heirloom rice essential for providing future rice plant genetic materials.

Women's Participation in Production and Development of Heirloom Rice in Community Development

Women's participation has been considered as one of the most important aspects in agricultural development. Women provide meanings in the rural landscape especially on their roles and responsibilities. In Sadanga, Mountain Province, the involvement of women in heirloom rice production and product development created picturesque description of women's development. Because of this, it has showed the importance of women in preserving, conserving, propagating and promoting their heirloom rice varieties as well as the different agricultural activities. Figure 3 shows the improved framework based on the relationships of factors concerning women's participation in the production and product development of heirloom rice.

The preservation of heirloom rice and its products influenced the improvement of the socio-economic condition of the municipality of Sadanga as well as its development with the support of the people's cultural identity and integrity and community's cultural beliefs, practices and traditions including the different heirloom rice varieties.

Based on these, women participate in heirloom rice production especially on seed variety selection, sowing, and transplanting activities. Although, there are several farm activities, women's responsibilities are directed towards their role in the preservation, conservation, propagation and production. These

necessitate the strong interaction and relationship making heirloom rice an important aspect in their daily lives. Furthermore, women's responsibilities are highlighted during processing of heirloom rice to produce products that are marketed and used for occasions and community activities. Such activities led to the strengthening of community belongingness because it highlights identity and ownership at the same time maintaining the dignity of women as key players in heirloom rice development.

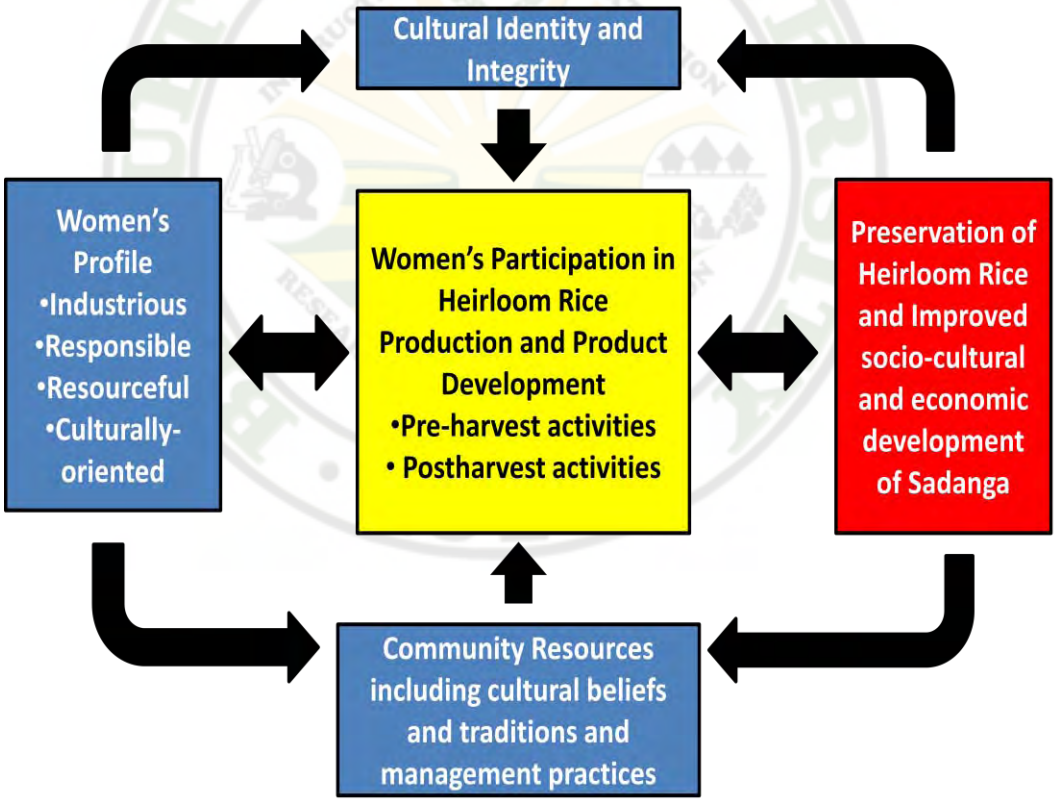

Figure: 3 Improved socio-cultural and economic development of Sadanga based on women's participation in the production and product development of heirloom rice (Fagyan and Aquino, 2012)

Lastly, the participation of women in heirloom rice is a manifestation that the community is well organized in terms of its socio-cultural and economic activities because women consider their product as a living treasure of industry, resourcefulness, perseverance, cohesiveness, culturally-oriented and most especially of integrity and dignity towards a holistic household and community development.

GLOSSARY OF LOCAL TERMS

Amag. Crafted tool used by women to ease bundling of rice panicles during harvest

Assiw. A bamboo or wood finely scaled, used for carrying palay. Assiw is a hauling tool for men.

Awit. A woven basket used by women to carry a load over their head. It is called *lowa* in the western part of the province.

Baro. Are the Introduced Traditional Rice Varieties (ITVR) from other municipalities or provinces

Bobod. A local yeast prepared by women out of heirloom rice and is the main ingredient in fermenting rice wine and fermented rice

Erag. Transplanting of rice seedlings

Fhegnas. A community festivity that lasts for 3-5 days and occurs twice a year, done before and after rice harvest for thanksgiving and to invoke God's blessing for a bountiful harvest for the next cropping. *Fhegnas* are celebrated in the *ator*

Forew. A rice production activity in the field to guard and drive away birds that prey on the ripening palay.

Kabunyan. Supreme Being.

Kada-anan. Indigenous rice varieties that originated from the municipality itself and planted and handed over by the old folks from one generation to another for about fifty years or more.

Karkarwak/Binobodan. A term used for rice that passed a very short fermentation usually 2-3 days.

Kilkilaw. A scare crow. Scare crows are man made figures out of used clothes and placed in the rice field and believed to drive away rats, and birds.

Kotim. Unriped rice grains. These are usually harvested by children and adults and they dehull the grains individually and eat them raw. An individual rice plant may have 1 – 3 panicles. These panicles are harvested in any rice farm regardless of who owns the farm. This is allowed by the community so long as it does not exceed to more than 10 in each farm bundle.

Lekem. A small sharp t- shaped blade tool used to cut individual rice stalk during harvest.

Makabelad. The tendency of rice to expand when cooked

Og-obfo. A practice of coming together in groups to lend a helping hand in times of need especially during planting and harvesting. It is repaying or lending in terms of labor.

Panar. To sow palay seeds or seed sowing

Patopat. A native delicacy cooked by boiling glutinous rice wrapped in banana leaves either in cone or core shaped. It is prepared by wrapping half steamed glutinous rice mixed with coconut milk and sugar before cooking.

Saliket. A native delicacy cooked by steaming glutinous rice without sugar and coconut milk.

*Sinab-ang.*Cooked glutinous rice mixed with sugar, sweet potato or corn grits. This is usually prepared for as snacks during rice harvest.

Sinapa. Cooked glutinous rice with little sugar brought to other barangays during wakes.

Supon. A gift in terms of cash or in kind (palay and other products) given to the newly wed and wakes for the dead.

Tinupig. A native delicacy cooked by boiling or steaming glutinous rice wrapped in highly and artistically prepared sugar cane leaves. This is usually shared or given as gift for everybody to eat during wedding ceremonies, wakes and community festivals.

Tapuey. Rice wine.

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APPENDICES

Appendix Table 1. Women's participation per barangay in the activities of Heirloom Rice Production

ACTIVITIES	Number and Percentage of Participation							
	Anabel (23)	Belwang (11)	Bekigan (13)	Betwagan (21)	Demang (11)	Poblacion (13)	Sacasacan (15)	Saclit (23)
Pre Harvest								
Seed Selection	23 (78.26)	11 (81.81)	13 (100)	21 (100)	11 (81.81)	13 (76.92)	15 (80.00)	23 (100)
Seed exchange	15 (65.21)	9 (81.81)	13 (100)	21 (100)	9 (81.81)	10 (76.92)	12 (80.00)	23 (100)
Seed Bed Preparation	21 (91.30)	9 (81.81)	13 (100)	21 (100)	9 (81.81)	9 (69.23)	15 (100)	21(91.30)
Seed Sowing	20 (100)	11 (100)	13 (100)	21 (100)	11 (81.81)	11 (100)	15 (100)	23 (100)
Pulling of Seedlings	16 (69.56)	9 (81.81)	13 (100)	21 (100)	9 (81.81)	10 (72.92)	15 (100)	22 (95.65)
Land Preparation	4 (17.39)	5 (45.45)	4 (30.75)	6 (28.57)	5 (45.45)	5 (38.46)	3 (20.00)	17 (73.91)
Transplanting	15 (65.21)	9 (81.81)	13 (100)	11 (52.38)	78(72.72)	810(76.92)	15 (100)	23 (100)
Pest/Disease Management	12 (52.17)	11 (100)	5 (3.84)	12 (57.14)	7 (63.63)	8 (61.53)	15 (100)	14 (60.86)
Weed Management	17 (73.91)	6 (54.54)	13 (38.46)	15 (71.42)	9 (81.81)	12 (92.30)	12 (80.00)	23 (100)
Soil Management	17 (73.91)	9 (81.81)	7 (53.84)	15 (71.42)	9 (81.81)	9 (69.23)	12 (80.00)	12 (52.17)
Water Management	4 (17.39)	6 (54.54)	10 (76.92)	13 (61.90)	6 (54.54)	10 (76.92)	4 (26.66)	17 (73.91)
Harvesting	11 (86.95)	11(100)	13 (100)	11 (71.42)	7 (63.63)	10 (76.92)	10 (66.66)	19(82.62)
Hauling	3 (13.04)	2 (18.18)	5 (38.46)	6 (28.57)	0 (0)	3 (23.07)	0 (0)	4 (17.39)
Post Harvest								
Drying	14 (60.86)	9 (81.81)	12 (92.30)	12 (57.14)	8 (72.72)	10 (76.92)	12 (76.92)	16 (69.56)
Seed/Palay Storage	13 (56.52)	4 (36.36)	13 (100)	15 (71.42)	9 (81.81)	11 (84.61)	12 (76.92)	15 (65.21)
Pounding/milling	18 (78.26)	10 (90.90)	100 (13)	13 (61.90)	9 (81.81)	9 (69.23)	12 (76.92)	23 (100)
Marketing	14 (60.86)	10 (90.90)	13 (100)	15 (71.42)	8 (72.72)	11 (84.61)	12 (76.92)	22 (95.65)
Product Processing	18 (78.26)	9 (81.81)	13 (100)	12 (57.14)	10 (90.90)	10 (76.92)	13 (86.66)	20 (86.95)

*Values in parenthesis are percentage

APPENDIX A. Communication Letter

OPEN UNIVERSITY
Benguet State University
La Trinidad, Benguet

4 October 2011

Hon. GABINO GANGGANGAN
Municipal Mayor
Sadanga, Mountain Province

Sir:

Greetings!

The undersigned is conducting a research entitled "Women's Participation in the Production and Product Development of Heirloom Rice in Sadanga, Mountain Province" in partial fulfillment for masters degree on Community Development at the Open University, Benguet State University , La Trinidad, Benguet.

Your municipality was considered as the research area because it is one of the major producers of heirloom rice in the province.

In this connection, I humbly request your permission to allow me to conduct the said research through the assistance of the Office of the Municipal Agriculturist. I will be glad to share the results of the research to support your municipal agricultural development plan.

Thank you very much and God Bless!

Respectfully yours,

(Sgd.)HAZEL S. FAGYAN
Researcher

(Sgd.)MARLOWE U. AQUINO
Research Adviser

Cc: Office of the Municipal Agriculturist

Appendix B. Survey Questionnaire

Questionnaire No.: _____
Barangay : _____

I. Profile of Respondent

1. Name: (Optional):_____ Age: _____
2. Marital Status:_____ single_____ married _____ widow
3. Occupation_____
4. Level of Educational Attainment
   _____has not gone to school
   _____Primary level (grade 1- 5)
   _____Elementary Graduate Level
   _____High School Level (1st year – 3rd year)
   _____High School Graduate
   _____College Level (1st – 3rd yr)
   _____College Graduate
5. Farm Size (sq.m)
   _____ 100 - 200 _____ 601 - 700
   _____ 201 - 300 _____ 701 - 800
   _____ 301- 400 _____ 801 - 900
   _____ 401 - 500 _____ 901 - 1000
   _____ 501 - 600 _____above 1000
6. Number of Years in Farming
   _____ 5 - 10 _____ 31 - 40
   _____ 11 - 20 _____ 41 - 50
   _____ 21 - 30 _____51 – 60
7. Land Tenure: _____owned _____leased
8. Organization affiliation: _____
   _____

II. PARTICIPATION OF WOMEN IN HEIRLOOM RICE PRODUCTION

A. The following are the activities in the production of heirloom rice. Please identify by checking who dominates in each activity.

Heirloom Rice Production Activities	Who dominates in doing the job	
I. Pre harvest Activities	Male	Female
1. Seed varietal Selection		
2. Seed Exchange		
3. Preparing Seed Bed		
4. Seed Sowing		
5. Pulling		
6. Land Preparation		
7. Planting/Transplanting		
8. Pest & Disease Management		
8. Weed Management		
9. Soil Management		
10. Water Management		
11. Harvesting		
12. Hauling		
II. Post harvest Activities		
1. Drying		
2. Seed & Palay Storage		
3. Seed Conservation		
4. Pounding/Milling		
5. Marketing		
6. Product Development		
7. Processing:		
Rice wine		
Fermented rice		
Rice cakes/pastries		
Others:		

III. FACTORS INFLUENCING WOMEN'S PARTICIPATION

A. Listed below are some factors influencing women's participation in the production activities and product development of heirloom rice. Please provide assessment using the following ranks: (1-very low; 2-low; 3-medium; 4- high; 5- very high).

FACTORS	RANK				
	5	4	3	2	1
I. Social Network					
1. Age					
2. Sex					
3. Status					
4. Education					
5. Farm size					
6. Socio-cultural factors (norms and customs)					
7. Number of years in farming					
8. Land Tenure					
Others:					
II. Home-based activities					
1. Child-care responsibilities					
2. Animal feed collecting and feeding					
3. Food preparation and feeding					
4. Caring for the sick and elderly					
5. Reproductive Role					
III. Economic Activities					
1. Marketing					
2. Wage labor					
3. Food processing					
4. Home gardening					
5. Others:					

IV. CHARACTERISTICS AND USES OF HEIRLOOM RICE

A. The following are heirloom rice varieties grown in Mountain Province and it's major uses. Please identify those grown in the locality, origin and utilization by putting a check mark on the opposite column.

Rice Varieties Grown	Reasons for Varietal Choice				Rank according to major uses
	For Product Processing	For sale	Staple Food	For offerings in family and community rituals	
Staple Rice					
1. Podawan					
2. Gumiki					
3. Bagseng					
4. Binuga					
5. Pak-ang					
6.Ginanay					
7.Kinabogawan					
8. Senyora red					
9.Senyora white					
10. Kintoman					
11. Uskil					
16. Korel					
17. Ginulot					
Others:					
Glutinous					
1.Waray					
2.Manmansa					
3.Kotinao					
Others:					

B. Listed below are heirloom rice products being processed? Please put a check mark on the appropriate column to identify its specific use and rank them according to its major use.

Heirloom Rice Products Commonly Processed	CULTURAL IMPLICATIONS				Rank according to major uses
	For Cash	Staple Food	For offerings during special family & community rituals	For Hospitality Purposes	
1.Saliket					
2.Tinupig					
3.Patopat					
4.Rice Wine					
5.Fermented rice					
6.Rice wine					
Others					

C. What are the characteristics of these heirloom rice varieties? Please check.

Heirloom Rice Variety	GRAIN CHARACTERISTICS																	
	Color				Grain size		Aroma when cooked			Texture			Expand when cooked			Stickiness when cooked		
	White	Red	Brown	Black/violet	long	short	Aromatic	Mod aroma	No aroma	soft	Mod soft	Very soft	high	moderate	slight	very	mod	slight
Staple Rice																		
1. Podawan																		
2. Gumiki																		
3. Bagseng																		
4. Binuga																		
5. Pak-ang																		
6.Ginanay																		
7.Kinabogawan																		
8. Senyora red																		
9.Senyora white																		
10. Kintoman																		
11. Uskil																		
16. Korel																		
17. Ginulot																		
Others:																		
Glutinous																		
1.Waray																		
2. Kotinao																		

D. What are the characteristics of these heirloom rice varieties? Please give details on the appropriate column provided.

Heirloom Rice Variety	PLANT CHARACTERISTICS									
	REASONS FOR VARIETAL CHOICE									
	Tillering	Pest/dis resistance	Root Length	Length of Panicle	Lodging	Yield	Shattering	Easy to pound	Good eating quality	
Staple Rice										
1. Podawan										
2. Gumiki										
3. Bagseng										
4. Binuga										
5. Pak-ang										
6.Ginanay										
7.Kinabogawan										
8. Senyora red										
9.Senyora white										
10. Kintoman										
11. Uskil										
16. Korel										
17. Ginulot										
Others:										
Glutinous										
1.Waray										
2. Kotinao										

Appendix C: Aerial view of some sample barangays.

Plate 7. Aerial view of sample barangays: Poblacion (top photo) Anabel (left) and Belwang (right) as research areas (Photo by Hazel S. Fagyan and C. Gamonac, 2011)

Appendix D: Photo Documentation of some Heirloom Rice Varieties (Photo by Hazel S. Fagyan, 2010).

Palay

Variety Information/Utilization

Grain Variety: **Kotinao**

Grain : elongated, ave of 190 /panicle

Grain Color : yellow black

Aroma : moderate aroma

Eating quality : good eating quality, moderately soft

Origin : ***"kadaanan"***

Spikelet : with very short awn, non

Milled rice

Fermented Rice

Champorado

Plate 8. *Kotinao* variety and its products

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Sample of Palay rice Varieties

Plate 10. *Kinedpayan* variety

Plate 11. *Podawan* variety

Plate 12. *Gumiki* Variety

Plate 13. *Waray* variety

Plate 14. *Tokpar* variety

Plate 15. *Tepa* variety

Plate 16. *Binuga* variety

Plate 17. *Kosimay* variety

Sample of milled Heirloom Rice

Plate 18. *Sagaga* milled rice

Plate 19. *Podawan* milled rice

Plate 20. *Kurot* milled rice

Plate 21. *Kabayan* milled rice

Sample of native delicacies

Plate 22. *Sinab-ang*

Plate 23. *Patopat*

Plate 24. Fermented rice (Photo by Hazel S. Fagyan, 2011)

Plate 25. *Bobod* used to ferment *tapuey* and fermented rice (Photo by Hazel S. Fagyan, 2011)

APPENDIX E. Photo of some indigenous materials used in heirloom rice production and product processing (Photo by Hazel S. Fagyan, 2011).

Plate 25. Assiw (from top left), mortar and pestle, ladle and jar.

BIOGRAPHICAL SKETCH

The author hails from Sagada, Mountain Province where she was born at dawn on the 30th of May. She is 7th among 9 children of Mr. Anthony Sumedca and Mrs. Joan Sauyen-Sumedca of Sagada, Mountain Province.

She finished her elementary education at Sagada Central School and secondary education at St. Mary's School in Sagada, Mountain Province. For her tertiary education, she completed Bachelor of Science in Agriculture at the Benguet State University, La Trinidad, Benguet. Six months after graduation she was employed at the Highland Agriculture Development Project (HADP), where she had involvements in technical research.

She had been into various fields of community development work. She had been organizing and training Farmers Field Schools in selected areas of Benguet and Mountain Province where she worked as Integrated Pest Management Trainer under the International Institute of Biological Control – Philippines (IIBC-RP) in coordination with the national KASAKALIKASAN – Department of Agriculture office.

Her involvements in technical and social community development work edged on when she tried her luck with the Central Cordillera Agricultural Program (CECAP).

As Project Development Officer she coordinated and conducted community development projects under the agriculture component of the said organization.

In 2001, she was employed with the Office of the Provincial Agriculturist, Provincial Local Government Unit in Bontoc, Mountain Province where she currently work as agriculturist. During her stay with the organization she had the opportunity to attend training on Soil Management at Dresden, Germany through a fellowship grant by the United Nations Environmental Program (UNEP) in coordination with the Federal Republic of Germany in November 2007.

She is married to Mr. Alexander W. Fagyan of Bontoc, Mountain Province by whom she was blessed with 6 children (2 boys and 4 girls).

Her family presently resides at Bontoc, Mountain Province.