

**CONSEQUENCES OF THE INTRODUCTION OF
COMMERCIAL CULTIVARS ON THE IFUGAO
RICE TERRACES WORLD HERITAGE SITE**



Jacy G. Moore

Cover photograph was taken from the website, <http://kiangan.gov.ph/tourist-spots/man-made/nagacadan-rice-terraces/>, and adapted by Mrs. Jackie Schaefer on the 26th of February 2015.

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1. Chapter 1: Introduction

1.1 Theoretical Context: Relevance, Issues, and Research

Rice Terraces of the Philippine Cordilleras

This thesis focuses on archaeological heritage management practices of the Rice Terraces of the Philippine Cordillera World Heritage (WH) site in the northern Philippine province of Ifugao. The main question of this thesis is as follows: "*How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?*"

The primary goal of this thesis is to address the current maintenance and management of the Ifugao WH property. A secondary goal is to provide data on types, linked with the name, of traditional and modern rice varieties grown today. Within this context, the hypothesis that introduction of modern rice cultivars in Ifugao contributes to the breakdown of rice related intangible traditions is examined. The Ifugao customary rituals associated with agricultural practices, mainly wet-rice, are intrinsic and significant components to the Ifugao identity. Construction of the Ifugao terraces, in concert with rice production processes, reveals agriculture and knowledge that are driven by social customs and practices important to the WH status today.

In this thesis, the ideology of commercial cultivation of modern rice affects the heritage of Ifugao is argued, and the deterioration of the Rice Terraces of the Philippine Cordillera's and its maintenance and management is discussed. Additionally, this thesis questions the current methods of preservation of intangible cultural heritage while showing data to support that modern cultivars are a source for future issues in safeguarding the terraces and Ifugao's intangible heritage.

Two methods were used to address the question, "*How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?*". The first method was the undertaking of an extensive review of national heritage management literature. This review included literature on Ifugao geographical conditions, agricultural systems, and commercial rice production practices. The literature review provided a background for understanding Ifugao's history and intangible practices, heritage management and the advantages and disadvantages of modern and traditional rice production.

The second method was an ethnographic survey, conducting personal interviews with current Ifugao rice terrace farmers. These interviews included a total of 96 farmers in Nagacadan, Pindongan, and Hapao Ifugao *barangays* (villages). The ethnographic work was carried out to determine what rice varieties were cultivated during 2013 and 2014, and to collect comments from farmers regarding rice cultivation and traditions they had used. The data gathered from ethnography was used to ascertain planting of modern rice cultivars¹ in Ifugao despite the fact that the province is considered to be a 'modern cultivar free zone' (Morales 2009, 1).

Altogether, the results of the literature research study and ethnographic survey were used to identify the state of heritage management and explore the importance of rice related intangible cultural heritage in Ifugao. The primary aim of this thesis is to discuss and describe the consequences of modern cultivars for the preservation of the Ifugao cultural heritage, while providing an assessment of the Rice Terraces of the Philippine Cordillera and, in the end, providing recommendations for heritage management in the Ifugao WH sites.

¹ The terms "modern cultivars" and "commercial cultivars" are used interchangeably.

1.1.1 Relevance: Ifugao, Heritage status, Intangible Cultural Heritage and Rice

The Rice Terraces of the Philippine Cordillera, composed of five sites, was designated as a UNESCO WH site in 1995. The Ifugao terraces WH site was valued as '*an outstanding example of living cultural landscapes*,' (UNESCO 1995b, 52) under criteria (iii), (iv) and (v) (refer table 1). These were based on several criteria (refer table 2) created by UNESCO's World Heritage Committee (UNESCO 2013, 20-21). Similar to other WH sites in Southeast Asia (*e.g. Angkor Wat* in Siem Reap, Cambodia), the designation has dramatically transformed the region in many ways (UNESCO 2008, vi). The volume of tourist activity in the area has increased (UNESCO 2008, 25). For instance, the municipality of Kiangnan had a total of 9,049 visitors in 2012 (Dulawan, 2014) whereas 11,264 visitors were recorded in the logbook of Kiangnan homestays in 2013 (Personal communication with Eulalie D. Dulawan, Tourism Counsellor [refer Appendix I]).

For a non-traditional tourist area, this 20 percent increase in a single year is significant for the town. These visitors, while providing short-term income, may lead to environmental degradation and lower rice production levels over time. For example, some rice farmers have abandoned their agricultural practices and engaged in the tourist economy (UNESCO 2008, 47). Concomitant with these changes is a shift to production of commercial rice, as opposed to more traditional highland Ifugao rice (*e.g. tinawon*) varieties. *Tinawon* rice is a one-crop-per-year variety, as opposed to modern commercial high-yield lowland varieties of rice (UNESCO 2008, 56) that produce harvests up to three times per year.

Table 1: Ifugao Terrace World Heritage Site Inscription Criteria, Statement of Outstanding Universal Value (UNESCO 1995b, 52).

Criteria (iii)	The rice terraces are a dramatic testimony to a community's sustainable and primarily communal system of rice production, based on harvesting water from the forest clad mountain tops and creating stone terraces and ponds, a system that has survived for two millennia.
Criteria (iv)	The rice terraces are a memorial to the history and labour of more than a thousand generations of small-scale farmers who, working together as a community, have created a landscape based on delicate and sustainable use of natural resources.
Criteria (v)	The rice terraces are an outstanding example of land-use that resulted from harmonious interaction between people and its environment, which has produced a steep terraced landscape of great aesthetic beauty, now vulnerable to social and economic changes.

Table 2: Criteria for the Assessment of Outstanding Universal Value (UNESCO 2013, 20-21).

(i)	Represent a masterpiece of human creative genius
(ii)	Exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design
(iii)	Bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared
(iv)	Be an outstanding example of a type of building architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history
(v)	Be an outstanding example of traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment specifically when it has become vulnerable under the impact of irreversible change
(vi)	Be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance
(vii)	Contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
(viii)	Be outstanding examples representing major stage of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features
(ix)	Be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial freshwater, coastal and marine ecosystems and communities of plants and animals
(x)	Contain most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from point of science and conservation

Currently, Ifugao and its community continue to maintain a strong connection to their past, observed during the execution of the ethnographic survey and interviews. The community strives to conserve traditions, knowledge, and in particular strong kinship ties. Such relationships are important in ensuring a stable farm labour source and support in times of need. The Ifugaos' also combine old and new traditions, which is apparent in the interweaving of Catholic marriage and funeral practices with elements of Ifugao indigenous religion, whereby marriages involve the groom to provide a set amount of pigs, depending on the man's status and wealth for the ceremony. The pig offering to the bride and her family during a marriage is a traditional Ifugao custom still practiced today. Another example of how the Ifugao's community has embraced traditional knowledge and practices is the progressive maintenance of their culture through community programs such as the creation of learning centres to educate young *Ipugos* and tourists (*e.g.* niketopprogramme.org²).

The people of Ifugao (*Ipugo*³) are also reflected in the terraced landscape through their labour-intensive work to maintain them. The structures have continued to be constructed, maintained, and managed by generations of Ifugao farmers. These terraces embody the past through both subsistence practices and heritage. This landscape is not unchanging, however Ifugao's landscape has seen the noticeable development of (usually concrete) infrastructure and paved roads as opposed to the construction of wooden and stilt traditional houses. The changes today are undeniably distinct from the past and have accelerated since the designation of WH status in 1995. The *Ipugos* are both inadvertently and intentionally becoming accustomed to the western lifestyle while maintaining strong affiliation with the Ifugao ideology and customary practices.

² <http://www.nikeprogramme.org/index.php/about-nike.html>, last accessed 10 February 2015.

³ Reference to the people of Ifugao as *Ipugos* shall be used and the province of Ifugao will be referred to as Ifugao.

In 2003, the UNESCO's *Convention for Safeguarding of the Intangible Cultural Heritage*, defines intangible cultural heritage as ‘*practices, representation, expression, knowledge, skill*’ (UNESCO 2003, 2) embedded in a group’s culture. UNESCO included one aspect of intangible cultural heritage in Ifugao into its inscriptions in 2001, namely a tradition, referred to as *Hudhud* (UNESCO 2001a, 2001b). This is an historical narrative chant by local Ifugao community members during the rice sowing season, funerals, and rituals (Blench and Campos 2010, 55-56). The Ifugao oral tradition recites at least 40 historical tales for a period in as short as three days to as long as seven days (Peralta 2008, 94-95). This element of Ifugao intangible cultural heritage is considered to be threatened by outside religious affiliations such as Catholicism, however, the UNESCO designation and safeguarding strategies have protected this tale under the Indigenous People’s Rights Act (Cariño 2012, 10) and intellectual property by National Commissions for the Culture and Art (NCCA) Intangible Heritage Committee and UNESCO’s Convention on Intangible Cultural Heritage (Peralta 2008, 91). This Ifugao oral tradition has therefore preserved strong ties to the Ifugao culture, rice-culture, and has furthered resistance to the threats of introduction of lowland culture to the intangible heritage of the *Ipugo*.

Traditional Ifugao rice cultivars are the results of a long process of artificial selection and domestication, and they are embedded with intangible knowledge and skills. Today, the process of agricultural selection and domestication is referred to as genetically modified organisms (GMO). The selection and domestication of crops began when humans started to use their surrounding environment as a source for subsistence. Modern GMO and traditional (*i.e.* not genetically-engineered/non-transgenic) cultivars differ in terms of how they were developed—generations of trial and error by traditional farmers rather than modern systematic experiments in a laboratory or other controlled environment by scientists.

However, this does not necessarily mean differentiation in terms of the end state (finished product) of the organism. The important aspect to note in regards to cultural heritage is that modern cultivars are introduced as part of the current industrial approach to farming with a focus on high-yields, commodity value, and return on investment. The introduction of these modern cultivars requires the change from traditional Ifugao agricultural practices to an approach that requires new skills and knowledge. Adoption of these changes removes the skilled processes and traditional practices enshrined in the Philippines National Heritage Act in 2009 (Republic Act No. 10066) as an intrinsic component of a cultural property as well as the designation of outstanding universal value on the Rice Terraces of the Philippine Cordillera's heritage status.

The key to maintaining landscapes to perpetuate promoting and enshrining intangible cultural heritage and traditional cultural practices in Ifugao is implementing effective heritage management. This thesis demonstrates how unintended change or accidental introduction of rice may have inadvertent consequences and unavoidable effects on the holistic spectrum of the intangible culture and community practice, which can result in the inevitable breakdown of the entire spectrum of traditional knowledge and practices. The adoption of new rice varieties and associated technologies is detrimental to the evolving community structure, if commercial value trumps the traditional value of rice.

The truth of the matter is that there would be no incentive to maintain terraces for new and non-commercially viable rice production without the primacy of traditional practices, resulting in farmers and communities searching for alternative, economic pursuits. However, with traditional rice there is a binding social contract within the community, and the terraces that can be upheld as part of this complex of intangible heritage relationships. Implementing effective heritage management can enable sustainable agricultural yields and the preservation of cultural landscapes

without necessitating the wholesale adoption of modern cultivars and practices, which can be destructive to countless generations of traditions.

1.1.2 Issue: Traditions, Agriculture, and Modern Cultivars

The world's population has tripled since the 1960s Green Revolution (GR) of agriculture development (Huke 1985, 249). With this population surge, food supply and biosecurity have become critical subjects of debate (Nguyen 2006, 24). Rice is an important world food crop, consumed by over 3 billion people (Mohanty 2013, 44) and has deeply rooted symbolic meaning in many Southeast Asian countries. This thesis examines conditions under which modern rice varieties (*e.g.* genetically modified, genetically engineered, and transgenic rice in a laboratory) are being introduced and the subsequent effects on intangible practices. Specifically, this study gathers and discusses information on both negative effects (*e.g.* soil acidification [Herrera-Estrella 2000, 924]) crop infertility, pesticide use [IRRI 1994, 40]) and positive effects (*e.g.* food surplus and profit) of commercial rice (*e.g.* lowland modern rice cultivars) and the association of those cultivars to the (presumed) future decline of the Ifugaos' indigenous traditional knowledge, as well as specific impacts on the Ifugao WH sites. The heritage management discussion reviews and evaluates the management and maintenance of the Ifugao WH sites in the context of this change.

According to Henson (2000), the agencies for archaeological heritage management in the Philippines are recently developed and have poorly implemented regulations. This is caused by challenges in defining and implementing of heritage laws, proper exploitation and production of funds and public awareness. Administrators of the Ifugao WH site have maintained the 'outstanding universal value' by overcoming difficulties in administration and protection during the past ten years (UNESCO 2008).

Past and current proactive initiatives by community groups (*e.g.* Save the Ifugao Terraces Movement [SITMO]) and other international organisations have worked on strategies for conserving and protecting the terraces. However persistent

problems with heritage management are revealed in the case study by Mananghaya (2011) where it was found that socio-economic development such as infrastructure building (Mananghaya 2011, 947) affected the heritage status title as it undermined UNESCO criteria (UNESCO 2001c).

This is inferred to be a result of past and imminent infrastructure changes affecting heritage management and maintenance practices. The rice terraces as a landscape and the people maintaining that landscape are not and have never been static. Modern infrastructure and cultural transformation and development are causes for unavoidable change—however, the Ifugao identity instilled in the terraces remains highly valued by many stakeholders, including the Ifugao farmers and the UNESCO organisation. The living traditions behind the rice terraces are a part of Ifugao heritage and associated with the Ifugao's intangible cultural knowledge, hence the linchpin of its heritage status title.

Having discussed that, the use of commercial high-yield lowland rice varieties provides multiple harvests per year but disrupts the cycle of traditional land use and cultural activities associated with traditional rice production. The use of modern high-yielding rice varieties therefore contributes to the breakdown of the Ifugao's social practices and agricultural activities such as the annual *Hongan di Page* agricultural ritual (Mananghaya 2011, 948; UNESCO 2008, 23) and possibly soon after the *Hudhud*. Traditionally, the *Hongan di Page* ritual is performed to help increase the yield for the *tinawon* rice (UNESCO 2008, 29) and the shift to modern cultivars removes the need to both invest in and participate in this agriculturally defined activity.

The cultivation of lowland rice requires packaged chemicals in order to produce high-yields (Estudillo and Otsuka 2013, 32) and this increases the use of pesticides on the crop to control insects, herbicides to exterminate weeds, and artificial fertilizers for soil enrichment (Estudillo and Otsuka 2013; UNESCO 2008, 23). All of these disrupt soil quality and the natural ecosystem. Furthermore, the

management of invasive species and pests, such as the freshwater golden apple snail (*Pomacea* spp.), were introduced as a food source in Ifugao but are now subsequently found to damage young rice (Cagauan and Joshi 2002). This problem has led farmers to apply chemical molluscicide during rice irrigations to treat snail infestation (Cagauan and Joshi 2002). These problems caused by poor management, maintenance, and lack of State Party support, following the legislation in 2001, were recognized as threats to the value of the site by the UNESCO WH Committee. The WH Committee responded by placing the Rice Terraces on the UNESCO endangered list in 2001 (UNESCO 2001c, VIII.111).

After 11 years, the Rice Terraces of the Philippine Cordilleras were removed from the List of World Heritage Sites in Danger (UNESCO 2012a, 40-41), in recognition of efforts toward proactive measures to secure funds and recommendations in State of Conservation reports by the Philippine State Party. This occurred with aid from international and local non-government organisations. Despite this positive development, conservation and management efforts are a continued issue, according to the 2012 and 2014 State of Conservation reports and advisories (UNESCO 2012b; UNESCO 2014). Moreover, the challenges affecting the WH area were also threats to traditional ways of life and knowledge systems, including financial and human allocation, illegal activities within the State Party's legal framework, implementation of management systems and management plans, and with the value that Philippine society places on heritage issues (Henson 2000, 109-116; UNESCO 2012b).

1.1.3 Research: Investigation of Rice Varieties, Agricultural Traditions, and Legislation

Based on the discussed relevance and issues, the primary research question in this study is, "*How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?*". This question was formulated to

address the issues of heritage management concerning introduced modern cultivars and identify varieties of traditional Ifugao rice and modern rice cultivars planted in three villages in Ifugao, Philippines. The primary objective is to discuss and investigate how commercial rice impacts agriculture and the traditions of the local population living and farming on the Ifugao terraces and its WH sites. Documented in ethnography by research anthropologist Ray Franklin Barton (1919, 1922, 1930), the intangible cultural heritage of rice rituals and social customs is supported by early nineteenth century Ifugao agriculture and law. Based on literature research and ethnography, it appears that encouraging the adoption of modern rice agriculture may negatively affect the long-standing heritage of the *Ipugos*.

In the Rice Terraces of the Philippine Cordillera, the Ifugao terrace farmers are the primary stakeholders, thus they are an essential element in successful maintenance and management of the terraces. It is the terrace farmers who have imbued the site with its '*living cultural landscapes*' character (UNESCO 1995b, 52) and the survey interview questions given to the farmers are meant to elucidate a deeper understanding of their knowledge and why farmers do what they do. The identification of rice varieties grown by farmers in the Ifugao terraces during 2013 and 2014 specifies whether farmers are growing *tinawon* or commercial rice. The introduction of lowland rice, and tourism impacts (UNESCO 2008, vi) have caused one of the most significant changes in subsistence practices since the initial cultivation of wet-rice around 300 years ago (Acabado 2009, 813).

The contact of modern development such as the lowland rice introduction may well influence the intrinsic Ifugao value system and so future implications to the Ifugao WH sites are examined in this research.

In summary, the research and approach in this thesis brings together information on archaeological heritage management, Philippine and international heritage and agriculture legislations, alongside contemporary data on traditional and commercial rice varieties grown in Ifugao. These help to aid in investigating and

examining the implications of the future transformation of intangible cultural heritage and rice that is grown by farmers on their Ifugao terraces today. This study will aid to deliberate on the preservation and conservation of the Rice Terraces of the Philippine Cordilleras for the reason of safeguarding their heritage through the lens of archaeological heritage management. Without a doubt, the Ifugao terraces are an area where change (*e.g.* introduction of mass-tourism and modern development) is occurring at a very rapid pace (UNESCO 2008, vi) and the *Ifugos* alongside with State Party need to be active participants in managing its World Heritage status.

1.2 Ifugao, Luzon, Philippines: Geography and Background

The Philippines (fig. 1) is an archipelago located southwest of mainland Asia within the western Pacific in a region referred to as Island Southeast Asia. The Philippines is comprised of more than 7,000 islands spread over more than 300,000 square kilometres. The region has three distinct geographical areas: Luzon (north), Visayas (centre), and Mindanao (south). Ethnographic and archaeological data suggest the initial settlers of the Philippines came from mainland Southeast Asia when sea levels were lower, exposing a now submerged landmass known as the Sunda Shelf, more than 30,000 to 40,000 years before present (O'Connor 2007, 523).

In the mountain ranges of central Luzon lies the province of Ifugao, part of the six territories in the Cordillera Administrative Region (CAR), which includes the mountain ranges of central northern Luzon, Philippines. Ifugao (fig. 2) consists of 11 municipalities that are separated based on political administration: Banaue, Hungduan, Kiangan, Lagawe, Mayoyao, Lamut, Asipulo, Tinoc, Aguinardo, Alfonso Lista, and Hingyon (Dulawan 2001, 1). Five of the Ifugao Rice Terraces, labelled as World Heritage Sites, are in the municipalities of Banaue, Kiangan, and Hungduan (UNESCO 2001, 19; UNESCO 1995a). Ifugao has a total land area of 251,778 hectares (622,157 acres) with the highest elevation at 2,523 meters (8,277 feet) above sea level. The Ifugao have long been associated with intensive rice cultivation in

terrace paddy fields and most rice terraces are at least 500 meters (1,600 feet) above sea level (Dulawan 2001, 1-2; UNESCO 2008, 2). The terraces were once thought to have been 2,000 years old (Beyer 1955 cited by Acabado 2010; UNESCO 1995b, 50) but radiometric carbon dating of highland rice terraces suggests they were established at c. 1650 CE (Acabado 2009, 813).

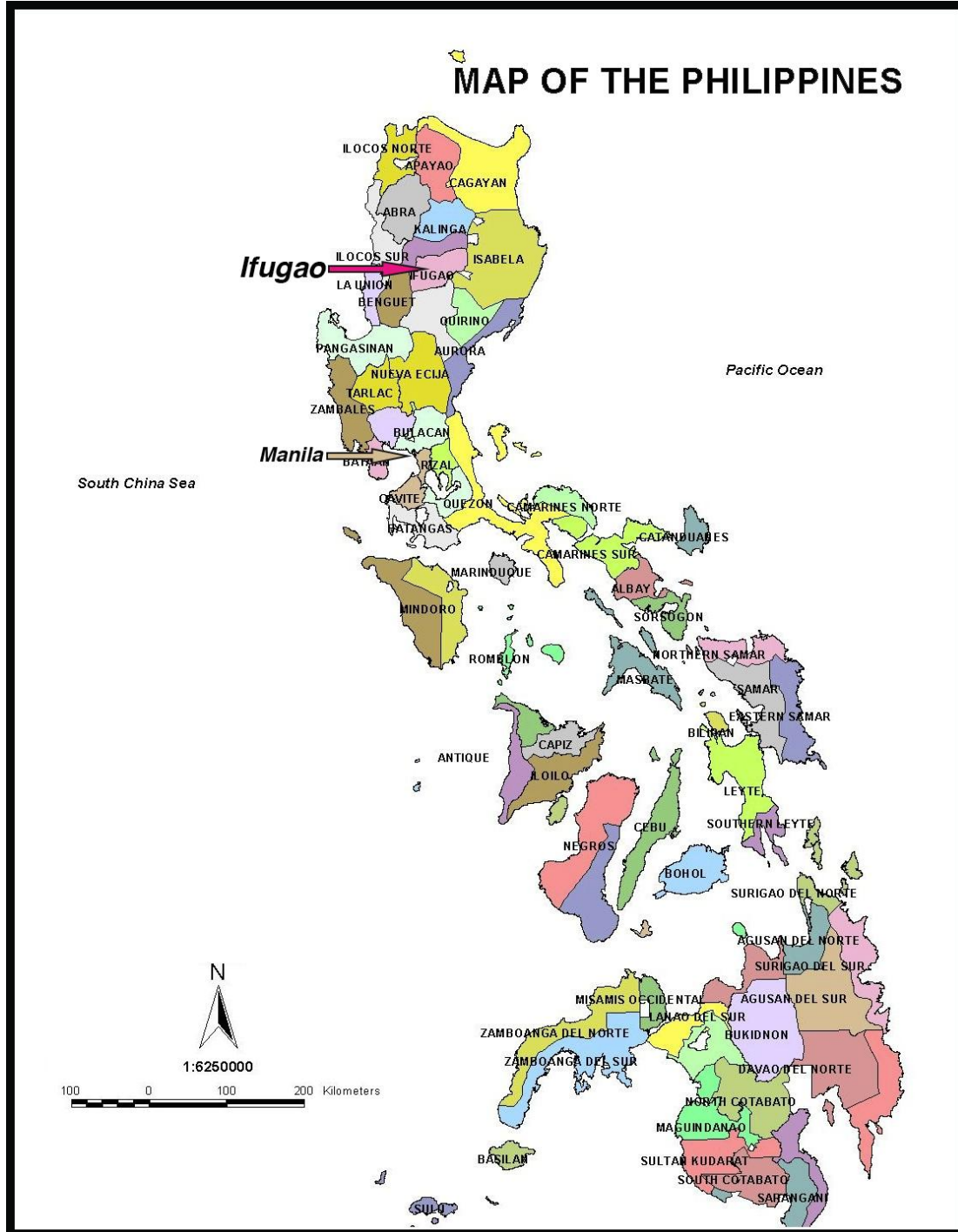


Figure 1: Map of the Philippines with the location of Ifugao
 (<https://retirednoway.wordpress.com/2011/05/16/provincial-map-philippines/>).



Figure 2: Ifugao Province Map with political subdivisions
(<http://www.mapsofworld.com/philippines/provinces/ifugao.html>).

1.3 Structure and Organisation of Thesis

The research investigation and data discussion addressed in this thesis is divided into seven chapters, including this introductory chapter. The second chapter focuses on the ***Research Design*** describing the methodology utilised for this study. It presents the two approaches used: a) literature review and b) ethnography. The methods are described based on their social relevance to understanding the research on archaeological heritage management and modern cultivars on the WH site and its component in archaeological resources. This chapter also discusses, explains and describes the methods applied on the collected quantitative data gained from ethnography (surveys and analysis) and literature review. Furthermore, this chapter clarifies how these datasets were analysed and applied to the research topic.

The third chapter covers the ***Previous and Current Research*** and provides background information and research on history, agricultural practices, and archaeological heritage management on Ifugao and the Philippines. The chapter utilizes modern day on-line articles, videos, and scholarly texts from archaeology, history, ecology, ethnography, and legislation. The literature review focuses on the background of the Ifugao culture, from history and archaeological analyses, conventions, laws, and policies of the WH properties. Also discussed in this chapter is the current state of heritage management in the Philippines. Within this chapter, the current legislation and agencies are discussed (*e.g.* International Rice Research Institute [IRRI]), relevant to rice production on the Philippines. Subsequent to the prior discussion, literature on current modern cultivars is illustrated to explain its relation to the research objective. This includes definitions, history, case studies issues and background data on genetically modified, genetically engineered, and transgenic organisms. An explanation on the advantages and disadvantages of modern cultivars is included to stress its importance on intangible cultural practices and heritage stasis. This is seen in the second-to-last segment of this chapter.

The fourth chapter presents the *Results and Analysis* of the study, which includes quantitative data culled from the ethnographic survey. This chapter presents frequency of use/cultivation of seed type (name) by Ifugao farmers. To be specific, the types of modern and Ifugao rice grown in three villages. The results are based on 2013 and 2014 farmer surveys of local knowledge of rice varieties through the interviews of 96 farmers from Nagacadan, Pindongan, and Hapao villages in Ifugao. The *Analysis* deconstructs the *Results* from the ethnographic surveys, describing, explaining, and synthesizing the relationship between the rice varieties planted in 2013 and 2014, particularly on Ifugao rice, non-Ifugao rice, and Ifugao adopted varieties. This chapter provides a detailed breakdown of the collected respondent data and its importance for the thesis question and research.

The fifth chapter is the *Discussion*, which incorporates the *Previous and Current Research*, *Results and Analysis* chapters to highlight the relevance of the research topic and problems inherent in managing archaeological heritage and rice variety change. This chapter explores how the results and analysis of ethnographic inquiry are foundational in implementing successful archaeological heritage management practices in the Rice Terrace of the Philippine Cordillera WH sites. The discussion also engages a combination of local, national, and global issues based upon the literature review and ethnography.

The *Conclusion* is the sixth chapter that draws upon the importance of maintaining indigenous and sustainable agriculture, alongside its symbiotic effects on the Ifugao terrace WH sites. The conclusion further discusses assessment of this research on a broader scale and the potential effects of ascribing "meaning" to a World Heritage property when cultural processes and their participants are transforming the area. The chapter concludes with a short recommendation detailing active management and maintenance methods towards preserving intangible heritage on the Rice Terraces of the Philippine Cordilleras WH site.

2. Chapter 2: Research Design

Ethnographic data formed the core of this research, which was then complemented with relevant literature on archaeological heritage management and agricultural practices. This chapter discusses these datasets and provides descriptions on the methods. Ethnography was used to obtain information to answer the primary research question of the investigation: *How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?*

2.1 Methodology: Literature and Ethnography

Heritage management is a broad concept that has multiple definitions (Shepherd and Lu 2013, 1), while archaeological heritage management has been refined by Skeates (2000) into two general characterizations: 1) '*the material culture of past societies survives in the present*' and 2) '*the process through which the material culture of past societies is re-evaluated and re-used in the present*' (Skeates 2000, 9-10).

In this thesis, Skeates' (2000) second characterization is used as it applies to the focus of this thesis; archaeological heritage management pertains to the perceived importance of cultural property in the face of rapid economic and political change. Therefore, the archaeological heritage management, specifically executed for this thesis, is the recognition of the processes and disintegration of Ifugao's culture heritage of the rice rituals and customs associated with present-day traditional rice. This investigation is achieved through extensive literature review and ethnographic surveys to understand the changing nature of archaeological heritage management of the Rice Terraces of the Philippine Cordilleras. These methods are used to explain the seeming contradiction of Ifugao farmers' need for economic productivity and their intent to conserve their customary way of life.

The literature review concentrated on historical and environmental publications found in archaeological, heritage, laws, and agricultural research

journals. Included in this review is background information on Ifugao history, Philippine legislation, and the processes of designating the Rice Terraces of the Philippine Cordillera as a National Cultural Treasure and a WH site. The literature review provides a background of the Ifugao's past intangible traditions such as the practices of *Hongan di Page* and *Hudhud*. In terms of the ethnographic methods, ethnographic surveys and interviews regarding the varieties of rice grown in 2013 and 2014 by Ifugao terrace farmers were conducted. This was undertaken to develop a greater understanding of the relationship between economic options and heritage conservation in Ifugao.

The perspectives and responses from farmers were then used to evaluate, support, or reassess the information obtained from the literature review. An additional method of acquiring information was through personal communication of four notable informants who were not farmers and did not participate in the survey, nor help conduct the survey. These informants are further described and discussed in the ethnography section of this chapter.

Altogether, the literature review and ethnographic data are used to analyse, compare, and contrast past and current Ifugao farming practices and their impacts on the heritage status of the Rice Terraces of the Philippine Cordillera. The literature and ethnographic data help to explain the role of traditional varieties to Ifugao's intangible cultural heritage evident in Ifugao customs and rituals. As a whole, the literature review provides the academic foundation and theoretical framework of the research effort, and the ethnographic information identifies qualitative data on current rice cultivars in three Ifugao villages.

2.2 Literature Review of Ifugao's Heritage Status and Rice

The body of literature consulted to complete this thesis demonstrates the relationship between archaeological heritage management and cultivation of modern/commercial

rice varieties in Ifugao. The literature review consists of an overview using scholarly research papers on policies, legislation, peer-reviewed and on-line-articles, and books related to the Ifugao province and its people, Philippine legislation, the Rice Terraces of the Philippine Cordilleras WH site, and modern cultivars. The literature reviewed provides a contextual foundation to address the research question and objective. This background information also provides a backdrop to explore the research question and outlines what is significant about the Ifugao rice culture as well as the development of the Rice Terraces of the Philippine Cordillera's heritage status. This topic involves the examination of modern cultivars and their introduction into the Philippines and other related Asian countries (*e.g.* Vietnam), implicitly bringing together the transformation of traditional norms and rice cultivars together.

In the first section of the literature review, historical background information on the Ifugao province is presented. Within this body of literature, the importance of rice to Ifugao rituals, legends, customs, and traditions is examined. The description of Ifugao's early history and ethno-history of colonial contact describes Ifugao customary ways of life and the resulting subsequent changes. This focus is central to the awareness of the pre-contact and post-contact of colonial imposition on Ifugao's traditional culture, specifically how early colonial interaction led to the rapid change in Ifugao beliefs and social systems. Contemporary Ifugao and western influences on government and rice culture, is subsequently addressed. Compared to early Ifugao society, this perspective offers a contrasting image of increased population, development in the political system and administration, improved housing and infrastructure, as well as public education.

The next point addressed is the significance of Ifugao terraces by explaining the processes of recognition as a National Cultural Treasure by the Philippine government as well as being designated as a WH site. The policies relating to the Rice Terraces of the Philippine Cordillera pave the way for the preservation, conservation, and protection of terraces as a national and global entity. Moreover, a

summary is given in the last section to encompass the archaeological heritage management in the Philippines through an in-depth scope of regulations with components on previously discussed Ifugao history. The concluding summary reviews the literatures' relevance to the research question and aim.

The final section of the review focuses on modern rice cultivars. In this section modern cultivars are defined: genetically modified organisms, genetically engineered organisms, and transgenic varieties. This section contributes an overview of the history and use of modern cultivars and rice cultivation in the Philippines, including how modern agricultural techniques⁴ introduced to the developing regions affect traditional agriculture. This section investigates the introduction of commercial rice varieties and modern agricultural technologies increased productivity, and how environmental degradation has accompanied this shift. This information comprehensively supplies agricultural subsistence strategies with past and current farming techniques and practices.

The literature review prefaces an examination of the role of modern cultivars in the breakdown of Ifugao's traditional agricultural practices that directly informs the intangible cultural heritage. To strengthen this perspective, the literature review demonstrates how commercial varieties can and will possibly impact the changes to the future management and maintenance of the Ifugao rice terraces.

The lack of regulation implemented by State's legislation is not properly visible or discussed in the current transformation and introductions to the Rice Terraces of the Philippine Cordillera. These issues are prevalent and demonstrated in the literature to confirm the significant changes in cultural heritage and rice cultivars. In summation, the literature review describes the different processes of development in Ifugao's agriculture, history, and legislation as well as introduces the importance of traditional agriculture associated with the heritage status of the Ifugao terraces.

⁴ Modern agriculture techniques are biotechnology laboratory work, which are artificial and unnatural selection for manipulating plants by humans.

2.3 Ethnography of Ifugao Rice Farmers

Ethnographic research is generally used in the field of anthropology to understand peoples, languages, cultures, and traditions (Conklin 2007, 172). The ethnographic data collected in Ifugao for this research suggests methods of seed selection by farmers and the current agriculture practices, similar to research produced by Stone (2007, 2010, 2014). Stone's research interests are GMOs, social and political economy, and farming knowledge and processes. Following Stone (2007, 2010, 2014), the Ifugao ethnographic seed datasets provide significant information to understand the state of preservation of the Ifugao terraces and cultural heritage. Stone's techniques of ethnography in farmer's seed selection have been followed. This is an important process to recognize, particularly the cultural transformation on heritage derived from the farmer's traditional knowledge. In the case of this research, the consequence of introduced commercial crops selected by Ifugao farmers to the Ifugao's WH status.

The use of ethnography has been foundational in Stone's (2007, 2010, 2014), a long-term anthropological work on traditional farming in India, specifically in the introduction of biotechnology (*e.g.* GMOs). Work by Stone (2007, 2010, 2014) and Kudlu and Stone (2013) was utilised for their ethnographic framework in this research. Stone (2007) has been influential in understanding the agricultural changes, using consistent ethnographic studies, particularly on introduced, genetically modified *Bt* cotton. His work features the social aspects in which agriculture skilling and deskilling processes take place. There is a disruption of environmental (traditional) farming methods when new technology and seeds are introduced and possibly adopted. This is illustrated in Stone's (2007) work. This means seed selections by farmers in India have relied on social relations with other farmers rather than environmental factors and learning processes. Ultimately, the farmers in India

were vulnerable to the introduction of biotechnology, producing a decline in their traditional knowledge.

The farmer's methods and skills inherent to environmental or traditional learning were questioned by introduced methods in agriculture and biotechnology. Similar methods have been applied to Stone (2007, 2010, 2014) and Kudlu and Stone (2013) methods. Ethnography has been used for investigation and identification on the scope of current seed selections and agricultural practices of Ifugao farmers, in the preservation of the terraces, and its WH status. This method differs from Stone (2007, 2010, 2014) and Kudlu and Stone (2013) in that it does not look at social learning or deskilling practices. Instead, the differences in seed name of traditional and commercial rice to reveal these effects of the Ifugao heritage status with associated intangible cultural heritage are examined.

The methods to gather data in archaeological heritage management research vary depending on the investigation and goals. In this research, ethnographic techniques such as observations, surveys, and open-ended interviews were conducted to obtain qualitative data on the varieties, as in seeds, of rice cultivated in the terraces. These surveys and interviews guided follow-up, face-to-face interviews and established relations with the respondents. This approach allowed for better personal connection with the rice farmers, allowing for clarification.

Ethnographic documentation complements the literature review by demonstrating the types of rice being cultivated today and the changes associated with the shift in commercial rice production.

The data gathering process was based on a standardized questionnaire (refer Appendix II) developed in conjunction with Professor Glenn Stone and Mr. Marlon Martin. The questionnaire was augmented by ad-hoc follow-up interviews. Due to the existence of a language barrier in some instances, SITMO staff members provided guidance in translating surveys and questionnaires, as well as translations during the interviews. As a non-Ifugao speaking researcher, an effort was made to learn the

language, however while basic and simple *Tuwali* words were learned, it was not deemed satisfactory enough to hold a fluent conversation with respondents, therefore requiring SITMO staff assistance.

The techniques used involved face-to-face interviews while recording and describing farmer's personal and agricultural information, in their own words whenever possible, based on interview time schedules. The schedules were formed utilizing the timeframe when farmers were active in the terraces, harvesting rice before sunrise until mid-afternoon, and then later in the afternoon before the sunset. The ethnographic approach was designed to document information on the current situation regarding the types of rice grown on Ifugao terraces, and practices employed by farmers. The collected survey information was later digitised for analysis after fieldwork. The ethnographic survey took place in two out of the five Rice Terraces of the Philippine Cordilleras WH Sites and one Ifugao terrace without WH status for comparison. These are Nagacadan, Pindongan, and Hapao (fig. 3). The interviews were conducted with terrace farmers in Kiangnan and Hungduan municipalities within three *barangays*: Nagacadan, Kiangnan, World Heritage Site and Tourist Destination, followed by Pindongan, Kiangnan, Non-World Heritage Site and Non-Tourist Destination, and finally, Hapao, Hungduan, World Heritage Site and Non-Tourist Destination. The respondents were provided with an explanation regarding the research, the purpose of the survey, and their rights with informed consent.

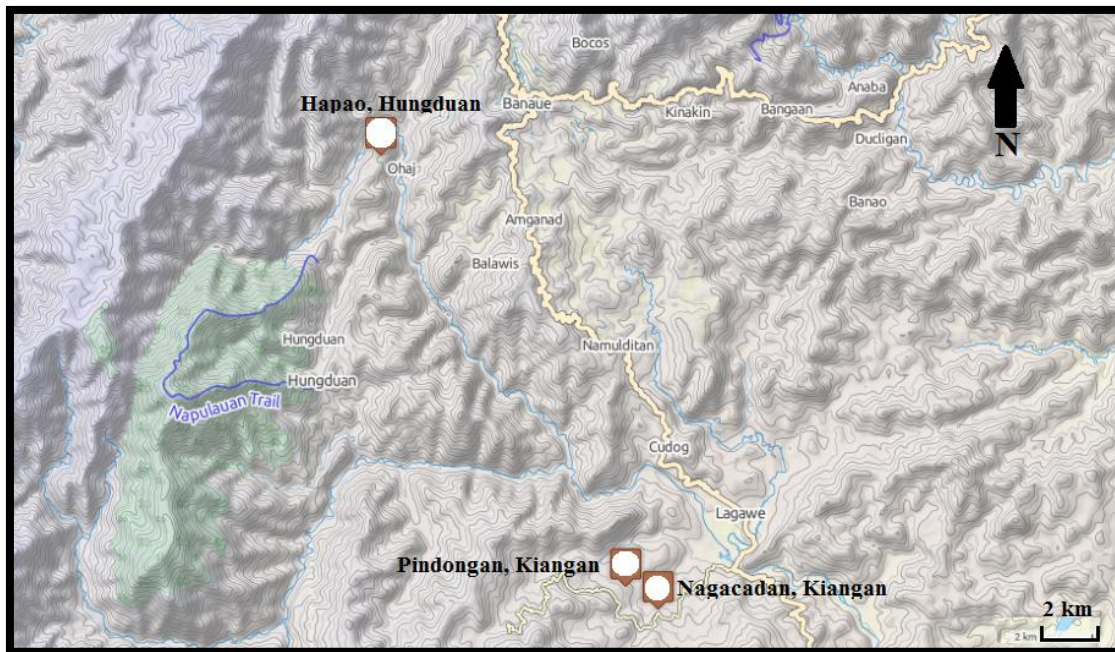


Figure 3: Map locations of Nagacadan, Pindongan and Hapao where surveys were conducted with Ifugao rice farmers (Google Maps 2014 adapted by Jacy Moore).

The Nagacadan survey area is in a *barangay* located northeast of Kiangnan municipality (refer table 3). This area is designated as a WH site and a tourist destination. The Nagacadan site is an area with occasional visitors and noticeable development that has changed the area. This is visible in restaurants and lodgings to cater to the incoming tourists. There are also traditional and Spanish residential homes situated in Nagacadan terraces with no modern (cement) homes.

In contrast to the Nagacadan site is the *barangay* called Pindongan. The Pindongan village is neither a heritage site nor a tourist destination. The data gathered from Pindongan farmers contributed to the null variable as compared with the other two survey groups. This site was chosen based on the proximity to the Nagacadan site and because it is at a lower altitude than the Nagacadan and Hapao sites. Also, Pindongan has housing infrastructure for families with no stores or tourist accommodations.

The third survey area is Hapao, Hungduan. These terraces are a segment of the Hungduan's WH site but are not part of the regular tourist destinations. This WH site is large, stretched across various mountain landscapes, and distant from other known municipalities. Hapao however, is known to have one small lodging called Giovanni's Place and a few small restaurants, and is also a part of the Heirloom Rice of the Philippine Project. This project sells and exports traditional rice cultivars all around the world (www.heirloomrice.com⁵).

Table 3: Criteria illustration for the chosen ethnography sites.

Ifugao Villages	Status	Criteria
<i>Nagacadan, Kiangnan</i>	World Heritage Site	Tourist Destination
<i>Pindongan, Kiangnan</i>	Non-World Heritage Site	Non-Tourist Destination
<i>Hapao, Hungduan</i>	World Heritage Site	Non-Tourist Destination

The ethnography dataset for this study shows current rice varieties grown by Ifugao farmers. This study contains a non-representative sample of farmers of Ifugao. There is currently no census indicating totals of the current number of Ifugao farmers growing rice in Ifugao. The 96 non-representative samples of farmers correspond to the rice seed varieties grown between 2013 and 2014 that is found in three Ifugao *barangays*. The survey questions for the interviews were:

- Head of household name and age.
- Respondent's name and age.
- Respondent's relationship to head of household.
- Identity of seed selector and age.
- Whether the respondent is an owner or tenant.

⁵ http://www.heirloomrice.com/index.php?p=project&n=rice_inc, last accessed 8 February 2015.

- For each rice planting: date of planting, seed source, seed name, alternative seed name, quantity planted, area planted, major and minor problems with crop and pesticides used.

Data fields used in the analysis were rice seed name, age of respondent, and seed selector (refer Appendix II). The survey took place from the 10th of June 2014 until the 9th of July 2014. This was timed to take place during the harvest season between May through August (UNESCO 2008, 21-22), to be able to encounter farmers working in the rice fields. Farmers were selected using the fortuitous sampling method of chance encounters to conduct the survey. All the respondents were interviewed while working in their rice fields and/or selected based on proximity to the reviewer. The survey with each respondent depended on the farmer's availability to be interviewed after or during his or her harvest work.

A total of 96 Ifugao farmers were interviewed, of which 32 were farmers from Nagacadan, 32 were from Pindongan, and 22 farmers from Hapao. The fluctuation on the number of farmers surveyed in each area depended on the amount of farmers in the field. This also reflected the quantity of rice to be harvested in terrace paddy fields for that day. Most farmers interviewed would work in the rice paddy fields as early as five A.M. in the morning and as late as eight P.M. in the evening. There was no bias between age and gender of rice farmers in selecting participants during these surveys.

In this research, the total collected farmer respondent sample is not intended to be a representative sample of all Ifugao farmers. Also, there is no demographic information on the current number of Ifugao farmers working to harvest, plant, and sow rice on the terraces. The ethnographic data illustrates the type of rice varieties grown by a sample of 96 farmers in 2013 and 2014 and does not reflect the overall population of Ifugao farmers. Each interview process was between 20 to 30 minutes in length for each farmer. There was no set amount of farmers for each area to be surveyed. The survey aimed to interview as many farmers in each *barangay* as

possible. The survey was completed in approximately one month, from June to July 2014.

The survey aimed to determine the amount of modern cultivars that have been introduced, and non-traditional Ifugao varieties being planted in the Nagacadan, Pindongan and Hapao rice terraces. The survey also showed the specific months rice was planted and cross-examines with the traditional Ifugao planting season (fig. 4). Additionally, a commentary section in the survey allowed farmers to stress their issues and concerns about the rice grown in 2013 and 2014. This commentary provided a basis of current agricultural practices (*e.g.* using chemical pesticides) and current techniques and methods associated with the planted rice.

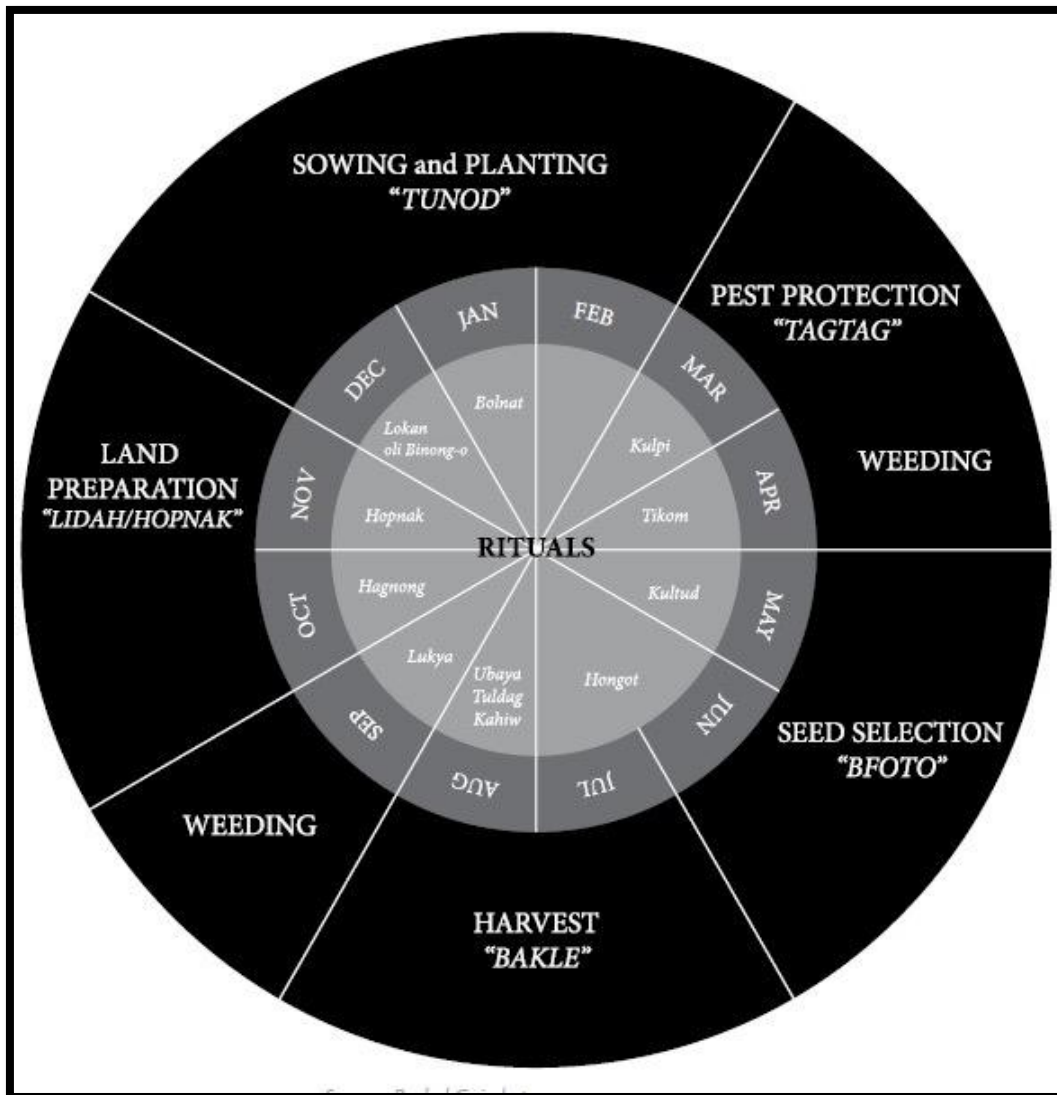


Figure 4: Agricultural calendar cycle (UNESCO 2008, 21).

The collected data from the survey was analysed in frequency of use of the rice types' name, months planted, and associated comments by farmers. This assisted to differentiate and cross-examine the World Heritage site and Non-World Heritage site. The collected information aids to further understand any correlation between introduced rice varieties, particularly if Ifugao farmers are planting traditional

varieties with non-Ifugao varieties in the heritage sites and non-heritage sites. The correlation is determined by the frequency of commercial rice with traditional rice.

In addition, three values that define a rice variety were considered. These were Ifugao rice, which are strictly traditional Ifugao local varieties (refer table 4), as claimed by the farmer informants, non-Ifugao varieties (*e.g.* those not from Ifugao, including commercial varieties), and lastly, Ifugao adopted strains (*e.g.* varieties that have an Ifugao name but are not Ifugao traditional rice).

Table 4: Traditional Ifugao Rice Varieties.

<i>Ipugo</i>
<i>Tinawon</i>
<i>Tino-on</i>
<i>Iggamay</i>
<i>Madduli</i>
<i>Binogon (Binuggon)</i>
<i>Imbannig</i>
<i>Mayawyaw (Minaangan)</i>
<i>Botnol</i>
<i>Imbuukan (Bukkan)</i>

2.3.1 Personal Communication of relevant Informants

Personal communication (refer Appendix I) was addressed through informal contact with four knowledgeable people in the subject area of Ifugao and agriculture. This was accomplished through email/electronic communication and personal interviews. The first two were *Ipugos*: Mr. Marlon Martin, an Ifugao conservation worker and SITMo chief operations officer, and Mrs. Eulalie Dulawan, the Tourism Counselor in the Kiangnan Municipality. Martin and Dulawan expounded upon the current community-based preservation and conservation methods to Ifugao heritage.

Also contacted were two entomologists: Professor Emeritus Merle Shepard and Mr. Finbar Horgan. Professor Emeritus Merle Shepard taught entomology at the Clemson University and occasionally assist in IRRI research. Mr. Finbar Horgan is currently a consultant researcher for IRRI. Shepard and Horgan provided information on current issues on rice, pest control, and agriculture in the Philippines. These four personal contacts assisted to answer questions relevant to Ifugao and agriculture, and are cited within the chapters of this thesis.

2.3.2 Data Processing: Results and Analysis of Ethnography

The results describe and explain the collected ethnographic data on the rice grown by interviewed farmers in 2013 and 2014. This information is presented in tables to show clear differences and similarities based on rice name and type. The frequency of rice planted is illustrated in graphs and tables. Descriptions and explanations are discussed in Chapter 5. These discussions correlate with the research question, intangible cultural heritage, archaeological heritage management, and other aspects taken from the literature review. Moreover, the results present detailed comparisons between each site and explain how the rice information and observations are pertinent to the research aim and question, overall, the relevance of this thesis to archaeological heritage management of the Rice Terraces of the Philippine Cordilleras.

3. Chapter 3: A Review of Previous and Current Research of Ifugao

This chapter sets the foundation and backdrop for understanding archaeological heritage management in Ifugao and the effects of modern rice cultivars. This is accomplished by providing contextual information on the people and terraces of Ifugao, together with general information on GMOs. This chapter is introduced with a review of early Ifugao traditions and social systems, followed by the historical scope of the Ifugao culture. Also discussed is a short colonial history of the *Ifugos*. These ethnohistorical and historical topics are the basis of the significant value envisaged in Ifugao culture and its heritage status.

Subsequently, details of modern day Ifugao is reviewed and provides information on the importance of past and present-day management and maintenance of the Rice Terraces of the Philippine Cordilleras WH site. Following this is an explanation of Philippine National Heritage laws, in which the nomination of WH properties is described, according to the national and global administration, procedures, and regulations. This information reviews the nomination processes of the Rice Terrace of the Philippine Cordillera and its current status today under the NCCA in the Philippines. The material resources are analysed in the end summary of a sub-section.

In the last section of this chapter, exploration on the topics of modern cultivars, specifically focusing on rice agriculture and culture are discussed. The impact of the Green Revolution on Southeast Asia, and the specific provinces and institutions in the Philippines affected by the revolution are explored. Within this topic, definitions and explanations of modern cultivars, alongside associated issues this subject raises is addressed, discussing the relation between Philippine legislation and the policies regarding GMOs as well as organisations involved in the nation's modern agricultural movement. The last theme is the advantages and disadvantages of modern cultivars. The conclusion of this chapter addresses the main points investigated and their relevance to the research question and aim.

3.1 Nineteenth and Twentieth Century Ethnography: The Ipugos of the Cordillera Administrative Region (CAR)

The northern mountainous provinces of the Philippines accommodate various ethnicities of indigenous mountain people, who were collectively called by Spanish conquistadores as *Igorots*⁶ (Dumia 1979, 5). The *Igorots* are different ethnolinguistic groups, landlocked and living in the CAR (Regpala 1990, 117-118). President Corazon Aquino initially established the term CAR in 1987. Ifugao, one of six provinces in CAR, is recognized for the world-renowned agricultural terraces and unique languages. These differentiate Ifugao and its people from those of neighbouring provinces.

The Ifugao province consists of several ethnolinguistic groups that stem from the Austronesian languages (Blust 2009, 60). In all eleven Ifugao municipalities, there is no standard dialect but instead, variation of vocabulary and pronunciation (Conklin 1991). The spoken dialects are *Tuwali*, *Ayangan*, *Kanguya*, *Keley-i* and *Yattuka* (Marlon Martin, personal communication). Ifugao also has Philippine's versatile *Tagalog* and *Ilocano* languages (Dumia 1979, 83).

Starting with the Spanish, and not until the influence of American culture in the early twentieth century, Ifugao customs and traditions were resilient to change. Western influences (*e.g.* religion) have contributed to the decreased use of traditional customs and practices. The noticeable changes contrast from early nineteenth century Ifugao. This is exhibited in ethnography work conducted by Barton (1919, 1922, 1930). His ethnography describes Ifugao's social customs and agricultural practices. Although, much of Ifugao's customary law and agricultural practices survived through oral transmission, there is still a decline of traditional methods. Some prevalent aspects (*e.g.* seasonal agriculture calendar) in Ifugao traditions have helped

⁶ The use of the word Igorot is highly controversial. The word is unacceptable in the classification of different ethno-linguistic groups. In addition, the Ifugaos do not consider themselves as Igorots.

to maintain the Ifugao terraces. In spite of such changes, Ifugao is still a cultural distinct area based on their independent rice agriculture and cultural traits.

Early anthropologist (Barton 1919; Beyer 1955) theorise that the Ifugao's cultural characteristics were connected and influenced by predecessors who brought with them terracing technology when they migrated into the Ifugao mountains from nearby Southeast Asian countries 2,000 years ago (Acabado 2010, 123-124; UNESCO 1995b, 50). On the other hand, anthropologist Felix Keesing inferred the terraces to be 400 years old (Keesing 1962, 322). Recent archaeological data suggests different views on migration and age of the terraces (Acabado *et al.* 2014, 12) and contradicts earlier research and investigations.

As of the last twentieth century, Beyer⁷ (1955), and Maher (1973) conducted two archaeological field-based investigations in Ifugao (Acabado 2010, 37). Acabado (2010, 37) confers that Beyer's work did not have supporting archaeological evidence, while Maher's work supplies archaeological research on past Ifugao society. Maher's (1973) work suggests that Ifugao had agricultural practices for 'at least 300 years' (Acabado 2010, 40).

The Ifugao Archaeological Project does current anthropological and archaeological investigational activities conducted in Ifugao. Directed by Dr. Stephen Acabado from UCLA in partnership with SITMo, Acabado's investigation shows archaeological evidence of early pre-Spanish settlements about 700-1,000 years old in the municipality Of Kiangnan (Acabado *et al.* 2012).

Nonetheless, the *Ipugo* have no recollection of their ancestors, and their oral mythology suggests that their bloodline connected them to gods from the sky world (*Kabunyan*) (Dulawan 2001, 2-3; Barton 1919, 3). This project perhaps continues to justify and aid investigations of Ifugao's past.

⁷ Acabado (2010, 125) indicates that Henry Beyer is known to be the Father of Philippine Anthropology.

3.1.1 The Ifugao Culture in the Past

The word Ifugao is a derivative of *Ipugaw*, meaning from the earth world (Dulawan 2001, 4). In the Ifugao religion, mortals, deities, gods and other supernatural beings occupy assigned realms in the cosmos. These include, but are not limited to, *Kabunyan* (Sky world), *Lagud* (Eastern world), *Daya* (Western world), *Dalom* (Underworld) and *Pugaw* (Earth world). In Ifugao languages, the prefix ‘i’ denotes one’s habitation or origins. The moral beings that inhabit the *Pugaw* or the earth world are called ‘i’-*Pugaw*, which later on became known as Ifugao. Other versions of the Ifugao mythology suggest the Ifugao term originates from the word *ipugo*. The *ipugo* term is the rice grain given to the Ifugao people by their god *Matungulan* (Dumia 1979, 4; Scott 1962, 235). Current *Ipugos* still refer to themselves as *i-Pugaw*. This literally translates to ‘from the earth’ (UNESCO 2008, 5).

In Ifugao’s past cultural complex, social status could be indicated by the design and colour of clothing and ornaments. Past Ifugao men were head of the household. They fished and hunted for wild pigs, deer, water buffalo and birds (Dumia 1979, 9). They also defended their lands during tribal wars and constructed terraces (Goldman 2003, 154). The women however, were tasked with planting, tending, and harvesting the rice. They also planted various other plants such as sweet potato and corn (Conklin 1980 in Acabado 2010, 40). Ifugao women also worked on household duties such as cooking, cleaning, and weaving. Ifugao children were well cared for and were expected to work in the rice fields at an older age. Boys were especially taught to hunt by their fathers (Dumia 1979, 9).

The immediate family relationships among other kinsman were influenced by their past ancestors relationships. Past good or bad relationships were connected with the current social standing and wealth (Dulawan 2001, 8). The *Ipugos* practiced various rituals that were associated with wealth (*i.e.* the *hagabi* complex, a ritual for the wealthy), marriages (*e.g.* the *bunbun*, a marriage ceremony and the *uyauy* feast involving animal sacrifices), deaths and burials, and coming of age ceremonies

(Dulawan 2001, 8-10). Similar to many Austronesian descendants, the *Ipugos* chew the red lip staining betel nut (*Areca catechu*) at any age.

Customarily, the *Ipugo* ranking is composed of three statuses described by an Ifugao author Dumia (1979, 10-11). There are the elite and nobility called *kadangyan*. Following, the common folk referred to as the *tagu*, who are landless. The third are the poor *nawotwot*, who work in the rice fields for the elites. Regardless of status, Ifugaos are known to respect their ancestors. The dead ancestors are included in the current state of family affairs and are also addressed during rituals and customs. Barton (1919 in Acabado 2010, 194) indicates that *Ipugos* resided in villages primarily with six to twelve houses of close kin members inside the range of the terraces.

Also of note was the social structure in early Ifugao society, which involved the concept of a bilateral kinship system, meaning both parents' bloodlines are equally represented in the children (Dulawan 2001, 1). The allocation of inheritances to children such as land, rice fields, heirlooms (e.g. gold, beads, gongs, spears) and house lots depend on the size of the property and number of children (Dulawan 2001, 17-18). The law of primogeniture still prevails in property succession, however it is important to note the egalitarian nature of Ifugao custom law that does not distinguish male and female children (Acabado 2010, 194). It is Ifugao custom that the first-born child benefits most while the younger siblings inherit only a disproportionately small share of the property (Dumia 1979, 18).

The family matters and affairs are resolved collectively amongst each other and immediate relatives (Barton 1919, 7). Similar to their neighbours, Ifugao were headhunters and disputes among neighbouring clans (e.g. to avenge family members) occurred in vendettas and pillaging (Barton 1919 in Acabado 2010, 185).

Nonetheless, *Ipugo's* social and cultural complex involved close-knit family members, and they practiced early agrarian agriculture. Past Ifugao had a clear delineation between nobles and poorly ranked individuals. A collective family

member relationship was relied upon. The allocation of material objects and land given to family was only discussed within close relations. Ifugao men, women and children played their individual roles in the society. *Ipugos* in the past, knew who they were—people from the mountains. Their heritage and customary ways are strongly tied and visible in the terraces.

3.1.2 The Role of Rice in Early Ifugao Society

In Ifugao, the status of a person is based on the amount of rice harvested. This rice culture is central to the *Ipugos* and their landscape. Ifugao terraces are narrow and horizontal in nature, at an elevation between 762 meters (2,500 feet) and 1,524 meters (5,000 feet) with varying sizes in width (Conklin 1980 in Acabado 2010, 92). Geographically, the mountainous slopes of Ifugao terrain allow for suitable water management. The terrace paddy fields are constructed by family and close kin, which rely on labour intensive methods (Acabado 2010, 44). The construction of terraces highly depended on water source availability (Acabado 2010, 26). Allocation of terraces is usually in the form of inheritance. Recently, the selling of land on terraces has become more frequent but involves gifts and rituals to ask permission for transactions from the deities (Barton 1922, 401).

An Ifugao legend describes the origin of *Ipugo* rice. *Ipugo as* described, is not the people of Ifugao but a name of a traditional rice. It is a tale of two mortals who went to hunt in the sky world where they taught two deities how to make and use fire properly, as well as to cook non-*Ipugo* rice. The gods enjoyed the rice and in return the deities gave them *Ipugo* rice varieties called *botnol* and *ayuhip* (Dulawan 2001, 27). An additional deity, *Hinumbiyan* also gave a variety of *Ipugo* (annual) called *Tinawon* (yearly crop) to the Banaue people (Dulawan 2001, 30). Rice is also associated with making rice wine (*baya*) that has a legend of origin. This legend involves the deity *Liddum* teaching a couple, *In-uke* and *Tad-ona*, to mix rice, binwa

fruit, and sugar cane (*una*) to create an alcoholic beverage served during celebrations (Dulawan 2001, 28).

The Ifugao terraces are primarily used for rice cultivation and require irrigation channels to aid in water distribution and fertility. Rice seeds would first be planted separately from the terraces and brought into the terraces paddies during transplanting season (refer table 5). *Ipugos* have mastered agricultural techniques involving rice seed selection, planting, harvesting, and even using stone and earth to make terraces and irrigation channels (Goldman 2003, 154) as well as restoring rice field dikes (Barton 1922, 402). They also know how to handle rice pests (*e.g.* insects and rodents) by picking insects, burning nearby plants for smoke, and drying (Barton 1922, 403). One of the highest gods *Bangauwan* is connected to the origins of the rice pest. In instances of severe pest infection, rice fields may require ceremonial ritual to aid in rejuvenating the crop (Barton 1922, 403).

Rice is reflected in and connected to many Ifugao traditional customs and beliefs. For instance, the *Baki Hongan di Page* calls upon the rice gods to assist in yields and the health of the planted rice. Also in the intangible cultural heritage the *Hudhud* chant is recited during the rice-sowing season. Moreover, there is a ritual for each stage in the annual rice agricultural cycle (refer table 5). The rituals are performed by the *mumaki* (native priest) at the rice owner's granary (Dulawan 2001, 30-35). Barton (1922) suggests that rice is an important crop to Ifugao despite the fact that it is labour intensive and does not meet the demands to feed the population (Barton 1922, 405). Other food sources, such as the sweet potato and taro, are less labour-intensive crops and grown within the terraces but are disliked and identified as lower class meals (Barton 1922, 405). Rituals and customs vary in municipalities but adhere to the *mumbaki*'s avocation and mind because they are the ones designated to connect to the ancestors and deities (Dulawan 2001, 31).

Table 5: The nine stages of the rice agricultural cycle (Dulawan 2001, 31).

Stage 1	<i>Panal</i>	Sowing of the selected rice seeds
Stage 2	<i>Pingil</i>	Transplanting the seedlings
Stage 3	<i>Kulpi</i>	Rest period
Stage 4	<i>Hagophop</i>	When rice plants grow new leaves, people petition the gods for protection against rats, pest, worms, and bugs. It is also the time for weeding.
Stage 5	<i>Paad</i>	When the rice plants start to form grains, people petition for protection of grains until they ripen.
Stage 6	<i>Ahi-ani or ahi-tul-u</i>	Harvest time. The gods are invited to participate in the festivities.
Stage 7	<i>Tuldag</i>	Stacking rice bundles in the granary storage.
Stage 8	<i>Ahi-bakle</i>	Making rice cakes in thanksgiving for the harvest.
Stage 9	<i>Lukya</i>	Removing the first or topmost rice bundles from the stack for use. This is the first time rice bundles are taken from the granary. People petition that the store rice bundles will last.

In summary, rice is an important aspect to Ifugao culture and heritage. This crop is visible in early Ifugao's belief system, which depicts multiple rice related gods. Their past culture, and the terraces symbolically enshrine the rice culture. The practice of intangible oral rituals, such as *Baki Hongan di Page* (also referred to as *Hongan di Page*), was central to the *Ipugos* way of life in maintaining the terraces. They also have distinct stages of rice cycle, associated with traditional rice varieties, illustrated in table 5. The value of rice is visible to how *Ipugos* secure their terraces from raids involving burning of one's land to avenge members. The relationship with the

terraces is also depicted in the nine stage agricultural cycle (refer table 5), which shows distinctive names for individual agricultural processes. The rice related rituals and customs in early Ifugao should be recognized as valued cultural heritage. The connection of Ifugao people and rice is significant. Their relationship of planting rice, drinking rice wine, eating rice, and chanting about rice to their deities is core to preserving the terraces. In spite of this, the Ifugao rice culture will perhaps, unless inadvertent change occurs, continue to be imbued in the terraces and associated intangible heritage.

3.1.3 Brief Colonial Contact of the Ifugao province⁸

In 1572, Spanish conquistadores discovered highland groups for the first time. A series of battles were fought between the northern highland groups and various Spanish military expeditionary forces (Dumia 1979, 26). This pattern of conflict continued up until 1662 with the defeat of Pedro Duran de Montforte and his men signalling the futility of attempts to subdue the highland groups.

Despite the attraction of highland resources, chiefly gold, and the potential opportunity to convert indigenous populations into Catholicism, and connect highland tribes with trade networks among other tribal groups, Spanish authorities pursued no major initiatives until the 1770's. In 1775, Governor General Arandia ordered that greater efforts were to be made for the conquest and conversion of the mountain people (Dumia 1979, 26-27). This was primarily manifested in raids (*i.e.* burning of native houses and agricultural resources) on villages in an effort to gain power over the land and property of highland tribes, and serve as reprisals for attacks on Spanish possessions. These attempts led to the pacification of some highland tribes who

⁸ The information presented in this subchapter section was originally documented and translated by Philippine historian Willem Henry Scott in late twentieth century. The citations used to provide the brief colonial events were the only available sources.

agreed to convert to Catholicism to regain access to, and control over their lands (Dulawan 2001, 37-40).

The first religious settlements in the area were established as early as the 1750's, with settlements in the province of Nueva Vizcaya. These settlements were designed as bases from which the Spanish conducted operations against the highland tribe group of Kiangnan, a major bastion of highland defiance. However the people of the Cagayan Valley and Kiangnan in particular, maintained their stance of belligerent resistance and the Spanish settlements were subjected to repeated raids and ambushes. As with previous efforts, the campaigns of the late seventeen hundreds were largely fruitless for the Spanish. However, Spanish interest in the area continued into the 19th century. The Spanish explored large parts of the Ifugao territory for the first time through the expeditions of Guillermo Galvey in 1829, 1832, 1833 and 1837 (Dumia 1979, 26-27).

The Ifugao region then came under direct Spanish administration in 1841 (Dumia 1979, 28). This in turn led to the creation of the pueblo or district of Lagawe, the construction of trails linking various villages in the region and the increasing presence of Spanish missionaries.

Nevertheless, despite some success in spreading Catholicism in certain villages, resistance to Spanish rule culminated with a regional rebellion in 1868. This was followed by the Philippine revolution in 1896, which spelled the end for Spanish conquest in the region. With the defeat of Spain by the US in 1898, Spanish rule came to an end. By 1900, the expulsion of Spaniards was complete, thus ending some 300 years of Spanish subjugation. Throughout this time the majority of *Ipugos* had retained their traditional faith and language and many had little to no contact with the Spanish authorities (Dumia 1979, 27-29).

After the ousting of the Spanish following the Philippine Revolution Period and the Spanish-American war, the territory of the Philippines was passed into American possession under indefinite colonial authority. This was followed almost

immediately by the Philippine-American war (1899-1902), which saw fighting throughout the Philippines, including the Ifugao region, eventually resulting in an American victory and shortly thereafter, the granting of limited self-government under the Philippine Organic Act of 1902 (Dulawan 2001, 41-42).

The new American administration in the Ifugao region immediately set about 'pacifying' the local population but was also quick to build new trails between the villages, and in 1903 a primary school was opened in Kiangnan. The period between 1900 and the outbreak of the Second World War was in general marked by road construction, education, an increasing adherence to the Catholic faith, thanks to the arrival of some Belgian missionaries in 1908, and social reforms such as the outlawing of slavery in 1911 (Dulawan 2001 43-48).

Conflict returned to Ifugao in 1941 with the Japanese invasion. By April 9th, 1942 the entire Philippine archipelago had fallen to the Japanese. The Philippines would remain so until the last stand of General Tomoyuki Yamashita (the 'Tiger of Maly') in the mountains of Ifugao in 1945.

The three years of Japanese occupation were a difficult time for the people of Ifugao. The region became a centre of guerrilla activity against the Japanese forces, which in turn made it the focus of brutal reprisals. By late 1942, the Japanese had begun making efforts to integrate the Philippines into their Greater East-Asian Co-Prosperity Sphere. This meant the re-opening of the school in Kiangnan and Banaue with a new, Japanese approved curriculum. Attendance was poor however, as most parents refused to send their children unless it was specifically to avoid reprimands and maltreatment. Although token levels of collaboration and acceptance of the Japanese regime was deemed necessary for the smooth running of the province and the preservation of relative peace, the hearts and minds of the Ifugao were never truly won by the Japanese. Furthermore, guerrilla (*i.e.* Filipino and American armed forces) operations in the region remained active right up to and throughout the American liberation of the Philippines in 1944/45 (Dulawan 2001, 51-53).

Following American liberation, Ifugao livelihood largely returned to normal despite the significant loss of life during the years of war. Guerrilla fighters received a promised pension along with American relief goods and food items such as corned beef, chocolate, candy, cigarettes, utensils and blankets which eased the hardship of local people. Philippine independence was declared in July of 1946 and in 1966 the mountain province was divided into four new provinces: Benguet, Mountain province, Kalinga-Apayao and Ifugao. The post-war period saw further infrastructural developments including hundreds of kilometres of new trails, footbridges and even paved roads between major settlements. A general hospital was constructed in Lagawe, as well as a high school and two vocational schools (one in Lagawe and one in Nayon). The post-war era and the efforts of the new democratically elected local government also brought about an agricultural revolution beginning in the mid-1960's.

With these efforts came the modernisation of traditional farming practices and the introduction of genetically modified IR8 '*miracle rice*' (Dumia 1979, 78), which is a hybrid between a Taiwanese dwarf variety and a taller strain from Indonesia (Hargrove and Coffman, 37). With the majority of *Ipugos* still working in the primary sector (making use of natural resources) the effect of this 'agricultural revolution' is still being keenly felt today (Dulawan 2001, 74-86).

3.1.4 Twenty-first Century: The modern day Ifugos

After WWII, *Ipugos* continued to pursue cultural customs and traditions. However, strong Catholic systems ultimately changed their traditional practices and belief system. The *Ipugos* managed to incorporate traditional practices such as *bogwa* (exhumation) and *baki* (religious ceremony) with the modern day Christian customs. Some traditions like engagements (*imbango*), wedding celebration (*uyuay*), and rice cake making (*baki*) are practiced with contemporary themes (Dulawan 2001, 61-62). Family and relatives are still considered the most important relations. The population

in 2010 was 191,100 taken from Philippine Statistic Authority census (web0.psa.gov.ph⁹), which has notably increased from the 76,800 Ifugao population in 1960 (Dulawan 2001, 82). The government in Ifugao is a part of CAR and a democratic political system that permits locally run elections within the eleven municipalities (Dumia 1979, 82-86).

As education became prominently recognized in Ifugao, many *Ipugos* became nurses, police officers, teachers, doctors, lawyers, officers, priests and nuns. These occupations allow them to work in Ifugao and various cities in the Philippines. Emigration is usually the case for the younger Ifugao generations seeking higher education and employment opportunities outside of Ifugao (UNESCO 2008, vi). The environment has changed noticeably with construction of new houses and roads financed by incoming funds endorsed by the attraction of the terraces. This has led to tourism as the new economic means to survive, as opposed to the livelihood of the rice culture. Advances in technology and development in infrastructure continue to happen. Some *Ipugos* are now tailored to the western lifestyle. The remnants of Ifugao past is still present today within the Ifugao dialect, betel nut, gongs and traditional weave blankets used in some Ifugao homes.

Despite the changes, the Ifugao continue to practice farming on the terraces. The current Ifugao farmers employ both traditional and modern agricultural methods (Acabado 2012, 503). For instance, modern pesticide and fertilizers are used alongside traditional practices (Acabado 2012, 503). In 1930, however, there was a change in agricultural practices from personal subsistence of intensive terrace farming, extensive swiddening and agroforestry (Barton 1930 in Acabado 2010, 78), to agricultural commodity production that was enhanced by government integration (McKay 2003, 288). The *Ipugos* regardless, are still farming wet-rice cultivation and

⁹ <http://web0.psa.gov.ph/content/ifugao%E2%80%99s-population-was-recorded-191-thousand-results-2010-census-population-and-housing>, last accessed 8 November 2014.

swidden field practices (Acabado 2012, 520-521). Rice continues to be significant in modern *Ipugos* as shown in McKay's (2003) research on gender concepts of economic opportunity that illustrates '*desired land is terraced for rice*' (298) and Ifugao farmers are gardening '*in order to produce cash crops that can be sold to purchase rice on the national market*' (McKay 2003, 298).

Additionally, the Philippine government saw the significance of the Ifugao terraces as a national cultural asset and economic outlet for the Philippine nation and labelled the site as a National Cultural Treasure (Tantuico 2011, 1). This fuelled the tourism industry and infrastructure development.

The most important acknowledgment came from UNESCO's World Heritage Committee inscription of WH status in 1995, which led to a boost in economy, infrastructure development, and moreover, tourism.

3.1.5 Summary and Analysis of Nineteenth and Twentieth Century Work

From the nineteenth to the twenty-first century, Ifugao has undergone tremendous changes in their traditional way of life. Barton's (1919, 1922, 1930) anthropological work depicted a culture remote from the lowland societies. This highland group with their language variation and unique culture were considered remarkable for their terraces, while also noticed for their aggressiveness toward defending their land. They valued the importance of rice, land and family. The terraces, symbolic for the Ifugao identity, enabled the way of life and social systems of the *Ipugaos*. Their rituals and customs cantered with social relations among close kin alongside the value of terraces. The documented past of *Ipugos* was described as a group of people resilient to initial colonial influence. This resilience has maintained the preservation of terraces as a collective effort by the Ifugao community, and perhaps may change.

Present-day Ifugao remains a distant highland area where the people continue to chew betel nut and live off their land. Much has changed in the area with modern infrastructure, such as the construction of concrete buildings and paved roads. The

Ifugao culture has not been static and continues to show features of western influence. The influences from Spanish rule, Catholicism, followed by American and Philippine democratic governments have led to the transformation of the Ifugao culture. Their society and way of life is still depicted in their terraces, but shifts in western values have exposed the terraces to education, political economy and introduced commodity. The tourism economy, for one, has developed a driven market economy structure in Ifugao. The arena of tourism has developed since the WH designation in 1995. Despite their perseverance to hold on to their heritage of rice and deities, the Ifugao culture is continuing to develop. Whether this is a progressive community that ensures Ifugao preservation or a community that will drive for abandonment of traditional agricultural practices is still yet to be seen.

3.2 Heritage Status: Philippine National Heritage Laws and Policies

Prior to 1966, the Philippine government did not implement preservation and protection for Philippine cultural properties, until President Ferdinand E. Marcos took office. President Marcos signed the Republic Act (RA) No. 4846¹⁰ titled *Cultural Properties Preservation and Protection Act* on June 16, 1966. He enacted measures to preserve and protect the Philippine nation's cultural properties. This act became a law that enabled security on identified cultural properties for the protection and preservation of Filipino identity. The RA No. 4846 defined cultural properties as:

'Cultural properties -- are old buildings, monuments, shrines, documents, and objects which may be classified as antiques, relics, or artefacts, landmarks, anthropological and historical sites, and specimens of natural history which are of cultural, historical, anthropological or scientific value and significance to the nation; such as physical, and anthropological, archaeological, ethnographical

¹⁰ <http://www.thecorpusjuris.com/laws/statutes/item/ra-no-4846.html>, last accessed 1 December 2014.

material, meteorites and tektites; historical objects and manuscripts; house and agricultural implements; decorative articles or personal adornments; works of art such a painting, sculptures, carvings, jewellery, music, architecture, sketches drawings or illustrations in part or in whole; works of industrial and commercial art such as furniture, pottery, ceramics, wrought iron, gold, bronze, silver, wood or other heraldic items, metals, coins, medals, badges, insignias, coat of arms, crests, flags, arms, and armour; vehicles or ships or boats in part or in whole' (RA No. 4846).

The RA No. 4846 prompted identification for two types of Philippine cultural properties: '*important cultural properties*' and '*National Cultural Treasure*'. The definition of an important cultural property is:

'Cultural properties which have been singled out from among the innumerable cultural properties as having exceptional historical and cultural significance to the Philippines, but are not sufficiently outstanding to merit the classification of 'National Cultural Treasures' are important cultural properties' (RA No. 4846).

A National Cultural Treasure is described as:

'A unique object found locally, possessing outstanding historical, cultural, artistic and/or scientific value which is highly significant and important to this country and nation' (RA No. 4846).

President Marcos declared the Ifugao terraces as National Cultural Treasures in 1973. Also important to note is the chief organisation to employ responsibility of RA No. 4846. The duty was given to the National Museum of the Philippines. The National Museum ensured proper procedures to gather appropriate professionals such as anthropologist, historians, scientist, fine artists and/or fine art historians, and other professions to identify, designate, and secure cultural properties (*i.e.* the illegal exportation of cultural properties) (Tantuico 2011, 3).

The *Constitution of the Republic of the Philippines*¹¹ came into effect on February 2, 1987. Under Section 14 to 18, Article XIV: Arts and Culture in the Constitution describes the promotion of Filipino culture through preservation, conservation and promotion of cultural heritage and resources. Through this legislation, the government of the Philippines greatly enhanced its recognition of the importance of culturally significant properties for both the proper understanding of Philippine culture and history and the promotion and enrichment of a Philippine identity. The new constitutional provisions not only acknowledged the vulnerability of the Philippines's cultural properties, but also emphasized the need to promote and communicate their significance.

The role of the State Party in protecting and preserving Philippine culture was augmented in 2010 with the approval of the 2009 National Cultural Heritage, RA No. 10066¹². This classified cultural properties into the following: (a) *National Cultural Treasures*, (b) *Important Cultural Property*, (c) *World Heritage Sites*, (d) *National Historic Shrines*, (e) *National Historical Monuments*, and (f) *National Historical Landmarks* under Article III, Section 4 found in RA 10066. The RA No. 10066 further defined the criteria for what could and could not fall under the purview of cultural properties. Of particular relevance to the Ifugao rice terraces is the inclusion of the following terms:

'(x) Intangible cultural property' shall refer to the practices, presentation, knowledge and skills, as well as the instruments, objects and artefacts associated therewith, that communities, groups and individual recognize as part of their cultural heritage, such as:

¹¹ <http://www.gov.ph/constitutions/the-1987-constitution-of-the-republic-of-the-philippines/>, last accessed 1 November 2014.

¹² <http://www.ncca.gov.ph/downloads/RA%2010066%20Heritage%20Law.pdf>, last accessed 1 December 2014.

(1) oral traditions, languages and expressions; (2) performing arts; (3) social practices, rituals and festive events; (4) knowledge and practices concerning nature and the universe; and (5) traditional craftsmanship. (y) Intangible cultural property' shall refer to the peoples' learned processes long with the knowledge, skills and creativity that inform and are developed by them, the products they create and the resources, space and other aspects of social and natural context necessary for their sustainability.' (RA 10066 Article II, Section 3)

The National Cultural Heritage Act also allowed for the establishment of 'heritage zones' under the remit of the NCCA and the Philippine Registry of Cultural Property, also administered by the NCCA. The act does not define a "World Heritage site" but does state that relevant cultural agencies should cooperate with UNESCO in the conservation and preservation of World Heritage sites.

3.2.1 Rice Terraces of the Philippine Cordilleras World Heritage Site

On August 1, 1973, the Ifugao province began its rapid transformation after the Presidential Decree No. 260¹³ given by President Marcos. This decree was a declaration of the Rice Terraces of the Philippine Cordilleras as a national landmark for the Philippine's National Cultural Treasure. By December 1975, a public statement declared the Ifugao rice terraces in the municipalities of Banaue, Kiangan, Mayaoyao and Hungduan as 'tourist zones' under Proclamation No. 1522 amended within RA No. 4846 (Tantuico 2011, 5). This statement facilitated the Ifugao terraces to be administrated and controlled under the Philippine Tourism Authority. Tourism became a market for revenue by Ifugao's local population and was substantiated

¹³ http://www.lawphil.net/statutes/presdecs/pd1973/pd_260_1973.html, last accessed 1 December 2014.

through development of restaurants and hotels within the municipality of Banaue (Tantuico 2011, 5).

A nomination procedure further enhanced the recognition of the Ifugao terraces in 1994, when the Philippine Government nominated the Rice Terraces of the Philippine Cordillera for inclusion on the UNESCO WH List. UNESCO's World Heritage Committee (WHC) recognized the terraces, and in partnership with the International Council of Monuments and Site (ICOMOS) and the International Union for Conservation of Nature (IUCN), geared to visit and assess the Ifugao terraces. Finally on December 1995, the Rice Terraces of the Philippine Cordilleras were officially inscribed in the List of World Heritage Sites during UNESCO's 19th WHC *Convention Concerning the Protection of the World Cultural and Natural Heritage* Session in Berlin, Germany. Five Ifugao rice terrace clusters sites (*Batad* and *Baggan* in Banaue, *Mayaoyao* Central in Mayaoyao, *Nagacadan* in Kiangnan, and *Hungduan* terraces) were inscribed World Heritage status under the *Operational Guidelines for the Implementation of the World Convention* criteria (iii), (iv), and (v) (Mananghaya 2011, 947).

Before, and more noticeable after the inscriptions, changes occurred as in modern development and technology gradually intertwined with Ifugao's traditional community, leading to shifts in socio-economic conditions. In response, the Fidel Ramos' Presidency issued Executive Order (EO) No. 158¹⁴ in 1994, seeking the development of a short and long term plan to restore and preserve the Ifugao terraces. This plan involved restoration and preservation of the WH Rice Terraces site as well as rice terraces in other Ifugao municipalities (*i.e.* Hingyon, Asipulo, Tinoc, Lagawe and Aguinaldo). In 1997, the Philippine Government requested financial assistance from the World Heritage Funds for a technical project using Geographical Information System (GIS) to map the Rice terraces. The request was approved by the World Heritage Committee and the newly elected Philippine Government officials

created the Banaue Rice Terrace Task Force under EO No. 77¹⁵ to restore, maintain and administer the development of Ifugao terraces. In 1999, this task team was involved in submitting a report to the World Heritage Bureau for the start of GIS mapping and measures were taken to repair, restore and protect the terraces.

The Rice Terraces of the Philippine Cordillera were reported as extremely fragile in management efforts, after receiving a report from the Philippine State party in 2000. The World Heritage Committee recognized that the GIS mapping of the terraces was not sufficient in the restoration, protection and rehabilitation of the Rice Terraces. The terraces needed a mandatory sustainable management plan (UNESCO 2000). At the twenty-fifth World Heritage Committee Session in Helsinki, Finland, the Rice Terraces of the Philippine Cordillera were included in the List of World Heritage Sites in Danger (UNESCO 2001). The Rice Terraces were then placed in Reactive Monitoring Mission due to the 20 to 30 percent abandonment of rice terraces, destruction of walls, and neglect to the irrigation system (UNESCO 2001, 32). The World Heritage Committee focused on the following problems:

- *'uncontrolled construction of shelters on the Rice Terraces;*
- *climate-induced erosion of the Rice Terraces;*
- *abandonment of the Rice Terraces;*
- *unsustainable agricultural practices for the local communities'*

(UNESCO 2001, 32).

The World Heritage Centre and the UNESCO Bangkok Office aided the Philippine Government with financial assistance to support the rehabilitation of the terraces (UNESCO 2003). Inside efforts by Philippine's National Commission for Cultural and Arts, and Ifugao's Provision Government created agencies that advocated for conservation strategies and financial assistance (Tantuico 2011, 9-10). The problems

¹⁴ <http://www.lawphil.net/executive/execord/eo1994/eo1994.html>, last accessed 23 November 2014.

¹⁵ <http://www.chanrobles.com/executiveorders/1999/executiveorderno77-1999.html#.VPQngfmG9GQ>, last accessed 25 November 2014.

and threats that plagued the Rice Terraces Reactive Monitoring were improper allocation of funds, improper administration and legislation, lack of management and maintenance and improper land-use and water management (UNESCO 2005, 40). The proactive efforts by the NCCA and the Ifugao community attracted help to rehabilitate the terraces and international agencies, such as the Japan Bank of International Cooperation, aided in their efforts (UNESCO 2008, 41).

The Rice Terraces of the Philippine Cordillera were on the List of World Heritage Site in Danger for twelve years. It was not until the 36th World Heritage Committee Session that WHC members addressed the significant efforts by the State Party and international organisations that actively engaged to address the problems and threats on the Rice Terrace. The WHC retracted the Rice Terraces from the List of World Heritage Sites in Danger (UNESCO 2012). Presently, the Philippine State Party continues to encourage efforts in implementing sustainable maintenance and management, alongside development plans for tourism, environment and heritage (Tantuico 2011, 16).

3.2.2 Summary and Analysis of Archaeological Heritage Management in Ifugao

After ten years of heritage status, the present-day management and maintenance of the Rice Terraces of the Philippine Cordillera are initial and still developing. Much of it could be due to the State Party's ambiguous methods with respect to rules and regulations on heritage management.

The legislation is unstable with each different cycle of Philippine Government candidacy. As mentioned in Chapter 1, the Philippines archaeological heritage management is initially due to the lack of direction by government administration. These, in effect, produce ineffective implementation of inconsistent mandates to protect, conserve, and preserve Philippine's National Cultural Treasures alongside WH heritage sites (Henson 2000, 109). There also is a notable conflict between the national regulation and global WH rules with each current Philippine Government. On top of this, there are clearly deficient funding efforts and underdeveloped

outreach programs for local recognition to the nation's WH sites, not just the Rice Terrace of the Philippine Sites, but other WH properties in the Philippines as well.

Regardless, the Ifugao WH sites have undergone transformation as a non-traditional tourist area to an eighth wonder of the world. The community and international efforts toward preservation of the Ifugao terraces has led to assistance in maintaining its heritage status. The efforts by the Ifugao driven organisation, *e.g.* SITMo, show community driven practices to dedicated heritage preservation. This is identified in Moore's (2014) evaluation on their initiatives of preservation, identified in their tourism as a form of conservation and community archaeology to educate young *Ipugos* on their history (Moore 2014, 8-9). Efforts from international groups also have recognised the significance of the terraces and have aided in financial support during times of need, such as the time when Ifugao's heritage was placed on the WH endangered list.

Perhaps, the Rice Terraces of the Philippine Cordillera's heritage management will continue to undergo waves of change in rules and regulations until suitable legislation is found agreeable to the State Property and the people of Ifugao. After all, these terraces are identified and valued as a Filipino achievement in culture and heritage.

3.3 Defining Modern Rice Cultivars in Southeast Asia



Figure 5: An Ifugao woman harvesting rice taken during 2014 fieldwork, photo taken by Jacy Moore on 5 July 2014.

There were seven billion people recorded on earth in 2014 (<http://www.prb.org>¹⁶). The human population is expected to reach between 8.3 and 10.9 billion by 2050 (Herrera-Estrella 2000, 923). As such, the need for sustainable agriculture to feed this rapidly growing global population is of utmost concern. Starting in the mid-twentieth century a process known as the Green Revolution (GR) changed the way humans produced their food and approach agriculture. New development in biotechnology

¹⁶<http://www.prb.org/publications/datasheets/2014/2014-world-population-data-sheet.aspx>, last accessed 15 February 2015

found in present-day agriculture was generated during the GR movement. In this section, the history and scope of modern cultivars and how they relate to the research study and aim are described. An analysis on how the creation of commercial and modern crops is built into society for means of subsistence is also provided. Altogether, incorporated is the relation to Ifugao's preservation of heritage found in traditional practices and customs, mentioned in the first section of this chapter, to the archaeological heritage management discussion of commercial crop cultivation and associated issues.

3.3.1 Rice in Southeast Asia

Rice has a long history of being cultivated by man. In Southeast (SE) Asia, rice (*Oryza saliva*) is important for consumption (Lu and Snow 2005, 669) and is well represented in the landscape's features and culture. Most of today's rice is grown and consumed in Asia. In fact, Asian producers also export rice to markets all around the world. This was not always the case. During the late 1950s and early 1960s, South and SE Asian countries were expecting to face a rice shortage (Salas 1985, 1), massive famine and starvation because land use had reached a peak (Estudillo and Otsuka 2013, 17). Many institutions and organisations like the Philippine Government and United States of America joined in partnership to explore alternative ways for new cultivation strategies to solve this problem. Initially the focus was on identifying new areas of arable land and increasing the acreage under tillage rather than exploring new cropping options or improved agricultural processes (Estudillo and Otsuka 2013, 18).

In the late 1960's, the GR was a movement which began to address the need for a new approach to agriculture incorporating elements of science, technology and industrialisation, prompted primarily by the expected rice (Estudillo and Otsuka 2013, 18) and wheat (Huke 1985, 249) shortages. This movement created new and

stronger seeds that responded positively to fertilizers, boasted variable morphological characteristics, and were resistant to pest and diseases (Huke 1985, 248).

Most importantly, the GR was responsible for significant increases in yields for farmers, particularly rice farmers in South and SE Asia, beginning in 1966 with the introduction of IR8, the first modern cultivar of rice. IR8 was a new and high-yielding rice variety differing from traditional crops, released by the IRRI, a product of the partnership between the American Ford Foundation and Rockefeller Foundation alongside the Philippine Government (Hargrove and Coffman, 37; IRRI 1994).

Modern cultivars (*e.g.* GMOs) introduced during the GR have become very popular in SE Asia and are widely used. In the Philippines, the average productivity per hectare jumped from 1.23 metric tons in 1961 to 3.59 metric tons as of 2009, largely as a consequence of introduced cultivars and new management practices (Estudillo and Otsuka 2013, 36). The proportion of modern cultivar production in central Luzon of the Philippines rose from zero in 1966 to 66 percent in early 1970s (Estudillo and Otsuka 2013, 36-37). Filipino farmers were quickly adapting to modern rice cultivars as well as the use of chemicals (Estudillo and Otsuka 2013, 37). Present-day modern cultivars are defined as the following:

Genetically Modified Organisms (GMO) *is most commonly used to refer to crop plants created for human or animal consumption using the latest molecular biology techniques. These plants have been modified in the laboratory to enhance desired traits such as increased resistance to herbicides or improved nutritional content. The enhancement of desired traits has traditionally been undertaken through breeding, but conventional plant breeding methods can be time consuming and are often not very accurate'* (Whitman 2000, 1)

Genetically Engineered Organisms (GEO) refers to *'an organism whose genetic material has been altered by means of genetic*

engineering' (Fowler 2014, 2). This is the extraction of a specific genetic trait from different organisms to acquire preferred traits of better accuracy in another organism.

Transgenics refers to '*the introduction of heterologous or homologous DNA into a plant genome resulting in its stable integration and expression*' (Dixon *et al.* 2007, 110). Transgenics is one or more genetically engineered trait that has been extracted from different organism to acquire preferred traits of better accuracy in other organisms.

Although modern cultivars provide food for the world's growing population, they also have precipitated negative effects on the ecosystem (Richmond 2006, 570). Today, a large amount of agricultural products in our supermarkets are selling these enhanced crops. The problem however, is the improved and new varieties have yet to be tested and studied regarding future health and environmental repercussions, as well as economic concerns (Whitman 2000, 1). The advances in technology are a natural process of human development but also generate consequences, such as the disintegration of traditional agricultural practice and intangible cultural heritage as well as irreversible damage to the environment. For this reason the European Union for one has imposed strict limitations under Directive 2001/18/EC and Regulation (EC) No. 1829/2003 on the production and importation of genetically engineered and transgenic crops (Davidson and Bertheau 2007, 2).

Other markets, where such crops are allowed many seed varieties, are controlled by patents belonging to large corporations such as Monsanto, which place restrictions on the use and distribution of these modern cultivars (Desquilbet and Bullock 2009, 658; Hayenga 1999). In the Philippines, cooperation between private and public agencies is key in soliciting free seeds with package deals on pesticides and fertilizers for farmers. The problem today is the ambiguity behind the expected influence of genetically modified varieties with unknown long-term effects on the

dilapidation of cultural and environmental interaction, respectively the ecological niches that represent an ascribed WH Property.

3.3.2 Legislation and Modern Cultivars in the Philippines

The Philippines began changing rice varieties through hybridization¹⁷ programs in 1914 with the Bureau of Plant Industry (BPI) at the forefront of biotechnology experimentation (Dalrymple 1986, 57). Both the College of Agriculture at the University of the Philippines, Los Baños (UPLB) and the Bureau of Agricultural Extension later joined the new rice variety campaign. Shortly thereafter, the Philippine Seed Board was established and subsequently in 1960, the IRRI was created in partnership with the United States of America's Ford and Rockefeller Foundation (Hargove and Coffman 2006, 3). The first high-yielding rice varieties (refer table 6) released in the Philippines were "BPI"-76 issued by BPI, "C4"-63 created by UPLB (Dalrymple 1986, 57), and "IR"34 by IRRI. The description of seed names was delegated to the Philippine Seed Board. The newly released rice varieties were quickly adopted with farmers who irrigated the lowland, rainfed lowland and upland environments (Dalrymple 1986, 58). At this time, the most popular seeds developed by the Philippine institutions (i.e. BPI, UPLB, and IRRI) were UPLB R-I4 and BPI-RI-10 (Dalrymple 1986, 57-58).

Early in the 1960s, the Philippines, among other Asian countries, were facing an impending rice shortage (Salas 1985, 1) and massive famine (Estudillo and Otsuka 2013, 17). To resolve these problems, the Philippine Government created the Rice Sufficiency Program (RSP) in 1967 to further introduce IR-8, BPI-76, and C-18 rice varieties to the Philippine agriculture industry (Salas 1985, 5). This program led to rice self-sufficiency in two years and rice surplus began to rise in the nation (Salas 1985, 20). Lowland farmers were integrating new agricultural practices and modern

¹⁷ Hybridization is the process by which different organisms produce offspring in isolated natural environments or in human induced processes

cultivars in their lands. Also at this time, the nation saw the need to implement rules and regulations intended for agencies that were involved in high yielding seed technology.

Table 6: Varieties of rice developed from 1966 until 1983 (Dalrymple 1987, 59).

Variety	Year of release
IR-8	1966
C4-63G	1968
C4-137	1969
UPL Ri-3	1969
BPI-76 (NS)	1971
C-12	1972
C-22	1972
BPI-3-2	1973
C-168	1973
BPI Ri-2	1975
UPL Ri-1	1977
BPI Ri-4	1978
BPI Ri-6	1978
UPL Ri-2	1978
UPL Ri-6	1978
BPI Ri-1	1979
UPL Ri-5	1980
BPI Ri-3	1981
UPL Ri-7	1981
UPL Ri-4	1982
BPI Ri-10	1983

All over the world in the 1970s, experiments on plant DNA techniques became a subject of interest, debate and research by scientists and Government organisations (NAST 2009, 12). In 1979, research and development began in the Philippines when President Ferdinand Marcos acknowledged that biotechnology would assist in boosting the economy, leading to the establishment of a microbiology institution at the University of the Philippines in Los Baños (UPLB) (DENR 2004, 5). At this time, biosafety was a principle concern to the administration and scientists. There were no clear guidelines in the application of modern biotechnology practices on the Philippines. The first regulatory committee to aid in biosafety guidelines was composed of the UPLB, the IRRI and the Department of Agriculture (DOA), who recommended that the Philippine Government gather a group of experts in the creation of a biotechnology regulation (DENR 2004, 8)

In response to these concerns, President Corazon Aquino formed the National Committee on Biosafety in the Philippines (NCBP) under EO No. 430¹⁸. The NCBP was a group of 10 individuals from various sectors and agencies in the Philippine's DA, Department of Environmental and Natural Resources (DENR), Department of Science and Technology, Department of Health and two community representatives (DENR 2004, 8). The mission of NCBP was to *'undertake the study and evaluation of existing laws, policies and guidelines on biotechnology and recommend measures for its effective utilization and prevention of possible pernicious effects on the environment'* (Executive Order No. 430 1990). This committee was the beginning of the formulation of national policies and guidelines regarding the risk factors concerning quarantine and testing on genetically modified and manipulated organisms.

In the 1990s, Philippine agencies such as IRRI and DA examined risk assessment, confinement and monitoring of experiments on GMOs (DENR 2004, 8).

¹⁸ <http://ncbp.dost.gov.ph/19-guidelines/24-executive-order-no-430-s-1990>, last accessed 25 November 2014.

In 2000, the Cartagena Protocol on Biosafety (CPB), a convention on biodiversity for the international agreement of the handling of living modified organisms (LMOs) facilitated the movement for the Philippine Government to secure the nation's biosafety (Convention of Biological Diversity 2000, 1). This convention changed the Philippine Government administration of the Institute of Biosafety Committee under the DOA. This ensured that the nation's rules and regulations corresponded with international guidelines of risk assessment, importing and exporting of living and genetically modified organisms. To further enhance protocols on biosecurity and in response to CPB, the Philippine's DOA created Administrative Order No.8 on the course and action of importation and publicity of GMOs. This involved standards met by Bureau of Plant Industry (BPI), Bureau of Agriculture and Fisheries Product Standards, Bureau of Animal Industry, Fertilizer and Pesticide Authority and a group of scientists and professionals.

In 2004, the National Biosafety Framework for the Philippines sponsored by the DENR's Protected Areas and Wildlife Bureau, the United Nations Environment Programme and the Global Environment Facility, declared a protocol that had the following objective:

'To contribute in ensuring adequate levels of protection in the field of safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risk to human health, and specifically on trans boundary movements' (DENR 2004, 1).

This framework indicates procedures and guidelines in relation to commercial release of LMOs and GMOS. The document focuses on regulations, authorizations, risk management, monitoring, public awareness and education. The framework encapsulates how various Philippine agricultural agencies ensure the health of humans and LMOs.

In 2009, the *Biosafety Regulation in the Philippines: A Review of the First Fifteen Years and Preparing for the Next Fifteen* report by NCBP on past initiatives to implement rules and regulations on all-modified living organisms in the nation was created. The report dismissed concrete 'national legislation' but sanctioned strategies for continuing and implementing guidelines and protocols for GMO research, operation, importation and use in the Philippines (NAST 2009, 12-13).

A counter initiative in 2010, which sought to reduce the use of LMOs and GMOs, was the Organic Act of 2010 under the RA No. 10068, enacted by the Senate and House of Representatives of the Philippine Congress. The Organic Act of the Philippines; '*an act providing for development and promotion of organic agriculture in the Philippines and for other purposes*' (<http://www.lawphil.net>¹⁹). One of three definitions in the act is the promotion of organic agriculture that includes:

(b) '*All agricultural systems that promote the ecologically sound, socially acceptable, economically viable and technically feasible production of food and fibres. Organic agricultural dramatically reduces external inputs by refraining from the use of chemical fertilizers, pesticides and pharmaceuticals. It also covers areas such as, but not limited to, soil fertility management, varietal breeding and selection under chemical and pesticide-free conditions, the use of biotechnology and other cultural practices that are consistent with the principles and policies of this Act and enhance productivity without destroying the soil and harming farmers, consumers and the environment as defined by the International Federation of Organic Agricultural Movement (IFOAM): Provided, that the biotechnology hereinto shall not include genetically modified organisms of GMOs*' (RA 10068).

¹⁹ <http://www.ncca.gov.ph/downloads/RA%2010066%20Heritage%20Law.pdf>, last accessed 25 November 2014.

An article on the social network website *Rappler* titled *PH [Philippines] most 'GMO-friendly country in Southeast Asia'* (<http://www.rappler.com/>²⁰) argues that the continuing approval of the use of GMOs has dampened the hearts of Filipino activists, consisting of local farmers, on the lack of nation-wide legislation affecting labels on products and research on GMO experiments and operations. Nonetheless, the GR relieved the food shortage and paved the way for increases in food supply and employment for Filipinos. Today, the Philippines has become a GMO-friendly country in Southeast Asia (Greenpeace 2007, 1) which has led to numerous attempts to establish a biosafety protocol for the entire nation that began as early as the late 1960s. Under the administration of various agencies (e.g. BPI, DA, NCBP and IRRI) there have been a total of 44 GMO applications approved by the Government and this rate is increasing each year (Greenpeace 2007, 1).

3.3.3 Advantages and Disadvantages of Modern Cultivars

Debates on GMOs and their benefit for population growth have not ceased to be a topical argument in many research-oriented fields. Global demand provoked by the rise in population since the Industrial Revolution, but particularly in the twentieth century, has led to enhanced approaches in modern crop biotechnology.

Enhancements caused by the alternation of hereditary traits in crops have resulted in increased yields as well as improved resistance to pests and certain adverse climate conditions. The modification of traditional crops has emerged as a leading strategy in ensuring agricultural sustainability and food supply growth worldwide. Herrera-Estrella (2000) emphasizes that sharing modern western technological innovations in the development of more pest resistant and more high-yielding crops will be key in assisting the ending of hunger in underdeveloped nations (Herrera-Estrella 2000, 923). As such, the key advantage of modern

²⁰ <http://www.rappler.com/business/industries/247-agriculture/38878-gmo-philippines-golden-rice>, last accessed on 15 November 2014.

introduced cultivars is an increased ability to feed the hungry and a stable, secure global food supply (Herrera-Estrella, 2000, 923). The disadvantages, however, include changes in land use and processes of agriculture, changing demands on the soil and ecosystem, the imposition of intellectual property 'patents' on organisms which people rely on for food security as well as their economic well-being, and unforeseen consequences on human health and nutrition (Whitman 2000, 5).

Evidently, humans have been cultivating rice for generations. Throughout this time farmers worked within their means to produce high-yielding and improved varieties of rice (Hayenga 1999). With these gradual developments, there was a co-evolving community of beneficial organisms such as insects and spiders, which existed within the rice eco-system and served to keep most rice pests largely under natural control without the need for pesticides, discussed with Professor Merle Shepard (refer Appendix I). During the GR and with the advent of laboratory-made GMO's, this symbiotic arrangement changed. Seeds for these new rice varieties were packaged so as to encourage the use of fertilizers and pesticides alongside them (Merle Shepard).

With many companies supplying genetically modified rice varieties, and being major suppliers of pesticides and fertilizers, there are grounds for encouraged use of such rice varieties. Many banks in SE Asia also refused to loan money to farmers looking to invest in modern cultivar seeds unless the farmers also agreed to adopt modern management processes which includes heavy, more than the usual use of pesticides and fertilizers. This topic was discussed with IRRI entomologist Finbar Horgan through personal communication (refer Appendix I). As a result, the pesticide and fertilizer industries significantly expanded their operations in SE Asia and to this day retain a strong presence (discussed with Finbar Horgan). This reliance on agricultural dealers means that many farmers in SE Asia may be investing money in purchasing pesticides and spraying their fields with little net gain in terms of end yields or economic gain (discussed with Finbar Horgan). Protecting the crops by the

use of insecticides may also induce greater long-term vulnerability for damages by insects such as the brown plant hopper (Horgan and Eduardo 2013, 9).

Pesticides also affect the spiders and insects within the rice ecosystem that prey on pests such as the brown plant hopper. Once these protector species have been killed off, the rice crop relies solely on pesticides for protection, further cementing the farmer's dependence on fertilizers and pesticides of large corporate entities. Furthermore, a number of traditional rice varieties have evolved with higher resistance to pests (although generally sacrificing yield strength for this). A number of modern cultivars appropriate pest resistant qualities from older traditional varieties (particularly South Asian varieties) and combine them with the potential for high yields. However, the widespread use of modern cultivars across large areas increases the potential benefit for pest species (such as the plant hopper) to adapt to feeding on these supposedly '*pest resistant*' varieties (Horgan and Eduardo 2013, 14).

Already there is evidence that some modern varieties are becoming more susceptible to pest damage, particularly among the hybrid varieties (Horgan and Eduardo 2013, 9-10) but also some inbred varieties with poorly selected parental lines may be negatively affected. On the other hand, high yielding modern cultivars are more efficient in terms of land use, being appropriate for planting on more marginal soils and producing higher yields per acre. This naturally is a boon for small farmers wishing to increase production but without the means to acquire more land (Peng *et al.* 2004).

3.3.4 Summary of Modern Cultivars

Without a doubt there have been definite changes, both beneficial and detrimental, when studying the introduction of modern cultivars. The cultivation of new rice in Asia, in particular, has not yet reached an influential level of food source sustainability. There continues to be issues related to quality and lax control of introduced and manipulated crops. These discussed modern cultivars have, and

continue to be developed in pursuit of food sustainability. As pursuits for new biotechnology and experimentation occur, laws and regulations on GMOs, GEOs, and transgenics are implemented at the same time.

However, the lack of understanding of GMOs, GEOs, and transgenics to the public, and even to the scientists and researchers, are an issue. There is a noticeable and connecting relationship between how these modern cultivars affect the environment and human livelihood as a food source and link to Government policies.

The further enhanced modern cultivars do assist in easier agricultural processes and industrialisation, which aid to open up job markets for people but also leave unanswered and unjust questions that are not discussed within local communities. The problem is connecting these agricultural introductions with today's legislations and the public. That is, the people who consume these modern cultivars should have the right to know what they put in their mouths. Precisely, what exactly are the consequences of such, and can agricultural scientists actually predict the future ramifications of commercial cultivars on human health? This has and continues to be an elusive subject, most especially with the prevalence of diseases like cancer.

Rice, for one, has been agriculturally industrialized to encourage economic profit and food sustainability in the Philippines. Rules and regulations of rice continue to be a subject of conflict within the Philippines and as well, in other nations. There is no general consensus on how rice will affect the Philippine nation aside from a food source. Farmers perhaps, do not know what to do with seeds given by the DA, especially with chemicals that are packaged or accompany these new introduced seeds. There is a tug and pull relationship with authorities that want to help the economy develop to participate in the larger global means of food supply. Aside, as a food source, rice has other symbolic importance in heritage that is connected to traditional practices. These conservative and cultural practices are undermined when newly introduced products (modern modified rice) that have their individual packaged agricultural procedure directed by modern scientists.

The new agricultural processes of introduced modern cultivars that aid in supplying food to stop hunger are an increasing controversial topic. There is a noticeable battle from well-informed people (*e.g.* scientist) and non-informed people (*e.g.* farmers). Also, the benefits of new agriculture, such as modified rice, have shifted past agricultural practices that relied on community, seasons and intangible practices. The new approaches have to better accommodate a growing nation's population in regards to the usefulness of its agricultural output. By this, with growing economic surcharge on more crop production, selective and manipulated seeds to help sustain finances for the people's livelihood are relied upon. People will become accustomed to profits of newly introduced products, rather than stick to traditional ways that do not have the ability to have enhanced production or increased revenue flow.

3.3.5 Significance: Archaeological Heritage Management and Modern Cultivars

As described in the previous section, over the years modern food cultivars, whether these are rice, corn or soybeans, have become artificially selected and domesticated for human benefit. The benefits of modern cultivars are not exactly advantageous for the environment but for the benefit of humans. These new industrialized agriculture aids to increase food supply (*e.g.* daily vegetables found in the grocery), easy tenable agriculture and labour with an extensive amount of crop production produced annually, and economic profit for a nation's economy. Biotechnology on GMOs and variations of modern cultivars has played a huge part in trying to reach a sustainable optimum in a global food supply to feed the hungry.

With the profit to humanity's survival and economy improvement, there comes a price. The new approach to cultivated organisms has an off-putting result to people's past traditional methods, where community relations and rituals had already adapted their lands to agricultural cycles. The introduction of modern cultivars, with its packaged deals of synthetic chemical pesticides and fertilizers, will imminently

affect the community structure and also strain the landscapes and surrounding environment. The ambiguous long-term consequences that have yet to be fully analysed associated with the modern introductions of GMOs are still not understood and are discussed by scientists. There is no definitive understanding on how these modified and introduced organism products affect the health of the human population, let alone the land that they live in.

The introduction of modern cultivars will eventually result in a disconnection with traditional agricultural practices—a misunderstood subject. Rural and underdeveloped nations with generations of farmers, lack the knowledge and skill set that are packaged with introduced cultivars such as GMOs. Traditional farmers (*e.g.* Ifugaos) have an embedded relationship with traditional varieties of crops and conservative agricultural processes. There is an important connection with the past knowledge of agriculture that these generations of farmers bond with, alongside with their landscape and environment. The noticeable issue is the present-day introduction of modern cultivar effects on past traditions, particularly heritage and identity, as recognized in the Ifugao's terraces. This is relevant to the main goal for this thesis, which is to address the management and maintenance of the Rice Terraces of the Philippine Cordillera WH site.

The Ifugao rice grown in the terraces is a significant and crucial component to its WH designation. Another recognized sector is the primary stakeholders—the Ifugao farmers. The important significant staple crop of rice is enshrined as the *Rice Terraces of the Philippine Cordilleras* WH site. The farmers, who assist to manufacture these terraces help imbue the UNESCO's universal value of a living cultural and natural landscape visible in the terraces of Ifugao, using rice as the main crop. Also of note, are the rules and regulations of modern cultivars in the Philippines that continue to be an issue of conflict. The national legislation is in its initial stages, and the archaeological heritage management lacks proper management and maintenance to look at the subject of cultural and traditional practices associated with

the importance of rice in Ifugao. The problem in the Philippines proper mandate on heritage sites should not stop the community of farmers addressing the issue on the importance of rice and their home.

The archaeological heritage management of cultural practices associated with rice should be argued as an important characteristic of the Rice Terraces of the Philippine Cordillera's WH status. As crucial is the fact that introduced rice varieties will inadvertently affect the farmers and the growing economy in Ifugao, should the State Party not properly address this subject. This is the reason this research and study, to answer the question: *How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site* and the answer leads to the discussion on the management and maintenance of the Rice Terraces of the Philippine Cordillera WH sites.

4. Chapter 4: Results and Analysis of Ethnography



Figure 6: The author interviewing a Nagacadan Ifugao farmer about the types of rice she planted in 2013 and 2014. Ms. Vanessa Bugar Morado took the picture on 15 June 2014.

Ethnography is an important technique used to document observations on cultural changes. Ethnography was employed in this study in a survey to document varieties of rice grown in present-day Ifugao (fig. 6). As mentioned in previous chapters, the question for this research study is, "*How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?*". This

chapter presents data on types of traditional and modern (commercial) rice growing in Ifugao by rice farmers during 2013 and 2014.

The results provide facts on what Ifugao farmers are planting in the terraces, whether rice varieties are traditional or commercial, and miscellaneous comments from the farmers. The results described are from survey interviews that were performed²¹ during the summer of 2014 in three different Ifugao *barangays* Nagacadan in Kiangnan, Pindongan in Kiangnan, and Hapao in Hungduan (fig. 7).

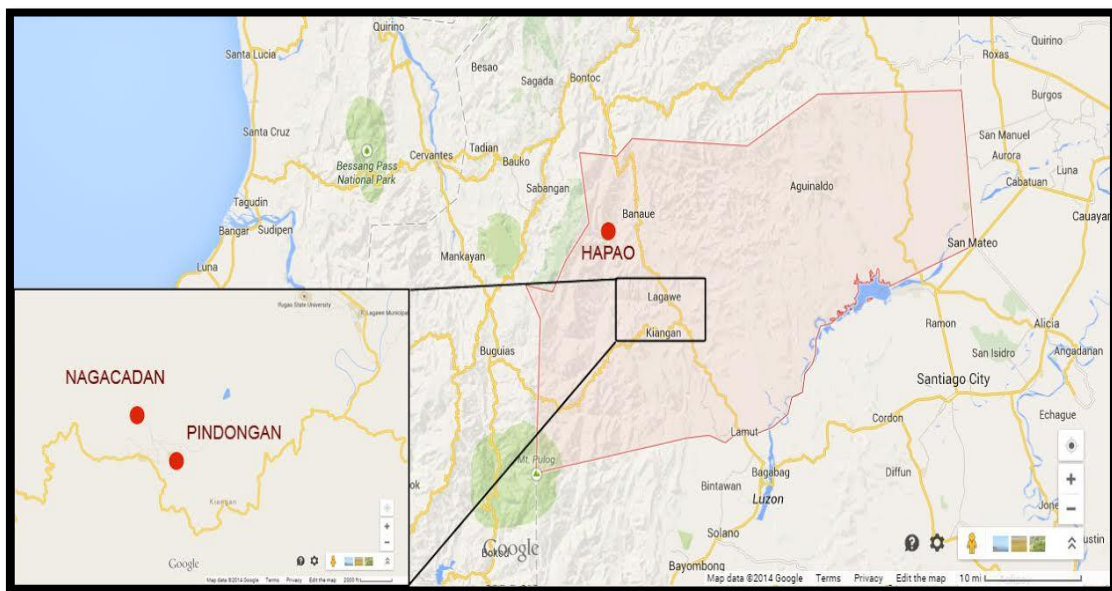


Figure 7: Research areas Nagacadan, Pindongan, and Hapao (Google 2014 adapted by Mr. Jared Koller).

In this chapter, the types of rice varieties grown in 2013 and 2014 in Ifugao are illustrated, particularly in two WH sites and one non-WH site. The non-WH village (*i.e.* Pindongan) allows for contrast with two heritage status sites. Using these sites was useful in understanding what is happening in a heritage status site as opposed to

²¹Performed by the author, with translation assistance from SITMo members: Vanessa Bugan Morado and Jacquiline Puguon.

a non-heritage site. The dissimilarity can assess if WH designations and non-WH rice terraces have distinction in their rice varieties.

The collected rice variety data determines the preservation of the Rice Terraces of the Philippine Cordilleras in regard to the introduction of modern and traditional rice varieties and the comments made by the Ifugao farmers. The results were divided into sections for each village. This information provides support for answering the research question in this study, whereas the final section of this chapter shows an analysis of the results and a summary.

4.1 Ethnography Data

A total of 96 farmers were interviewed: 32 from Nagacadan, 42 from Pindongan, and 22 from Hapao. The age of farmers ranged from 22 years old from Pindongan to 80 years old from Nagacadan, with an average age of 50. Out of the 96 farmers, there were 29 rice terrace owners and a total of 58 tenants. Eight respondents were both owners and tenants. Rice seed selectors were predominately tenants. Respondents sowed 70 different rice varieties. The data included three unknown rice types, and five considered as Ifugao adopted strains. During 2013 and 2014, respondents of Nagacadan village planted a total of 20 rice varieties while Hapao farmers' planted 15 rice varieties. In contrast, 35 rice varieties were sowed in Pindongan. The maximum number of rice varieties planted by an individual farmer was nine and the minimum was one (refer table 7), with an average of three varieties planted.

Table 7: Age demographics, seed selectors by owner or tenant and number of total rice varieties sown.

Respondent Age		Seed Selector		Number of Rice Varieties Sown by Each Respondent	
Mean	49	Owner	29	Mean	3.33
Min	22	Tenant	58	Min	1.00
Max	80	Owner and Tenant	8	Max	9.00
		Undisclosed	1		

4.1.1 Traditional rice varieties

During the interviews, there were a total of 10 considered traditional rice varieties. These Ifugao rice varieties are *Ipugo*, *tinon-on* and *tinawon*. These are generic references to the overall Ifugao varieties. These may include *iggamay*, *madduli*, *binogon* (*binuggon*), *imbannig*, *mayawyaw* (same as *minaangan*), *botnol*, and *imbuukan* (same as *bukkan*) (refer table 4). All sites contained traditional rice varieties, with nine in Nagacadan, six in Hapao and the least in Pindongan with five.

Seven traditional Ifugao non-glutinous and two Ifugao glutinous varieties are not indicated in the survey (only names are indicated) but are referenced in the raw data in Appendix III. Important to note is that *iggamay*, *madduli*, *binogon* (*binuggon*), *imbannig*, *mayawyaw* (same as *minaangan*), *botnol*, and *imbuukan* (same as *bukkan*) are considered true traditional Ifugao rice varieties.

In terms of mutually exclusive rice varieties such as *dayyakot*, *bukig*, *inyaphan*, *bongkitan*, *ingui-pal*, and *pugut*, these are presented as both Ifugao and non-Ifugao (Ifugao adopted) rice varieties. These are considered as Ifugao adopted strains. The word *dayakkot* (*Tuwali*) means the same as *diket* (*Ilocano*). These two types of rice refer to the glutinous rice or rather sticky rice (Latvilayvong *et al.* 2010, 3) varieties, which include *bongkitan* (white) and *ingup-ul* (black/purple) rice. The non-glutinous rice varieties are traditional *iggamay*, *madduli*, *binogon*, *imbannig*, *mayawyaw*, *botnol*, and *imbuukan*. The difference between glutinous and non-glutinous rice varieties is not employed to answer any questions for this research study.

Ifugao language-based names do not necessarily mean the rice variety in question is a type of Ifugao rice. For instances *dayyakot*, *bukig*, *inyaphan*, *bongkitan*, *ingui-pal*, and *pugut* are considered Ifugao names. They are represented as Ifugao adopted varieties because there is no clear delineation of these varieties being introduced or traditional from the farmer respondents. The Ifugao adopted strains

were present in all sites, with five in Nagacadan, three in Hapao, and the least with two in Pindongan.

4.1.2 Modern cultivars

As mentioned in chapter 3, modern cultivars are introduced rice varieties that are not native to Ifugao. In this study, introduced cultivars are all varieties other than: *iggamay*, *madduli*, *binogon* (*binuggon*), *imbannig*, *mayawyaw* (same as *minaangan*), *botnol*, *imbuukan* (same as *bukkan*) as well as *bukig*, *inyaphan*, *bongkitan*, *ingui-pal*, and *pugut*. Table 8 shows the number of introduced cultivars in each municipality.

A total of 27 out of 35 rice varieties from Pindongan were non-Ifugao rice varieties. The village of Nagacadan had five out of 20 varieties that were non-Ifugao rice. Hapao had five out of 15 being non-Ifugao rice strains. Also present were two unknown varieties, which could perhaps be untitled Ifugao, non-Ifugao and/or Ifugao adopted strains.

Table 8: A total of 37 rice varieties that are not Ifugao rice or Ifugao adopted strains.

Pindongan	Nagacadan	Hapao
52	C-4	Halaylay
82	C-4 red	Migapas
222	Ingaspi	Oklan
C-12	Oakland	Oklan Minaangan
C-2	Taiwan	Taiwan
C-4		
C-4 red		
Diamond		
Ingaspar		
Ingaspi		
Korean		
Minmis		
Mukoz		
Mulmug		
Munoz		
NSCI-208		
Pakulsa		
Pangasinan variety		
PJ-27		
PJ-7		
RC-218		
RI-152		
RI-238		
Romelia		
RP 224		
Super 60		
Thunder		

4.2 Nagacadan: World Heritage Site and Tourist Destination

The Nagacadan World Heritage Site and major tourist destination had a total of 32 farmer respondents. The youngest respondent was 27 years old, while the eldest was 80, with an average age of 55. There were 14 owners, 14 tenants and four owner/tenants that were seed selectors.

The minimum number of rice varieties planted was two and the maximum planted by one farmer was six. A total of 20 rice varieties of which nine were Ifugao, five non-Ifugao rice, five Ifugao adopted strains (*bongkitan*, *bukig*, *ingui-pal*, *inyaphan*, and *pugut*), and one unknown variety. These were planted between 2013 and 2014 by 32 Nagacadan farmers (refer table 9).

The farmers in Nagacadan WH site were the largest group to be surveyed because this area was easily accessible and respondents were more agreeable to the survey interview processes versus farmers from the other two sites. This could be because the site is a tourist destination and farmers are accustomed to visitors. This WH property in Kiangnan has common eco-tours that are usually given by members of SITMo (Moore 2014) in which traditional rice varieties are displayed to visitors.

The interviewed farmers in Nagacadan were harvesting rice before the survey was conducted. These interviews were taken over a week in different areas of Nagacadan WH site. In this WH site, there are visible dissimilarities of traditional and commercial rice varieties in the terraces. The difference is that lowland commercial varieties are not grown as high up on the terraces as the traditional rice due to adaptive features in climate.

Table 9: Rice varieties grown between 2013 and 2014 in Nagacadan.

Seed	Frequency
Binogon	3
Bongkitan	11
Botnol	4
Bukig	8
C-4	19
C-4 red	1
Dayakkot	3
Iggamay	1
Imbannig	2
Ingaspi	1
Ingup-ul	2
Inyaphan	16
Ipugo	7
Madduli	8
Mayawyaw	2
Native rice	1
Oakland	1
Pugut	6
Taiwan	12
Unknown	1

Based on the interviews, the traditional varieties were planted based on aroma, personal consumption, and to make rice wine and rice cakes. One of the very first respondents of Nagacadan site had planted the *Madduli* variety since she was a child and plans to continue planting traditional varieties because it is a crucial part in her family's tradition. Five farmers responded in this area as to why they chose to plant *Inyaphan*:

"climate resistant"

"chose inyaphan for the past 4 years because it produces good harvest"

"inyaphan because it produces more stem and more harvest of rice grains"

"inyaphan produces more harvest and resistant to climate change"

"inyaphan because this variety is stronger/resistant to grain infestations"

These answers indicate as to why the frequency of *Inyaphan* seeds is numerous in Nagacadan. Other traditional and Ifugao adopted strains were commented on by the farmers as follows:

"chose bongkitan for personal consumption and rice wine making"

"madduli is aromatic and climate resistant. That's why we chose to plant"

"bongkitan, because it is good for commercial selling and has a very good price at the market".

The traditional rice varieties seem to play an important role in farmers' seed selection. This is likely because traditional varieties perhaps were domesticated to adapt to Ifugaos terrain compared to the newly commercial varieties. As for commercial varieties, two contrasting comments by farmers were received:

"Tinawon is not enough because it is planted once a year, so adopted C-4 to supplement, used pesticide"

"I chose to plant C-4 because of high production/harvest, unfortunately the rice field was infested by rice insects that sipped young grains"

C-4 and Taiwan rice varieties were commonly addressed as the commercial crop for Nagacadan farmers. For instance:

"No pesticides, looking for C-4 but couldn't find so instead chose Taiwan"

These varieties, along with *Ingaspi*, were correlated together in the farmers' comments. This means, if one farmer talked about C-4 then he or she would mention *Taiwan* or *Ingaspi* and vice versa. There is no clear relation why these farmers do so. One farmer states:

"they will change their rice variety next year from C-4 to Taiwan rice because of their bad experience with the C-4 rice variety for 2 consecutive years."

Another farmers also said,

"they chose to plant C-4 because of high production/harvest" and "they planted ingaspi because they saw ingaspi brings good harvest to the other fields, C-4 did not bring good harvest last year."

The commercial varieties produce high harvest production but at the same time increase insects and other rice pest on the fields. The pests for these varieties are highly discussed, unlike the traditional varieties. The study also found that store bought pesticides and synthetic fertilizers were commonly used. One farmer decided to change from commercial rice varieties, and plans *"to stop using pesticides, chose to go organic,"* since he came back to farming after 2013. This farmer had stopped farming to work in Manila. An additional farmer also says that she did not use pesticide because she wanted the crops to be organic. Another farmer stated that *"they did not use pesticides because they do not have enough money to buy pesticide,"* which resulted in poor harvest due to infected insects on rice. A total of eight farmers stopped using fertilizers because of its cost.

In this WH site, the most common problem addressed by these farmers was rats eating the rice. The farmers also observed their neighbours' harvest that year to decide what they were going to plant the following planting season. This is indicated by one farmer who states:

"they chose madduli because they saw their fellow farmers had a good harvest from the madduli variety that they also tried."

Farmers in Nagacadan planted both traditional and commercial rice during the same planting season. Although, traditional rice crops are one crop per year varieties, they used commercial rice varieties as an alternative. There is also an association with commercial rice varieties and pesticides and fertilizers. These farmers would identify commercial rice with pesticides and fertilizers rather than the traditional varieties.

The Nagacadan farmers did not discuss any cultural practices that were associated with planting these current rice strains. There is no understanding of why, unless these practices are no longer rehearsed. The farmers were planting for their personal consumption and only a few were selling the rice they consumed. The only mentioned cultural practices were being a part of the open-museum to perform shows to visitors of a traditional engagement ceremony and the passages from the *Hudhud*. These practices were performances and not actual traditional events that took place in relation to rice culture and agriculture.

The Nagacadan site does not show present traditional agricultural performances that are regularly performed for the rice seasons. This was not heavily discussed with the farmers. They only discussed performances were given to the tourists.

4.3 Pindongan, Kiangon: Non-World Heritage Site and Non-Tourist Destination

The Pindongan, Kiangon site is a Non-World Heritage Site and Non-Tourist Destination. This site had a total of 42 farmer respondents: seven owners, 29 tenants, and six owner/tenants. There were a total of 35 varieties of rice seed planted in Pindongan between 2013 and 2014 (refer table 10). There were a total of 27 non-Ifugao rice type, five Ifugao rice varieties, two Ifugao adopted varieties and one unknown variety. The minimum seed planted by a farmer was one and the maximum rice varieties planted was eight.

This non-World Heritage site and non-tourist destination is closer and similar to lowland environments and had the largest amount of farmer respondents. Residential houses and convenient stores accompany the area. Pindongan farmers plant both traditional and commercial varieties.

The farmers mostly sell their harvests rather than using it for personal consumption. The major problems for these farmers were lack of water, rice pests and soil related issues. The interviewed farmers in Pindongan claimed to prefer shorter rice growing periods. These shorter growth periods are the commercial rice varieties. For instance, the following farmers stated that:

"C-4 and ingaspi are 4 month harvest plants which was from January to May 3"

"Binnugon is harvested each 5 months"

"Tinawon has more labour and less harvest"

Commercial varieties are prominent in this site and farmers show their preference for these rice types. This is reiterated in several in comments:

"Planted 152 because it isn't heavy and does not easily fall off from its strands"

"Romelia is good quality for consumption but vulnerable to weather fluctuations. They change to ingaspi"

"PJ-27 is shorter in length and is more suitable in rainy season during typhoons."

As clearly stated, the farmers favoured rice for their characteristics that were adaptive to the climate. The traditional varieties are less used because they are not climate driven. This is different in the Nagacadan site. One Pindongan farmer confirms:

"Traditional rice is more laborious and gives lesser supply."

Pindongan farmers also do not mention cultural practices associated with their terraces. They only mentioned issues they are having with the soil, water and pests. This area has the most commercial varieties out of the three selected sites and it is also a non-heritage site. Farmers of this area are not opinionated about their rice and

prefer to discuss commercial varieties moreover traditional rice. One farmer stated that:

"Owner wants tenants to plant traditional variety but tenant refuses because it's not enough for family consumption"

This is different than a farmer that commented:

"Changing varieties to see which is well suited in the lands"

The Pindongan area has different opinions when it comes to planting traditional and commercial rice varieties. These farmers wanted to express their use of commercial varieties rather than traditional varieties. The apparent situation in Pindongan is the present commercial varieties of rice as opposed to traditional varieties. The farmers did not further discuss any information during the survey.

Table 10: 35 rice varieties planted in Pindongan by farmers in 2013 and 2014.

Seed	Frequency
52	1
82	3
222	4
Bongkitan	1
C-12	1
C-18	11
C-2	1
C-4	9
C-4 red	1
Dayakkot	12
Diamond	2
Ingaspar	1
Ingaspi	35
Ipugo red	1
Ipugo white	1
Korean	4
Miniaangan red	1
Minmis	1
Mukoz	1
Mulmug	1
Munoz	1
NSCI-208	1
Pakulsa	6
Pangasinan variety	3
PJ-27	4
PJ-7	1
RC-218	2
RI-152	1
RI-238	1
Romelia	5
RP 224	1
Super 60	1
Thunder	4
Tinawon	1
Unknown	15

4.4 Hapao, Hungduan: World Heritage Site and Non-Tourist Destination

The Hapao, Hungduan, World Heritage Site and Non-Tourist Destination had a total of 22 farmer respondent interviews with one owners, 12 tenants, one undisclosed, and zero owner/tenant. The youngest farmer interviewed was 32, with the eldest at 64. The maximum number of seed varieties planted was nine and the least was one. The amount of rice seed varieties in Hapao for 2013 to 2014 was 15 (refer table 11), in which there were six Ifugao varieties, five non-Ifugao varieties, and three Ifugao adopted varieties and one unknown variety.

The farmers in Hapao, Hungduan were few because the area of land to conduct surveys with farmers was at times unreachable. The Hapao terraces were vast and incomparable to the Nagacadan or Pindongan sites, both in length and in width. These terraces were also very remote from any centralized common visitation area. Being a remote area, in comparison to the Kiangnan sites, undoubtedly effects how they select their rice. The farmers in this site were planting more traditional rice varieties than commercial rice, and also they preferred organic farming.

Organic farming to Hapao is growing traditional rice varieties. For instance, a farmer states:

"she maintains organic farming, she will continue farming minaangan next year because it has a very high price at the market." Although a select few farmers were interviewed, there was a clear understanding that traditional varieties of rice were sold and, at the same time, used for personal consumption as well. One Hapao farmer discusses that the *"rice is for personal consumption and by 'mana' means inheritance"* by his family members.

Another instance of growing traditional varieties is consecutive use of traditional seed as indicated by one farmer, *"I grow and repeat the same variety of minaangan."* Minaangan rice is the frequent traditional rice variety grown in Hapao. Three farmers state this variety:

"minaangan red increased when cooked so farmers like to plant"

"minaangan is for consumption"

"minaangan good for the health, increased when cooked, not much problems with this kind of rice"

As for commercial rice, one farmer said:

"If the plant is not fertile, the cropping is bad, and I tried commercial rice but it's not good and will not thrive"

One farmer expressed that

"She loves experiments on the different rice varieties, when she saw that it provides good harvest then she will continue planting the next year"

This area shows favour for traditional rice strains than the other sites, but does not oppose the introduction new rice. The Hapao area farmers did not discuss cultural practices and knowledge straightforwardly. They had only mentioned the local agricultural priest, a women that, if there are any problems with agriculture, should be contacted. This woman will, as claimed by the farmers, help assist in the revival of rice related issues.

Table 11: The 15 rice varieties planted by farmers in 2013 and 2014 in Hapao, Hungduan.

Seed	Frequency
Binuggon	1
Dayagut red	1
Dayakkot	4
Diket red	1
Halaylay	1
Imbuukan	3
Ipugo	5
Migapas	1
Minaangan	23
Minaangan red	8
Oklan	6
Oklan Minaangan	3
Taiwan Rice	1
Tinoon	1
Unknown	3

4.5 Analysis of Ifugao Ethnography

One key aspect of this thesis is to examine if modern or introduced rice cultivars are present in three Ifugao sites. The outcome presented supports a change in traditional agriculture processes using the result of rice varieties and the processes associated with these introduced rice varieties. Based on the survey result of rice varieties, there are non-Ifugao rice varieties in Pindongan, Nagacadan, and Hapao. The frequency of rice varieties (refer table 12) for each site was 37 for non-Ifugao rice, 20 for Ifugao rice, 10 for Ifugao adopted strains and 3 for an unknown rice variety.

The comments provided by the farmers suggest that commercial varieties are chosen over traditional varieties due to easier yields. The choice of rice varieties are influenced mostly by yield and taste, rather than neighbours or Government. The motivation to use commercial varieties depends on the harvest.

If commercial varieties yield more, then the farmer will choose this variety over a strain that doesn't produce enough yield. Regardless, there are farmers that do continue to plant traditional varieties for the taste and personal preference. In terms of cultural practices, there seems to be no forwardness towards discussing agricultural practice and knowledge processes that have been illustrated in the past ethnohistory and ethnography of Ifugao.

Table 12: The frequency of rice varieties - Ifugao, Non-Ifugao, and Ifugao adopted strains.

Variety	Frequency
Ifugao	20
Non-Ifugao	37
Ifugao adopted strains	10
Unknown	3

In each site, there were one or more traditional Ifugao varieties: *ipugo*, *tinawon*, *iggamay*, *madduli*, *binogon* (*binuggon*), *imbannig*, *mayawyaw* (same as *minaangan*), *botnol*, and *imbuukan* (same as *bukkan*). The traditional Ifugao *ipugo* variety, including both red and white adapted varieties, were the only traditional cultivar common to all sites. *Dayakkot* is also common to all sites but is not a traditional cultivar in Ifugao. Nagacadan site had the most traditional rice varieties (fig. 8) out of the three sites.

The frequency for non-Ifugao rice varieties shows that Pindongan site had the largest proportion of introduced rice varieties. These are 28 from Pindongan, five from Nagacadan, and five in Hapao for non-Ifugao rice varieties (fig. 9). As for Ifugao and non-Ifugao rice varieties combined, the data shows larger representation in Nagacadan (fig. 10) and a smaller depiction in Pindongan.

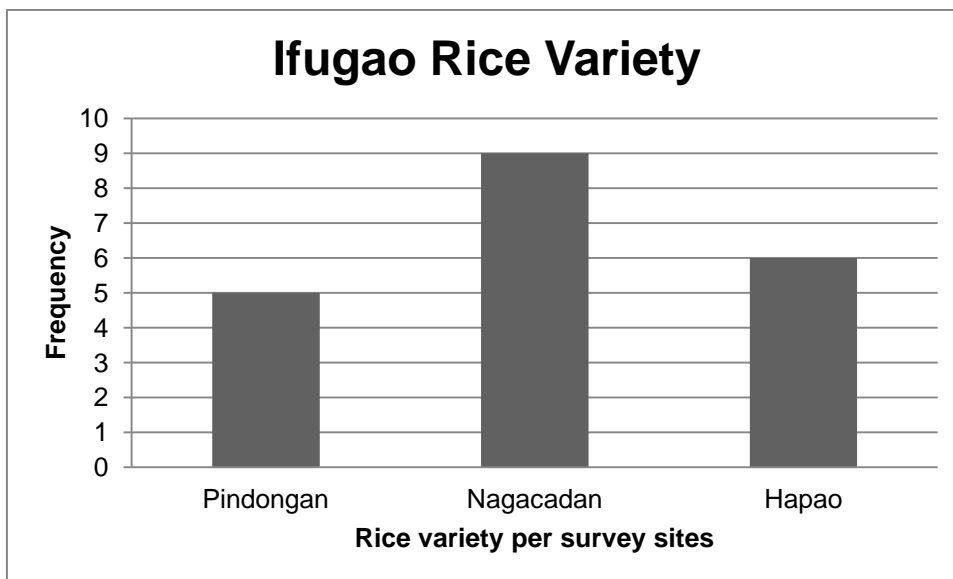


Figure 8: Ifugao Rice Variety frequency.

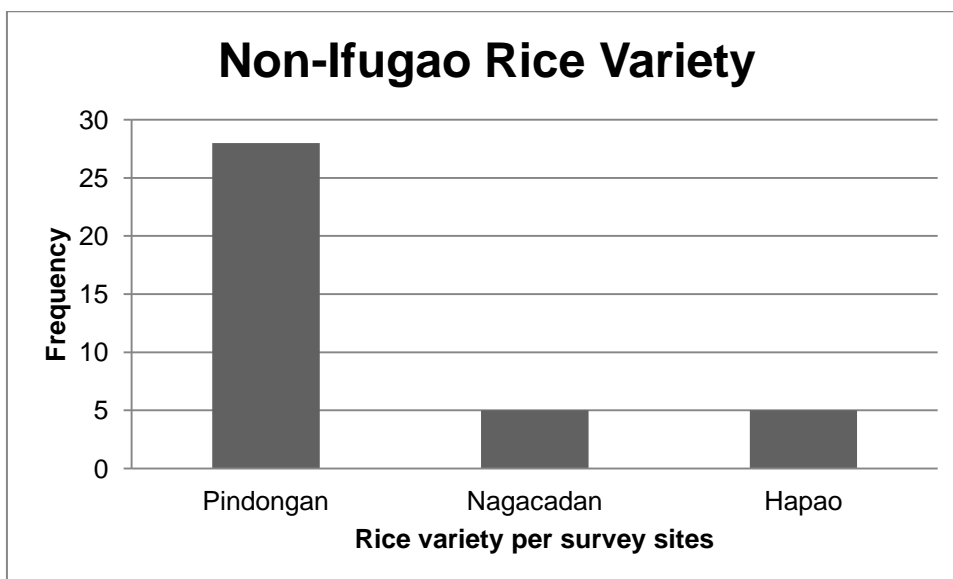


Figure 9: Non-Ifugao variety frequency.

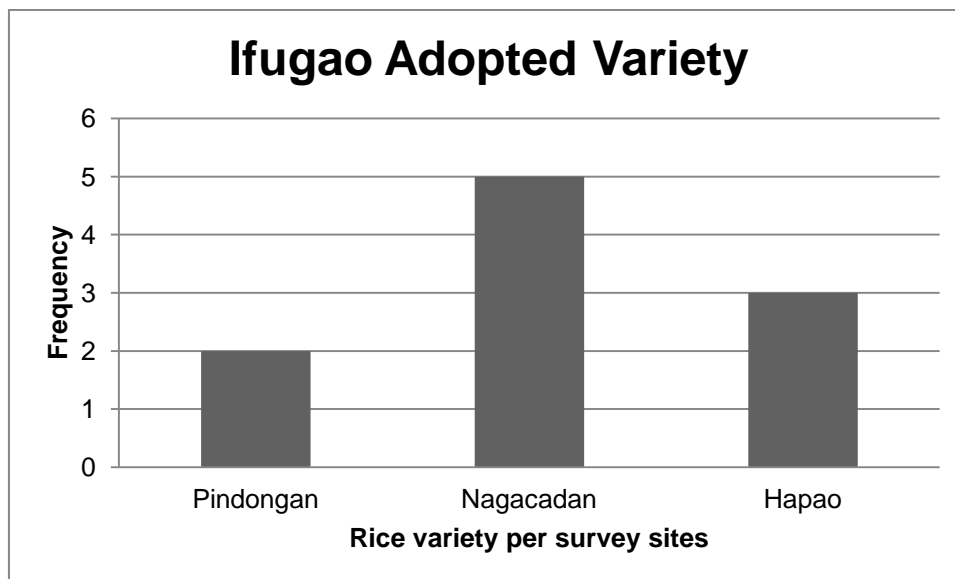


Figure 10: Ifugao adopted rice variety frequency.

The Pindongan terrace site demonstrates a larger amount of commercial and introduced varieties than the two heritage sites. The rice variety in Pindongan reflects modern cultivars due to the code name (*e.g.* C-4, PJ-27, and RI-152) given by farmer respondents---which are very similar to genetically modified organism names (*i.e.* IR8).

As for the WH sites, the results indicate modern cultivars such as C-4 are present in Nagacadan. For this survey, it was not clear if the C-4 rice variety in Nagacadan, and also in Pindongan, is from the IRRI C4 rice project. This project modifies genetic components of rice to allow favourable expressions of photosynthetic processes and enhancing crop growth with less water (Day 2013, 1). The Hapao site had the least respondent farmers and the fewest rice varieties, less than Nagacadan and Pindongan, in terms of both Ifugao adopted strains.

4.6 Summary of Results and Analysis

Commercial rice varieties, alongside traditional rice varieties, are present in all three Ifugao villages. Terrace farmers in both WH sites and non-WH Site planted commercial crops and Ifugao traditional rice varieties. Farmers in Pindongan plant a larger proportion of commercial rice varieties than the other two villages. This must mean the varieties of non-Ifugao rice very closely resemble names of modern cultivars such as *Super 60*, *RI-152*, *RI-238*, and *Diamond*. Similar name designations were present in modern cultivars created by IRRI and UPLB in chapter 3. Pindongan is experimenting with commercial varieties and planting more high-yielding commercial crops. This village is also closer to Kiangnan's town centre and indeed partially within the confines of the larger town in comparison to the more remote Nagacadan site.

The Kiangnan municipality has developed since the designation of the Nagacadan World Heritage Site. The centre of town caters to tourists with a newly built tourism centre, multiple souvenir shops and homestays all around the town to accommodate visitors and tourists visiting the Nagacadan World Heritage Site. The village of Pindongan is changing in rice variety alongside the development of Kiangnan as a tourist destination.

The Nagacadan village is further into the mountains of Kiangnan municipality and harder to travel to than Pindongan. The rice variety analysis reveals large quantities of 'true' traditional Ifugao rice varieties grown compared to the other villages. The number of non-Ifugao rice varieties was equal to Hapao except for the existence in Hapao of undefined rice varieties with names coming from the traditional Ifugao language but no evident history of traditional use in the Nagacadan region. This shows change in the use of commercial varieties but not as prominently as Pindongan. The *C-4* and *C-4 red* rice varieties found in Nagacadan may correspond to varieties grown in Pindongan. This village is recognized for its WH status and some farmer respondents were involved with both farming and tourism. A few farmer

respondents owned souvenir shops and canteen shops close to the entry of the rice terraces in Nagacadan. In the coming years, Nagacadan may be more involved in tourism activities as well as infrastructure development to accommodate visitors because of its designation as a World Heritage site.

The Hapao village did not have many farmer respondents compared to the other villages, and despite its larger population (according to the 2010 National Bureau Census), it is quite remote compared to the other sites. The non-Ifugao variety of *Oklan Minaangan* present only in Hapao, may reveal breeding of non-Ifugao rice with traditional rice varieties.

This is based on the name/variety of *oklan*, which is non-Ifugao and *Minaangan* a traditional Ifugao variety. This village also holds true traditional Ifugao rice varieties similar to Nagacadan. One of the informants discussed how Hapao is going to be a part of the Heirloom Rice Project, importing traditional varieties outside of the CAR. Hapao is not often involved in tourism, unlike Pindongan and Nagacadan. There are rarely any souvenir shops or canteens in this village. If in the future, should Hapao become a tourist destination, then there might be the possibility for more modern cultivars.

The rice varieties within the survey revealed commercial varieties were present in all sites. There are questionable ill-defined Ifugao adopted varieties, which need to be further assessed. There is however, a clear trend that introduced cultivars are in Pindongan, Nagacadan and Hapao villages---indicating changes in agricultural practices and cultural norms that have already begun to occur.

As discussed in chapter 3, modern cultivars are high-yielding, benefit from short growth cycles and are more pest resistant with the use of insecticides. These attributes make it easier for the terrace farmer to continually produce more rice than the traditional varieties with less demand on management. The survey shows that market forces encouraged by development, tourism, and infrastructure all play a role in *Ipugos* transformation.

5. Chapter 5: Discussion of Literature Review and Ethnography

In this chapter the answer to the research question: *How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?* are discussed. The primary goal in this thesis is expounded upon to expose the current state in which the archaeological heritage management of the Rice Terraces of the Philippine Cordillera WH sites is represented.

Included in the question and goal are the results from the culled ethnography dataset which aids to answer the question, as well as contribute to the examination of archaeological heritage management in the Philippines, or rather, more specifically, Ifugao. The information presented here argues how the ideology that commercial cultivation of modern rice affects the heritage of Ifugao, tangible and intangible, and discusses the consequences to the deterioration of the Rice Terraces of the Philippine Cordillera's and their heritage maintenance and management.

This discussion begins with a quote from a former, and the late, University of Guam Professor of Botany, Dr. Lynn Raulerson. She had written and discussed in her courses that '*Introduced plants often replace native species at development sites, with the loss of native vegetation, losses in culture, tradition, and important ecological values also occur*' (Raulerson and Rinehart 1991, 1), and thus encapsulates the core argument of this research.

5.1 Argument: Importance of Preservation on Ifugao Rice and Traditions

Ipugos are their terraces and the terraces are a representation of *Ipugos*. The *Ipugo* heritage, culture, and traditions are important in the preservation of these terraces, which have been well indicated in nineteenth century ethnography and ethnohistory. The *Ipugo's* social and cultural belief system centres on the terraces and is the

defining heritage of Ifugao. This terrace-heritage connects rice-related cultural traditions with agricultural practices and knowledge of the *Ipugo* identity. To be specific, the heritage is the very rice that is planted by an Ifugao farmer on the terrace—linked to past traditions concerning agricultural knowledge and practices. For instance, the traditional planting seasons (fig. 4) of traditional rice varieties possess characteristics important for preservation of the Ifugao terraces. The traditional varieties of rice, in association with oral traditions present in the *Ipugo's* knowledge of agriculture and their farming practices, as discussed in chapter 3, show how these traditional rice varieties are a valued asset to the *Ipugo* culture. The traditional rice and the *Ipugo* illustrate the foundation of heritage imbued in the Ifugao terraces. Therefore, the preservation of traditional rice varieties is crucial for not only the Ifugao terraces but for the *Ipugos'* identity as a whole.

In their history, the *Ipugo* were resilient during early contact with Spanish and American colonisers and this resilience aided in the protection of their cultural practices and knowledge. Their cultural traditions facilitated maintenance and management of the terraces for at least 700 years. It was not until the advent of western religion and technology that Ifugao and *Ipugos* began to transform, comparable to many other remote indigenous civilisations. The traditional and agricultural approaches for safeguarding the terraces in the past led to the appreciation and justification of the Ifugao terraces as a part of Filipino heritage. The significance of the terraces assisted in the representation of Ifugao as a part of the Philippine identity. For this reason, the terraces were inscribed as a National Cultural Treasure to be preserved and valued as a cultural treasure that embodies Philippine heritage. Succeeding this dedication is the recognition and inscription of five Ifugao rice terraces as a part of the WH heritage site.

The UNESCO's *Convention Concerning the Protection of World Cultural and Natural Heritage* affirms the need to ensure effective and active measures to identify, protect, conserve, present and transmit to future generations, the distinguished

'*outstanding universal value*' (UNESCO 1972, 3-6) of a WH property together with State Party. Henson (2000) describes the status of Philippine archaeological heritage management. She argues that the Philippine heritage management is in its initial phase of development and has weaknesses due to poor administration, legislation, inadequate finances and a lack of public awareness (Henson 2000, 115).

A recognized risk from establishment of a WH site in the Philippines and elsewhere is increased tourism, which negatively impacts the site (Hitchcock *et al.* 2010, 1-27). Ironically, WH site designation, intended to promote protection and preservation, may indirectly cause rapid decline of a site due to stimulation of tourism and development. In the case of Ifugao, the tourism, perhaps, discourages agricultural and traditional cultural processes for local populations to better participate in the tourism economy. WH site designation results in markets for the tourism industry, which is advantageous for additional profit on the local population and economy (*i.e.* creating alternative jobs for farmers). Ifugao, farmers conduct performances with traditional chants (*i.e.* *Hudhud*) to visitors in their traditional attire and this is identified as '*Tourism as a form of conservation*' (Moore 2014, 7-8). Although these rituals can be seen as a form of preservation, these same farmers neglect the processes of agricultural management. They have little incentive to continue farming if they get more profit from visitors than tending to the land.

Ifugao was considered as a non-traditional tourist area until the acquisition of its National Cultural Treasure title and WH status--the value of the terraces shifted from an agricultural driven economy to one reliant on the tourism industry. The incoming tourism and development has caused Ifugao's cultural and agricultural norms to shift, as indicated and visible in the cultivation of non-traditional rice by present-day *Ipugos* farmers. The use of introduced quick-growing and non-seasonal commercial rice strains are breaking traditions correlated with the traditional annual agricultural cycle for traditional rice varieties. The *Hudhud*, in this case an intangible cultural heritage, is practiced during rice sowing season, specifically the rice season

associated with traditional rice varieties. As a result, the WH designation not only opens up revenue for multiple stakeholders and outside interest groups visiting the terraces, but also alters and eliminates agricultural practices on the terraces.

In Ifugao, subsistence is visible in the vocation of cultural and agricultural practices and knowledge, and this should be expressed as a method of cultural continuity. The significance of the Ifugao rice terraces holds meaning to the people living and subsisting on them. The Ifugaos have subsisted on rice as seen in the archaeological record by Acabado (2012 and 2013). Another important aspect to consider is the foreign visitors who want to visit and see the marvels of human-made terraces. In that case, the traditional varieties require less labour intensive agricultural processes than the commercial varieties. As discussed in chapter 4, modern rice cultivars require more labour and agricultural tending. This brings into question, the value of new agricultural processes that are different from traditional processes.

The advent of globalization and the associated spread of western culture and lifestyle, combined with increased tourism and development means that market forces are becoming increasingly more powerful in rural Philippines as the world grows smaller and smaller and becomes more connected.

The fact remains that the local farming in the communities of Ifugao is changing their lifestyle that is leading to a dismissal of traditional agricultural practices (Toorn Aan den 2013, 43) to better participate in more financially driven sectors such as tourism, is inevitable. The *Ifugo* hold traditional and agricultural knowledge that has shifted to accommodate the demands for development and abandonment of rice terrace culture (Toorn Aan den 2013, 43). Conservation strategies of traditional practices are without a doubt necessary to maintain the statuses of a World Heritage Site and National Cultural Treasure in response to the growing financial advantage of tourism.

The Ifugao rice culture has intangible heritage value through the practice of traditional knowledge, skill, and creativity related to rice agriculture. The traditional

agricultural practices and rice varieties are beneficial to the *Ipugo* culture and identity and this is imbued in UNESCO's WH designation of '*outstanding example of living cultural landscapes*' (UNESCO 1995a, 52). The farmers are planting introduced rice varieties alongside traditional rice and this diminishes the traditional and cultural knowledge and craftsmanship of Ifugao farmers and agricultural practices. If farmers become dependent on high-yielding varieties that are faster to grow than traditional and agricultural customs will surely disappear.

The market forces of tourism are directly related to the shift from traditional rice varieties towards high-yielding varieties. The introduced varieties allow for more rice production in a shorter timeframe, allowing for greater participation in the tourist economy. The tourism economy, after the designation of heritage status, has grown and *Ipugo* see the financial benefit given by participation in the tourism industry. This shifts the incentive towards discontinuing the use of annually grown rice *Tinawon* or *Ipugo* for easier, faster yielding commercial rice. The heritage status of Ifugao terraces creates changes in the market forces and traditional agricultural practices. *Ipugos* have a clear identity and heritage throughout their terraces and associated customs, which become threatened if improper management and maintenance of rice terraces are not 'traditionally' taken care of.

The introduction of modern cultivars such as IR8 had an almost immediate impact on the agricultural practices of SE Asia. Farmers were quick to realise the benefits of these new rice varieties with their high yields, short growth cycles, and responsiveness to fertilizers. Of course this led to changes beyond increased yields for farmers. In the Philippines, there is clear ambiguity and pleonasm of national guidelines on the propagation of GMOs indicated in the *Biosafety Regulation in the Philippines: A Review of the First Fifteen Years and Preparing for the Next Fifteen* report by NCBP. The Philippine government has issued procedures, regulations and legislations regarding modified organisms but implementation of these policies do not involve the Filipino farmers. Philippine agencies like the Bureau

of Plant Industry, NCBP, and adjacent organisations (*e.g.* IRRI and DOA) provide consent for testing on GMOs in multiple areas in the Philippines such as the Institute of Plant Breeding, a part of the University of the Philippines, Los Banõs. There are no clear destinations where breeding for these sites take place, leading to potential contamination on local crops.

Another issue of modern cultivars in the Philippines is seen in the farmers who lack background and knowledge of GMOs. For instance, the Ifugao farmers of all three *barangays* did not ask, nor were particularly interested in GMOs. Furthermore, Philippine farmers are given free modern seed varieties that require use of packaged or selective pesticides and fertilizers from organisations (*e.g.* DOA). These organisations believe that giving or selling GMO seeds to farmers will benefit their livelihood and the goal of sustainable agriculture is met. To be precise, the need for training and education is often overlooked and the national goals to meet proper regulations and policies need to be addressed and discussed to bring the inherent shortcomings to the table and offer viable solutions.

The need for training and education on the advantages and disadvantages of GMOs is often overlooked. As such, national goals to meet proper regulation and policies need to be addressed. The lack of explanation on what GMOs are, to farmers by Philippine's administration, may cause consequences to traditional practices that are perhaps detrimental to heritage preservation. The accompanied introduced agricultural process with GMOs may lead to the decline of usage of traditional agriculture knowledge and practices.

The World-Trade Organisation (WTO), known for its role as a global political power in international trade and law has defined the standards of economic relations among nations in regards to how genetically modified organisms should be regulated among each nation. The regulation on world trade of modern cultivars for use is an elusive and indefinite case study in the research from Bonneuil and Levidow (2012). They challenged the WTO on its credibility and liability in exercising scientific

knowledge relating to the distribution and trade of genetically modified organisms (Bonneuil and Levidow 2012, 76-77). Bonneuil and Levidow (2012) state that it is insufficient to develop laws that are only based on scientific research regarding the speculative risk of GMOs. Bonneuil and Levidow (2012) articulate that scientific knowledge, as a basis for laws regarding the speculative risk of GMOs, is insufficient (Bonneuil and Levidow 2012, 82).

On the other hand, developed countries such as the members of the European Union have strict authorization and legislation put in place by the European Commission on Health and Consumer Protection which controls GMOs entry and use (e.g. Directive 2001/18/EC and Regulation EC No. 1829/2003). Europe has taken legislative measures by creating a legal framework (*i.e. Evaluation of the EU Legislative framework in the field of cultivation of GMOs under Directive 2001/18/EC and Regulation EC No. 1829/2003, and the placing on the market of GMOs as or in products under Directive 2001/18/EC: Final Report*) to overcome the risk factors of GMOs on the safety and security of environmental and human health. These security and safety factors place a query on the lack of examination and evaluation on the global consensus of impending issues, consequences and risk factors linked to GMOs, GEOs, and transgenics.

As the ambiguous consequences of these manipulated organisms continues, so will the prolific investment by corporate organisations to alter natural organisms for the comfort of human means of subsistence persist unabated. The global scientific response to the problem of food shortage and how food is distributed all over the world resulted in immense agricultural productivity. By this, humans have come to the ideology of consumerism aids for better quality of life that is embedded in twenty-first century western society but do not fully understand the repercussions of enhanced biotechnology in health, ecosystem and cultures.

Methods of sustainable agriculture have to be delivered on a grander scale because of the emerging reliance on GMOs by underdeveloped countries. The

problem however, is the impact of these biotechnologies on the traditional and organic way of living. Agriculturists and biotechnicians all over the world are on pro-GMO or anti-GMO chains that agree or disagree on the proliferation of unnatural seeds to feed the hungry and ethics derived on consequences to secure human safety and environmental health.

Regardless of the benefits and drawbacks of GMOs, currently there is no consistent policy on the cultivation, distribution and consumption of GMOs in Ifugao, let alone in different rural provinces in the Philippines where there are traditional farming methods that are neglected by the nation's DA and DENR. Given the increasing prevalence of such crops in the region, this is a cause for concern due to the delicate nature of traditional practices and the terraces themselves.

The management and maintenance of the Rice Terraces of the Philippine Cordillera will continue to be under threat without proper recognition of how the development affects the intangible cultural heritage that aids in the preservation of the terraces. Another aspect important to realise is that the loss of values is subjective for each interest group or stakeholder of the Ifugao terraces. Other values may be gained or cultural practices may evolve into something different, and this does not necessarily create less meaningful practices and knowledge than traditional methods.

The important notion is to understand this past cultural heritage as a method to prescribe past approaches in preservation of the terraces. The breeding of modern cultivars needs to be fully documented and this work record is just a small case study that represents changes in rice agriculture. Nevertheless, these are challenges common in less developed countries and the Philippines may consider the value of traditional practices as a source to preserve their heritage, especially the Ifugao's heritage imbued by the rice grown on the terraces.

5.2 Summary of Discussion

Many stakeholders value the Rice Terraces of the Philippine World Heritage site. The preservation of this site is still unclear and the introduction of modern development through tourism and introduction of modern cultivars are creating issues that can produce ramification to the preservation of traditional Ifugao's intangible and cultural heritage and its WH property status. The introduction of modern cultivars, GMOs, are issues in the nation's legislation, which should be taken into consideration with regards to the archaeological heritage management practices of the Ifugao terraces. This facet of improper legislation can produce irreversible problems for past traditions that have helped maintained the terraces for centuries. Although commercial rice variety may bring faster yields, it may cause problems of intangible cultural heritage importance in the preservation of the Ifugao's rice terraces

6. Chapter 6: Conclusion

In this thesis, the archaeological heritage management of the Rice Terraces of the Philippine Cordillera was to '*re-evaluate*' the changes caused by present-day unintentional modern introductions on Ifugao's past cultural heritage that is to be '*re-used*' for current management on the heritage site. This has been accomplished in this investigation to understand archaeological heritage management and the effects of introduced commercial rice in Ifugao.

6.1 Archaeological Heritage Management of Ifugao Terraces

In this investigation, the archaeological heritage management pertains to the perceived importance of cultural property in the face of rapid economic and political change. The use of commercial rice cultivars on the Ifugao WH sites and non-WH site expose problems with the preservation of the *Ifugao's* cultural heritage and terraces. The market forces in tourism and development formed by WH status designation has influenced Ifugao farmers to adopt modern rice cultivars.

The Ifugao culture is also not static, and changes do occur as a part of cultural processes as described in chapter 4. In the process of introductions and improvements (*e.g.* Catholicism, modern infrastructure and cultivars), the values of Ifugao culture as well as practices change with positive and negative results. The management of their traditional heritage transforms as they progress to participate more in the global arena of WH sites. Nonetheless, Ifugaos will continue to adapt and adopt the inadvertent introductions, which is to be expected. However, the core preservation of past identity, reflected in the cultural infrastructures of the Ifugao, may change what is valued to them.

Of key importance is the occurrence of introduced cultivars, which has transformed traditional agricultural practices and knowledge. This results in eliminating the conventional character of traditional rice farming in regards to

maintaining the Ifugao's WH Site. The agriculture and maintenance of the Ifugao terraces then become less important to future *Ipugos* as more market forces are further introduced. This study has shown how often unintentional introductions and unavoidable impacts affect *Ipugo* heritage and their cultural traditions and practices.

Despite the archaeological heritage management of the Philippines still being in its initial stages, the understanding of past cultural practices can assist with cultural heritage preservation. Up until the modern day, the Ifugao culture has generally been static. *Ipugo's* were a resilient indigenous ethnolinguistic group and their interaction with both Spanish and American imperialism did not fully conciliate their traditional lifestyle.

The advent of modern introductions (*e.g.* democratic government system) and inscriptions, such as the Philippine's National Cultural Treasure and WH site inscription, shifted the dynamics of Ifugao culture to facilitate in the State's political affair alongside tourism and infrastructure change. The introduction of modern rice cultivars has acted as part of this transition and signifies cultural change in the *Ifugaos'* agricultural practices, specifically, the paradigm shift in the cultural significance of their rice crops.

The nineteenth century ethnohistory and ethnography studies of *Ipugo's* cultural heritage and agricultural processes, together with understanding GMOs and the identification of rice grown on Ifugao today, are vital instruments that can assist in future preservation and protection of the Ifugao terraces.

Evidently, the introduced rice varieties have different agricultural processes that use synthetic pesticides and fertilizers that can lead to irreversible damage to the terraces' for pest control, effects to the soil and to the water. Insomuch, traditional agricultural practices (*e.g.* *Baki Hongon di Page* and *Hudhud*) associated with Ifugao rice varieties are valuable to sustaining the Ifugao terrace landscape since these varieties have been at the heart of the Ifugao culture in the terraces for the last 700 years.

The *Ipugos* and its heritage inscription continue the battle for proper conservation and management (Acabado and Martin, in press). Active participation and efforts led by UNESCO, the State Party of the Philippines (*i.e.* NCCA) and community organisations (*i.e.* SITMO) must continue to progressively safeguard and supervise practices for long-term perpetuation on the Ifugao culture and its place in the united World Heritage. This is for all the stakeholders who value the Ifugao terraces as a representation of human achievement.

Also of note, the indigenous culture of the Ifugaos, and many other indigenous groups in developing nations have been heavily impacted by the introduction and development, such as modern agricultural techniques, telecommunications and transportation networks, as well as the globalization of supply chains and culture. These have led to the significant transformation in the understanding of the fabric of traditional practices that are valuable to understanding past preservation techniques of identity, culture, and traditions. These challenges are innumerable to less-developed countries, but proper recognition of past traditional processes can lessen the gravity of a globalized world.

Overall, the influence of modern concepts of development will likely cause irreversible repercussions to the cultural heritage of *Ipugo's* indigenous population and their traditional practices and knowledge. It is important to recognise that development has affected, and will continue to affect, the rice terraces. In order to manage these changes, conservation, management and maintenance, the State Party and international organisations need to clearly examine the market forces, specifically the effects caused by the introduction of commercial cultivars. Without the implementation of adequate precautions, there will be irreparable harm to the natural environment of the terraces—which are intrinsic to the Ifugao heritage. After all, the *Ipugo's* identity is the very place they are living and subsisting---the Rice Terraces of Philippine Cordillera heritage site.

6.2 Recommendations

To fully understand the current circumstance on the preservation of Rice Terraces of the Philippine Cordilleras, the State Party needs to develop proposals on archaeological heritage management in collaboration with Ifugao's provincial government. These proposals should plan to discuss issues with the farmers on present and incoming inadvertent modern cultivar introductions that are harmful to the *Ipugos*, the terraces, and the heritage that they enshrine. The propositions should also consider a ratification of legislation on traditional terrace farming communities. The legislation should affirm the importance of Ifugao traditions and associated agricultural practices. This encourages that the farming community's past agricultural practices and knowledge are passed down to the younger Ifugao generations for the continuity of their heritage. Such legislation would promote community farming and sustainable agriculture for the revival of the terraces.

A practical suggestion involves the reassessment of the Philippine's administration and legislation on GMOs and traditional varieties. For instance, precise clarifications on what traditional rice varieties are grown in Ifugao. The collaboration of the Ifugao's municipality officials and farmers, the Philippine NCCA and IRRI researchers in documenting, through genetic analysis, the systematic differentiation of the traditional and commercial rice varieties in Ifugao is strongly encouraged. This genetic trait of current Ifugao rice varieties can be associated with the traditional variety name, which can be linked to Ifugao's *Tuwali* language and the cultural component of each seed type. The recommendation suggested can better recognise the biological component in the genetic trait of each variety of rice seed sown.

A third suggestion is regarding the importance of the intangible cultural heritage, such as the *Baki Hongon di Page*. The association of traditional varieties, with practice and knowledge of intangible cultural heritage, should be fully investigated by NCCA members. The *Baki Hongon di Page* was documented in the

ethnohistory and ethnography of this research, but not fully examined in the current Ifugao's agricultural practice. The lack of literature about past agricultural practices in chapter 5 of this study should be further assessed and its current pool of knowledge supplemented with current research. The examination of this practice today will invaluablely benefit future researchers and local *Ipugos*.

These three recommendations would better facilitate the consequences of commercial varieties on the Ifugao World Heritage Site and the heritage and people of *Ipugo* this status represents. Overall, this research gives insight on how the indigenous people of Ifugao and the Philippine nation can understand and explore their options for greater sustainable agriculture and provide information on issues that lead to long-term cultural preservation. This investigation on Ifugao's heritage management could also benefit other similar indigenous groups in underdeveloped nations that are only now feeling the impact of globalisation and who also deserve more time and attention as to how modernisation impacts their culture and heritage.

Abstract

Ifugao is a province in the northern Philippines, notable for its magnificent rice terraces and UNESCO World Heritage sites. Ethnographical and ethnohistorical sources support the view that this province's subsistence system is based on intensive rice agriculture. Rice is embedded in the cultural and social core of Ifugao. This is visible in the structured terraces as well as intertwined in the Ifugao's intangible cultural heritage practices. Be that as it may, modern and commercial, cultivars (*e.g.* rice) are frequently becoming modified to assist in an increase of food supply and security.

This thesis research answers the question: *How does the cultivation of commercial rice varieties affect Ifugao's intangible traditions and agricultural customs associated with the Rice Terraces of the Philippine Cordilleras World Heritage Site?* Two approaches were applied to answer this: a review of relevant literature and an ethnography performed on 96 current Ifugao rice farmers. Both methods provided datasets to present the traditional character of Ifugao's traditional rice farming. This study is particularly focused on Ifugao's traditional rice varieties in comparison to modern introduced varieties. The intention was to discuss the effects of these varieties on Ifugao's past and current cultural and intangible heritage practices.

The archaeological heritage management of traditional cultural practices, concerning Ifugao rice rituals, *e.g. Baki Hongon di Page*, assist to validate the critical component of maintaining the '*outstanding universal value*' of the Ifugao's terraces and its value as a World Heritage site. How often very inadvertent modifications or introductions, *e.g.* GMOs, might have unintended consequences and avoidable impacts on the holistic fabric of the intangible culture and community practices associated with rice are demonstrated. This is further complicated with the wavering

state of the Rice Terraces of the Philippine Cordillera's heritage maintenance and management, and the lack of initiatives to aid future issues in safeguarding the terraces of Ifugao heritage on this matter.

The new rice varieties introduced to Ifugao are in fact deleterious to community structure, not just commercially, but also there is no visible traditional nexus for the introduced rice. This means, there is no need to maintain terraces for new rice since it is commercially viable. The Ifugao communities will therefore find other economic pursuits, but with traditional rice the social glue links the community to the terraces and they will be maintained as part of this complex cultural heritage connection. The research concludes that the cultural and intangible heritage, alongside the farming of traditional rice varieties, are critical to the preservation of both the physical terraces, and its intrinsic significance.

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Appendix

Appendix I. Personal Communication

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- Dr. Merle Shepard, Professor Emeritus in Entomologist for Clemson University, mshprd@clemson.edu
- Dr. Finbarr G. Horgan, Research Consultant for International Rice Research Institute, f.horgan@irri.org

Appendix II. Questionnaire

Field Name	Description
HHNumber	
TempHHNumber	
Village	
Baranggay	
Sitio	
HeadFame	
HeadGiven	
HeadAge	
Respondent	
RespondentAge	Age of respondent in years
Relation	
SeedSelector	
NumberSeeds	
Date	

Field Name	Description
HH#	Head of Household
Temp HH#	Temporary HH
Seed No.	Amount of Seed
Date Planted	Month and Year
Seed	Name
Alt Name	Second Name
Amount Planted	
Unit	
Area	
Unit1	
Harvest Amt	
Unit2	
Harvest Note	
Time Planted Before	Time planted before in years
Rodenticide?	
Herbicide?	
Insecticide?	
Fungicide	
Molluscicide?	
Comments	Additional comments
Source	Seed source

Appendix III. Database of Ethnography

The following SQL statements will build my database using LibreOffice Base or other SQL database management system.

```
SET DATABASE COLLATION "Latin1_General"

CREATE SCHEMA PUBLIC AUTHORIZATION DBA

CREATE TABLE "seeds" ("ID" INTEGER NOT NULL PRIMARY KEY, "HH#" VARCHAR(255), "Temp
HH#" VARCHAR(255), "Seed No." VARCHAR(255), "Date Planted" VARCHAR(255), "Seed"
VARCHAR(255), "Alt Name" VARCHAR(255), "Amount Planted" VARCHAR(255), "Unit"
VARCHAR(255), "Area" VARCHAR(255), "Unit1" VARCHAR(255), "Harvest Amt"
VARCHAR(255), "Unit2" VARCHAR(255), "Harvest Note" VARCHAR(255), "Times Planted Before"
VARCHAR(255), "Rodenticide?" VARCHAR(255), "Herbicide?" VARCHAR(255), "Insecticide?"
VARCHAR(255), "Fungicide" VARCHAR(255), "Molluscicide?" VARCHAR(255), "Comments"
VARCHAR(255), "Source" VARCHAR(255))

CREATE TABLE "dataHH" ("ID" INTEGER NOT NULL PRIMARY KEY, "HHNumber"
VARCHAR(255), "TempHHNumber" VARCHAR(255), "Village" VARCHAR(255), "Baranggay"
VARCHAR(255), "Sitio" VARCHAR(255), "HeadFame" VARCHAR(255), "HeadGiven"
VARCHAR(255), "HeadAge" VARCHAR(255), "Respondent" VARCHAR(255), "RespondentAge"
VARCHAR(255), "Relation" VARCHAR(255), "SeedSelector" VARCHAR(255), "NumberSeeds"
VARCHAR(255), "Date" VARCHAR(255))

CREATE USER SA PASSWORD ""

GRANT DBA TO SA

SET WRITE_DELAY 60

SET SCHEMA PUBLIC

INSERT INTO "seeds" VALUES(1, '1008', 'TJ-02', '1', '2013-12-01', 'Maduli
Red', NULL, '3', 'binongo', '11', 'paddies', 'small', NULL, 'Eaten by
rats', '20+', NULL, NULL, NULL, NULL, NULL, 'Planted since a child. She was first to plant in
the area so rats ate it.', NULL)

INSERT INTO "seeds" VALUES(2, '1008', 'TJ-02', '2', '2014-01-01', 'Inyaphan
white', NULL, '4', 'binongo', '15', 'paddies', 'planned for
July', NULL, NULL, '20', NULL, NULL, NULL, NULL, NULL, NULL, 'Neighbor')

INSERT INTO "seeds" VALUES(3, '1008', 'TJ-02', '3', '2014-03-01', 'C-
4', 'Taiwan', '2', 'cans', '5', 'wide paddies', 'planned for late
June', NULL, NULL, '0', NULL, 'Y', NULL, NULL, NULL, NULL, 'Bought in Potiya (Municipality now
called Alfansolista)')

INSERT INTO "seeds" VALUES(4, '1008', 'TJ-02', '4', '2013-02-01', 'Ipugo
Brown', NULL, '6', 'binongo', '20', 'wide
paddies', '150', 'bundles', NULL, '4', NULL, NULL, NULL, NULL, NULL, NULL)

INSERT INTO "seeds" VALUES(5, '1008', 'TJ-02', '5', '2013-02-01', 'Ingup-
yul', NULL, '2', 'bundles', '2', 'paddies', '30', 'bundles', NULL, NULL, NULL, NULL, NULL, NULL,
NULL, 'neighbor')

INSERT INTO "seeds" VALUES(6, '1131', 'TJ-01', '1', '2014-01-01', 'Iggamay
', NULL, '1', 'binongo', '5', 'paddies', 'planned for June 15', NULL, NULL, 'First time (2014)
```

since 2009 (this is what I wrote but I\u201a\u00c4\u00f4ve learned)',NULL,NULL,NULL,NULL,NULL,'Alternate variety (2009), commercial rice was transitioned to Iggamay to bring up tradition rice to and bring down fertilizers. Process of alternation. First plantation of Iggamay 2009. Second plantation of Iggamay 2014. ','Farmer: Imelda Duminong')

INSERT INTO "seeds" VALUES(7,'1131','TJ-01','2','2014-01-14','Taiwan',NULL,'4','cans','6','wide paddies','June 15-20, 2014',NULL,'Rat pest. Previous year seeds (2013)','3',NULL,NULL,NULL,NULL,NULL,'4-5 month yield, once a year, previous year seeds','#33 farmer: Johnny Tayaban')

INSERT INTO "seeds" VALUES(8,'1131','TJ-01','3','2014-01-13','Taiwan',NULL,'4','cans','11','paddies','37','sacks',NULL,'2011 *My mistake',NULL,NULL,NULL,NULL,NULL,'Jan 2013 season of planting','#33 farmer: Johnny Tayaban')

INSERT INTO "seeds" VALUES(9,'1131','TJ-01','4','2014-01-12','Taiwan',NULL,'4','cans','11','paddies','37','sacks','First time planted in 2011','2',NULL,NULL,NULL,NULL,NULL,'First time planted was 2011','#33 farmer: Johnny Tayaban')

INSERT INTO "seeds" VALUES(10,'1197','TB-01','1','2014-01-14','Taiwan',NULL,'1','sack','9','paddies','planned for first week of July 2014',NULL,'rat infestation','2','Yes, Symbex',NULL,'Yes, Cymbush',NULL,NULL,'Symbex to drive away rats, Cymbush for more rice grain produce, used synthetic fertilizers','Own seedlings, changed variety from C-4 to Taiwan because C4 has lower rice production')

INSERT INTO "seeds" VALUES(11,'1197','TB-01','2','2014-01-13','Taiwan',NULL,'1','sack','9','paddies','30','sacks','rat infestation','1','Yes, Symbex',NULL,'Yes, Cymbush',NULL,NULL,'Symbex to drive away rats, Cymbush for more rice grain produce, used synthetic fertilizers','Borrowed from Floerence Dulnuan')

INSERT INTO "seeds" VALUES(12,'1009','TB-02','1','2014-12-13','Ipugo',NULL,'3','bundles','4','paddies','planned for august 2014',NULL,NULL,'8',NULL,NULL,NULL,NULL,NULL,'They plant Ipugo to nourish the family even if they eat small amount of ipugo','Own seedlings ')

INSERT INTO "seeds" VALUES(13,'1009','TB-02','2','2014-12-13','C-4',NULL,'3','cans','4','paddies','planned for august 2014',NULL,NULL,'3',NULL,NULL,NULL,NULL,NULL,'they planted C-4 this year because their seedlings of ipugos is not enough to be transplanted in their rice field because they are some of their seedlings of Ifupugo','Seed exchange')

INSERT INTO "seeds" VALUES(14,'1009','TB-02','3','2014-11-12','Ipugo',NULL,'3','bundles','8','wide paddies','300','bundles','good harvest','7',NULL,NULL,NULL,NULL,NULL,'Own seedlings ')

INSERT INTO "seeds" VALUES(15,'1001','TB-03','1','2014-12-13','Madduli',NULL,'3','bundles','5','wide paddies','planned for June 18, 2014',NULL,NULL,'2',NULL,NULL,NULL,NULL,NULL,'None, she did not use spray or fertilizers ','Seed exchange ')

INSERT INTO "seeds" VALUES(16,'1001','TB-03','2','2014-12-13','Ipugo',NULL,'3','big bundles','6','wide paddies','150','bundles','big flies eating but small destroyed','4',NULL,NULL,NULL,NULL,NULL,'She produced her own seedlings of Ipugo','She produced her own seedlings of Ipugo')

```

INSERT INTO "seeds" VALUES(17,'1001','TB-03','3','2014-12-13','Imbannig',NULL,'1','big
bundle','4','paddies','20','bundles','Big flies and many were destroyed, small
harvest','2',NULL,NULL,NULL,NULL,NULL,'No spray or fertilizer were used','Get her
seedlings from Joseph Patian ')

INSERT INTO "seeds" VALUES(18,'1001','TB-03','4','2014-12-12','Madduli',NULL,'1','big
bundle','2','big paddies','40','bundles','new open rice
field','1',NULL,NULL,NULL,NULL,NULL,NULL,'Mr. Belingon')

INSERT INTO "seeds" VALUES(19,'1001','TB-03','5','2014-12-12','Ipugo',NULL,'2','big
bundle','2','big paddies','200','bundles','new open so the seeds were
makeups','3',NULL,NULL,NULL,NULL,NULL,'For the ipugo buddlings, she gets her first
seedlings from mrs. joseph belong on until she produced her own seedlings for the
following years','Own seedlings ')

INSERT INTO "seeds" VALUES(20,'1001','TB-03','6','2014-12-
12','Imbannig',NULL,'1','bundle','2','small
paddies','10','bundles',NULL,'1',NULL,NULL,NULL,NULL,NULL,'Joseph Patian')

INSERT INTO "seeds" VALUES(21,'1021','TB-04','1','2014-02-14','C-4
white',NULL,'half','sack','one forth','hectare','planned for june 25',NULL,'kulung
(the leaves were dried), stem borer is a problem','2',NULL,NULL,'Yes,
Karate',NULL,NULL,'Use synthetic fertilizer','Seed exchange from Felomeno Melaneo ')

INSERT INTO "seeds" VALUES(22,'1021','TB-04','2','2014-02-14','C-4 white',NULL,'1 and
1/2','sacks','one forth','hectare','38','sacks','kulung, stem borer is a
problem','1',NULL,NULL,'Yes, Karate',NULL,NULL,'Use synthetic fertilizer','Seed
exchange from farmer Patrick Maddam-ot')

INSERT INTO "seeds" VALUES(23,'1020','TB-05','1','2014-02-14','C-4
white',NULL,'half','sack','one forth','hectare','not yet harvest',NULL,'stem borer is
a problem','3',NULL,NULL,'Yes, Karate',NULL,NULL,'Use synthetic fertilizer','Own
seedlings ')

INSERT INTO "seeds" VALUES(24,'1020','TB-05','2','2014-02-14','Bongkitan (glutinous
rice)',NULL,'1','big bundle','2','big paddies','18','sacks','stem borer is a
problem','3',NULL,NULL,'Yes, Karate',NULL,NULL,'Use synthetic fertilizer','Own
seedlings ')

INSERT INTO "seeds" VALUES(25,'1020','TB-05','3','2014-02-13','C-4
white',NULL,'half','sack','one forth','hectare','17','sacks','stem borer is a
problem','2',NULL,NULL,'Yes, Karate',NULL,NULL,'Use synthetic fertilizer','Own
seedlings')

INSERT INTO "seeds" VALUES(26,'1020','TB-05','4','2014-02-
13','Bongkitan',NULL,'1','big bundle','2','big paddies','5','sacks','stem borer is a
problem','2',NULL,NULL,NULL,NULL,NULL,'Use synthetic fertilizer (urea)','Own seedlings
')

INSERT INTO "seeds" VALUES(27,'1021','TV-01-N','1','2014-01-14','C-
4',NULL,'4+','cans','30','paddies','40','sacks','white flies, rats, and golden snail
were problems','2','Yes, rat poison',NULL,'Yes, cymbush,
karate',NULL,NULL,'Fertilizer (16-20-0 viking) ','From harvest ')

INSERT INTO "seeds" VALUES(28,'1021','TV-01-N','2','2014-01-13','C-
4',NULL,'4','cans','30','paddies','40','sacks','white flies, rats, and golden snail
were problems','1','Yes, rat poison ',NULL,'Yes, cymbush,
karate',NULL,NULL,'Fertilizer (16-20-0 viking) ','Patrick Maddam-ot (brother) ')

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INSERT INTO "seeds" VALUES(29,'1009','TJ-03','1','2014-02-14','Ipugo',NULL,'4','big
bundles','10','wide paddies','planned for july 2014',NULL,'white insects that sips the
young grain','5',NULL,NULL,NULL,NULL,NULL,'did not use pesticide because she wants
crops to be organic','Dionisio Belingon (Neighbor)')

INSERT INTO "seeds" VALUES(30,'1009','TJ-03','2','2014-01-13','Ipugo',NULL,'4','big
bundles','10','wide paddies','470','bundles','good harvest, insects was a
problem','4',NULL,NULL,NULL,NULL,NULL,'only this year changed seed, given by the
neighbor from 2012 harvest','Seedlings from her parents (1 variety)')

INSERT INTO "seeds" VALUES(31,'1009','TJ-03','3','2014-03-01','C-
4',NULL,'4','cans','N/A',NULL,'planned for end of June 2014',NULL,'imuk (insect),
brown worm are problems','2',NULL,NULL,NULL,NULL,NULL,'Tinawon is not enough because
planted once a year, so adopted C4 to supplement, used pesticide but
can\u201a\u00c4\u00f4t remember, *Other rice field she manages but not farms','Vizcaya
(certified seed from the Department of Agriculture)')

INSERT INTO "seeds" VALUES(32,'1009','TJ-03','4','2014-01-13','C-
4',NULL,'4+', 'cans','30','rice paddies','15 (1/3 of share)','sacks','white flies,
rats, and golden snail were problems','1',NULL,NULL,NULL,NULL,NULL,'used pesticide but
can\u201a\u00c4\u00f4t remember','Jose Nabeject (owner of rice field) ')

INSERT INTO "seeds" VALUES(33,NULL,'TB-06','1','2014-02-14','Mayya-yaw',NULL,'4','big
bundles','14','rice paddies','planned for end of July
2014',NULL,NULL,NULL,NULL,NULL,NULL,'Rice variety came from
Mayoyao','seedling from Junia Codamon')

INSERT INTO "seeds" VALUES(34,NULL,'TB-06','2','2014-01-13','Bukig',NULL,'4','big
bundles','14','rice paddies','280','bundles','good harvest','1',NULL,'Yes,
magnum',NULL,NULL,NULL,'He changed bukig to mayoyao rice because there are more stems
in the bukig rice, next year will be planned for bukig','from her mother in law at
Maggot Hungduan')

INSERT INTO "seeds" VALUES(35,'1096','TV-02-N','1','2013-12-14','Ingup-ul (Red
Diket)',NULL,'1','cans','3','rice paddies','40','bundles','water supply, chestnut
munya (bird species that eats rice grains or sips rice milk), and rats were
problems','1',NULL,NULL,NULL,NULL,NULL,'Stopped using pesticides, chooses to go
organic, stopped farming in 2013','Waldo from Nagacandan proper')

INSERT INTO "seeds" VALUES(36,'1096','TV-02-N','2','2014-12-14','Native rice (from
Mayoyao',NULL,'1','bundle','3','rice paddies','40','bundles','lack of water supply,
chestnut munya, and rats were problems','1',NULL,NULL,NULL,NULL,NULL,'Stopped farming
in 2013, did not use pesticides','Farm Waldo a wife\u201a\u00c4\u00f4s friend who is
from Mayoyao ')

INSERT INTO "seeds" VALUES(37,'1104','TB-07','1','2014-01-14','C-4
white',NULL,'4','cans','14','rice paddies','14','sacks','good harvest but rat
infested','2',NULL,NULL,NULL,NULL,NULL,'chose c-4 because good rice variety and
produces more stems that gives more harvest, ','They already produced their own
seedlings')

INSERT INTO "seeds" VALUES(38,'1104','TB-07','2','2014-01-14','Inyapan
(white)',NULL,'2','big bundles','3','big rice paddies','not yet
harvest',NULL,'good harvest','2',NULL,NULL,NULL,NULL,NULL,'they did not used
pesticides but regularly cleared the dikes and surroundings of the rice fields','They
already produced their own seedlings')

INSERT INTO "seeds" VALUES(39,'1104','TB-07','3','2014-01-13','C-4

```

```

white',NULL,'2','cans','14','rice paddies','10','sacks','rat
infested','1',NULL,NULL,NULL,NULL,NULL,NULL,'Got their seedlings from Adeline Bulao')

INSERT INTO "seeds" VALUES(40,'1104','TB-07','4','2014-01-13',NULL,NULL,'2','big
bundles','3','rice paddies','15','sacks','good
harvest','1',NULL,NULL,NULL,NULL,NULL,NULL,'Borrowed seedlings from farmer Junia
Codamon')

INSERT INTO "seeds" VALUES(41,NULL,'TB-08','1','2014-02-14','Taiwan
Rice',NULL,'3','cans','10','rice paddies','24','sacks','rat infested, dango,
kiwit','1',NULL,NULL,'Yes, brodan, dango',NULL,NULL,'Jerry lived in Asipola for a long
time and this year he moved back to Kiangnan, first time he planted this kind of rice
variety','Seeds of the owner ')

INSERT INTO "seeds" VALUES(42,'1108','TB-09','1','2014-02-14','C-4
White',NULL,'2','cans','5','rice paddies','to be harvested',NULL,'good cropping
seasons','2',NULL,NULL,'Yes, conquer',NULL,NULL,'they chose c-4 for two years because
they have to go with the other farmers planting c-4, native will be destroyed if
planted with lowland rice','seed exchange from a local farmers Bugaran ad Likkod')

INSERT INTO "seeds" VALUES(43,'1108','TB-09','2','2014-02-13','C-4
White',NULL,'2','cans','5','rice paddies','15','sacks','rat
infested','1',NULL,NULL,NULL,'Yes ',NULL,NULL,'seed exchange from a local farmers
Bugaran ad Likkod')

INSERT INTO "seeds" VALUES(44,'1101','TB-10','1','2014-01-14','Taiwan
Rice',NULL,'2','cans','20','small paddies','not yet harvested',NULL,'stem borer, did
not produce many stems because of climate change','3',NULL,NULL,NULL,NULL,NULL,'did
not use pesticide','borrowed from local farmer Florencio Dulnuan')

INSERT INTO "seeds" VALUES(45,'1101','TB-10','2','2014-02-14','Inyaphap',NULL,'1 and
1/2','bundles','1','big paddy','not yet harvested',NULL,'stem
borer','1',NULL,NULL,NULL,NULL,NULL,'did not use pesticide','get their seedling from
local farmers ')

INSERT INTO "seeds" VALUES(46,'1101','TB-10','3','2014-02-14','Bongkitan
(white)',NULL,'2','bundles','2','big paddies','not yet harvested',NULL,'stem
borer','1',NULL,NULL,NULL,NULL,NULL,'did not use pesticide','get their seedlings from
local farmers')

INSERT INTO "seeds" VALUES(47,'1101','TB-10','4','2014-01-13','Taiwan
Rice',NULL,'2','cans','20','small rice paddies','44','sacks','good
harvest','2',NULL,NULL,NULL,NULL,NULL,'did not use pesticide','borrowed from local
farmer Florencio Dulnuan')

INSERT INTO "seeds" VALUES(48,'1101','TB-10','5','2014-01-13','Inyaphan',NULL,'3','big
bundles','10','rice paddies','155','bundles','stem borer, late
cultivation','3',NULL,NULL,NULL,NULL,NULL,'did not use pesticide','borrowed the
seeds')

INSERT INTO "seeds" VALUES(49,'1026','TB-11','1','2014-02-14','Bukig ',NULL,'1','big
bundle','1','wide rice paddy','planned for last week of
august',NULL,'\u201a\u00c4\u00faralanu\u201a\u00c4\u00f9 and
\u201a\u00c4\u00fanabigi\u201a\u00c4\u00f9 ', '1',NULL,NULL,'Yes,
Karate',NULL,NULL,'her share from her rice field at brgy. galongan. she chose bukig
because for three years she planted oakland associated to typhoon storms.','her share
from her rice field at brgy. Galongan')

```

```

INSERT INTO "seeds" VALUES(50,'1026','TB-11','2','2014-02-13','Oakland',NULL,'1','big
bundle','1','wide rice
paddy','50','bundles','\u201a\u00c4\u00faralanu\u201a\u00c4\u00f9 and
\u201a\u00c4\u00fanabigi\u201a\u00c4\u00f9 ','3',NULL,NULL,'Yes, Karate
',NULL,NULL,'used karate for worms, oakland color is white and produces good harvest
but problem with long stems that sways every time there are typhoon','farmer: Mary
Humiwat')

INSERT INTO "seeds" VALUES(51,'1032','TB-12','1','2014-01-14','Madduli',NULL,'1','big
bundle','7','rice paddies','planned for last week of july',NULL,'rat
infested','1',NULL,'Yes, magnum',NULL,NULL,NULL,NULL,'borrowed from local farmer Belen
Belington')

INSERT INTO "seeds" VALUES(52,'1032','TB-12','2','2014-01-14','Bongkitan (glutinous
rice)',NULL,'1','big bundle','5','rice paddies','planned for august 2014',NULL,'rat
infested','2',NULL,'Yes, magnum',NULL,NULL,NULL,NULL,'Seed exchange from Felomeno
Melaneo ')

INSERT INTO "seeds" VALUES(53,'1032','TB-12','3','April-14 ','Pugut',NULL,'5','big
bundles','15','big rice paddies','planned for august
2014',NULL,'\u201a\u00c4\u00fanakulung\u201a\u00c4\u00f9 and rat
infested','1',NULL,NULL,NULL,NULL,NULL,'replacement from bukig','borrowed from farmer
Belen Belington')

INSERT INTO "seeds" VALUES(54,'1032','TB-12','4','2014-12-
13','Bongkitan',NULL,'1','big bundles','5','rice paddies','153','bundles','no
pest','1',NULL,NULL,'Yes, Karate ',NULL,NULL,NULL,'Seed exchange from Felomeno Melaneo
')

INSERT INTO "seeds" VALUES(55,'1126','TV-03-N','1','2014-01-
14','Inyapan',NULL,'3','binong-o','2','wide paddies','200','bundles','attacked by
insects','10',NULL,NULL,NULL,NULL,NULL,'insect sips the stem so the shoot does not
grow eventually the plant dies and she doesn\u201a\u00c4\u00f4t know the name of the
insect','Seeds kept from last year')

INSERT INTO "seeds" VALUES(56,'1126','TV-03-N','2','2014-01-
13','Inyapan',NULL,'3','binong-o','2','wide paddies','300','bundles','harvest was
okay','10 years or more',NULL,NULL,NULL,NULL,NULL,'harvest last year (2013) was okay
because it was not attacked by the insects','Seeds kept from harvest last year')

INSERT INTO "seeds" VALUES(57,NULL,'TV-04-N','1','2014-01-14','C-
4',NULL,'2','cans','5','rice paddies','17 and 1/2','sacks','fertilizer and
rate','3',NULL,NULL,NULL,NULL,NULL,'one rice field area owned by deceased
husband','borrowed from Sherwin Olnanigon (fellow farmer)')

INSERT INTO "seeds" VALUES(58,NULL,'TV-04-N','2','2014-01-
14','Inyaphan',NULL,'3','bundles','2','rice paddies','planned for for end of June
2014',NULL,'some areas shaded by trees and problem with
worms','4',NULL,NULL,NULL,NULL,NULL,'no pesticide used, inyaphan, grains are smaller
in size so the bundles are smaller','seeds kept from harvest')

INSERT INTO "seeds" VALUES(59,NULL,'TV-04-N','3','2014-03-14','Diket
(white)',NULL,'1','bundle','1','rice paddy','planned for July 2014',NULL,'stem borer
\u201a\u00c4\u00falaou\u201a\u00c4\u00f9 ','many times already so
can\u201a\u00c4\u00f4t remember when the first
time',NULL,NULL,NULL,NULL,NULL,NULL,'From harvest last year')

INSERT INTO "seeds" VALUES(60,NULL,'TV-04-N','4','2014-01-

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```

13','Taiwan',NULL,'2','cans','5','rice paddies','18','sacks','no
problems','1',NULL,NULL,NULL,NULL,NULL,NULL,'Florencio Dulnuan from nearby village')

INSERT INTO "seeds" VALUES(61,NULL,'TV-04-N','5','2014-01-
13','Inyaphan',NULL,'3','bundles','2','rice paddies','100','bundles','same as noted
this year','3',NULL,NULL,NULL,NULL,NULL,NULL,'From harvest last year')

INSERT INTO "seeds" VALUES(62,NULL,'TV-04-N','6','2014-03-
13','Dayakat',NULL,'1','bundles','1','rice paddy','50','bundles','stem
borer','N/A',NULL,NULL,NULL,NULL,NULL,NULL,'From harvest last year')

INSERT INTO "seeds" VALUES(63,'1030','TV-05-N','1','2014-01-14','Pugut (5
months)',NULL,'4','binong-o',NULL,'can\u201a\u00c4\u00f4t guess','planned for July
2014',NULL,'rats','2',NULL,NULL,'Yes, Karate',NULL,NULL,'stopped farming 2007-12, and
sold in sari-sari store to look after high school children','Seeds kept from harvest')

INSERT INTO "seeds" VALUES(64,'1030','TV-05-N','2','2014-02-
14','Bukig',NULL,'1','binong-o','3','regular paddies','planned for July
2014',NULL,'better than the other varieties','2',NULL,NULL,NULL,NULL,NULL,'did not use
pesticide','Seeds kept from harvest')

INSERT INTO "seeds" VALUES(65,'1030','TV-05-N','3','2014-01-14','Dayakot
(Bongkitan)',NULL,'2','bundles','2','rice paddies','planned for July 2014',NULL,'rice
were eaten by rats, lane, and leaf folders','2',NULL,NULL,NULL,NULL,NULL,'expecting
less yields on dayakot due to rats','Filemena Melanio from Bilong, Nagacadan')

INSERT INTO "seeds" VALUES(66,'1030','TV-05-N','4','2014-01-
13','Pugut',NULL,'1','binong-o',NULL,'can't guess','60','bundles','leaf folders and
rats are problems','1',NULL,NULL,'Yes, Karate',NULL,NULL,'bundle/botok - smaller
bundles than binong-o','Belen Belingon')

INSERT INTO "seeds" VALUES(67,'1030','TV-05-N','5','2014-01-
13','Bukig',NULL,'2','binong-o','4','wide paddies','100','bundles','leaf folders and
rats are problems','1',NULL,NULL,'Yes, Karate ',NULL,NULL,NULL,'Seeds kept from last
years harvest')

INSERT INTO "seeds" VALUES(68,'1030','TV-05-N','6','2014-01-
13','Dayakat',NULL,'1','bundle','2','rice paddies','40','bundles','leaf folder and
rats are problems','1',NULL,NULL,'Yes, Karate',NULL,NULL,'bought from Teresita Aftalba
from Tuplac (Kiangnan barangay) for 75 pesos each ','Bought from Teresita Aftalba')

INSERT INTO "seeds" VALUES(69,'1027','TV-06-N','1','2014-02-
14','Pugut',NULL,'1','bundle','2','wide paddies and 4 small ponds','200','bundles','no
problems','3',NULL,NULL,NULL,NULL,NULL,'does not change schedule of planting because
they might not good yields (makupo)','Seeds kept from harvest')

INSERT INTO "seeds" VALUES(70,'1027','TV-06-N','2','2014-02-
13','Pugut',NULL,'1','bundle','2','wide paddies and 4 small ponds','250','bundles','no
problems','2',NULL,NULL,NULL,NULL,NULL,'2014 harvest has lesser yield because they
planted lesser number of seedlings','Dundun Luis Licayayo')

INSERT INTO "seeds" VALUES(71,'1116','TJ-04','1','2014-02-
14','Taiwan',NULL,'1','can','10','wide/small terrace','planned for July
2014',NULL,'okay-lang-none, eely when it rains hard, eel makes holes in
dikes','2',NULL,NULL,NULL,NULL,NULL,'no pesticides, looking for C4 but
couldn\u201a\u00c4\u00f4t find so instead chose taiwan','Borrowed from Patrick-
Maddamot')

```

```

INSERT INTO "seeds" VALUES(72,'1116','TJ-04','2','2014-02-14','Binogon (glutinous
rice)',NULL,'1','seedling','1','small rice paddy','planned for July 2014',NULL,'dango
(green smelly flies) is a problem, did not use pesticide','about 20 years, planted
every year to make baya (rice wine)',NULL,NULL,NULL,NULL,NULL,'her area has no problem
but new area has white flies problems, which they use \u201a\u00c4\u00fai
don\u201a\u00c4\u00f4t know the spray\u201a\u00c4\u00f9','Their family seed ')

INSERT INTO "seeds" VALUES(73,'1116','TJ-04','3','2014-02-
14','Inyapan',NULL,'20','small bundles','1','big rice paddy','planned for July
2014',NULL,'eel is a problem, no pesticide','1',NULL,NULL,NULL,NULL,NULL,NULL,'Ricardo
Illaga (local farmer had excess seed)')

INSERT INTO "seeds" VALUES(74,'1116','TJ-04','4','2014-01-
13','Taiwan',NULL,'1','can','10','wide/small paddies','10','sacks','eel, no problem
with planted rice, and giant earth worm, no
pesticide','1',NULL,NULL,NULL,NULL,NULL,NULL,'Florincio Dulnuan')

INSERT INTO "seeds" VALUES(75,'1116','TJ-04','5','2014-01-13','Binogon
',NULL,'1','small bundle','2','rice paddies','20','bundles','good harvest, no
pesticide use','\u201a\u00c4\u00faevery year since
before\u201a\u00c4\u00f9',NULL,NULL,NULL,NULL,NULL,NULL,'Their own seedlings, make on
bilangon')

INSERT INTO "seeds" VALUES(76,NULL,'TB-13','1','2014-01-14','C-4
white',NULL,'6','cans','15','regular size rice paddies','40','sacks','rat infested and
stem borrower, did not put pesticide but spread synthetic fertilize name UREA for
healthy stems and produce more stems','3',NULL,NULL,NULL,NULL,NULL,'they will change
their rice variety next year from C-4 to Taiwan rice and Sinandomeng because of their
bad experience with C-4 rice variety for 2 consecutive years','Seed exchange from
local farmer Junia Nepano in barangay Jalongan')

INSERT INTO "seeds" VALUES(77,NULL,'TB-13','2','2014-01-13','C-4
white',NULL,'6','cans','15','regular size rice paddies','28','sacks','rat infested,
the rats ate all the growing rice seedling, small amount of rice left, low harvest
last year','2',NULL,NULL,'Yes, karate',NULL,NULL,'they did not put pesticides because
they do not have enough money to buy pesticide ','Seed exchange from local farmer
Junia Nepano in barangay Jalongan')

INSERT INTO "seeds" VALUES(78,'1053','TB-14','1','2014-01-14','Mayaw yaw (8
months)',NULL,'3','big bundles','7','rice paddies','planned for August 2014',NULL,'rat
infested, \u201a\u00c4\u00fadaimuk\u201a\u00c4\u00f9 and did not put pesticides, they
just cleaned the surroundings of the rice field','1',NULL,NULL,NULL,NULL,NULL,'they
chose mayaw yaw this year because they saw that the other farms who planted this rice
variety has a good harvest, but this variety can be harvested after 8 months so they
will harvest late','Borrowed seeds from farmer Eddie Agustin of Brgy Jalongan')

INSERT INTO "seeds" VALUES(79,'1053','TB-14','2','2014-02-13','C-4
white',NULL,'1','sack','7','rice paddies','15','sacks','rat infested,
\u201a\u00c4\u00fanakupo"',NULL,NULL,'Yes, Cymbush',NULL,NULL,'they chose to plant
c-4 because of high production/harvest, unfortunately the rice field was infested by
rice and insects that sipped young grains','borrowed from local farmer ')

INSERT INTO "seeds" VALUES(80,'1029','TB-15','1','2014-03-
14','Ingaspi',NULL,'2','cans','8','rice paddies','planned for last week of July
2014',NULL,'\u201a\u00c4\u00fanakulung,\u201a\u00c4\u00f9 rats and used bida for worms
and karate for insects','1',NULL,NULL,'Yes, karate',NULL,'Yes, bida ','they planted
ingaspi because they saw ingaspi brings good harvest to the other fields, c-4 did not

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bring good harvest last year','Seed exchange from local farmer Gabino Lumigat')

INSERT INTO "seeds" VALUES(81,'1029','TB-15','2','2014-02-13','C-4
red',NULL,'2','cans','8','rice paddies','22','sacks','rat infested and presences of
insect and worms, bida for worms and insect','2',NULL,NULL,'Yes,
bida',NULL,NULL,NULL,'Saved seedlings of her mother from Tuplac')

INSERT INTO "seeds" VALUES(82,'1041','TB-16','1','2014-01-14','Pugut',NULL,'3','big
bundles','7','rice paddies','300','bundles','rat
infested','1',NULL,NULL,NULL,NULL,NULL,'the native ipugo that she used to plant was
destroyed cousins her to plant, other varieties varied pugut, the native ipugo that
she used to plant is botnot','Borrowed from local farmer belen belongon')

INSERT INTO "seeds" VALUES(83,'1041','TB-16','2','2014-01-14','Bukig',NULL,'3','big
bundles','9','rice paddies','175','bundles','rat infestation and wild
birds','1',NULL,NULL,NULL,NULL,NULL,'she used to save this kind of rice seedling but
she did not planted the past few years because she prioritized botnol until all her
botnol seedlings were affected by climate change','saved seedlings')

INSERT INTO "seeds" VALUES(84,'1041','TB-16','3','2014-01-13','Botnol',NULL,'3 and
1/2','bundles','7','rice paddies','200','bundles','nakupo, stem borer, her harvest is
low this year because of climate change','2',NULL,NULL,NULL,NULL,NULL,'They chose this
rice variety because it is aromatic when cooked the eater does not feel hungry all the
time, botnol is one of the traditional rice and she always gets a good harvest from
this variety. it is also use as main ingredient of rice wine. ','saved seedlings')

INSERT INTO "seeds" VALUES(85,'1038','TB-17','1','2014-02-
14','Doesn\u201a\u00c4\u00f4t know',NULL,'200','small bundles','7','rice
paddies','planned for july 2014',NULL,'stem borer, nagando and utilized cymbush for
insects \u201a\u00c4\u00fadango\u201a\u00c4\u00f9','1',NULL,NULL,'Yes,
cymbush',NULL,NULL,'on 2014, they were forced to plant lowland rice because their
bukig seedlings were rotten and destroyed because of climate change','From local
farmer Anita Humiding')

INSERT INTO "seeds" VALUES(86,'1038','TB-17','2','2014-02-14','Bukig',NULL,'1 and
1/2','small bundles','4','rice paddies','planned for august 2014',NULL,'stem borer,
nagando ','3',NULL,NULL,'Yes, Cymbush',NULL,NULL,'but before they used to plant bukig
variety only and they always get food harvest, they chose bukig to plant in 2013
because it was the only available saved seeds and provides good harvest','saved
seedlings ')

INSERT INTO "seeds" VALUES(87,'1038','TB-17','3','1905-07-05','Bukig',NULL,'2','big
bundles','11','rice paddies','220','bundles','good
harvest','2',NULL,NULL,NULL,NULL,NULL,'they are saving the bukig seedlings because
they are always getting good harvest from this rice variety','saved seedlings ')

INSERT INTO "seeds" VALUES(88,'1016','TB-18','1','2014-03-13','Inyapan',NULL,'4','big
bundles','3','hectare','planned for july 2014',NULL,'flies/insects, cricket, giant
worms','3',NULL,NULL,'Yes, Karate',NULL,NULL,'the rice field is being destroyed by
giant earthworms and crickets, inyapan produces more harvest and resistant to climate
change','borrowed seedling from auntie Junia Codamon')

INSERT INTO "seeds" VALUES(89,'1016','TB-18','2','2014-01-13','C-4 white',NULL,'4 and
1/2','cans','3','hectare','39','sacks','rat infested, crickets','3',NULL,NULL,'Yes,
Cymbush',NULL,NULL,'the harvest for 2013 is low because of rat infestation and climate
change so he was forced to plant inyapan and c-4 alternatively','own seedlings ')

INSERT INTO "seeds" VALUES(90,'1123','TB-19','1','2014-03-14','Inyaphan',NULL,'3','big

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bundles','13','small rice paddies','planned for July2014',NULL,'nadango, did not spray','1',NULL,NULL,NULL,NULL,NULL,'He chose inyaphan because this variety is stronger/resistant to grain infestation','borrowed from his brother Victor Dulawan')

INSERT INTO "seeds" VALUES(91,'1123','TB-19','2','2014-03-14','Botnol',NULL,'10','kilo seedlins','7','rice paddies','planned for July 2014',NULL,'attacked by brown and green hopper recovered (hon-al), did not spray','1',NULL,NULL,NULL,NULL,NULL,'chose botnal so that the heirloom rice be preserved and this variety is aromatic','get his seedlings from farmer Mary Guimbatan')

INSERT INTO "seeds" VALUES(92,'1123','TB-19','3','2014-03-14','Madduli','Red Rice','1','big bundle','2','rice paddies','planned for July 2014',NULL,'it was not attached. climate resistant, no pesticides','1',NULL,NULL,NULL,NULL,NULL,'madduli is aromatic and climate resistant that\u201a\u00c4\u00f4s why he chose to plant','get his seedlings from Mary Guimbatan')

INSERT INTO "seeds" VALUES(93,'1123','TB-19','4','2014-03-14','Bongkitan',NULL,'10','kilos seedling','5','rice paddies','planned for July 2014',NULL,'no problems and pesticides','2',NULL,NULL,NULL,NULL,NULL,'for rice wine making and personal consumption','own seedlings')

INSERT INTO "seeds" VALUES(94,'1123','TB-19','5','2014-02-13','Taiwan','NULL','3','cans','16','rice paddies','25','sacks','nadango, bad harvest','5',NULL,NULL,NULL,NULL,NULL,'saved seedlings ')

INSERT INTO "seeds" VALUES(95,'1123','TB-19','6','2014-02-13','Bongkitan',NULL,'3','big bundles','4','rice paddies','40','bundles','nadango, and affected by strong typhoon','1',NULL,NULL,NULL,NULL,NULL,'chose bongkitan for personal consumption and rice wine making','bought from Bugan Snanays. ')

INSERT INTO "seeds" VALUES(96,'1049','TB-20','1','2014-03-14','Madduli','Red Rice','1','big bundle','3','rice paddies','planned for august 2014',NULL,'the leaves was infested with worms and insects','1',NULL,'yes, magnum','Yes, Cymbush',NULL,NULL,'they chose madduli because they saw their fellow farmers harvest well in the madduli variety that they planted so they also tried','seed exchange with local farmer faith belongon')

INSERT INTO "seeds" VALUES(97,'1049','TB-20','2','2014-03-14','Bongkitan',NULL,'1','regular bundles','4 and 1/2','small rice paddies','planned for July 2014',NULL,'no major problems and no pesticides used','2',NULL,NULL,NULL,NULL,NULL,'they chose bongkitan because it is good for commercial selling and has a very good price at the market','saved seedlings ')

INSERT INTO "seeds" VALUES(98,'1049','TB-20','3','2014-02-13','Inyaphan',NULL,'1 and 1/2','big bundle','3','rice paddies','200','bundles','nakupo ','4',NULL,NULL,'Yes, Karate and cymbush',NULL,NULL,'they chose inyaphan for the past 4 years because it produces good harvest','saved seedlings ')

INSERT INTO "seeds" VALUES(99,'1049','TB-20','4','2014-03-13','Bongkitan',NULL,'1','regular bundle','N/A','N/A','20','bundles','worm infested','1',NULL,'Yes, magnum',NULL,NULL,NULL,NULL,'Saved seedlings from previous harvest')

INSERT INTO "seeds" VALUES(100,'1111','TB-21','1','2014-01-14','Inyaphan',NULL,'3','big bundles','10','regular paddies','planned for July 2014',NULL,'attacked by flies, leaking rice paddies due to giant earthworms','3',NULL,NULL,NULL,NULL,NULL,'the rice grains does not mature at the same time this year.','saved seedlings ')

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INSERT INTO "seeds" VALUES(101,'1111','TB-21','2','2014-01-13','Inyaphan',NULL,'3','big bundles','6','rice paddies','170','bundles','attacked by flies but the damage is lesser. ','2',NULL,NULL,NULL,NULL,NULL,'they chose inyaphan because it produces more stem and more harvest of rice grains','saved seedling from previous year')

INSERT INTO "seeds" VALUES(102,'1002','TB-22','1','2014-02-06','Madduli',NULL,'1','big bundle','6','regular rice paddies','planned for July 2014',NULL,'the leaves were attacked by brown hopper','5',NULL,NULL,'Yes, cymbush',NULL,NULL,'No synthetic fertilizer, cymbush to kill insects and golden snail, chose madduli because it is rich in vitamins and nutrients and w/ good market value, when sold to the market','saved seedlings')

INSERT INTO "seeds" VALUES(103,'1002','TB-22','2','2014-02-14','Botnol',NULL,'1','big bundle','7','regular rice paddies','150','bundles','the leaves were also attacked by brown hopper','5',NULL,NULL,'Yes, Cymbush',NULL,NULL,'they chose botnol because it is aromatic when cooked, they have good harvest this year for botnol','saved seedlings')

INSERT INTO "seeds" VALUES(104,'1002','TB-22','3','2014-03-14','Inyaphan',NULL,'1','big bundle','7','rice paddies','planned for July 2014',NULL,'the leaves are nakulung, no insecticide used','3',NULL,NULL,NULL,NULL,NULL,'they chose inyaphan because the stems are strong and produces more stems to produce more rice grain','seed exchange from Alberto Dulnuan in the year 2012')

INSERT INTO "seeds" VALUES(105,'1002','TB-22','4','2014-02-13','Madduli',NULL,'1','big bundle','6','regular rice paddies','100','bundles','harvest not good because nakupo','4',NULL,NULL,NULL,NULL,NULL,'rainy season that\u201a\u00c4\u00f4s why it affected their harvest','saved seedlings gathered from previous years harvest')

INSERT INTO "seeds" VALUES(106,'1002','TB-22','5','2014-02-13','Botnol',NULL,'1','big bundle','7','regular rice paddies','80','bundles','harvest not good because nakupo','4',NULL,NULL,'Yes, Cymbush',NULL,NULL,'botnol is aromatic and perfect rice to cook especially when mixed with little amount of madduli rice','saved seedlings gathered from previous years harvest')

INSERT INTO "seeds" VALUES(107,'1002','TB-22','6','2014-03-13','Inyaphan',NULL,'1','big bundle','7','rice paddies','100','bundles','good harvest, no major or mino problems encountered, no pesticides and insecticides sprayed','2',NULL,NULL,NULL,NULL,NULL,'Inyaphan is climate resistant also','saved seedlings, gathered from their first harvest')

INSERT INTO "seeds" VALUES(108,NULL,'TV-03-P','1','2014-01-13','C-4 white',NULL,'2','cans',NULL,'less than','55','sacks','Cambodian eel causing erosion','many times',NULL,NULL,'Yes, Karate',NULL,NULL,'C-4 and ingaspi are 4 month harvest, plants c-4 in main cropping (jan-may), 3 month variety in 2nd cropping','Department of agriculture, so Paulo works in DA buy and sell rice (palay')

INSERT INTO "seeds" VALUES(109,NULL,'TV-03-P','2','2014-01-14','Ingaspi',NULL,'2','cans or more',NULL,'less than a hectar','57','sacks','Cambodian eel','4',NULL,NULL,'Yes, Karate',NULL,NULL,'Good harvest, weather resistant, heavy','Cousin: Lawrence Aliguyon')

INSERT INTO "seeds" VALUES(110,NULL,'TV-03-P','3','2014-07-14','unknown 3-month variety','C-18','2','cans',NULL,'less than a nectar','40','sacks','stem borer, stinky rice bug (dango)','3 months',NULL,NULL,'Yes, karate ',NULL,NULL,NULL,'certified seeds bought from Department of Agriculture')

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INSERT INTO "seeds" VALUES(111,NULL,'TV-03-P','4','2014-01-13','Ingaspi','Sultan','3','cans',NULL,'less than a hectar','57','sacks','stem borer, stinky rice bug (dango, cambodian eel','3',NULL,'Yes, power','Yes, cymbush',NULL,NULL,NULL,'From last harvest')

INSERT INTO "seeds" VALUES(112,NULL,'TV-03-P','5','2014-07-13','mulmug (3-month variety)',NULL,'1','can','5','rice paddies','15','sacks','stem borer, stinky rice bug (Dango), cambodian eel','2',NULL,NULL,'Yes, cymbush and karate',NULL,NULL,NULL,'Department of agriculture')

INSERT INTO "seeds" VALUES(113,'2005','TJ-05','1','2014-01-14','not known, husband choice from Potia',NULL,'3-4','cans','one forth','hector','45','sacks','none because utilize 2 sacks of fertilizers/sprays, used insecticide but does not know','1',NULL,NULL,'Yes, 1 liter, not know insecticide',NULL,NULL,'Her husband got seed from Department of Agriculture in Potia','Department of Agriculture in Potia')

INSERT INTO "seeds" VALUES(114,'2005','TJ-05','2','2014-01-14','Dayagut (unknown, commercial)',NULL,'5','small kilos','1','rice paddies','4 and 1/2 till harvest possibly 4 sacks',NULL,'none, no problem because they are spraying it, used insecticide but does not know','3',NULL,NULL,'Yes, not known',NULL,NULL,'she said, if there is no fertilizer the harvest is not good','exchange borrowed seedlings and then give back')

INSERT INTO "seeds" VALUES(115,'2005','TJ-05','3','2014-06-13','not known ','seed# 202','4','cans','one forth','hectors','45','sacks','problems were rats ( harvest went down), white flies','5',NULL,'Yes, magnum','Yes, Karate',NULL,NULL,NULL,'Free seeds from department of Agriculture seminar in Potia.')

INSERT INTO "seeds" VALUES(116,'2005','TJ-05','4','2014-08-14','Ingaspi',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,'To be planted in August 2014',NULL)

INSERT INTO "seeds" VALUES(117,'2006','TJ-06','1','2014-12-13','Thunder (commercial)',NULL,'7','cans','three forth','hectare','68','sacks','short-dry season','1',NULL,NULL,'Yes, something similar to magnum',NULL,NULL,'Thunder variety did not receive enough water, limited growth','Among fellow farmers and exchange ')

INSERT INTO "seeds" VALUES(118,'2006','TJ-06','2','2014-07-14','C-4',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,'does not know ',NULL)

INSERT INTO "seeds" VALUES(119,'2006','TJ-06','3','2014-08-13','Ingaspi ',NULL,'7','cans','three forth and 1 third','hectare','95','sacks','not so much, usually a problem was irrigation','2 because it was good in Imbabang',NULL,NULL,'Yes, karate',NULL,NULL,NULL,'Isabella, 3 years ago, spread after flourishing, Department of Agriculture')

INSERT INTO "seeds" VALUES(120,'2006','TJ-06','4','2014-12-12','Romelia',NULL,'7','cans','three forth','hectare','70','sacks+', 'request agriculture department for rat bait, rat and chicken problems','1','Y, common','Y, chivoron','Y, tamaron',NULL,NULL,'owner provides money to tenant, Saturnine is the owner and Balong/Oliver are the tenants','fellow farmers, who give and exchange later-on')

INSERT INTO "seeds" VALUES(121,'2116','TV-04-P','1','2014-02-14','Ingaspi',NULL,'6','cans','three forth','hectare','57','sacks','rice bug (dango), neck rot (fungi), stem borer, too much fertilizer added, water shortage, insecticide did not apply','3',NULL,NULL,'Y, brodan and legion',NULL,NULL,NULL,'from harvest last

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year')

INSERT INTO "seeds" VALUES(122,'2116','TV-04-P','2','2014-02-14','C-
18',NULL,'2','cans','225','square meters','13','sacks','same as above, water supply
and excessive fertilizer','1',NULL,NULL,'Y, brodan and legion',NULL,NULL,'has more
yields','Raul (Fellow farmer)')

INSERT INTO "seeds" VALUES(123,'2116','TV-04-P','3','2014-02-
14','Bongkitan',NULL,'1','can','one forth','hectare','planned for end of June
2014',NULL,'stem borer, water, shortage','1',NULL,NULL,'Y, brodan and
magnum',NULL,NULL,NULL,'daughter in law in Mayoyao')

INSERT INTO "seeds" VALUES(124,'2116','TV-04-P','4','2014-08-13','R-152
variety',NULL,'1','sack','one half','hectare','45','sacks','green leaf hoper, rats,
rice bugs, neck rot','3',NULL,NULL,'Y, brodan and magnum',NULL,NULL,'plans to plant
152 because it is heavy and does not easily fall off from it\u201a\u00c4\u00f4s
strands, 3.5 harvest, seed exchange from fellow farmer of 152 Jeff Dinamlig, suspects
source from Department of Agriculture','from seeds kept')

INSERT INTO "seeds" VALUES(125,'2131','TV-05-P','1','2014-01-
14','Ingaspi',NULL,'3','cans','one forth','hectare','42','sacks','water supply,
combodian eel, golden snail, dango(rice bug)','3',NULL,NULL,'Y, karate,
cymbush',NULL,NULL,'harvested more if all rice fields enough water supply','Anthony
Pagada from Banaue but lives in Pindongan')

INSERT INTO "seeds" VALUES(126,'2131','TV-05-P','2','end of Dec-
13','Diket','Binuggan','1','bundle','5','paddies','planned for June 2014',NULL,'rice
bug, grasshopper','5',NULL,NULL,'Y, lanate',NULL,NULL,'binnugon is harvested 5
months','From Agripina Allaga')

INSERT INTO "seeds" VALUES(127,'2131','TV-05-P','3','2014-08-13','PJ-7 (commercial
rice)',NULL,'3 . 5','cans','one forth','hectare','38','sacks','short
strands','7',NULL,NULL,'Y, cymbush',NULL,NULL,'cambodian eel bores hole in rice
paddies cause erosion, grasshopper sips rice milk, PJ-7 harvested in 3 month 1 week
depending on climate from Department of agriculture','Andrea Buhong from Department of
Agriculture')

INSERT INTO "seeds" VALUES(128,'2131','TV-05-P','4','2014-02-13','Ingaspi',NULL,'3 .
5','cans','one forth','hectare','48','sacks','good yields because there was water
supply','8',NULL,NULL,NULL,NULL,'does not use commercial fertilizer because it
destroys land and soil, cymbush is applied when grains are starting to grow','Gaspar
Pagaddut from Ba-e')

INSERT INTO "seeds" VALUES(129,NULL,'TJ-07','1','2014-01-
14','Dicot',NULL,'2','bundles','20','rice paddies','planned for end of June
2014',NULL,'no problem but soil is problem soil is infected, soil be treated, defect
acidity of soil','1',NULL,NULL,'Y, chix',NULL,NULL,'soil is hard, easily harvested,
watery paddies means difficult to harvest, mixed with tinawon','Somebody bought it
can\u201a\u00c4\u00f4t remember, neighbor Marson Erlinda')

INSERT INTO "seeds" VALUES(130,NULL,'TJ-07','2','2014-01-14','Tinowon,
igami',NULL,'10','bundles',NULL,'less than a hectar','planned for end of June
2014',NULL,'none, soil is the problem, applied fertilizer urea and complete 1414,
sprayed pesticide chix during blooming time of rice','1',NULL,NULL,'Y,
chix',NULL,NULL,'she use to be a teacher, now a farmer','a friend, Joseph Patiwi')

INSERT INTO "seeds" VALUES(131,NULL,'TJ-07','3','2014-08-13','Commercial rice, cannot
remember',NULL,'3','cans',NULL,'less than a hectar','28','sacks','no, soil is the

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problem','since 1998, doesn\u201a\u00c4\u00f4t know',NULL,NULL,'Y,
cymbush',NULL,NULL,NULL,'get it from the department of agriculture')

INSERT INTO "seeds" VALUES(132,NULL,'TJ-07','4','2014-01-13','Cannot
remember',NULL,'cannot remember',NULL,NULL,'less than a hectare','35','sacks','soil and
grasses \u201a\u00c4\u00fabako\u201a\u00c4\u00f9 kind of grass that are taller than
palsy rice grain (looks similar to the rice)','7',NULL,NULL,'Y,
cymbush',NULL,NULL,NULL,'from the department of agriculture Kiangnan, purchase for 900
pesos per sack')

INSERT INTO "seeds" VALUES(133,NULL,'TJ-08','1','2014-02-14','Ipugo white',NULL,'4-
5','bundles','one forth','hectare','planned for June 2014',NULL,'soil defect, utilized
urea','1',NULL,NULL,'Y, magnum',NULL,NULL,'seeds didn\u201a\u00c4\u00f4t come out at
the same time','Bilong and tupac')

INSERT INTO "seeds" VALUES(134,NULL,'TJ-08','2','2014-02-14','Ipugo
red',NULL,'1','bundle','1','pukung: field pond','Planned for June 2014',NULL,'soil
defect, utilized urea for fertilizer','2',NULL,NULL,'Y,
magnum',NULL,NULL,NULL,'Hingyon')

INSERT INTO "seeds" VALUES(135,NULL,'TJ-08','3','2014-02-
14','Dayyakkot',NULL,'5','bundle','almost one forth','hectare','planned for July
2014',NULL,'insects: rice hoppers (ba-atong), dango (rice bug) and rats, urea for
fertilizer','4',NULL,NULL,'Y, brodan, magnum',NULL,NULL,NULL,'Katherine Dinamhing
(neighbor)')

INSERT INTO "seeds" VALUES(136,NULL,'TJ-08','4','2014-02-14','Minaangan (red long
grain)',NULL,'3','regular bundle','4-5','hectare','Planned for June
2014',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,'Jeffrey Dinamlig')

INSERT INTO "seeds" VALUES(137,NULL,'TJ-08','5','2014-02-14','C-
4',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,'does not
remember',NULL)

INSERT INTO "seeds" VALUES(138,NULL,'TJ-
08','6',NULL,'Ingaspi',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NUL
L,NULL,'does not remember',NULL)

INSERT INTO "seeds" VALUES(139,NULL,'TV-10','1','2014-01-14','does not know,
can\u201a\u00c4\u00f4t remember',NULL,'6','cans','three
fifth','hectare','80','sacks','lanu not harvested at the same time, water supply, stem
borer, dango or rice bug','5',NULL,NULL,'Y, brodan',NULL,NULL,'2nd crop usually with
lots of problems due to rainy season and typhoons and rats, likes cold weather and
water','Sanina (Ambuaya)')

INSERT INTO "seeds" VALUES(140,NULL,'TV-10','2','2014-07-13','does not know, can't
remember',NULL,'3','cans','three forth','hectare','48','sacks','rain, wind,
rats','4',NULL,NULL,'Y, brodan and chix',NULL,NULL,'lanu - a soil problem in the rice
field, rice plants hardly thrive with results to delay of yielding/disturbs the growth
of palay','From previous harvest (kept seeds)')

INSERT INTO "seeds" VALUES(141,NULL,'TV-10','3','2014-07-
13','Ingaspi',NULL,'3','cans','one eighth','hectare','14','sacks','rain, wind, and
rats','1',NULL,NULL,'Y, brodan and chix',NULL,NULL,NULL,'Jay De Guzman (neighbor)')

INSERT INTO "seeds" VALUES(142,NULL,'TV-10','4','2014-06-13','does not know, can't
remember',NULL,'3','cans','one eighth','hectare','16','sacks','variety not well-suited
to soil variety, can\u201a\u00c4\u00f4t remember

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pesticides','4',NULL,NULL,NULL,NULL,NULL,NULL,'Carlos Tapo (neighbor)')

INSERT INTO "seeds" VALUES(143,NULL,'TV-10','5','2014-01-13','does not know, can''t
remember',NULL,'3','cans','one half','hectare','48','sacks','variety not well-suited
to soil variety, can''t remember pesticides','3',NULL,NULL,NULL,NULL,NULL,NULL,'Potia
(Alfanzo Lista) bought by Owner')

INSERT INTO "seeds" VALUES(144,NULL,'TV-11','1','2014-01-
14','Romelia',NULL,'1','can','does not know',NULL,'27','sacks','Cambodian eel that
destroy rice paddies, utilize urea as a fertilizer','2',NULL,NULL,NULL,NULL,NULL,'Rice
were planted not at the same time so they have time to work on the other rice
field','Samina her sister and fellow farmer')

INSERT INTO "seeds" VALUES(145,NULL,'TV-11','2','2014-02-14','Ingaspar
(Burik)',NULL,'3','cans','does not know',NULL,'38','sacks','lack of water
supply','does not know',NULL,NULL,'Y, cymbush',NULL,NULL,'Cymbush usually used for
rice bug','Seeds kept from harvest last year ')

INSERT INTO "seeds" VALUES(146,'2028','TV-12','1','2014-02-14','Super
60',NULL,'25','kilograms','one half','hectare','46','sacks','not much insects and
pests, cambodian eel','1',NULL,NULL,'Y, cymbush',NULL,NULL,NULL,'bought from
Department of Agriculture at 1060/25 kg')

INSERT INTO "seeds" VALUES(147,'2028','TV-12','2','2014-08-
14','Ingaspi',NULL,'3','cans','one half','hectare','42','sacks','rats, worm, dango,
stem borer','2',NULL,NULL,'Y, magnum, chix, cymbush',NULL,NULL,'Ingaspi classified as
burik when sold to buyer of rice','Gerome Palaghicon - fellow farmer and neighbor')

INSERT INTO "seeds" VALUES(148,'2028','TV-12','3','2014-01-13','C-
4',NULL,'3','cans','one half','hectare','47','sacks','cymbush, fertilizer (urea and
complete), fohar','4',NULL,NULL,'Y, cymbush',NULL,NULL,NULL,'Nestor Bulahao
(neighbor)')

INSERT INTO "seeds" VALUES(149,'2095','TV-13','1','2014-02-
14','Ingaspi',NULL,'4','cans','one forth','hectare','25','sacks','did not use
pesticide, \u201a\u00c4\u00falanu\u201a\u00c4\u00f9 weeds, waterlily were
problems','2',NULL,NULL,NULL,NULL,NULL,'uwe-uwe means sharp weeds, this years main
crop has lesser yields due to expression weed','Borrowed from Toto (Luis) Maliga')

INSERT INTO "seeds" VALUES(150,'2095','TV-13','2','2014-08-
13','222',NULL,'1','sacks','one forth','hectare','21','sacks','rats, rice bug, and
rain, did not use pesticide','2',NULL,NULL,NULL,NULL,NULL,'prefers to go organic,
chemical effects, harvest for personal consumptions','John Benzer Timbulog')

INSERT INTO "seeds" VALUES(151,'2095','TV-13','3','N/A-13','Ingaspi
',NULL,'1','sack','one forth','hectare','32','sacks','did not use pesticide, rat, rice
bug and rain','1',NULL,NULL,NULL,NULL,NULL,'normally harvest 30 + sacks but due to
problems most of the rice do not survive','Dan Umoltog fellow farmer')

INSERT INTO "seeds" VALUES(152,'2020','TV-14','1','2014-12-
14','Ingaspi',NULL,'2','cans','3 wide, 8 small','paddies','32','sacks','worms were
problems, use urea as a fertilizer and snail killer that can\u201a\u00c4\u00f4t
remember','4',NULL,NULL,'Y, foliar',NULL,NULL,'one or two seedling with wider distance
than regular distance but it was supplemented with fertilizer 3 times','Seeds kept
from harvest in 2nd cropping last 2013')

INSERT INTO "seeds" VALUES(153,'2020','TV-14','2','2014-08-
13','Ingaspi',NULL,'3','cans','3 wide, 8 small','paddies','22','sacks','rats, weeds,

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and chestnut munya are problems','3',NULL,NULL,'Y, foliar',NULL,NULL,'worms burrows in the mud, cover rice plants and is a pest','seed exchange from Boy Licayayo (neighbor)')

INSERT INTO "seeds" VALUES(154,'2020','TV-14','3','2014-01-13','Romelia',NULL,'3','cans','3 wide, 8 small','paddies','23','sacks','did not take care of paddies because wife got sick','2',NULL,NULL,'Y, foliar',NULL,NULL,'exchanged seeds because variety had good yields, winnowed seedlings for main crop to select the good seeds','extra seedlings from Oliver Culinay, another farmer in the area')

INSERT INTO "seeds" VALUES(155,NULL,'TV-15','1','2014-02-14','does not know',NULL,'1','sack','three forth','hectare','planned for July 2014',NULL,'lanu, weeds, eel, worms were problems','does not know',NULL,'Y, magnum, gunerantee','Y, cymbush',NULL,NULL,NULL,'can\u201a\u00c4\u00f4t remember')

INSERT INTO "seeds" VALUES(156,NULL,'TV-15','2','2014-01-13','82',NULL,'1','sack','three forth','hectare','60','sacks','lanu, weeds, eel, worms were problems','1',NULL,'Y, magnum, gunerantee',NULL,NULL,NULL,'Quirino Province is in region','bought from Quirino Province')

INSERT INTO "seeds" VALUES(157,NULL,'TV-15','3','2014-02-13','c-18',NULL,'1','sack','three forth','hectare','30','sacks','lanu, weeds, eel, worms were problems','1',NULL,NULL,'Y, SAA',NULL,NULL,NULL,'from owner ')

INSERT INTO "seeds" VALUES(158,'2035','TV-16','1','2014-11-14','C-4',NULL,'3','cans','one forth','hectare','48','sacks','lanu, rice bug, cut worm are problems (fertilizer 14-14-14)','3',NULL,NULL,'Y, karate ',NULL,NULL,'pukung means smaller ponds ','Samuel Pittang from Bacwawan ')

INSERT INTO "seeds" VALUES(159,'2035','TV-16','2','2014-01-14','Dayakot (White)',NULL,'1','bundles','6','rice paddies','80','bundles','rice bug are problems','2',NULL,NULL,'Y, karate ',NULL,NULL,NULL,'Seed exchange from Nasario Licayayo another from in Bacwawan ')

INSERT INTO "seeds" VALUES(160,'2035','TV-16','3','2014-01-14','Dayakot (white)',NULL,'1','bundles','7','rice paddies','78','bundles ','rice bug are problems','2',NULL,NULL,'Y, karate ',NULL,NULL,NULL,'Nasario Licayayo ')

INSERT INTO "seeds" VALUES(161,'2072','TV-17','1','2014-02-14','Pakulsa',NULL,'3','cans','less than one','hectare','50','sacks','erosion, rice bug, and snails were problems','4',NULL,NULL,'Y, karate ',NULL,NULL,'karate used for worms that attach the grains, all harvest last year were consumed so they borrowed from Pablo Angel','Pablo Angel (fellow farmer)')

INSERT INTO "seeds" VALUES(162,'2072','TV-17','2','2014-02-13','Pakulsa',NULL,'3','cans','less than half','hectare','62','sacks','erosion, rice bug, and snails were problems, green bee (fertilizer) ','3','Y, penant',NULL,'Y, cymbush',NULL,NULL,'gold rice - rice husk has shining, erosion due to weather from dry to wet season, ','Seeds kept harvest last year')

INSERT INTO "seeds" VALUES(163,'2072','TV-17','3','2014-08-13','PJ-27 (long grain)',NULL,'1','sacks','less than half','hectare','60','sacks','grass easily fall off were problems','1','Y. penant',NULL,'Y, cymbush',NULL,NULL,'cymbush rice pollination, rice owner doesn\u201a\u00c4\u00f4t like to change variety, pi-27 easily \u201a\u00c4\u00f4f9, hopes for seminar on rice plantation','Bobby De Guzman (fellow farmer)')

INSERT INTO "seeds" VALUES(164,'2085','TV-18','1','2014-02-14','Ingaspi',NULL,'4','cans','one forth','hectare','47','sacks','lanu, rice not

harvested at the same time, rice bug were problems','1',NULL,'Y, magnum and foliar','Y, chix',NULL,NULL,'ingaspai more resistant to lanu/soil depleet, heavier than other varieties, will farm earlier because not enough water ','seed exchange with Toto Malingan (Pindogan)')

INSERT INTO "seeds" VALUES(165,'2085','TV-18','2','2014-01-13','C-12',NULL,'2','cans','2 wide, 8 small','paddies','45','sacks','lanu, erosion, snails, rice bugs were problems ','2',NULL,NULL,'Y, can\u201a\u00c4\u00f4t remember',NULL,NULL,'prepared 3 cans for the 2nd cropping last year to make sure they have enough to plant ','Seed exchange with Fernando Tayaban (neighbor)')

INSERT INTO "seeds" VALUES(166,'2085','TV-18','3','2014-07-18','C-18 (3 months)',NULL,'3','cans','2 wide, 8 small','paddies','45','sacks','lanu, rice bug, golden snail, and Cambodia eel were problems','3',NULL,'Y, magnum and folair',NULL,NULL,'Y, baylucide for golden snail','had to save seed for next crop because certified seed are expensive ','Seeds kept from main cropping 2013')

INSERT INTO "seeds" VALUES(167,'2021','TV-19','1','2014-02-14','Mukoz',NULL,'3','cans','5 wider, 6 smaller',NULL,'37','sacks','needs fertilizer, used urea as fertilizer, land not nutritious ','1',NULL,NULL,NULL,NULL,NULL,'no other seeds available so they choose the varieties mentioned','Pastor Batulon from Tuplac')

INSERT INTO "seeds" VALUES(168,'2021','TV-19','2','2014-01-14','Ingaspi',NULL,'1','cans','10 narrow','paddies','18','sacks','rice bug and stem borer were problems ','3',NULL,NULL,'Y ',NULL,NULL,'main crops has 4 months','Seeds kept from harvest last year ')

INSERT INTO "seeds" VALUES(169,'2021','TV-19','3','April-14 ','Thunder ',NULL,'less than 1','can','5 wider, 6 smaller',NULL,'planned for July 2014',NULL,'rice bug and stem borer were problems ','2',NULL,NULL,'Y, cymbush',NULL,NULL,'planted not the same time to have time to work on other rice fields','Extra seedlings from Jeffrey Cannog, another farmer in the area')

INSERT INTO "seeds" VALUES(170,'2021','TV-19','4','2014-08-14','Doesn''t know specific name',NULL,'2','cans','all areas except buyayo\u201a\u00c4\u00f4s','paddies','30','sacks','rats, erosion, insects, rice bug and stem borer were problems','since started to farm','Y, zincfusfide ',NULL,'Y, cymbush',NULL,NULL,'Tinawon has more labor and less harvest','Seeds kept from last harvest')

INSERT INTO "seeds" VALUES(171,'2021','TV-19','5','2014-01-14','Thunder ',NULL,'one half','can','one eighth','hectare','10','sacks','less water supply were problems, fertilizer was used','1',NULL,NULL,'Y, cymbush',NULL,NULL,'Keep seeds for next cropping so they don\u201a\u00c4\u00f4t have to buy certified seed because it added to expense','Seed exchange from Nestor Tsulahao')

INSERT INTO "seeds" VALUES(172,'2021','TV-19','6','2014-02-14','Ingaspi',NULL,'2','cans','one eighth','hectare','15','sacks','water supply were problems ','2',NULL,NULL,'Y, cymbush',NULL,NULL,'Starts planting in Jan to March','From son Jose Jr who is another farmer ')

INSERT INTO "seeds" VALUES(173,'2144','TV-20','1','2014-02-14','Ingaspi',NULL,'3','cans','one eighth','hectare ','40','sacks','not enough water, supply white worms, rice bug that cut rice plant were problems','2',NULL,'Y, foliar','Y, cymbush',NULL,NULL,'a neighbors brother works in korea and brought home some seed','Baytay Licayayo (Fellow farmer)')

INSERT INTO "seeds" VALUES(174,'2144','TV-20','2','2014-02-14','Rice variety from

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Korea',NULL,'3','cans','one forth','hectare','50','sacks','not enough water, supply
white worms, rice bug that cut rice plant were problems','3',NULL,'Y, foliar','Y,
cymbush',NULL,NULL,'rain drops pollen grains of rice','Seeds kept from last harvest
last year (2013)')

INSERT INTO "seeds" VALUES(175,'2144','TV-20','3','2014-07-13','PJ-
27',NULL,'4','cans','one forth','hectare','30','sacks','rats, rain, and rice bug were
problems ','2','Y, black poison for rats',NULL,'Y, cymbush',NULL,NULL,'PJ-27 is
shorter height is more suitable in rainy season during typhoon','Regie Dumangong from
Labannon')

INSERT INTO "seeds" VALUES(176,'2144','TV-20','4','2014-01-
14','Ingaspi',NULL,'3','cans','one half','hectare ','80','sacks','rats, rain, and rice
bug were problems ','1','Y, black poison for rats',NULL,'Y,
cymbush',NULL,NULL,'Ingaspi is planted with distance because it\u201a\u00c4\u00f4s
robust ','Baybay Licayayo (fellow farmer)')

INSERT INTO "seeds" VALUES(177,'2140','TV-21','1','2014-01-
14','Pakulsa',NULL,'3','cans','one half','hectare','40 (50 normal)','sacks','less
water supply, fertilizer was used, but have worm rice bug, utilized urea (viking) and
complete (14-14-14) ','2',NULL,'Y, magnum',NULL,NULL,NULL,'viking urea is less for the
soil in that area','From harvest 2013')

INSERT INTO "seeds" VALUES(178,'2140','TV-21','2','2014-01-
13','Pakulsa',NULL,'3','cans','one half','hectare','55',NULL,'less water supply,
fertilizer was used, but have worm rice bug, utilized urea (viking) and complete (14-
14-14)','1',NULL,'Y, magnum',NULL,NULL,NULL,'less fertilizer this year (2014) so
lesser yield','Florencio Aliguyon (From Libliban Pindongan)')

INSERT INTO "seeds" VALUES(179,'2140','TV-21','3','2014-08-13','Korean
rice',NULL,'3','cans','one half','hectare','55','sacks','less water supply, fertilizer
was used, but have worm rice bug, utilized urea (viking) and complete (14-14-14)
','1',NULL,'Y, magnum',NULL,NULL,NULL,'suggesting survey for cure for
\u201a\u00c4\u00falanu\u201a\u00c4\u00f9','Jeffrey Dinanling, a neighbor family')

INSERT INTO "seeds" VALUES(180,NULL,'TV-22','1','2014-01-
14','Ingaspi',NULL,'1','sack','one half','hectare','54','sacks','not enough water
supply bug, rice hopper, eel were problems ','4',NULL,NULL,'Y, brodan and
cymbush',NULL,NULL,'Planted ingaspi because most farmer plant it and good to
eat','Seeds kept from harvest in 2nd cropping 2012')

INSERT INTO "seeds" VALUES(181,NULL,'TV-22','2','2013-08-
14','Ingaspi',NULL,'1','sack','one half','hectare','47','sacks','rain, rats, insect
(rice bug) were problems ','3',NULL,NULL,'Y, brodan and cymbush',NULL,NULL,'Cymbush is
for rice buy because other insecticide are not much effective ','seeds kept from
harvest 1 cropping in 2013')

INSERT INTO "seeds" VALUES(182,NULL,'TV-22','3','2014-02-
13','Ingaspi',NULL,'1','sack','one half hectare ',NULL,'52',NULL,'rain, rats, insect
(rice bug) were problems ','2',NULL,NULL,'Y, brodan and cymbush',NULL,NULL,NULL,'seeds
kept from harvest last 2012')

INSERT INTO "seeds" VALUES(183,NULL,'TV-23','1','2014-02-14','Ingaspi',NULL,'1 and
1/2','sack','one half','hectare','42','sacks','water supply, rice bug, rice hopper,
and eel were problems ','1',NULL,NULL,'Y, brodan',NULL,NULL,'Kept changing varieties to
see which is well suited in the lands','Juan Puguon (neighbor)')

INSERT INTO "seeds" VALUES(184,NULL,'TV-23','2','2014-01-14','c-18',NULL,'1 and

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1/2','sack','one half','hectare','25','sacks','rats, water supply, rice bug, rice
hopper, and eel were problems','1',NULL,NULL,'Y, cymbush and super
metrine',NULL,NULL,NULL,'Seeds kept from last harvest 2012')

INSERT INTO "seeds" VALUES(185,NULL,'TV-23','3','2014-01-13','PJ-27',NULL,'1 and
1/2','sack','one half','hectare ','30','sacks','no fertilizer ','1',NULL,NULL,'Y,
cymbush and super metrine ',NULL,NULL,NULL,'Stocked from previous year ')

INSERT INTO "seeds" VALUES(186,NULL,'TV-24','1','2014-02-14','PJ-
27',NULL,'3','cans','one half','hectare','52','sacks','rice bug
\u201a\u00c4\u00falanu\u201a\u00c4\u00f9, utilized fertilizer liquid called green
bee','2',NULL,NULL,'Y, karate',NULL,NULL,'Suggesting dispersal for rice seedlings,
karate to drive/kill away rice bugs, mixed with liquid fertilize (green bee)','Jeffrey
Dinamlig')

INSERT INTO "seeds" VALUES(187,NULL,'TV-24','2','2014-08-14','Doesn't know
name',NULL,'3','cans','one half','hectare','42','sacks','rats, rice bug rain,
\u201a\u00c4\u00falanu\u201a\u00c4\u00f9, utilized fertilizer called viking
urea','2','Y, rat poison ',NULL,NULL,NULL,NULL,NULL,'Pablo Takina')

INSERT INTO "seeds" VALUES(188,NULL,'TV-24','3','1905-07-
05','Ingaspi',NULL,'3','cans','one half','hectare','55','sacks','rice bug
\u201a\u00c4\u00falanu", utilized fertilizer called viking urea ','1','Y, rat poison
',NULL,NULL,NULL,NULL,NULL,'Polen Aliguyon neighbor in Tannibung')

INSERT INTO "seeds" VALUES(189,'2138','TV-25','1','2014-01-14','C-
18',NULL,'3','cans','one forth','hectare','25','sacks','slope of land so water is
drained, utilized fertilizer called 14-14-14','3',NULL,NULL,'Y, karate ',NULL,NULL,'3
cans for seedling but some left for replacing dead rice plant','Seeds kept from
previous harvest (2013) rain cropping')

INSERT INTO "seeds" VALUES(190,'2138','TV-25','2','2014-01-14','Ingaspi
',NULL,'3','cans','one forth','hectare','29','sacks','slope of land so water is
drained, utilized fertilizer called 14-14-14 ','2',NULL,NULL,'Y,
karate',NULL,NULL,'newly harvested crops need to be stocked, it does not yield
well','Seeds kept from previous harvest (2013) rain cropping')

INSERT INTO "seeds" VALUES(191,'2138','TV-25','3','2014-02-
13','Romelia',NULL,'6','cans','one half','hectare ','51','sacks','water shortage,
utilized fertilizer called 14-14-14 ','1',NULL,NULL,'Y, karate ',NULL,NULL,'planted in
Feb 2013 since rainy season was delayed, Romelia is good quality for consumption but
vulnerable in weather so they change to ingaspi which is more resistant ','Pablo
Takina (seed exchange)')

INSERT INTO "seeds" VALUES(192,'2138','TV-25','4','2014-06-14','doesn't know specific
name',NULL,'6','cans','one half','hectare','54','sacks','rats, rain, insects, and rice
bug were problems utilized fertilizer called 14-14-14 ','1',NULL,NULL,'Y, karate
',NULL,NULL,'planted variety which is harvested in 3 months due to lack of water
supply','Pablo Takina')

INSERT INTO "seeds" VALUES(193,NULL,'TV-26','1','2014-02-
14','Ingaspi',NULL,'3','cans','one forth','hectare ','30','sacks','lanu, lack of
water, leaf hopper, cut worm, and Cambodian eel, used clear out
herb','1',NULL,NULL,'Y, cymbush and melathione',NULL,NULL,NULL,'Bought 1 can from Juan
Puguon, 2 cans from Garita Atobba from Tannibung')

INSERT INTO "seeds" VALUES(194,'3027','TV-27','1','2014-02-14','Minaangan (red
rice)',NULL,'1','binong-o','1','rice paddy','planned for June 25, 2014',NULL,'no

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problems and no pesticides','1',NULL,NULL,NULL,NULL,NULL,'rice field are mortgaged for 3 years, parents were farmers so she eventually learned about farming','Source of seed is from Ester Huminding ')

INSERT INTO "seeds" VALUES(195,'3027','TV-27','2','2014-02-14','Dayakot',NULL,'1','binong-o','1','rice field','planned for June 25, 2014',NULL,'rice plants did not open at the same time which was a problem and no pesticide used','1',NULL,NULL,NULL,NULL,NULL,'the rice is for personal consumption and mana means inheritance ','Source of seed is from Ester Huminding ')

INSERT INTO "seeds" VALUES(196,NULL,'TJ-09','1','2014-01-14','Minaangan',NULL,'3','bundles','3','rice paddies','320','bundles','soil that makes the plant stagnant, and rats were problems','24',NULL,NULL,NULL,NULL,NULL,'If the plant is not fertile, the cropping is bad, tried commercial rice but it\u201a\u00c4\u00f4s not good (will not thrive)','Selected seeds from last years, other years from relatives, and reservation of seeds')

INSERT INTO "seeds" VALUES(197,NULL,'TJ-09','2','2014-01-14','Dicot',NULL,'one forth','bundles','1','rice paddy','25','bundles','soil and rats are problems, afraid to use pesticides, want her rice field to be organic so she use sunflowers as a fertilizer ','24',NULL,NULL,NULL,NULL,NULL,'utilized sunflower before planting as a fertilize to solve the soil problem and a week called cowcowaing grass to put on the field as a fertilizer','Relatives and friends, collected from last years cropping')

INSERT INTO "seeds" VALUES(198,NULL,'TJ-09','3','2014-01-13','Minaangan',NULL,'2','bundles','2 and 1/2','paddies','270 +','bundles','soil, rats, sometimes weeds if not remove then the rats will come and eat weeds ','23',NULL,NULL,NULL,NULL,'Minaangan is for consumption ','Relatives, selected seeds from 2012')

INSERT INTO "seeds" VALUES(199,NULL,'TJ-09','4','2014-01-14','Dicot white',NULL,'2 and 1/2','paddies','1','rice paddy','20','bundles','soil and rats are problems, utilize sunflower for fertilizer ','23',NULL,NULL,NULL,NULL,NULL,'Dicot every year for rice wine','Selected seeds from last year ')

INSERT INTO "seeds" VALUES(200,NULL,'TV-28','1','2014-12-13','Minaangan',NULL,'5','bundles','6 wide and 3 narrow','rice paddy','planned for July 2, 2014 (300 bundles normal harvest)',NULL,'soil \u201a\u00c4\u00falawa\u201a\u00c4\u00f9, rats, and snails were problems, no pesticide used ','since childhood',NULL,NULL,NULL,NULL,NULL,'planted in 3 areas, Hapao, Baang, Nungulina, planted rice in Dec, Jan, and Feb.','Binong-o from last year (2013) harvest ')

INSERT INTO "seeds" VALUES(201,NULL,'TV-28','2','2014-02-14','Bu-ukkan',NULL,'1','bundles','1','paddy','planned for end of July 2014',NULL,'soil \u201a\u00c4\u00falawa\u201a\u00c4\u00f9, rats, and snails were problems, no pesticide used ','2',NULL,NULL,NULL,NULL,NULL,'Lana is a synonymous with lane, they have to drain water so the soil gets little bit dry ','BINong-o from last year (2013) harvest')

INSERT INTO "seeds" VALUES(202,NULL,'TV-28','3','1905-07-05','Minaangan',NULL,'5','bundles','6 wide, and 3 narrow','rice paddy','800','bundles','soil \u201a\u00c4\u00falawa\u201a\u00c4\u00f9, rats, and snails were problems, no pesticide used and imuk \u201a\u00c4\u00fainsect\u201a\u00c4\u00f9 ','since childhood',NULL,NULL,NULL,NULL,NULL,'does not use pesticide because she\u201a\u00c4\u00f4s afraid','Binong-o from last year (2012) harvest ')

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INSERT INTO "seeds" VALUES(203,NULL,'TV-28','4','1905-07-05','Bu-
ukkan',NULL,'1','bundle','1','paddy','45','bundles','imuk is a problem
','1',NULL,NULL,NULL,NULL,NULL,'selected by owner of rice field, chooses variety of
minaangan because it increased more yield ','From owner of rice fields')

INSERT INTO "seeds" VALUES(204,NULL,'TV-29','1','2014-01-
14','Minaangan',NULL,'1','bundle ','3 regular','rice paddy','Being harvested
',NULL,'doesn\u201a\u00c4\u00f4t ripen well then rots and snails were problems
','2',NULL,NULL,NULL,NULL,NULL,'tenant is from Baang but rice field is in Hapao','from
former tenant Ester Humminding ')

INSERT INTO "seeds" VALUES(205,NULL,'TV-29','2','2014-01-14','Hairy white grain
rice',NULL,'6','bundles ','5 wide',NULL,'planned for July
2014',NULL,'doesn\u201a\u00c4\u00f4t ripen well then rots and snails were problems
','3',NULL,NULL,NULL,NULL,NULL,'Ester Hummiding is the former tenant ','Binong-o from
harvest 2013')

INSERT INTO "seeds" VALUES(206,NULL,'TV-29','3','Jan-Feb-13','Minaangan
',NULL,'1','bundle ','3','rice paddies ','Unsure but 120-130','bundles
','doesn\u201a\u00c4\u00f4t ripen well then rots and snails were problems
','1',NULL,NULL,NULL,NULL,' practice \u201a\u00c4\u00faub-buh\u201a\u00c4\u00f9
exchanging labor','from harvest 2013 ')

INSERT INTO "seeds" VALUES(207,NULL,'TV-29','4','2014-01-13','Hair white grain
rice',NULL,'6','bundles','5 wide','rice paddies
','240','bundles','doesn\u201a\u00c4\u00f4t ripen well then rots and snails were
problems ','2',NULL,NULL,NULL,NULL,NULL,'170k owner mortgaged rice fields to finance
daughter in Hawaii ','Binong-o from last year harvest')

INSERT INTO "seeds" VALUES(208,NULL,'TV-30','1','1905-07-06','Ipugo (hairless,
thinner)',NULL,'8','bundles','1','wide paddy','700-800 (normal harvest)','bundles
','operational expenses and rats were problems, fertilizer 14-14-14 (complete) was
used, no pesticide ','1',NULL,NULL,NULL,NULL,NULL,'family mortgaged land for 3 years
now ','Does not know')

INSERT INTO "seeds" VALUES(209,NULL,'TV-30','2','1905-07-
05','Minaangan',NULL,'8','bundles ','1','wide paddy','700 or more ','bundles
','operational expenses and rats were problems, fertilizer 14-14-14 (complete) was
used, no pesticide ','2',NULL,NULL,NULL,NULL,NULL,NULL,'Binong-o from last years
harvest ')

INSERT INTO "seeds" VALUES(210,NULL,'TV-31','1','1905-07-06','Minaangan (red
rice)',NULL,'1','bundle','5','paddies ','190','bundles','rats, chestnut munya, house
birds and eats were problems, used chicken dung as a fertilizer but not often (concept
introduced by Department of Agriculture)','1',NULL,NULL,NULL,NULL,NULL,'farmers have
to farm together to avoid rats eating their seedling/rice plants','Earned from another
rice field (neighbor) ')

INSERT INTO "seeds" VALUES(211,NULL,'TV-31','2','2014-01-13','Hair white grain
rice',NULL,'1','bundle ','5','paddies ','165','bundles','fertilizer 14-14-14
(complete, and lanai ','2',NULL,NULL,NULL,NULL,NULL,'farmers have to farm together to
avoid rats eating their seedling/rice plants','Binong-o from last year (2012) harvest
')

INSERT INTO "seeds" VALUES(212,'3029','TV-32 ','1','2014-01-
14','Oklan',NULL,'4','binong-o','3 regular','paddies','planned for July
2014',NULL,'lanah, earth worm, and eel were problems','since started farming, never

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changed variety ',NULL,NULL,NULL,NULL,NULL,NULL,'BINONG-o from last year (2013) harvest')

INSERT INTO "seeds" VALUES(213,'3029','TV-32 ','2','2014-01-13','Oklan',NULL,'4','binong-o','3 regular','paddies ','150','bundles','lanah, earth worm, and eel were problems','since started farming, never changed variety ',NULL,NULL,NULL,NULL,NULL,NULL,'Binong-o from last year (2012) harvest ')

INSERT INTO "seeds" VALUES(214,NULL,'TV-33','1','Jan-14 ','Tinoon (Ipugo)',NULL,'1','bundle','1','paddy ','50','bundles ','water supply, eel and finances were problems and no pesticides ','1',NULL,NULL,NULL,NULL,NULL,'works for children because husband is paralyzed','gathered from other rice field ')

INSERT INTO "seeds" VALUES(215,NULL,'TV-33','2','Jan-14 ','Minaangan',NULL,'1','bundle ','1','paddy','being harvest ',NULL,'water supply, eel and finances were problems and no pesticides ','1',NULL,NULL,NULL,NULL,NULL,'has water supply but no outlet for water to pass the rice field ','earned from Imbangan (another farmer) ')

INSERT INTO "seeds" VALUES(216,NULL,'TV-33','3','Jan-14 ','Diket ',NULL,'1','bundle ','1','paddy ','10','bundles ','water supply, eel and finances were problems and no pesticides ','2',NULL,NULL,NULL,NULL,NULL,'diket for consumption','binong-o from last harvest (2013)')

INSERT INTO "seeds" VALUES(217,NULL,'TV-33','4','Jan-13 ','Halayhay ',NULL,'1','bundle ','1','paddy','50','bundles ','water supply, eel and finances were problems and no pesticides ','1',NULL,NULL,NULL,NULL,NULL,NULL,'earned from another farmer ')

INSERT INTO "seeds" VALUES(218,NULL,'TV-33','5','Jan-13 ','Diket',NULL,'half ','bundle ','1','paddy','15','bundles','water supply, eel and finances were problems and no pesticides ','since started farming, can\u201a\u00c4\u00f4t remember when ',NULL,NULL,NULL,NULL,NULL,'minaangan red increased when cooked so farmers like to plan ','From harvest last year')

INSERT INTO "seeds" VALUES(219,NULL,'TV-34 ','1','2014-01-14','Minaangan',NULL,'18','bundles','10','rice paddies','more than 1500','bundles','rats, eel, snails, lanah, rice bugs when rice grains are growing were problems, no pesticides used ','3',NULL,NULL,NULL,NULL,NULL,'does not used machine (tractor) but it makes other farmers work easier, practice traditional ways of farming, wiking sometimes attach, it eats rice stems ','binong-o from last harvest (2013) ')

INSERT INTO "seeds" VALUES(220,NULL,'TV-34 ','2','Jan-13 ','Minaangan ',NULL,'10','bundles ','5','rice paddies ','more than 900','bundles ','rats, eel, snails, lanah, rice bugs when rice grains are growing were problems, no pesticides used ','2',NULL,NULL,NULL,NULL,NULL,'repeasts the same variety if it\u201a\u00c4\u00f4s robust, sometimes gives decision to other women farmer, eel causes water drainage from burrowing in the rice fields','binong-o from last harvest (2012)')

INSERT INTO "seeds" VALUES(221,NULL,'TV-34 ','3','Jan-13 ','Hairless white grains ',NULL,'8','bundles ','5 elongated','paddies','600','bundles ','rats, eel, snails, lanah, rice bugs when rice grains are growing were problems, no pesticides used ','3',NULL,NULL,NULL,NULL,NULL,'harvest depends on how you take care of the rice plant, if you clean them regularly rats wont eat them, snail eat young rice plants, attack during planting season, hair rice grains quite difficult to manage ','binong-o from last harvest (2012) ')

INSERT INTO "seeds" VALUES(222,NULL,'TV-35','1','Jan-14 ','Hairless white rice

(Ipugo)', 'Oklan ', '1 and 1/2', 'bundle', '3', 'paddies ', '125', 'bundles ', 'rats, lanah, eels, and weeds were problems and no pesticide ', '3', NULL, NULL, NULL, NULL, NULL, 'selects seeds suited to soil, tried to plant lowland rice but it didn\u201a\u00c4\u00f4t thrive, rice field inherited from grand parents ', 'binong-o from last year harvest (2013) ')

INSERT INTO "seeds" VALUES(223, NULL, 'TV-35', '2', 'Jan-13 ', 'Minaangan (Red rice) ', NULL, '1 and 1/2', 'bundle ', '4', 'paddies', '125', 'bundles', 'rats, lanah, eels, and weeds were problems and no pesticide ', '2', NULL, NULL, NULL, NULL, NULL, 'stopped farming to take care of grand children, 2008 in hapao, 4 years in Baguip, 4 years in Banayan, 5 years farming since 2008 ', 'binong-o from last harvest (2012)')

INSERT INTO "seeds" VALUES(224, '3058', 'TV-36 ', '1', 'Jan-14 ', 'Minaangan (hairy) ', NULL, '1', 'bundles ', '1', 'paddy ', '156', 'bundles ', 'lanu, golden snails, eel, and rats were problems and no pesticide ', '15 to 20 times (changed variety at some time be still returns the manager) ', NULL, NULL, NULL, NULL, NULL, 'when transplanted they need to drain water to kill snails', 'binong-o from last harvest 2013 ')

INSERT INTO "seeds" VALUES(225, '3058', 'TV-36 ', '2', 'Jan-14 ', 'Minaangan (hairless) ', NULL, '2', 'bundles ', '2', 'paddies ', '404', 'bundles ', 'lanu, golden snails, eel, and rats were problems and no pesticide ', '15 to 20 times ', NULL, NULL, NULL, NULL, NULL, 'owner likes the white Oklan but this kind of rice Makupo, member of RT farmers, pledges 25 kg (rice) ', 'binong-o from last harvest 2013 ')

INSERT INTO "seeds" VALUES(226, '3058', 'TV-36 ', '3', 'Jan-13 ', 'Minaangan (hairless) ', NULL, '3', 'bundles ', '3', 'paddies ', '550', 'bundles ', 'lanu, golden snails, eel, and rats were problems and no pesticide ', '15 to 20 times ', NULL, NULL, NULL, NULL, NULL, 'minaangan good for the health, increased when cooked, not much problems with this kind of rice ', 'binong-o from last harvest (2012)')

INSERT INTO "seeds" VALUES(227, '3058', 'TV-36 ', '4', 'Jan-14 ', 'Dayakot (red) ', NULL, 'one half', 'bundle ', '1', 'regular paddy ', 'does not know, previous it was a fish pond ', NULL, 'tungru, lanahs were problems and no pesticides ', '1', NULL, NULL, NULL, NULL, NULL, 'stopped planting white diket has many problems (lanai, tungru, got few seeds from relatives in Bulanan and yielded till had enough for planting', 'from relative in Bulanan')

INSERT INTO "seeds" VALUES(228, '3058', 'TV-36 ', '5', '1905-07-06', 'Dayakot (white) ', NULL, '1', 'bundle', '1', 'regular paddy ', '35', 'bundles ', 'tungru, lanahs were problems and no pesticide ', '2', NULL, NULL, NULL, NULL, NULL, 'prepared more seedlings last year but shared with another farmers', 'binong-o from last harvest (2012)')

INSERT INTO "seeds" VALUES(229, NULL, 'TB-23', '1', 'Jan-14 ', 'Oklan Minaangan (Red, short grain)', NULL, 'half', 'kilo', '3 wide ', 'rice paddies ', 'ongoing harvest ', NULL, 'Tungru, no pesticide ', '1', NULL, NULL, NULL, NULL, NULL, 'minaaangan for export quality of rice grains, for the tungru, she was taught by GIAHS to removed infected stems so that it will grow', 'From municipal Agricultural Office ')

INSERT INTO "seeds" VALUES(230, NULL, 'TB-23', '2', 'Jan-14 ', 'Oklan Minaangan (Red, medium grain)', NULL, 'half', 'kilo', '2 wide ', 'rice paddies ', '50', 'cans ', 'Tungru, nalanu or zinc deficiency, no pesticide ', '5', NULL, NULL, NULL, NULL, NULL, 'She warned the technique and applied it to her rice field and it was very effective ', 'Saved rice grain from previous years harvest ')

INSERT INTO "seeds" VALUES(231, NULL, 'TB-23', '3', 'Jan-14 ', 'Oklan Minaangan (Red, long grain)', NULL, 'half ', 'kilo', '1 very wide rice', 'paddy ', 'ongoing harvest ', NULL, 'Tungru ', '1', NULL, NULL, NULL, NULL, NULL, 'her problem with the low grain is the

stems are very high and every time wind strong the planted rice bows and stems will be damaged ', 'Fellow farmer ')

```
INSERT INTO "seeds" VALUES(232,NULL,'TB-23','4','Jan-14 ','Long grain (light brown)
Migapas ',NULL,'half','kilo','1 wide','paddy ','17','cans ','no problem
','10',NULL,NULL,NULL,NULL,NULL,'she maintains organic farming, she will continue
farming minaangan next year because it has a very high price at the market ','Priest
from Mindanao ')
```

```
INSERT INTO "seeds" VALUES(233,NULL,'TB-23','5','Jan-14 ','Tinawon (Minaangan)
Red',NULL,'one forth','kilo','1 wide','rice paddy ','12','cans ','nalanu or zinc
deficiency ','1',NULL,NULL,NULL,NULL,NULL,'she sell the minaangan by orders and she
supplies rice to the different individuals outside the province ','Dole out from
SITMO')
```

```
INSERT INTO "seeds" VALUES(234,NULL,'TB-23','6','Jan-14 ','She does not know the name
',NULL,'half ','kilo ','1 wide','rice paddy ','17','cans ','good harvest
','1',NULL,NULL,NULL,NULL,NULL,'the binayyuan rice variety came from bayou mountain
province ','N/A ')
```

```
INSERT INTO "seeds" VALUES(235,NULL,'TB-23','7','can\u201a\u00c4\u00f4t
remember','Imbuukan ',NULL,'less than one forth','kilo ','1','big rice paddy
','30','bundles ','stem borer ','2',NULL,NULL,NULL,NULL,NULL,'she saved her seedlings
until she planted it ','Given by fellow farmer from Municipality of Hingyon ')
```

```
INSERT INTO "seeds" VALUES(236,NULL,'TB-23','8','Jan-13 ','Binayyuan ',NULL,'1','big
bundle ','4 wide ','rice paddy ','cannot remember ',NULL,'none
','1',NULL,NULL,NULL,NULL,NULL,'she loves experiments on the different rice varieties
when she saw that it provides good harvest then she will continue planting the next
year ','Saved seedlings, grain is black color ')
```

```
INSERT INTO "seeds" VALUES(237,NULL,'TB-23','9','Feb-14 ','Taiwan Rice ',NULL,'one
forth','bundle ','1','rice paddy ','2','cans ','none
','2',NULL,NULL,NULL,NULL,NULL,'She experiments on this kind of crop ','Neighbor who
came from Taiwan ')
```

```
INSERT INTO "seeds" VALUES(238,NULL,'TB-24','1','2014-03-14','Minaangan (hair)
',NULL,'1','bundle ','1','wide paddy ','ongoing harvest ',NULL,'nakupo was a
problem','1',NULL,NULL,NULL,NULL,NULL,'chose to plant minaangan because easy to pound,
she is a tenant of her father ','her own seedlings from pevious harvest ')
```

```
INSERT INTO "seeds" VALUES(239,NULL,'TB-24','2','Mar-13 ','Minaangan (hairless)
',NULL,'4','big bundle ','3','rice paddies ','200','bundles ','rat infested
','5',NULL,NULL,NULL,NULL,NULL,'she planted at bang this year, chose minaangan with no
hair because it directly to rice mill, less work ','saved seedlings from previous
harvest ')
```

```
INSERT INTO "seeds" VALUES(240,'3078','TB-25','1','Jan-14 ','Oklan (white)
',NULL,'2','big bundle ','4','rice paddy ','ongoing harvest ',NULL,'nakupo, nakpit,
cambodian eel, climate change were problems, no pesticide
','2',NULL,NULL,NULL,NULL,NULL,'they owner chose oklan because it is good to eat/good
family consumption, they share tenant and owner 50/50 ','Saved seedlings from previous
harvest ')
```

```
INSERT INTO "seeds" VALUES(241,'3078','TB-25','2','Jan-14 ','Oklan (white)
',NULL,'2','big bundle ','4','rice paddy ','150','bundles ','nakupo and nakpit were
problems ','1',NULL,NULL,NULL,NULL,NULL,'the tenant likes to change oklan rice to
minaangan red but the owner does not like to change','Seedlings given by the owner for
```


them to plant ')

```

INSERT INTO "seeds" VALUES(242,NULL,'TB-26','1','Jan-13 ','Minaangan (hairless)
',NULL,'4','big bundles ','3','big rice paddies ','540','bundles ','no problems no
pesticide ','2',NULL,NULL,NULL,NULL,NULL,'chose minaangan to plant because when cooked
it bulges, it is eaten and grains bring good food ','Saved seedlings from previous
harvest ')

INSERT INTO "seeds" VALUES(243,NULL,'TB-26','2','Jan-13 ','Minaangan',NULL,'4','big
bundles','N/A ',NULL,'400','bundles ','no problems no pesticide
','1',NULL,NULL,NULL,NULL,NULL,'they plant every year on January (Bogayan to fellow
the agricultural colonizer, they were tenant in that rice field for 2 consecutive
years ','Saved seedlings, she earned the seedlings from her labor from another farmers
rice fields ')

INSERT INTO "seeds" VALUES(244,NULL,'TB-27','1','2014-01-14','Minaangan (hairless)
',NULL,'2','big bundles ','1 wide','rice paddy ','ongoing harvest ',NULL,'good harvest
but there are pressure of kiwi and golden snail ','3',NULL,NULL,NULL,NULL,NULL,'chose
mianaangan to plant because it is weather resistant, the owner give the decision on what
rice variety to plant ','saved seedlings from previous years harvest')

INSERT INTO "seeds" VALUES(245,NULL,'TB-27','2','Jan-13 ','Minaangan (hairless)
',NULL,'2','big bundles','1 wide','rice paddy','90','bundles ','napkit, presence of
Kiwit and golden
\u201a\u00c4\u00facohol\u201a\u00c4\u00f9','2',NULL,NULL,NULL,NULL,NULL,'poor harvest
because rice grains had nakpit, family consumption onlye, next year they will continue
to plant minaangan ','saved seedling from previous year')

INSERT INTO "seeds" VALUES(246,NULL,'TB-28 ','1','Jan-14 ','Ipugo white
',NULL,'1','big bundle ','1 wide','rice paddy','ongoing harvest ',NULL,'nakupo, kiwit,
and giant earth worms were problems and no pesticide was used
','2',NULL,NULL,NULL,NULL,NULL,'chose ipugo white because it\u201a\u00c4\u00f4s good
to cook and eat, for family consumption ','fellow farmer in Uhaj Banaue last year')

INSERT INTO "seeds" VALUES(247,NULL,'TB-28 ','2','Jan-13 ','Ipugo white
',NULL,'1','big bundle','1 wide ','rice paddy ','130','bundles ','good harvest, no
pesticide was used because of no problems ','1',NULL,NULL,NULL,NULL,NULL,'presence of
kiwit (Cambodian eel) are damaging the rice field, giant worms, and she plans to
maintain planting the Ipugo rice','Uhaj Banaue ')

INSERT INTO "seeds" VALUES(248,NULL,'TV-37','1','Jan-14 ','Minaangan (red rice)
',NULL,'2 and 1/2',NULL,'1 wide ','1 pakung ','100','bundle ','chestnut munya, chicken
of neighbor, snails, house birds (banukung) were problems and no pesticide were
used','3',NULL,NULL,NULL,NULL,NULL,NULL,'Binong-o from last harvest 2013
\u201a\u00c4\u00faselected good seeds\u201a\u00c4\u00f9')

INSERT INTO "seeds" VALUES(249,NULL,'TV-37','2','Jan-13 ','Minaangan ',NULL,'2 and
1/2','bundles ','1 wide','paddy
\u201a\u00c4\u00fapukung\u201a\u00c4\u00f9','100','bundles ','chestnut munya, chicken
of neighbor, snails, house birds (banukung) were problems and no pesticide were
used','2',NULL,NULL,NULL,NULL,NULL,NULL,'binong-o from last harvest 2013 ')

INSERT INTO "seeds" VALUES(250,NULL,'TV-38','1','Jan-14 ','Oklan (hairy)
',NULL,'1','binong-o','1 wide','paddy ','being harvest ',NULL,'stem borer, rice bug,
snails, eel, and rats were problem and no pesticide was used
','1',NULL,NULL,NULL,NULL,NULL,'they pick the snails ','from neighbors farm they
farmed last year ')

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INSERT INTO "seeds" VALUES(251,NULL,'TV-38','2','Jan-14 ','Oklan (hairless)
',NULL,'1','bundle ','1','paddy ','130','bundles ','stem borer, rice bug, snails, eel,
and rats were problem and no pesticide was used
','3',NULL,NULL,NULL,NULL,NULL,NULL,'binong-o from last harvest ')

INSERT INTO "seeds" VALUES(252,NULL,'TV-39','1','Jan-14 ','Minaangan
(Red)',NULL,'3','bundles ','1 wide ','paddy','N/A ',NULL,'eel, golden snail, stem
borer \u201a\u00c4\u00fanakupo\u201a\u00c4\u00f9, and giant earth worm were problems
and no pesticide ','since started farming ',NULL,NULL,NULL,NULL,NULL,'farmer only
started farming only this year','binong-o from last year ')

INSERT INTO "seeds" VALUES(253,NULL,'TV-40','1','Jan-14 ','Minangan (red)
',NULL,'4','bundles ','3 wide and 5 small','paddies ','estimate 300','bundles ','giant
earthworm, eel, and irrigation were problems and no pesticide
','2',NULL,NULL,NULL,NULL,NULL,'changes variety if yield is not good, surprised she
did not pick snails this year','Binong-o from harvest 2013')

INSERT INTO "seeds" VALUES(254,NULL,'TV-40','2','2014-01-13','Minaangan (Red)
',NULL,'4','bundles ','3 wide and 5 small','paddies','more than 300 ','bundles
','giant earthworm, eel, and irrigation were problems and no pesticide
','1',NULL,NULL,NULL,NULL,NULL,'variety is easier to mill/pound ','earned from Lourdes
Humiuwat ')

INSERT INTO "seeds" VALUES(255,NULL,'TV-
40',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NU
LL,NULL,NULL)

INSERT INTO "seeds" VALUES(256,'2068','TV-41','1','2014-02-
14','Korean',NULL,'3','cans','one forth','hectare ','21','sacks','only Cambodian eel,
not much except the usual farm insects because weather is okay and rice fields has
water supply','first time since he stopped farming the previous years and did
carpentry',NULL,NULL,'yes, magnum, chix',NULL,NULL,'alternately uses different
insecticides to avoid insects being immune','seed exchanged with Bitoy Timbuloy,
another farmer in the neighborhood')

INSERT INTO "seeds" VALUES(257,'2068','TV-41','2','2014-08-13','Forgot name (3
months)',NULL,'3','cans ','one forth hectare ',NULL,'10','sacks','too much rain, rats,
insects - leaf hoppers, rice bugs, stem borer','first time',NULL,NULL,'yes, magnum,
chix',NULL,NULL,'too much rain washes the pollen grains of rice causing less harvest,
usually in 2nd cropping (July to Dec)','given by xenon kimmayong, current
tenant\u201a\u00c4\u00f4s brother who farmed the rice fields before')

INSERT INTO "seeds" VALUES(258,NULL,'TV-42','1','Feb-14
','Ingaspi',NULL,'4','cans','less than
one','hectare','60','sacks','\u201a\u00c4\u00falanu\u201a\u00c4\u00f9, eel, water
shortage, rice bugs','first time',NULL,NULL,NULL,NULL,NULL,NULL)

INSERT INTO "seeds" VALUES(259,NULL,'TV-42','2','Feb-14
','Korean',NULL,'2','cans','7','paddies','17','sacks','\u201a\u00c4\u00falanu\u201a\u00
0c4\u00f9, eel, water shortage, rice bugs','6',NULL,NULL,'yes, Vira and
Amihan',NULL,NULL,NULL)

INSERT INTO "seeds" VALUES(260,NULL,'TV-43','1','Jan-14 ','C-4',NULL,'2','cans','does
not know',NULL,'15','sacks','rice bug, stem borer, golden snails, Cambodian eel were
the problems','2',NULL,NULL,'Yes, Karate',NULL,NULL,'rice bug, stem borer, golden
snails, Cambodian eel','Seeds kept from harvest')

INSERT INTO "seeds" VALUES(261,NULL,'TV-43','2','2014-08-14','C-

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18',NULL,'2','cans','does not know',NULL,'13','sacks','too much rain, rats and more
rice bugs and hoppers','3',NULL,NULL,'Yes, Karate',NULL,NULL,NULL,'Seeds kept from
harvest')

INSERT INTO "seeds" VALUES(262,'2153','TV-44','1','Jan-14
','Ingaspi',NULL,'3','cans','dont know',NULL,'37','sacks','soil fertility, grass
difficult to get rid of - cleans 3 times at least each crop','2',NULL,NULL,'Yes,
magnum, cymbush, karate',NULL,NULL,'soil fertility - needs fertilizers so uses ammonia
and complete fertilizers, weeds difficult to get rid of','seeds exchanged with Oscar
Dunuan another farmer')

INSERT INTO "seeds" VALUES(264,'2153','TV-44','3','2014-12-13','dont know name (from
Baguinge, Kiangon)',NULL,'1','sack','1','hectare','57','sacks','rats, insects - rice
bugs, rice hoppers, typhoons/calamities','2',NULL,NULL,'yes, magnum, cymbush,
karate',NULL,NULL,NULL,'seeds kept from last harvest 2012')

INSERT INTO "seeds" VALUES(265,'2136','TV-45','1','Jan-14
','Pakulsa','ingaspi','1','can','one fourth','hectare','22','sacks','rats attack in
cold months like Jan - Feb, usually plants in June but summer is extended so planting
season is delayed, wishes all farmers to apply rat poison at the same time but
schedules are varied',NULL,NULL,NULL,NULL,NULL,NULL,NULL)

INSERT INTO "seeds" VALUES(266,'2136','TV-45','2','2014-06-13','C-
18',NULL,'1','can','one fourth','hectare','20','sacks','rice blast when not cured
would give not good yields, rats, rice bugs and hoppers, Cambodian eel','first
time',NULL,NULL,'yes, zinc phosphate, karate, bugdown (cheaper) are all
insecticides',NULL,NULL,NULL,'extra seedlings given by Raul Napadawan, another farmer
in that area')

INSERT INTO "seeds" VALUES(267,NULL,'TV-46','1','Feb-14 ','Ingaspi (4
months)',NULL,'2','cans','one eighth','hectare','22','sacks','not enough water supply,
rice bugs, snails, eels, all destroy paddies','3',NULL,NULL,'Y, cymbush and
karate',NULL,NULL,NULL,'Seeds kept last years harvest 2013')

INSERT INTO "seeds" VALUES(268,NULL,'TV-46','2','Jan-13
','Ingaspi',NULL,'2','cans','one eighth','hectare','25','sacks','not enough water
supply, rice bugs, snails, eels, all destroy paddies','2',NULL,NULL,'Y, cymbush and
karate',NULL,NULL,NULL,'Seeds kept last years harvest 2012')

INSERT INTO "seeds" VALUES(269,NULL,'TV-46','3','Aug-13 ','PJ-27',NULL,'2','cans','one
eighth','hectare','18','sacks','rats','2',NULL,NULL,'Y, cymbush and
karate',NULL,NULL,NULL,'Bought by owner from Department of Agriculture')

INSERT INTO "seeds" VALUES(270,'2129','TV-47','1','Dec-13
','Ingaspi',NULL,'5','cans','one half','hectare','41','sacks','rice bug, worms, stem
borer, snails, eel, utilized urea as a fertilize','1',NULL,NULL,'Y, cymbush and
magnum',NULL,'Y, bayluse',NULL,'did not plant at the same to be able to work on other
areas being farmed','borrowed seed exchange from Boy Licayayo (another farmer)')

INSERT INTO "seeds" VALUES(271,'2129','TV-47','2','Jan-14 ','Doesn't know
name',NULL,'4','cans','one half or less','hectare','55','sacks','rice bug, worms, stem
borer, snails, eel, utilized urea as a fertilize','2',NULL,NULL,'Y, cymbush and
magnum',NULL,'Y, bayluse',NULL,'harvested lesser in wider area due to wider distances of
rice plants (ingaspi)','Seed exchange/borrowed from Anton Guimatatan, another farmer
in Pindongan')

INSERT INTO "seeds" VALUES(272,'2129','TV-47','3','Feb-14 ','Don't know
name',NULL,'3','cans','one eighth','hectare','42','sacks','rice bug, worms, stem

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borer, snails, eel, utilized urea as a fertilize','1',NULL,NULL,'Y, cymbush and magnum',NULL,'Y, bayluside ','wife is confused on varieties of rice, husband is more knowledgable since he is the one deciding on what to plant','Seex exchange/borrowed from Jeff Dinamlinang')

INSERT INTO "seeds" VALUES(273,'2110','TV-48','1','Feb-14 ','C-4',NULL,'3','cans','one forth hectare ',NULL,'more than 20','sacks ','lanu, stem borer, less water supply were the problem and used complese and urea ','1',NULL,NULL,'Y, magnum ',NULL,'Y, brodan','Tananon is better than other insecticides','Borrowed from Felibent Baguilat, another farmer ')

INSERT INTO "seeds" VALUES(274,'2110','TV-48','2','Jan-14 ','222 (commercial rice)',NULL,'1 and 1/2','cans ','one forth','hectare','15','sacks ','lanu, stem borer, less water supply were the problem and used complese and urea ','2',NULL,NULL,'Y, magnum ',NULL,'Y, brodan','PJ-27 easily drops from stem','Borrowed from James Bouding another farmer ')

INSERT INTO "seeds" VALUES(275,'2110','TV-48','3','Jan-13 ','PJ-27',NULL,'1 and 1/2',NULL,'one forth','hectare','15','sacks ','lanu, stem borer, less water supply were the problem and used complese and urea ','1',NULL,NULL,'Y, magnum ',NULL,'Y, brodan',NULL,'Borrowed from James Bouding another farmer ')

INSERT INTO "seeds" VALUES(276,'2110','TV-48','4','2014-02-13','C-4 (red)',NULL,'3','cans','one forth','hectare','30','sacks ','insufficient water supply and eel ','1',NULL,NULL,'Y, magnum ',NULL,'Y, brodan','C-4 has good yield but difficult to tresh and mill. ','Felibent')

INSERT INTO "seeds" VALUES(277,'2110','TV-48','5','2014-07-13','222',NULL,'2','cans','one forth','hectare','20','sacks ','did not plant 2 paddies because of lanu, rats rain, rice bugs were problems ','N/A ',NULL,NULL,'Y, magnum ',NULL,'Y, brodan','Harvested very few in the 2nd cropping due to rats and other pest ','Earned from treating other farmers crops ')

INSERT INTO "seeds" VALUES(278,'2070','TV-49','1','2014-03-14','Dayakot (White)',NULL,'5','bundles ','7','paddies','Being harvested ',NULL,'lanu, eel, golden snail, and rice bug were problems','1',NULL,NULL,'Y, cymbush for rice bug',NULL,NULL,NULL,'Seeds bought from another farmer in Julong')

INSERT INTO "seeds" VALUES(279,'2070','TV-49','2','2014-03-14','Pakulsa',NULL,'2','cans ','don't know ',NULL,'16','sacks ','lanu, eel, golden snail, and rice bug were problems','3',NULL,NULL,NULL,NULL,NULL,'Exchanged another variety to Pakulsa from Juan Puguon')

INSERT INTO "seeds" VALUES(280,'2070','TV-49','3','2014-03-14','Thunder ',NULL,'3','cans ','don\u201a\u00c4\u00f4t know ',NULL,'30','sacks ','lanu, eel, golden snail, and rice bug were problems','1',NULL,NULL,NULL,NULL,NULL,'Exchange variety to Guillermo Dagupo (another farmer)')

INSERT INTO "seeds" VALUES(281,'2070','TV-49','4','Jan-13 ','Pakulsa',NULL,'1 with extra','sack ','don\u201a\u00c4\u00f4t know ',NULL,'37','sacks ','lanu, eel, golden snail, and rice bug were problems',NULL,NULL,NULL,'Y, cymbush',NULL,NULL,NULL,'Seeds kept from harvest 2012 ')

INSERT INTO "seeds" VALUES(282,'2070','TV-49','5','Jan-13 ','Don't know name (3 months)',NULL,'1 with extra','sack ','don't know ',NULL,'36','sacks ','lanu, eel, golden snail, and rice bug were problems','more than 3 years ',NULL,NULL,'Y, cymbush',NULL,NULL,NULL,'seeds kept from last harvest 2012')

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INSERT INTO "seeds" VALUES(283,'2070','TV-49','6','July-13 ','3 months ',NULL,'1 sack
',NULL,'don\u201a\u00c4\u00f4t know ',NULL,'27','sacks ', 'lanu, eel, golden snail, and
rice bug were problems','more than 3 years ',NULL,NULL,'Y,
cymbush',NULL,NULL,NULL,'Seeds kept from last harvest 2011 ')

INSERT INTO "seeds" VALUES(284,'2154','TV-50','1','2014-05-14','Minmis ',NULL,'1','can
','one half','hectare ','planned for September 2014 ',NULL,'rice bug and cricket were
problem ','1',NULL,NULL,'Y, chix, tananon ',NULL,NULL,'planted in dry land/swidden
farm, if no rain then the rice do not yield ','Seeds got form Dippug (Vizacaya)')

INSERT INTO "seeds" VALUES(285,'2154','TV-50','2','Jan-13 ','Don''t know the name
(bilog)',NULL,'3','can ','one half','hectare ','12',NULL,'lanu, steel, stem borer, and
rice bug were problems ','1',NULL,NULL,'Y, magnum and chix ',NULL,NULL,'cricket eats
roots of rice plant and stays dry ','Seed exchange with Paul Badangayon, another
farmer ')

INSERT INTO "seeds" VALUES(286,NULL,'TV-
50',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NU
LL,NULL,NULL)

INSERT INTO "seeds" VALUES(287,NULL,'TV-51','1','Jan-14
','Minaangan',NULL,'5','bundles','1',' wide paddy','owns land so
doesn\u201a\u00c4\u00f4t count harvest',NULL,'rats, worms, and stem borers are
problems','1',NULL,NULL,NULL,NULL,NULL,'did not use pesticide, borrowed from
neighboring farmer','Borrowed from neighboring farmer')

INSERT INTO "seeds" VALUES(288,NULL,'TV-
51',NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NULL,NU
LL,NULL,NULL)

INSERT INTO "seeds" VALUES(289,'2109','TV-52','1','Feb-14 ','Don''t know the name
(Variety from Pangasinan)',NULL,'1','sack ','less than 1 ','hectare ','45','sacks
','stem borer and rice bug were problems ','2',NULL,NULL,'Y, cymbush, and kartap
',NULL,NULL,'planted commercial rice & dayakot at the same time because dayakot takes
longer time to yield ','Seeds kept from last harvest')

INSERT INTO "seeds" VALUES(290,'2109','TV-52','2','Feb-14 ','Dayakpt (red and
white)',NULL,'less than one half ','bundle','4','paddies ','50','sacks ','stem borer
and rice bug were problems ','1 time for consumption ',NULL,NULL,'Y, cymbush, and
kartap ',NULL,NULL,'started farming only this year, worked in private corporation
','Given buy Erlinda Gullunan ')

INSERT INTO "seeds" VALUES(291,'2109','TV-52','3','Aug-13 ','Variety from
Pangasinan',NULL,'1','sack ','less than 1 ','hectare ','40 + ','sacks ','stem borer
and rice bug were problems ','1',NULL,NULL,'Y, cymbush, and kartap
',NULL,NULL,NULL,'Seed exchange from Pablo Takina ')

INSERT INTO "seeds" VALUES(292,'2105','TV-53','1','2014-12-14','C-18',NULL,'4','cans
','1','hectare ','35','sacks ','Cambodian eel and grass were problems
','4',NULL,NULL,'Y, cymbush',NULL,NULL,'traditional rice is more laborious and give
lesser supply, plants diket only in main crop','Seeds kept last harvest ')

INSERT INTO "seeds" VALUES(293,'2105','TV-53','2','2014-12-14','Diket
(white)',NULL,'1','cans ','1','hectare','Planned for July 20, 2014 ',NULL,'Cambodian
eel and grass were problems ','since started farming ',NULL,NULL,'Y,
cymbush',NULL,NULL,'plants diket only in main crop','Seeds kept last harvest ')

INSERT INTO "seeds" VALUES(294,'2105','TV-53','3','1905-07-05','C-4',NULL,'4','cans

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', '1', 'hectare', '40', 'sacks ', 'Cambodian eel and grass were problems ', 'since started farming ', NULL, NULL, 'Y, cymbush', NULL, NULL, 'Cambodian eel one of the major and serious problem for farmers and some grasses', 'Seeds kept last harvest ')

INSERT INTO "seeds" VALUES(295, '2105', 'TV-53', '4', '1905-07-05', 'Diket', NULL, '3', 'bundles ', '50 x 30 ', 'meter ', '400', 'bundles ', 'Cambodian eel and grass were problems ', 'since started farming ', NULL, NULL, 'Y, cymbush', NULL, NULL, 'imported rice from Vicazaya region', 'Seeds kept ')

INSERT INTO "seeds" VALUES(296, '2105', 'TV-53', '5', 'June-2013 ', '82', NULL, '4', 'cans ', NULL, 'N/A ', '25', 'sacks ', 'Cambodian eel and grass were problems ', 'since started farming ', NULL, NULL, 'Y, cymbush', NULL, NULL, 'Owner, Marlon Martin wants tenants to plant traditional variety but tenant refuses, it\u201a\u00c4\u00f4s not enough for family consumption', 'Seeds bought from Vizcaya ')

INSERT INTO "seeds" VALUES(297, '2118', 'TV-54', '1', '2014-12-01', 'Thunder ', NULL, '6', 'cans ', 'half ', 'hectare ', '70', 'sacks ', 'insufficient water supply, worms, rice leaf folders, eel and snails were problems ', '2', NULL, NULL, 'Y, chix ', NULL, 'Y, plebathon ', 'Leaf folder difficult to manage ', 'Seed exchange with Nestor Bulahao ')

INSERT INTO "seeds" VALUES(298, '2118', 'TV-54', '2', '2014-12-14', 'Don''t know the name (82) long grain ', NULL, '2', 'cans ', 'don''t know ', NULL, '21', 'sacks ', 'insufficient water supply, worms, rice leaf folders, eel and snails were problems ', '1', NULL, NULL, 'Y, chix ', NULL, 'Y, plebathon ', NULL, 'Percentage from Jaime Buimidang, Naganwua Tuplac ')

INSERT INTO "seeds" VALUES(299, '2118', 'TV-54', '3', '2014-12-14', 'Munoz', NULL, '3', 'cans ', 'don''t know ', NULL, '30', 'sacks ', 'insufficient water supply, worms, rice leaf folders, eel and snails were problems ', '1', NULL, NULL, 'Y, chix ', NULL, 'Y, plebathon ', NULL, 'Seed exchange with Pastor Pannaput ')

INSERT INTO "seeds" VALUES(300, '2118', 'TV-54', '4', 'July-13 ', 'Ingaspi', NULL, '6', 'cans ', 'don''t know ', NULL, '68', 'sacks ', 'excessive water causing erosion, eel, snails, and rats were problems ', '1', NULL, NULL, 'Y, chix ', NULL, 'Y, plebathon ', NULL, 'Seed exchange from can\u201a\u00c4\u00f4t remember name ')

INSERT INTO "seeds" VALUES(301, '2118', 'TV-54', '5', '2014-12-13', 'Thunder', NULL, '6', 'cans ', 'don''t know ', NULL, '70', 'sacks ', 'excessive water causing erosion, eel, snails, and rats were problems ', '1', NULL, NULL, 'Y, chix ', NULL, 'Y, plebathon ', 'Listed as calamity case but no nee fit from the government, feels neglected ', 'Seed exchange with can\u201a\u00c4\u00f4t remember ')

INSERT INTO "seeds" VALUES(302, '2075', 'TV-55', '1', 'Jan-14 ', 'Diket (lowland variety) (red) (4 months)', NULL, '2', 'cans ', '3', 'hectare ', '30', 'sacks ', 'eels, earthworm, and seasonal problems, used organic, urea, and complete for fertilize ', '5', NULL, 'Y, foliar and power ', 'Y, yellow label, karate, electron ', NULL, NULL, NULL, 'Seeds kept from last harvest')

INSERT INTO "seeds" VALUES(303, '2075', 'TV-55', '2', 'Jan-14 ', 'C-18 ', NULL, '40', 'kilograms ', '1', 'hectare ', '40', 'sacks ', 'eels, earthworm, and seasonal problems, used organic, urea, and complete for fertilize ', '3', NULL, 'Y, foliar and power ', 'Y, yellow label, karate, electron ', NULL, NULL, '1,600 certified seeds need more to manage ', 'Seeds kept ')

INSERT INTO "seeds" VALUES(304, '2075', 'TV-55', '3', 'Jan-14 ', 'C-4 ', 'Tungro', '5', 'cans ', '8', 'hectare ', '60-70 ', 'sacks ', 'eels, earthworm, and seasonal problems, used organic, urea, and complete for fertilize ', '3', NULL, 'Y, foliar and power ', 'Y, yellow label, karate, electron ', NULL, NULL, 'not good yield, due to climate/weather ', 'Seeds

kept ')

```
INSERT INTO "seeds" VALUES(305,'2075','TV-55','4','Jan-14 ','RC-218',NULL,'40','kilograms ','half ','hectare ','40','sacks ','eels, earthworm, and seasonal problems, used organic, urea, and complete for fertilize ','2',NULL,'Y, foliar and power ','Y, yellow label, karate, electron ',NULL,NULL,NULL,'Bought from Bagabag (Seed distributor-Department of Agriculture)')
```

```
INSERT INTO "seeds" VALUES(306,'2075','TV-55','5','Aug-13 ','222 (3 months)',NULL,'3','sacks ','8','hectare ','less than 100','sacks ','rats, tungu \u201a\u00c4\u00faairborn\u201a\u00c4\u00f9, rice bugs, and rice hoppers were problems, used organic, urea, and complete for fertilize ','2',NULL,'Y, foliar and power ','Y, yellow label, karate, electron ',NULL,NULL,NULL,'Subsidized by LGU distributed by Department of Agriculture ')
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```
INSERT INTO "seeds" VALUES(307,'2075','TV-55','6','Jan-13 ','RC-218',NULL,'40','kilograms ','8 ','hectare ','40','sacks ','rats, tungu \u201a\u00c4\u00faairborn\u201a\u00c4\u00f9, rice bugs, and rice hoppers were problems, used organic, urea, and complete for fertilize ','1',NULL,'Y, foliar and power ','Y, yellow label, karate, electron ',NULL,NULL,NULL,'Seeds kept (bought from Bagabag)-seed distributor Department of Agriculture ')
```

```
INSERT INTO "seeds" VALUES(308,'2075','TV-55','7','Jan-13 ','Diket',NULL,'2','cans ','3 ','hectare ','30','sacks ','rats, tungu \u201a\u00c4\u00faairborn\u201a\u00c4\u00f9, rice bugs, and rice hoppers were problems, used organic, urea, and complete for fertilize ','4',NULL,'Y, foliar and power ','Y, yellow label, karate, electron ',NULL,NULL,NULL,'Seed kept ')
```

```
INSERT INTO "seeds" VALUES(309,'2075','TV-55','8','Jan-13 ','C-18',NULL,'40','kilograms ','1','hectare ','40','sacks ','rats, tungu \u201a\u00c4\u00faairborn\u201a\u00c4\u00f9, rice bugs, and rice hoppers were problems, used organic, urea, and complete for fertilize ','2',NULL,'Y, foliar and power ','Y, yellow label, karate, electron ',NULL,NULL,NULL,'Seed kept ')
```

```
INSERT INTO "seeds" VALUES(310,'2102','TV-56','1','Feb-14 ','Variety from Pangasinan',NULL,'3','cans ','3 ','hectare approx.','40','sacks ','expensive labor, insufficient water supply, rice bug and rice hoppers were problems, used fertilizer, urea ammonium, and sulfate ','1',NULL,'Y, spitfire ','Y, chix ',NULL,NULL,NULL,'Seeds kept from previous harvest ')
```

```
INSERT INTO "seeds" VALUES(311,'2102','TV-56','2','Aug-13 ','52',NULL,'3','cans ','3 ','hectare approx.','32','sacks ','expensive labor, insufficient water supply, rice bug and rice hoppers were problems, used fertilizer, urea ammonium, and sulfate ','2',NULL,'Y, spitfire ','Y, chix ',NULL,NULL,NULL,'Seeds kept from previous harvest ')
```

```
INSERT INTO "seeds" VALUES(312,'2102','TV-56','3','2014-02-13','PJ-27',NULL,'3','cans ','3 ','hectare approx.','42','sacks ','expensive labor, insufficient water supply, rice bug and rice hoppers were problems, used fertilizer, urea ammonium, and sulfate ','1',NULL,'Y, spitfire ','Y, chix ',NULL,NULL,NULL,'Seed exchanged with Fernando Tayaban, neighboring farmer ')
```

```
INSERT INTO "seeds" VALUES(313,NULL,'TV-57','1','Feb-14 ','RI-238',NULL,'20','kilogram ','5','hectare ','29','sacks ','insufficient water supply, indigenous weeds, snails, eels, rice hoopers, rice bugs, and stem borers were problems ','2',NULL,NULL,'Y, karate and cymbush',NULL,'Y, brodan, baybucide, snail ','Harvested more in 2nd cropping - with enough H2o supply, quality of rice not good for consumption, hard
```

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texture','Bought Phil rice San Mateo ')

INSERT INTO "seeds" VALUES(314,NULL,'TV-57','2','July-13 ','RP
224',NULL,'20','kilogram ','. 5','hectare ','32','sacks ','insufficient water supply,
indigenous weeds, snails, eels, rice hoopers, rice bugs, and stem borers were problems
','1',NULL,NULL,'Y, karate and cymbush',NULL,'Y, brodan, baybucide, snail ','Stem
borer burrows in the stem of rice plant, rice hopper bore leaves & rice handle, rice
bug bores on grains, rats attack more in 2nd cropping cuz they dont have food during
rainy season ','Bought from Department of Agriculture Lamut ')

INSERT INTO "seeds" VALUES(315,NULL,'TV-57','3','2014-12-20','C-
18',NULL,'20','kilogram ','. 5','hectare ','32','sacks ','insufficient water supply,
indigenous weeds, snails, eels, rice hoopers, rice bugs, and stem borers were problems
','1',NULL,NULL,'Y, karate and cymbush',NULL,'Y, brodan, baybucide, snail ','Cymbush
most cheapest among insecticides, karate most expensive but effective, snail kill is
more effective and cheaper than baylucide ','Seed exchanged with Robert Pittang,
another farmer in the village ')

INSERT INTO "seeds" VALUES(316,NULL,'TV-58','1','Ingaspi','Ingaspi',NULL,'1 sack / 4
cans ',NULL,'one forth ','hectare ','47','sacks ','eel destroyed rice paddies and rice
hoppers and rats were problems','2',NULL,NULL,'Y, bulleyes ',NULL,'Y, bullseyes
','alternatively use insecticide to avoid immunizing other insects ','Seed exchanged
with Luis Gullana, husband\u201a\u00c4\u00f4s brother')

INSERT INTO "seeds" VALUES(317,NULL,'TV-58','2','C-2','C-2',NULL,'1 sack / 4 cans
',NULL,'one forth ','hectare ','38','sacks ','rats, insufficient water supply were
problems ','2',NULL,NULL,'Y, bulleyes ',NULL,'Y, bullseyes ','alternatively use
insecticide to avoid immunizing other insects ','Seed exchange with another farmer
Eddie Tayaba')

INSERT INTO "seeds" VALUES(318,NULL,'TV-58','3','Ingaspi ','Ingaspi',NULL,'1','sacks
','one forth ','hectare ','46','sacks ','rats, insufficient water supply were problems
','1',NULL,NULL,'Y, bulleyes ',NULL,'Y, bullseyes ','alternatively use insecticide to
avoid immunizing other insects ','Seed exchange with Luis Gullana ')

INSERT INTO "seeds" VALUES(319,NULL,'TV-59','1','Jan-14 ','Diamond x (3 1/2
month)',NULL,'40 with extra ','kilograms ','. 4 ','hectare approx.','35','sacks
','eel, needle-like earthworm, which brings out soil to cover rice seedlings,
eventually will not germinate, used fertilized urea, ammonium sulfate, ','2',NULL,'Y,
folair and spitfire','Y, cymbush and cypermethyre ',NULL,NULL,'plans to plant second
cropping in 2014','Seed kept from last harvest 2013')

INSERT INTO "seeds" VALUES(320,NULL,'TV-59','2','July-13 ','Diamond x (3 1/2
month)',NULL,'40 with extra ','kilograms ','. 4 ','hectare approx.','42','sacks
','rats, various weeds (imported lily), uwehi, bako, eventually will not germinate,
used fertilized urea, ammonium sulfate, ','1',NULL,'Y, folair and spitfire','Y,
cymbush and cypermethyre ',NULL,NULL,'plans to plant second cropping in 2014','Bought
from seed center at Munoz, Nueva Ecija ')

INSERT INTO "seeds" VALUES(321,NULL,'TV-59','3','Jan-13 ','NSCI-208',NULL,'40 with
extra ','kilograms ','. 4 ','hectare approx.','35','sacks ','rats, various weeds
(imported lily), uwehi, bako, eventually will not germinate, used fertilized urea,
ammonium sulfate, ','1',NULL,'Y, folair and spitfire','Y, cymbush and cypermethyre
',NULL,NULL,'from Munoz ','Bought from seed center at Munoz, Nueva Ecija ')

INSERT INTO "dataHH" VALUES(1,'3020','TV-27','Hungduan','Hapao','Pul-
la','Bummanga','Hilario',NULL,'Gloria Bumangabang',NULL,'Wife','Tenant','2','2014-06-

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24')

INSERT INTO "dataHH" VALUES(2,'N/A','TJ-
09','Hungduan','Hapao','Baang','Pelagio','Joseph','43','Evangiline
Pelagio','35','Wife','Owner and Tenant','4','2014-07-01')

INSERT INTO "dataHH" VALUES(3,'N/A','TV-
28','Hungduan','Hapao','Baang','Tuguinay','Henry','52','Doleres
Tuguinay','52','Wife','Owner and Tenant','4','2014-07-01')

INSERT INTO "dataHH" VALUES(4,'N/A','TV-29','Hungduan','Hapao','Dayandi','Dong-
e','Gaston','45','Lolita Dong-e','44','Wife','Owner and Tenant','4','2014-07-01')

INSERT INTO "dataHH" VALUES(5,'N/A','TV-
30','Hungduan','Hapao','Bocos','Immingle','Gano','64','N/A',NULL,'Husband','Owner and
Tenant','2','2014-07-02')

INSERT INTO "dataHH" VALUES(6,'N/A','TV-
31','Hungduan','Hapao','N/A','deceased','deceased',NULL,'Lydia
Atiwon','48','Wife','Tenant','2','2014-07-02')

INSERT INTO "dataHH" VALUES(7,'3029','TV-32','Hungduan','Hapao','Boy-
anga','deceased','deceased',NULL,'Naty Dano','60','Wife','Owner and Tenant','2','2014-
07-02')

INSERT INTO "dataHH" VALUES(8,'N/A','TV-
33','Hungduan','Hapao','N/A','deceased','deceased',NULL,'Kupinne
Tagtagon','60','Wife','Owner and Tenant','5','2014-07-03')

INSERT INTO "dataHH" VALUES(9,'N/A','TV-34','Hungduan','Hapao','Proper
H','Uyami','Jose','62','Elena Uyami (Tumon-a','64','Wife','Owner','3','2014-07-03')

INSERT INTO "dataHH" VALUES(10,'N/A','TV-35','Hungduan','Hapao','Muy-
yad','Guminigi','Rosaline','71','Dominga Crespillo','47','Daughter','Owner','2','2014-
07-03')

INSERT INTO "dataHH" VALUES(11,'3058','TV-
36','Hungduan','Hapao','N/A','deceased','deceased',NULL,'Linda
Madiwo','53','Wife','Owner and Tenant','5','2014-07-03')

INSERT INTO "dataHH" VALUES(12,'N/A','TB-23','Hungduan','Hapao','Proper
H','Humiding','Ester','59','Ester Huminding','59','Head','Owner','9','2014-07-04')

INSERT INTO "dataHH" VALUES(13,'N/A','TB-
24','Hungduan','Hapao','Baang','Kindipan','Flordeli','40','Flordeliza
Kindipan','40','Head','Owner','2','2014-07-04')

INSERT INTO "dataHH" VALUES(14,'3078','TB-25','Hungduan','Hapao','Proper
H','Madiwo','Stephen','29','Flor Madiwo','35','Wife','Owner and Tenant','2','2014-07-
04')

INSERT INTO "dataHH" VALUES(15,'N/A','TB-
26','Hungduan','Hapao','Baang','Ullang','Rufino','57','Mary
Ullang','57','Wife','Tenant','2','2014-07-04')

INSERT INTO "dataHH" VALUES(16,'N/A','TB-
27','Hungduan','Hapao','Boyod','Bugatti','Tomas','55','Imerita
Bugatti','53','Wife','Tenant','2','2014-07-04')

INSERT INTO "dataHH" VALUES(17,'N/A','TB-28','Hungduan','Hapao','Proper

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H','Jalllib','John','52','Clarita Tallib','48','Wife','Tenant','2','2014-07-04')

INSERT INTO "dataHH" VALUES(18,'N/A','TV-
37','Hungduan','Hapao','N/A','Himmiwat','Elima','54','Elma
Himmiwat','54','Head','Tenant','2','2014-07-04')

INSERT INTO "dataHH" VALUES(19,'N/A','TV-
38','Hungduan','Hapao','Baang','Palataw','Rodolfo','31','Rufina
Palataw','32','Wife','Owner','2','2014-07-04')

INSERT INTO "dataHH" VALUES(20,'N/A','TV-
39','Hungduan','Hapao','N/A','deceased','deceased',NULL,'Jenny
Palatic','45','Wife','Owner and Tenant','1','2014-07-04')

INSERT INTO "dataHH" VALUES(21,'N/A','TV-
40','Hungduan','Hapao','N/A','Dano','Paula','48','Terasa Dano','41','Wife','Owner and
Tenant','2','2014-07-04')

INSERT INTO "dataHH" VALUES(22,'N/A','TV-
51','Hungduan','Hapao','Bocos','Balanni','Daniel',NULL,'Daniel
Balanni',NULL,'Head','Owner','1','2014-07-02')

INSERT INTO "dataHH" VALUES(23,'1008','TJ-
02','Kiangnan','Nagacadan','Bilong','Langbaya','Herminio',NULL,'Norma','65','Wife','Own
er','5','2014-06-11')

INSERT INTO "dataHH" VALUES(24,'1131','TJ-
01','Kiangnan','Nagacadan','Aliguyon','Maddam-o','Patrick','50','Lodres Maddam-
ot','48','Wife','Tenant','4','2014-06-11')

INSERT INTO "dataHH" VALUES(25,'1197','TB-01','Kiangnan','Nagacadan','Pa-
U','Ananayo','Catalina',NULL,'Gilbert Ananayo','43','Son','Tenant','2','2014-06-15')

INSERT INTO "dataHH" VALUES(26,'1009','TB-
02','Kiangnan','Nagacadan','Bilong','Dulnuan','Guillerm','54','Eva
Dulnuan',NULL,'Daughter','Tenant','3','2014-06-15')

INSERT INTO "dataHH" VALUES(27,'1001','TB-
03','Kiangnan','Nagacadan','Hallipan','Guimbata','Alfredo','64','Mary
Guimbatan','49','Husband','Tenant','6','2014-06-15')

INSERT INTO "dataHH" VALUES(28,'1021','TB-04','Kiangnan','Nagacadan','Kigumad-
','Maddam-o','Mario','44','Joselyn Maddam-pt','41','Wife','Owner','2','2014-06-16')

INSERT INTO "dataHH" VALUES(29,'1020','TB-05','Kiangnan','Nagacadan','Kigumad-
','Melanio','Feomena','80','Felomena Melanio','80','Head','Owner','4','2014-06-16')

INSERT INTO "dataHH" VALUES(30,'1021','TV-01-
N','Kiangnan','Nagacadan','Bilong','Maddam-o','Mario','44','Mario Maddam-
ot','44','Head','Tenant','2','2014-06-19')

INSERT INTO "dataHH" VALUES(31,'1009','TJ-
03','Kiangnan','Nagacadan','Bilong','Dulnuan','Guillerm','54','Mary
Dulnuan','54','Wife','Owner and Tenant','4','2014-06-19')

INSERT INTO "dataHH" VALUES(32,'N/A','TB-
06','Kiangnan','Nagacadan','Bilong','Liclican','Willy','50','Willy
Liclician','50','Head','Tenant','2','2014-06-21')

INSERT INTO "dataHH" VALUES(33,'1096','TV-02-N','Kiangnan','Nagacadan','Pa-

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U','Buhong','Antonio','64','Antonio Buhong','64','Head','Owner','2','2014-06-22')

INSERT INTO "dataHH" VALUES(34,'1104','TB-
07','Kiangan','Nagacadan','Kabongla','Bulahao','Ricardo','60','Ricardo
Bulahao','60','Head','Owner','4','2014-06-23')

INSERT INTO "dataHH" VALUES(35,'N/A','TB-
08','Kiangan','Nagacadan','Onnop','Allaga','Jerry','27','Jerry
Allaga','27','Head','Tenant','2','2014-06-23')

INSERT INTO "dataHH" VALUES(36,'1108','TB-
09','Kiangan','Nagacadan','Bayninan','Dumangen','Ben','29','Ben
Dumaneng','79','Head','Owner','2','2014-06-23')

INSERT INTO "dataHH" VALUES(37,'1101','TB-
10','Kiangan','Nagacadan','Paniki','Dulnuan','Antonio','59','Antonio
Duluan','59','Head','Owner','5','2014-06-23')

INSERT INTO "dataHH" VALUES(38,'1026','TB-
11','Kiangan','Nagacadan','Maningla','Tagubat','Virginia','66','Virignia
Tugubat','66','Head','Owner','2','2014-06-23')

INSERT INTO "dataHH" VALUES(39,'1032','TB-
12','Kiangan','Nagacadan','Bokyod','Belington','Alexandr','54','Faith
Belington','49','Wife','Owner and Tenant','4','2014-06-23')

INSERT INTO "dataHH" VALUES(40,'1126','TV-03-
N','Kiangan','Nagacadan','Onnop','Tuguinay','Bernard','62','Bernard
Tuguinay','62','Head','Tenant','2','2014-06-23')

INSERT INTO "dataHH" VALUES(41,'N/A','TV-04-
N','Kiangan','Nagacadan','Onnop','Dulawan','Lucia T.','60','Lucia Dulawan
T.','60','Head','Tenant','6','2014-06-22')

INSERT INTO "dataHH" VALUES(42,'1030','TV-05-
N','Kiangan','Nagacadan','N/A','Tinol','Mary Jan','46','Mary Jane
Tinol','46','Head','Owner','6','2014-06-22')

INSERT INTO "dataHH" VALUES(43,'1027','TV-06-
N','Kiangan','Nagacadan','Maningla','Belington','Marcelo','45','Belen
Belington','44','Wife','Tenant','2','2014-06-23')

INSERT INTO "dataHH" VALUES(44,'1116','TJ-
04','Kiangan','Nagacadan','Likkod','Tuguinay','Simon Sr','65','Virginia
Tuguinay','57','Wife','Owner','5','2014-06-23')

INSERT INTO "dataHH" VALUES(45,'N/A','TB-
13','Kiangan','Nagacadan','Iyak','Guimbang','Daniel','58','Simplicia
Guimbongan','57','Wife','Owner and Tenant','2','2014-06-26')

INSERT INTO "dataHH" VALUES(46,'1053','TB-
14','Kiangan','Nagacadan','Bagwong','Codamon','Bernardo','65','Bernardo
Codamon','65','Head','Owner and Tenant','2','2014-06-26')

INSERT INTO "dataHH" VALUES(47,'1029','TB-
15','Kiangan','Nagacadan','Maninga','Belington','Lorenzo','46','Myona
Belington',NULL,'Wife','Owner','2','2014-06-26')

INSERT INTO "dataHH" VALUES(48,'1041','TB-
16','Kiangan','Nagacadan','Punduntu','Humiwat','Mary','65','Mary

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Humiwat','65','Head','Owner','3','2014-06-26')

INSERT INTO "dataHH" VALUES(49,'1038','TB-
17','Kiangang','Nagacadan','Punduntu','Tinol','Jonie','51','Helen
Tinol','52','Wife','Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(50,'1016','TB-
18','Kiangang','Nagacadan','Bilong','Galap','Franciso','45','Franciso
Galap','45','Head','Owner','2','2014-07-02')

INSERT INTO "dataHH" VALUES(51,'1123','TB-
19','Kiangang','Nagacadan','Onnop','Dulawan','Leo','36','Leo
Dulawan','36','Head','Tenant','6','2014-07-02')

INSERT INTO "dataHH" VALUES(52,'1049','TB-
20','Kiangang','Nagacadan','Bagwong','Taguinay','Robin','55','Angie
Taguinayo','60','Wife','Tenant','4','2014-07-02')

INSERT INTO "dataHH" VALUES(53,'1111','TB-
21','Kiangang','Nagacadan','Likkod','Dulnuan','Alberto','46','Jane
Dulnuan','41','Wife','Tenant','2','2014-07-02')

INSERT INTO "dataHH" VALUES(54,'1002','TB-
22','Kiangang','Nagacadan','Hallipon','Belingon','Dionisio','77','Josefa
Belingon','70','Wife','Owner','6','2014-07-02')

INSERT INTO "dataHH" VALUES(55,'N/A','TV-03-
P','Kiangang','Pindongan','Bakwawan','Attolba','Laura','65','Laura Altolba
Pinnig','65','Head','Owner','5','2014-06-12')

INSERT INTO "dataHH" VALUES(56,'2005','TJ-
05','Kiangang','Pindongan','Ano','Allaga','Bartalom','55','Agripina
Allaga','55','Wife','Owner','4','2014-06-12')

INSERT INTO "dataHH" VALUES(57,'2006','TJ-
06','Kiangang','Pindongan','Ano','Guimbata','Saturnin','72','Saturnine
Guimbatan','72','Head','Owner','4','2014-06-12')

INSERT INTO "dataHH" VALUES(58,'2116','TV-04-P','Kiangang','Pindongan','Tukdadoe','De
Guzma','Rodulfo','59','Jay De Guzman','25','Son','Owner and Tenant','4','2014-06-19')

INSERT INTO "dataHH" VALUES(59,'2131','TV-05-
P','Kiangang','Pindongan','Ammudyun','Humiding','Norma','58','Norma
Humiding','58','Head','Owner','4','2014-06-20')

INSERT INTO "dataHH" VALUES(60,'N/A','TJ-
07','Kiangang','Pindongan','N/A','Mason','Escolast','77','Escolastica
Mason','77','Head','Owner and Tenant','4','2014-06-20')

INSERT INTO "dataHH" VALUES(61,'N/A','TJ-
08','Kiangang','Pindongan','Labanon','Angel','Jose','70','Jose
Angel','70','Head','Tenant','6','2014-06-21')

INSERT INTO "dataHH" VALUES(62,'N/A','TV-
10','Kiangang','Pindongan','Tukdadde','Dinamlin','Jeffrey','40','Catherine
Dinamling','33','Wife','Owner and Tenant','5','2014-06-22')

INSERT INTO "dataHH" VALUES(63,'2165','TV-
11','Kiangang','Pindongan','Ambuaya','Licayao','Oscar','38','Diddy Buyagawon
Duln','32','Wife','Owner and Tenant','2','2014-06-25')

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INSERT INTO "dataHH" VALUES(64,'2028','TV-12','Kiangnan','Pindongan','Proper
P','Allaga','Martom','33','Martom Allaga','33','Head','Tenant','3','2014-06-25')

INSERT INTO "dataHH" VALUES(65,'2095','TV-
13','Kiangnan','Pindongan','Labanon','Najayawo','William',NULL,'William Najayawon
Jr',NULL,'Head','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(66,'2020','TV-
14','Kiangnan','Pindongan','Godde','Guimbata','Mark','34','Norina
Guimbatan','26','Wife','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(67,'N/A','TV-
15','Kiangnan','Pindongan',NULL,'Paggadut','Peter','59','Anit
Pagadut','52','Wife','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(68,'2035','TV-16','Kiangnan','Pindongan','Proper
P','Palaghic','Jerome','45','Jerome Palaghicon','45','Head','Owner and
Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(69,'2072','TV-
17','Kiangnan','Pindongan','Ungbol','Gullunan','Luis','60','Luis
Gullunan','60','Head','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(70,'2085','TV-
18','Kiangnan','Pindongan','Labanun','Dulnuan','Daniel S',NULL,'Pacita
Dulnuan',NULL,'Wife','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(71,'2021','TV-19','Kiangnan','Pindongan','Proper
P','Gullunan','Jose','59','Juliet Gullunan','57','Wife','Owner and Tenant','6','2014-
06-26')

INSERT INTO "dataHH" VALUES(72,'2144','TV-
20','Kiangnan','Pindongan','Ammudyun','Puguon','Juan','49','Elvie
Puguon','39','Wife','Owner and Tenant','4','2014-06-26')

INSERT INTO "dataHH" VALUES(73,'2140','TV-
21','Kiangnan','Pindongan','Tannibun','Takinan','Pablo','67','Pablo
Takinan','67','Head','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(74,'N/A','TV-
22','Kiangnan','Pindongan','Tukdadde','Tayaban','Conrado','35','Jenny
Tayaban','22','Head','Owner and Tenant','3','2014-06-26')

INSERT INTO "dataHH" VALUES(75,'N/A','TV-23','Kiangnan','Pindongan','Tukdadde','De
Guzma','Jonas',NULL,'N/A',NULL,'Head','Owner and Tenant','3','2014-06-28')

INSERT INTO "dataHH" VALUES(76,'N/A','TV-
24','Kiangnan','Pindongan','Tannibun','Guimmon','Joseph','53','Vilma
Guimmon','42','Wife','Owner and Tenant','3','2014-06-27')

INSERT INTO "dataHH" VALUES(77,'N/A','TV-
25','Kiangnan','Pindongan','Tannibun','Bongtiwo','Patricio','51','Regina
Bongtiwon','52','Wife','Owner and Tenant','4','2014-06-28')

INSERT INTO "dataHH" VALUES(78,'N/A','TV-
26','Kiangnan','Pindongan','Tannibun','Buyucaan','Romeo','32','Remy
Buyucaan','30','Head','Owner and Tenant','1','2014-06-28')

INSERT INTO "dataHH" VALUES(79,'2068','TV-
41','Kiangnan','Pindongan','Ungbol','Kimmayon','Crisenci','46','Kimmayong',NULL,'Head',

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'Owner and Tenant','2','2014-07-09')

INSERT INTO "dataHH" VALUES(80,'N/A','TV-
42','Kiangnan','Pindongan','Ungbol','Tapo','Carlos','24','Carlos
Tapo','24','Head','Owner and Tenant','2','2014-07-09')

INSERT INTO "dataHH"
VALUES(81,'N/A','TV_43','Kiangnan','Pindongan','Ambuaya','Liwayan','Jhun','42','Jhun
Liwayan','42','Head','Owner and Tenant','2','2014-07-09')

INSERT INTO "dataHH" VALUES(82,'2153','TV-
44','Kiangnan','Pindongan','Bannahi','Badangay','Paul','48','Paul
Badangayon','48','Head','Owner and Tenant','3','2014-07-09')

INSERT INTO "dataHH" VALUES(83,'2136','TV-
45','Kiangnan','Pindongan','Tannibun','Aliguyon','Forencio',NULL,'Florencio
Aliguyon','NULL','Head','Owner and Tenant','2','2014-07-09')

INSERT INTO "dataHH" VALUES(84,'N/A','TV-
46','Kiangnan','Pindongan','Bannahi','Guinanoy','Peter','49','Peter
Guinanoy','49','Head','Owner and Tenant','3','2014-07-09')

INSERT INTO "dataHH" VALUES(85,'2129','TV-
47','Kiangnan','Pindongan','Bacwawan','Takinan','Ceasar S','55','Tsenita
Takinan','49','Wife','Owner and Tenant','4','2014-07-08')

INSERT INTO "dataHH" VALUES(86,'2110','TV-
48','Kiangnan','Pindongan','Labanon','Ananayo','Leopoldo','39','Leopoldo
Ananayo','39','Head','Owner and Tenant','5','2014-07-08')

INSERT INTO "dataHH" VALUES(87,'2070','TV-
49','Kiangnan','Pindongan','Ungbol','Buyayawe','Arthur','51','Christine
Buyayawe','50','Wife','Owner and Tenant','6','2014-07-08')

INSERT INTO "dataHH" VALUES(88,'2154','TV-
50','Kiangnan','Pindongan','Bannahi','Dinamlin','Glenn',NULL,'Glen
Dinamling',NULL,'Head','Owner and Tenant','2','2014-07-08')

INSERT INTO "dataHH" VALUES(89,'2109','TV-
52','Kiangnan','Pindongan','Labanon','Bilibli','Rafael','48','Noemi
Budeng','30','Daughter','Tenant','3','2014-07-09')

INSERT INTO "dataHH" VALUES(90,'2105','TV-
53','Kiangnan','Pindongan','Labanon','Botwagon','Pascual','48','Pascual
Botwagon','48','Head','Owner and Tenant','5','2014-07-09')

INSERT INTO "dataHH" VALUES(91,'2118','TV-
54','Kiangnan','Pindongan','Bakwawan','Culimay','Oliver','34','Oliver
Culimay','34','Head','Tenant','5','2014-07-10')

INSERT INTO "dataHH" VALUES(92,'2075','TV-
55','Kiangnan','Pindongan','Ungbol','Baguilat','Felibert','44','Felibert
Baguilat','44','Head','Owner','8','2014-07-10')

INSERT INTO "dataHH" VALUES(93,'2102','TV-
56','Kiangnan','Pindongan','Labanon','Umoltoog','Joseph','45','Joseph
Umoltoog','45','Head','Owner and Tenant','3','2014-07-10')

INSERT INTO "dataHH" VALUES(94,'N/A','TV-
57','Kiangnan','Pindongan','Ano','Dinamlin','Reynaldo',NULL,'Reynaldo

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Dinamling',NULL,'Head','Owner','3','2014-07-09')
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INSERT INTO "dataHH" VALUES(95,'N/A','TV-  
58','Kiangnan','Pindongan','Ungbol','Gullunan','George','57','Erkiada  
Gullunan','59','Wife','Owner and Tenant','3','2014-07-10')
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INSERT INTO "dataHH" VALUES(96,'N/A','TV-  
59','Kiangnan','Pindongan','Ungbol','Dumangen','Reginald','55','Reginald  
Dumangeng','55','Head','Owner','3','2014-07-10')
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