Annals of Tropical Research 39 (SUPPLEMENT A):66-78 (2017)

Traditional knowledge and natural resources management for agricultural production in the marginal uplands: the case of Brgy. Caticugan, Sta. Rita, Samar

Jedess Miladel N. Salomon[1*], Annabella B. Tulin[2], Marciana B. Galambao[3] and Michelle E. Gumba[4]

ABSTRACT

This study documented how people in an agricultural community cope with water scarcity. Through focus group discussions, household interviews, and observation, it attempts to understand how they make use of the available resources and traditional knowledge to make a livelihood. Thirty informants were involved in the study: six of which were tenants and twenty-four were landowners. Their agricultural practices were based on traditional beliefs and years of observation and experience on when to plant and how to ensure a bountiful harvest in conjunction with soil fertility and pest management. Preferred crops were those that were drought and pest resistant. Water scarcity was minimized through the use of *balon*, cemented deep well, water pumps, rainwater harvesting during the rainy season, and a reservoir. However, these could not supply enough for human consumption and agricultural production, especially during the dry season. Because of this, informants expressed the need for an irrigation system.

This study illustrates the importance of traditional or local knowledge to agriculture and natural resource management by providing households with adaptive strategies. It is therefore important that this knowledge system be incorporated in the development and implementation of programs to improve the agricultural and economic productivity of farm households and the management of natural resources in the marginal uplands.

Keywords: agriculture, livelihoods, water scarcity

[1] National Abaca Research Center, Visayas State University
[2] Philippine Root Crops Research and Training Center, Visayas State University
[3] Department of Plant Breeding and Genetic Resources, Visayas State University
[4] Philippine Root Crops Research and Training Center, Visayas State University

*Corresponding Author. Address: National Abaca Research Center, Visayas State University, Visca, Baybay City, Leyte; Email: jedess.salomon@vsu.edu.ph
DOI: 10.32945/atr39sa6.2017

INTRODUCTION

The poor are particularly dependent on freshwater for their livelihoods and survival (UN-Water 2012). It is important to note that it is in the marginal areas, which are traditionally water-scarce, that poverty persists. It is also this water scarcity that has prevented poor farmers from adopting technologies that could alleviate their poverty. Hence, access to water for agriculture is seen as a more critical problem than access to primary health care and education (Barker, van Koppen & Shah 2000). It should also be noted that in the Philippines, only a little more than half (56.57%) of potential irrigable areas are irrigated (National Irrigation Administration 2014). Brgy. Caticugan in Sta. Rita, Samar falls under the other half that is not. This study documents how farmers in Brgy. Caticugan manage their resources to make a living. It takes Izac and Sanchez's (2001) definition of natural resources management as the "sustainable use of the resource base of agriculture in order to meet the production goals of farmers as well as the goals of the community," with the resource base of agriculture consisting of all the natural resources essential to agricultural production such as soil, water, solar energy, plant, tree, and animal germplasm (*ibid.*)

Studies (Humanitarian Practice Network 2018, Swiderska et al 2011 in Nakashima et al 2012, Jabeen, Johnson & Allen 2010, Gyampho et al 2009) have documented how traditional or local knowledge have been used by people to cope in harsh environmental conditions attributed to climate change. They have devised methods, which are based on their skills, resources, and knowledge of their environment, to protect themselves and their livelihoods (Humanitarian Practice Network 2018). They have used the knowledge and practices gained over the years to cope with risks due to crop failure, droughts, and floods (Gyampho et al 2009).

Brgy. Caticugan is surrounded by rice fields, however, most of its farms lack access to water, which is heavily required by this crop. They persist, carrying on with the farming traditions they have practiced for years. With this traditional knowledge, they manage resources to sustain agricultural production, which is their primary source of livelihood.

Agriculture occupies 40% of the land surface, consumes 70% of global water and makes use of and affects environmental resources (Altieri & Koohafkan 2008). More importantly, it provides man with his basic needs. Farmers depend on agriculture as their main source of livelihood, in the same way that agricultural production is highly dependent on them. However, small farmers, making up 86% of rural people remain poor (Scoones, Thompson & Chambers 2008). Documenting the plights and resource management of farmers in marginal areas brings to the forefront how the degradation of resources affects farmers, their households and farming communities whose livelihoods depend on the use of these resources (Shiferaw, Okello & Reddy 2009).

Thus, this study documents the agricultural beliefs and practices of farmers in Brgy. Caticugan, Sta. Rita, Samar. Specifically, this aimed to identify and document their water sources, how they make use and manage water sources, describe their knowledge and beliefs on farming and how these influence their farming decisions and practices, and determine information sources and other sources of income apart from farming.

METHODOLOGY

This study was conducted in Caticugan, one of the 38 barangays of Santa Rita, a fourth-class municipality in the province of Western Samar (see Figure 1). Its name is derived from the Cebuano word *tikog (Fimbristylist globulosa),* which refers to a grass commonly found in the barangay. According to old residents, they use this grass for weaving mats. Its infrastructures: a barangay hall, health center, school, and basketball court, are located along the national road. According to barangay council data, it has a population of 2,426.

The study site was selected because it fit the category of a marginal upland where the soil was noticeably dry and infertile, patches of land were cultivated but with minimal productivity, water sources were very scarce and the people living off of the land were poor.

In the mid-1960s, Brgy. Caticugan had only about forty households. According to informants, it was only in the year 1979 to 1981 that the barangay experienced an influx of migration after the mountains were occupied by the rebel group New People's Army or NPA. In the early years, the area was mainly covered with cogon (*Imperata cylindrica*) and *tikog (Fimbristylist globulosa)*. Only a few portions of the area were cultivated as it was difficult for the farmers to control the grasses. Even then, the soil was dry and infertile. During the time of fieldwork, a large part of the uplands was developed for agriculture. The houses in the barangay were built near the road, on top of the hills and along the few waterways.

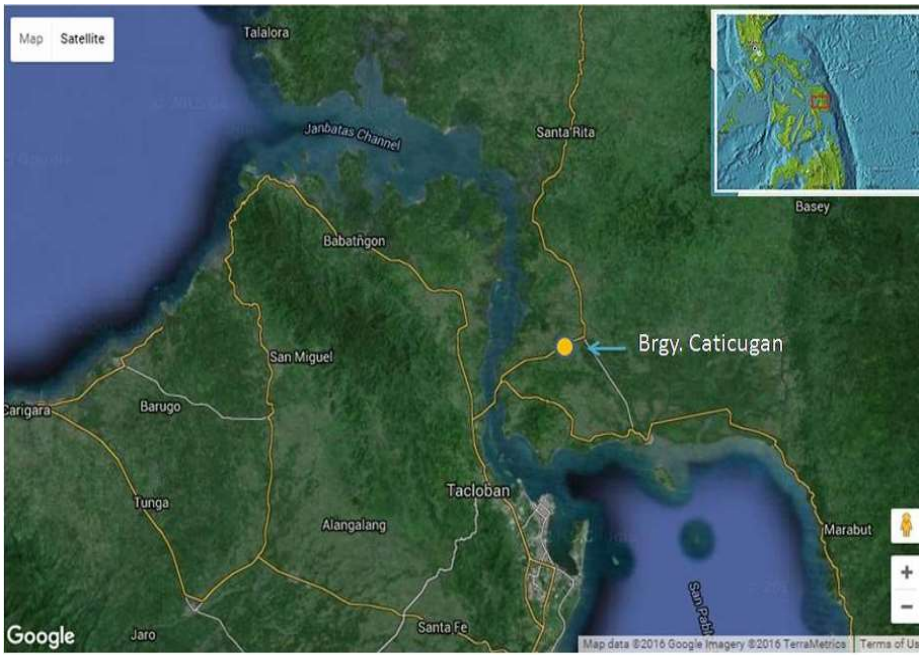

Figure 1. Map of the study site: Brgy. Caticugan, Sta. Rita, Samar
Source: http://www.maphill.com/search/samar-island/detailed-satellite-map/

Data on the barangay's history, tradition, general use of resources and current problems associated with these was gathered from barangay documents, observation, and informal interviews with informants and focus group discussions from March to August 2015. The focus group discussions also elicited informants' knowledge, attitude and perception on their access and use of resources in their environment.

Key informants were selected key officials of the barangay, the oldest male (79 years old) and female (94 years old) residents of the barangay, and selected residents of Sitio Cantaba and Sitio San Roque (Table 1). Soil samples were also collected at specific sites within the barangay to determine the overall soil chemical analysis of the area. A total of 30 informants were interviewed: six were tenants and 24 were landowners.

FINDINGS

Water sources, Water scarcity and Climate change

The issue of access to water, particularly for agriculture, cannot be understated. Freshwater resources are fundamental to sustainable development and food security because these are critical for human survival. These provide clean water for household use, agriculture and industry, remove waste, replenish groundwater and help prevent soil erosion. According to Altieri and Koohafkan (2008), small farmers in rain-fed areas in the developing world are the most disadvantaged and vulnerable groups in the wake of climate change.

According to informants, their water sources were their own *balon* or deep well, water pumps and water catchment during rainy season. They also have a reservoir. Figure 2 shows the different water sources of informants in Brgy. Caticugan. They use the water from the *balon* and water catchment for washing clothes, watering the plants, cleaning animals' pens and other activities that do not need clean water. But for cooking and drinking, they get water from the water pumps and the reservoir using large plastic containers. During *El Nino*, they get water from the *burabod* or spring, which has clear, clean water as it is free flowing, located in Sitio San Roque. It was the only water source that did not dry up during the dry season.

However, in some areas in the barangay, the water was murky, thus it cannot be used for drinking and cooking. This was because the water table in these areas was low. Another problem occurred during the dry season when the water level in the wells decrease, that was why residents need water pumps to get water. While majority of the barangay's residents were farmers (the barangay was surrounded by rice fields), the fields remained rain-fed. Informants during the focus group discussions repeatedly complained that there was no irrigation project in the area. According to a male farmer, the main problem was the lack of access to water for the rice fields. Rice (*Oryza sativa*) is a water-intensive crop. Informants had reservoirs, but these could not provide sufficient water for their fields.

Figure 2. Different water sources of the study site (a & b - reservoirs, c - water pump, d - water catchment, e - deep well, f - deep well with wheel tire, g & h - *burabod*)

Adding to the lack of access to water was the observed changes in the weather pattern. Either there was too little water because of long dry spells, or too much because of heavy rains.

Nowadays, we can really experience weather extremes. There are long dry periods when it is really very hot. And then when the rains come, they are very heavy. Years ago, there was equal measure of dry and wet weather. This weather makes it hard for us farmers to know when to plant our crops. (Female farmer, FGD)

Agricultural Practices

Agriculture has produced more traditions, customs and superstitions than any other occupation of man (Yule nd). These are the bases for decision-making in agricultural production, natural resource management and other activities within a particular community or society (Rao & Ramana 2007) and are generally recognized as key factors in increasing agricultural productivity (Olatokun & Ayanbode 2008 in Motsumi, Magole & Kgathi 2012).

Traditional beliefs on farming. The agricultural practices of farmers in Barangay Caticugan vary according to the kind of crop planted. Farming superstitions involved attributing events to supernatural as opposed to natural causes. These are carried out in the form of rituals, repetitive practices, and taboos (from a Polynesian term meaning prohibition), the breaking of which led to undesirable consequences or "bad luck" (Gmelch 2000).

Banica was a term given to farm, while *basak* was a term for rice fields. There were rituals to ensure plenteous and good quality harvest. There is pagmamayaw, which is offering a chicken before and after planting. Informants also practiced whispering or *bulong* before or during planting to get rid of pests and diseases. For sweetpotato, they placed sugar and shredded young coconut in the hole before planting to ensure sweet tubers and plentiful harvest. Also, informants in *Sitio* San Roque added that they did not use fertilizers in growing sweetpotato because they believed that this will change the taste of the root crop. There was also an informant who stated that the farmers before practiced *pagpahinungod* where the farmer carries a child on his back while planting so that their harvest would be bountiful or *patung-patong.* The informants also mentioned that when planting cassava, the farmer should not smoke so that the tuber would not taste bitter when cooked. In addition, there was a time when farmers used drums to cast away bad luck or spirits and pests in the farm. They also use drums for synchronized planting, especially in planting rice. There were also superstitions regarding pest and disease control. For pest control, farmers employed the following methods: improvised scarecrows made from unused clothing and bamboo sticks; tin cans which produced noise and scared birds from the rice fields; the head of the coconut stalk was cut and placed vertically on the ground to look like a cobra ready to attack prey (eg, rats in the rice field). Some also practiced the use of pesticide. For weed control, they used

herbicides, burned the grasses or cut them using a grass cutter. Regarding the soil, one informant believed that burning *dayami* or the parts of the plant left after harvest was the reason for soil acidity. They also planted coconut only during the full moon for a bountiful harvest.

However, informants argued that, although they observed some of these rituals and beliefs that were passed on to them by their elders, they did not really believe in their supernatural effects. They did not necessarily believe in the effects of rituals and beliefs grounded on supernatural causality, but they observed these as additional safeguards and simply as part of tradition.

Soil classification and management. The farmer's knowledge of the soil is a result of years of observation and experience. Soil classification is significant in developing optimal land management practices for each specific soil and landscape types (Krasilnikov & Tabor nd). This is particularly essential to an agricultural community such as Brgy. Caticugan, where the soil is one of the most important parts of the environment, since its residents' livelihood is dependent on soil fertility and crop productivity (Barrera-Bassols & Zinck 2003, Krasilnikov & Tabor nd). As is commonly found in surveys among farmers in Africa, America and Asia (Barrera-Bassols & Zinck 2003, Saito et al 2006), soil is classified according to color and texture. Table 2 and Figure 3 show the different soil types in the barangay as classified by the informants.

Table 2. Types of soil and associated crops according to descriptors

Type of soil	Description	Texture	Associated crops
Pula	Red soil, infertile	Hardened clay	Rice, vegetables, corn, coconut, pineapple, lemon grass, banana
Itim	Dark soil, fertile	Sandy clay loam	Rootcrops, corn, rice, coconut, vegetables
Brown	Brown soil, moderately fertile	Loamy soil	Any crop
Yellowish	Yellow soil, infertile	Hardened clay	Pinapple, lemon grass, coconut, banana

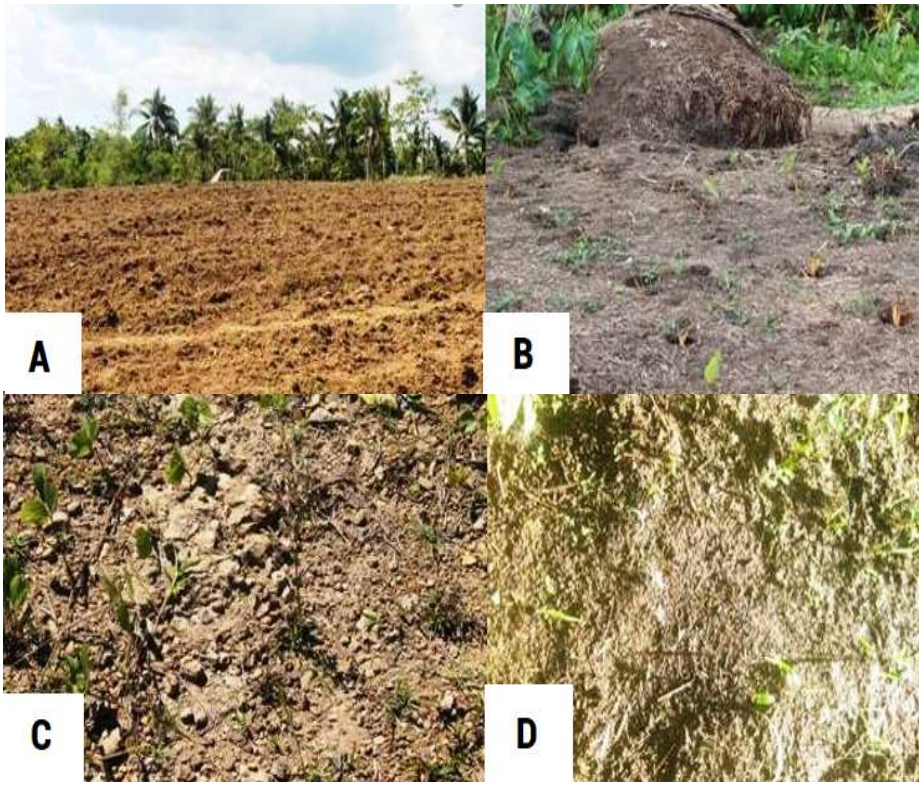

Figure 3. Different types of soil as classified by the farmers in Brgy. Caticugan (a - red soil, b - dark soil, c - yellowish soil and d - brown soil)

Informants had four soil classifications according to soil color: *pula* (or red), which is infertile, *itim* (or dark), which is fertile, brown which is moderately fertile, and yellowish which is also infertile. This was their guide in planting certain crops in each type of soil. Rice, vegetables, corn, coconut, pineapple, lemon grass and banana were planted in the red and yellow, infertile soil while any kind of crops were planted in the dark and brown, fertile soil. On the other hand, pineapple, lemon grass and banana were planted in the red and yellow, infertile soil since these crops could tolerate low levels of water and nutrients. These observations and practice of informants were validated through the soil chemical analysis done in the study site which showed that red soil was low in phosphorus, organic matter content, total nitrogen, and was highly acidic. Dark soil color, on the other hand, indicated a medium amount of organic matter. Barangay Caticugan generally had red or yellowish soil, while dark and brown soil were found in areas near the lowlands and under trees.

To improve soil fertility, some informants indicated that they used a mixture of animal manure, particularly for growing vegetables. One informant specified that he used carabao, pig and chicken dung to fertilize the plots where he grew string beans. The idea of the mixture, he said, was his own and he found that it improved the growth and yield of his string beans.

According to informants, the poor soil quality in the uplands was aggravated by continuous, excessive plowing. Plowing was practiced as a way of controlling weeds. However, some informants believed that overplowing the field can lead to soil erosion and degradation. Plowing was a common practice of farmers as it loosens the soil and uproots weeds in preparation for planting and burning of vegetation to control cogon. There were also those who believed that *kaingin* or burning of vegetation can cause soil degradation and aggravate soil acidity.

To counter soil infertility, informants used cover crops like *ohot* or rice straw and cogon, which are rich in nitrogen, as soil conditioners. To a lesser extent, fallen leaves of trees contributed to soil fertility in areas where these were planted. Farmers do not burn the leaves that fall from the trees, leaving them on the ground instead, to decompose. They also practiced crop rotation to replenish nutrients, especially nitrogen, and shifting cultivation to allow the soil to regenerate. When they perceived that a crop did not grow well, they replaced it with another crop as they believed, through years of observation and experimentation that planting of the same crop for successive cropping seasons used up the nutrients in the soil. When a particular crop failed to grow well in a cropping season, it is replaced with another type of crop for the next planting. Such perception is correct as monoculture not only decreases available nutrients for plant growth, but also increases crop-specific pests and diseases over time (Thierfelder & Wall nd).

Crops planted. The crops farmers plant and the knowledge on how to grow them are important to food security (Hart & Vorster 2006). The most common crops cultivated by informants at the time of fieldwork were sweetpotato, cassava, corn and banana. According to them, these were the crops which could tolerate the infertile and dry soil of the uplands. These crops did not need constant watering which made it less laborious for farmers, especially during the dry season, since water is very scarce in the barangay. Moreover, they have two planting seasons for rice: *baksalan* or dry season (February to June) and *karayapan* or wet season (September to December) when they experienced bountiful harvest because their fields were rain-fed since they did not have an irrigation system. On the other hand, one of the informants converted part of his rice field into a fishpond so that the unproductive land could be productive. The residents practiced backyard gardening for their daily subsistence of vegetables (okra, eggplant, squash, patola, mongo beans, pechay, sitaw, upo), herbs (mayana, lemon grass, turmeric, pepper), and fruits (papaya, calamansi, guava, caimito, santol, & mango, banana, pineapple, lanzones, avocado, rambotan, dalandan, tambis, macopa & pakwan). They also practiced crop rotation in which some of the farmers planted corn on the first cropping and a combination of corn, cassava and mongo beans on the second cropping. In Sitio San Roque, one of the informants planted rootcrops such as cassava, sweetpotato or gabi after he harvested rice so that the fertilizer he applied on the rice field would be used by these crops since rice is only planted during the wet season.

Sources of Farming Information and Assistance

Local innovation is the process through which individuals or groups discover or develop new and better ways of managing resources – building and expanding the boundaries of their IK. This is what makes it work despite changing circumstances (Hart & Vorster 2006).

Generally, informants' knowledge, beliefs and practices on farming were either passed down from the older generation or gleaned from years of observation and experience. Most of the informants in Brgy. Caticugan stated that some local government units and non-government organizations (NGOs) visited their area or assisted them in some way. Some of these government agencies and NGOs were the MAO (Municipal Agricultural Office), DA (Department of Agriculture), FAO (Food and Agricultural Organization), PCA (Philippine Coconut Authority), DAR (Department of Agrarian Reform), and World Vision. However, informants in Sitio San Roque asserted that the project researchers were the first to visit their area. Only barangay officials and association leaders of the barangay have undergone trainings and seminars, or received assistance from the government.

The members of the farmers' association in Sitio Cantaba have undergone trainings on free farming systems. While in Sitio San Roque, the farmers were rarely visited by any government and non-government agencies, though, they said that they were very much interested to learn about technologies that would help improve their livelihoods.

Other Sources of Income

Some households in Brgy. Caticugan engaged in enterprises. Before Typhoon Yolanda devastated the Visayas region, one of the main crops in the barangay was coconut where they get products like *copra* (dried coconut meat), coconut shells (for charcoal), and *tuba* (coconut wine) and sell these products to Tacloban City. Some were *sari-sari* store and rice mill owners since they live along the national highway. Aside from farming, some of the men were also construction workers for additional income, according to informants. Others go to the National Capital Region (NCR) to work as domestic helpers. Some of the farmers get wages from laboring in other farms. One profitable venture that a farm household engaged in is furniture-making. A resident of the barangay accepted orders of bamboo furniture sets to add to their income from the farm. He earned as much as P3,000.00 per set. He did not have to spend much on the raw materials since bamboo was readily available from the surroundings.

CONCLUSION

This study documented how farmers engaged in agricultural production in the midst of water scarcity. They have employed coping strategies, such as rainwater harvesting and setting up water reservoirs, to augment their water sources. However, they still express the need for access to technologies that would improve their agricultural production. One of their primary needs as rice farmers is irrigation. The absence of irrigation is one of the main reasons why agricultural productivity in the area is low. Hussain (2005 in Namara et al 2010) presented that in some South and Southeast Asian countries, irrigated areas are more than twice as productive as non-irrigated areas. This shows that reliable access to agricultural water not only increases crop production, it also usually reduces variance in output over seasons, whether wet or dry. Lack of access to water is also one of the causes of poverty. It constrains smallholder farmers' production, thus keeping them in poverty (Molden et al 2007, in Namara et al 2010).

Similar to a previous study on traditional knowledge of farmers in a marginal upland community (Salomon et al 2014), this study documented how local farmers used their traditional knowledge to adapt to the limited resources in the marginal uplands. Their understanding of the soil and its properties, their diagnosis of nutrient deficiencies and their ingenuity in using available, limited resources have helped them manage their agricultural practices to lessen soil degradation, prevent erosion, and ensure a harvest (Matanmi 2001). Because these practices are a product of years of observation and experience, these could be considered scientific although they are yet to be explored and documented (Soh & Omar 2012). In this study, farmers' soil classification based on color and fertility was validated by the soil analysis conducted by the researchers.

However, there are also certain rituals grounded on supernatural causality that farmers themselves admit to practicing for the sake of tradition without necessarily believing in their effects. These rituals are practiced as part of culture and additional safeguards. Even the farmers in the study who practiced some of the rituals relied more on observation and years of experience in making farm decisions.

REFERENCES

Altieri, MA and Koohafkan P. 2008. Enduring farms: climate change, smallholders and traditional farming communities. Accessed 25 November 2015 from http://sa.indiaenvironmentportal.org.in/files/Enduring_Farms.pdf

Barker R, Van Koppen B & Shah T. 2000. A global perspective on water scarcity and poverty: achievements and challenges for water resource management. Accessed 25 November 2015 from http://www.researchgate.net/profile/Barbara_Koppen/publication/227366582_A_global_perspective_on_water_scarcity_and_poverty_achievements_and_challenges_for_water_resource_management/links/00b4952bd41695b754000000.pdf

Barrera-Bassols N and Zinck JA. 2003. Ethnopedology: a worldwide view on the soil knowledge of local people. *Geoderma* 111(3-4):171-195

Gmelch G. 2000. Baseball magic. In Spradley J and McCurdy D (eds) *Conformity and conflict: reading in cultural anthropology* (11th edn) . Allyn& Bacon, U.S.A

Gyampho BA, Amisah S , Idinoba M & Nkem J. 2009. Using traditional knowledge to cope with climate change in rural Ghana. *Unasylva* 60:70-74

Hart T and Vorster I. 2006. Indigenous knowledge on the South African landscape: potentials for agricultural development. Human Sciences Research Council (HSRC) Press, Cape Town, South Africa. Accessed 10 October 2013 from www.hsrcpress.ac.za

Izac AMN and Sanchez PA. 2001. Towards a natural resource management paradigm for international agriculture: the example of agroforestry research. *Agricultural Systems* 69:5-25

Jabeen H, Johnson C & Allen A. 2010. Built-in resilience: learning from grassroots coping strategies for climate variability. *Environment and Urbanization* 22(2):415–431

Krasilnikov P and Tabor J. nd. Ethnopedology and soil folk taxonomies. Soils, plant growth and crop production 3. Accessed September 21 from http:www.eolss.net/sample-chapters/c10/E1-05A-35-00.pdf

Lavenda RH and Schultz EA. 2003. Core concepts in cultural anthropology (2nd edn). McGraw-Hill Higher Education, U.S.A

Matanmi BM. 2001. Indigenous knowledge in agricultural production in Northern Nigeria: the use of astronomy. Accessed 19 September 2013 from http://www.unilorin.edu.ng/publications/matanmi/Indigenous_knowledge_in_agricultural_production_in_northern_nigeria.pdf

Motsumi S, Magole L & Kgathi D. 2012. Indigenous knowledge and land use policy: Implications for livelihoods of flood recession farming communities in the Okavango Delta, Botswana. *Physics and Chemistry of the Earth* 50-52:185-195

Nakashima DJ, Galloway McLean K, Thulstrup HD, Ramos Castillo A & Rubis JT. 2012. Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation. Paris, UNESCO, and Darwin, UNU

Namara RE, Hanjra MA , Castillo GE, Ravnborg HM , Smith L & Van Koppen B . 2010. Agricultural water management and poverty linkages. *Agricultural Water Management* 97:520-527

National Irrigation Administration. 2014. Annual Report 2014. Accessed 18 January 2016 from http://www.nia.gov.ph/publications/annualreport/2014-annualreport.pdf

Newsham AJ and Thomas DSG. 2011. Knowing, farming and climate change adaptation in North-Central Namibia. *Global Environmental Change* 21:761-770

Rao VLN and Ramana GV . 2007. Indigenous Knowledge, Conservation and Management of Natural Resources among Primitive Tribal Groups of Andhra Pradesh. *Anthropology today: trends, scope and applications* 3:129-134

Saito K, Linquist B, Keobualapha B, Shiraiwa T & Horie T. 2006. Farmers' knowledge of soils in relation to cropping practices: a case study of farmers in upland rice based slash-and-burn systems of northern Laos. *Geoderma* 136:64-74. Accessed 8 October 2013 from www.sciencedirect.com

Salomon JMN, Tulin AB & Monderondo JMS. 2014. Indigenous knowledge, agricultural practices and adaptation in the marginal uplands: the case of Brgy. Linao, Inopacan, Leyte. *Annals of Tropical Research* 36:30-27

Scherr SJ. 2000. A downward spiral? Research evidence on the relationship between poverty and natural resource degradation. *Food Policy* 25:479-498

Scoones I, Thompson J & Chambers R. 2008. Farmer first revisited: innovation for agricultural research and development. Accessed 25 November 2015 from http://www.future-agricultures.org/farmerfirst/files/Farmer_First_Revisited_Post_Workshop

Shiferaw BA, Okello J & Reddy RV. 2009. Adoption and adaptation of natural resource management innovations in smallholder agriculture: reflections on key lessons and best practices. *Environment, Development and Sustainability* 11:601-619

Soh MBC and Omar SK . 2012. Small is big: the charms of indigenous knowledge for sustainable livelihood. *Procedia – Social and Behavioral Sciences* 36:602-610. Accessed 9 October 2013 from www.sciencedirect.com

Thierfelder C and Wall PC. nd. The importance of crop rotations. CIMMYT International Maize and Wheat Improvement Center. Accessed 10 October 2013 from http://www.wiso.boku.ac.at/fileadmin/_/H73/H733/Mozambique/CIMMYT_ExtBulletins02.pdf

United Nations-Water. 2012. Status report on the application of integrated approaches to water resources management. Accessed 11 June 2014 from www.un.org/waterforlifedecade/pdf/un_water_status_report_2012.pdf

Yule ES .nd. Some superstitions and customs of Filipino farmers. Accessed 10 October 2013 from http://archive.org/stream/jstor29738348/29738348_djvu.txt