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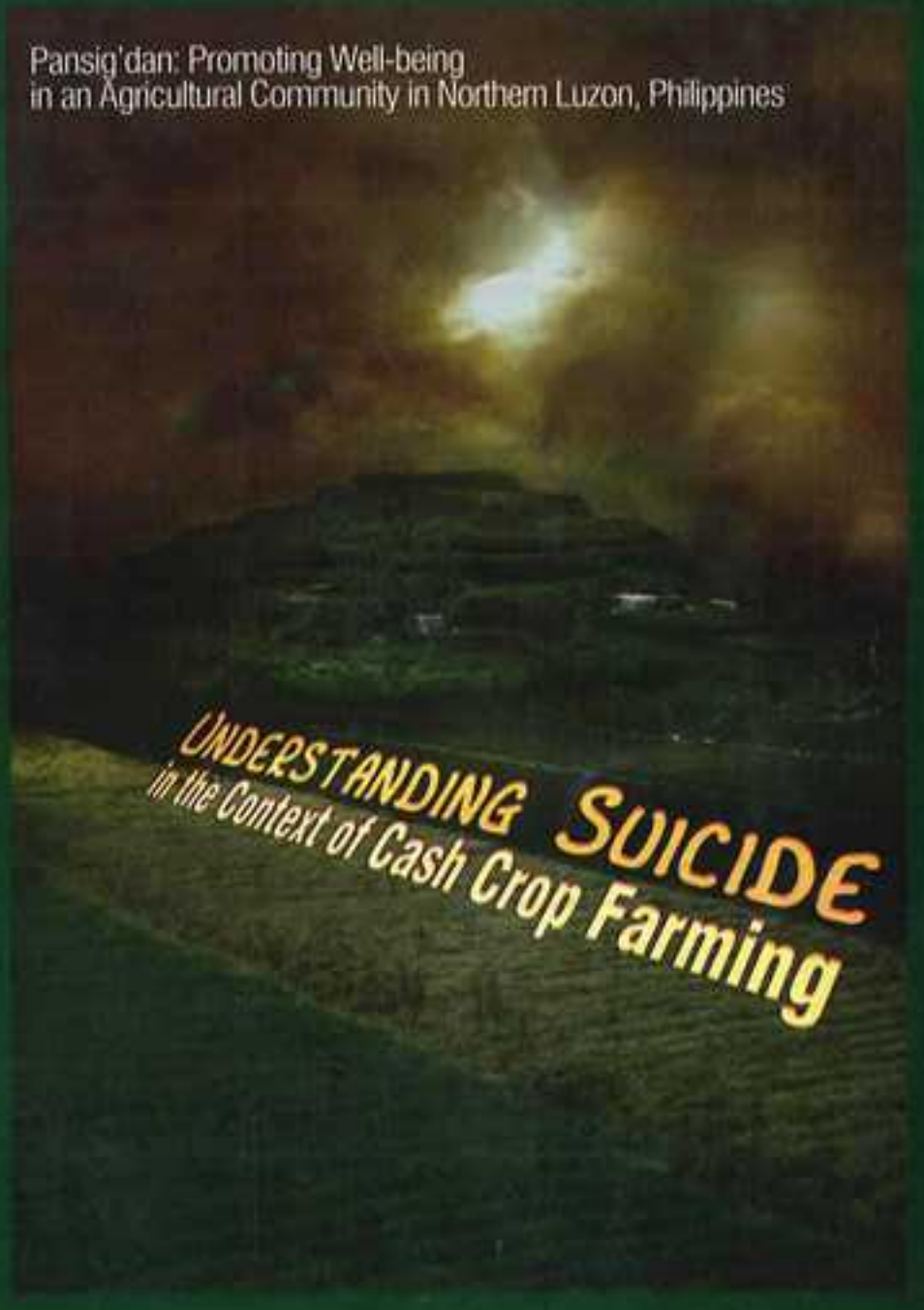

Pansig'dan: Promoting Well-being in an Agricultural Community in Northern Luzon, Philippines

Understanding Suicide in the Context of Cash Crop Farming

RUTH SIDCHOGAN - BATANI
STANLEY F. ANONGOS JR.
MURSHA D. GAPASIN
RACHELE D. DE GUZMAN
BETTY C. LISTINO
BEVERLY C. SA-AO
TECAH C. SAGANDOY
GREGORIO C. TAAG

Benguet State University
La Trinidad, Benguet

FOR ETHICAL REASONS, the name of the community has been deliberately dropped. This should be observed at all times when citing and quoting any part of this report. Most of the photographs used were taken from the different vegetable farming communities of Benguet. Pesticides mentioned were listed according to their chemical names.

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Publication Editing, Design and Layout: Betty C. Listino
Cover Photos: Betty C. Listino and Gladys T. Maximo
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Reviewers:
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FOREWORD

Project Pansig'dan was born out of the desire to respond to the high incidence of suicide in our vegetable farming communities. This is a critical decision that Benguet State University (BSU) has to make as an organic university as its commitment to respond to the emerging needs of its surrounding communities becomes central. It is also a timely project for BSU in relation to its commitment to develop people imbued with culture of excellence and social consciousness who will actively promote environment-friendly technologies to improve the quality of life.

The implementation process of the project's research and extension activities is academically significant because it employs collaborative and interdisciplinary approaches. The implications of its results also go beyond the academe because they are hoped to direct policies.

In the field of social research, the project is also a pioneering work for it outlined the ethical precautions in the context of working with a sensitive issue in an indigenous community. The team has been working with relevant agencies and individuals such that immediate interventions were delivered while doing the research activities. This material is therefore another concrete effort to pave the way for collaborative efforts especially among policy makers as well as education, agriculture, environment and health agencies.

(Sgd) LUCIANA M. VILLANUEVA, Ph.D.
Vice President for Research and Extension
Benguet State University

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The project could not have pushed through without the support of the previous and present Benguet State University (BSU) officials: the Office of the Vice President for Research and Extension, Vice President for Academic Affairs, Vice President for Administration and to the 2009-2010 BSU Gender and Development committee members and to the present and previous presidents of the university.

Thank you very much for believing in what the project can do.

EXECUTIVE SUMMARY

The journey of understanding the complexities of suicide phenomenon in a chemical based rural farming community has brought so much reflexivity. The project team clearly remembers the experience of approaching a phenomenon that initially brought numbing silence, discomfort and fear. But as students of the social world, this action research has to be pursued.

The project is an exploration of how a commercial farming community presents itself as a landscape for decisions and choices. It also tried to understand the manifest problem of suicide and the recent alarming suicide incidents in the study site. Using focus group discussions, key informant interviews, and informal discussions, the research team consisting several disciplinal lenses tried to discern the respondents' notions of suicide and to understand the context and the meanings linked to particular interactions taking place.

Profile of suicide cases show that victims are relatively young, ranging from ages 15 to 24; 73% of them are males. There are 52 suicide cases counted starting from the first case in 1961 up to the last case recorded in 2010. Almost all of these cases were committed using pesticides. A suicide cluster was observed in 2008 - 2010 registering 38 deaths, 12 of which is caused by paraquat, 10 by pyrethroid and eight by organophosphate.

Results also show that self-inflicted injuries usually happen when the victims are under the influence of alcohol. However, on why these acts were committed, findings reveal that chemical-based farming with all its pesticide use, disposal, management as well as the dependency to "modern" technologies has been shaping the farmer's character of everyday transactions. The labor demands as well as the desire to hit the "jackpot" price make farming households slave to their gardens – and many times at the expense of personal leisure and relationships. This condition has to be understood in the context of farming communities that have limited access to balanced information on alternative technologies and education materials that are needed in self-determining decisions.

On the surface, the reasons of self-inflicted injuries range from being scolded, being frustrated with love, being teased, having dreams of the dead, family misunderstanding to name a few, but closer examinations reveal that there are suicide correlates interacting together. Person-level and relational issues are usually reinforced by the person's environment such as the presence of enabling factors.

The multiplicity of conditions such as the predisposing, reinforcing, and enabling factors have been implicated. Predisposing factors emanate from the market-oriented economy and the loss of socialization support coupled with stressors and learned helplessness. The condition of producing for the market created a lifestyle that is in accordance with market demands. Since parents have to always catch-up with farm work, their time poverty robs the younger members of the family the needed care and attention. Teenagers are left to tend to their own emotional conditions which cause them to turn to their peers resulting to complex outcomes.

Reinforcing factors to include the quality of interaction that one has in the family, peer group and the larger community may shape social behaviors, too. In the larger

environment, the "bite" of satirical humor, locally called *toknang* can serve as avenues for self expression although it can also have dangerous implications. The contagion effect or the *ginmuyyod* has also been marked socially with the young imitating the others who have committed suicide. All these have to be understood in the context of grief and bereavement which, if not properly processed, can result to self-harm.

Enabling factors such as the availability and accessibility of instruments which make thoughts of suicide more realizable is another layer. Drinking alcohol disinhibits sound behavior. In the same way, the availability of pesticides almost always guarantee their use for self-inflicted injuries.

The commercial agricultural landscape carved to produce for the market is indeed a fertile ground for cash and material enrichment, ironically, it is the same landscape where the manifest problem of self-inflicted injury through pesticide ingestion has become prevalent. How the community "make sense" of suicide is revealing of euphemisms which have to be understood in the light where the community themselves do not seem to understand what is happening.

However, this research project may still be limited even as it captured correlates of suicide that include predisposing factors, reinforcing factors and enabling factors as there have been changing dynamics of the community. The qualitative nature of the research as well as certain ethical guidelines that guided the team considering the intrusive character of the project are other factors that limited its scope. Nevertheless, all these provide the material and social context that relate to the pervasiveness of risk factors that have to be considered in understanding and addressing the phenomenon.

RATIONALE AND OBJECTIVES

1.0

"Pansig'dan[1] : Promoting Well-being in an Agricultural Community in Northern Luzon", is an interdisciplinary action research and an extension project that aims to understand the phenomenon of youth suicide through pesticide poisoning in the context of cash crop farming. The end goal is to be able to provide appropriate recommendations to the concerned stakeholders of the affected communities. It is a response to the alarming suicide incidence that started in 2008 until the first quarter of 2009 in the northern vegetable farming towns of Benguet, a province of the Cordillera region, Philippines.

Self-inflicted injuries, to begin with has been a historical and chronic problem in Benguet. Official health data of the province in the early 70s placed suicide as the 10th leading cause of mortality (Benguet Profile, 1970).

The project team was formed by Benguet State University (BSU) through the Institute of Social Research and Development (ISRD) with the Department of Social Sciences and selected faculty members of the College of Teacher Education and ResearchMate Inc., a local non-government organization for information management and promotion. It started as a response to the call of a women's organization for extension activities in one of the affected communities. A community study was later conceptualized as a result of the active participation of ISRD and BSU's Gender and Development Program to the Provincial Pesticide Task Force created by the province of Benguet to investigate the alarming deaths reported by affected families and clinics/hospitals catering to these farming communities. The extension site of the project also became the location of the study because of the positive and strong support of the community's women's organization.

The study is composed of four inter-disciplinary fields: anthropology, economics, history, and psychology. The extension activities conducted with the community were facilitated by the researchers together with two psychologists and a development communication specialist. The project was implemented in 2009 from June to September and in 2012 from August to September. A Memorandum of Agreement between the study site's municipal government and BSU was signed in August 2009 to give the project team the personality to conduct its activities in the area.

[1] In the study site's native language, *pansigedan* or *pansig'dan* comes from the Kankana-ey root word *siged*, which pertains to a "good" condition or the state of being well. *Pansigedan* then refers to anything that favors the attainment of that state or condition.

The study is largely qualitative. Except for a semi-structured interview questionnaire used to obtain the suicide profiles and economic data, the team mainly gathered its data through Key Informant Interviews (KII), Focus Group Discussions (FGD) and informal discussions during community assemblies for the project's extension activities. The anthropological part of the study did a follow-up on FGD respondents by conducting KIIs. Additional FGDs were likewise facilitated with four groups in the community's public secondary school.

Table 1. Composition of focus groups

STATUS/AGE	MALE	FEMALE	TOTAL
STUDENTS	9	10	19
UNMARRIED	8	8	16
MARRIED	0	10	10
ELDERLY (51 and above)	6	1	7
TOTAL	23	29	52

There was one FGD conducted with students of the secondary school; one FGD with parents and/or relatives of those who committed suicide and one FGD for the elderly. The KIIs were conducted separately with these groups including the community's local government officials.

Respondents of the study were purposively sampled. The following were the inclusion criteria: resident of the community; a farmer for at least two years; present in the community at the time of the interview; and willing to be interviewed.

2.1 Data Analysis

As the study is mainly ethnographic in nature, it deals with experiences of informants in their particular cultural setting. Data analysis starts with a description of events, incidents and exceptions from the community's perspective. How the community socially constructs notions of suicide, for instance is important. Analytic procedures start from organizing data and generating categories and themes. Examining emerging data against assumptions and searching for other explanations of the data were also explored.

2.2 Ethical Guidelines

The study is largely exploratory as it looked at the notions of suicide and the community's take on the phenomenon (i.e., how the community negotiates with the phenomenon). Aware that the study is intrusive in nature, the project team was guided by emerging issues and concerns from the community which were influential in the future directions of the project. These concerns guided the project team in drawing out their ethical guidelines. Part of the guideline is the non-inclusion of the study site's name, use of pseudonyms, and the methodological limitation such as allowing the respondent to define which parts of the narratives or stories are they willing to share. Open ended guide questions therefore were used. The need to conduct psycho-educational activities were likewise readily recognized and thereby delivered. These ethical considerations are recognition of the respondent's individual rights. It also aimed to protect the community against the possible negative effect or trauma of the research. Presentation of the project's consolidated results was conducted first in the study site to obtain the community's consent to present and release these results to the general public.

2.3 Profile of the Project Site

The location of the study is a relatively "new" rural and mountain community located along the highest mountain range of the so-called Mountain Trail area in the northern part of Benguet. It has an average elevation of 1,500 meters above sea level and was formerly unoccupied until the 1920s. The area is characterized by steep to gently rolling slopes. The temperature is cold making it unfavorable to the cultivation of staple crops like rice and sweet potato.

As recalled by the present elders in the community, the place was once a mossy forest or *kada* in their native language. The first settlers were indigenous families from the Kankana-ey ethnolinguistic group who moved out from nearby lower altitude settlements. The settlement grew only after Mountain Trail, later called Halsema highway (named after Eusebius Halsema, the American engineer who built it) was opened in 1930. The Philippines was then under the American colonial government and the opening of this important road made the area accessible and nearer to Baguio City. The Americans built this city as their "hillstation" which served as their only refuge from the sweltering heat of the lowlands especially during summer. Eventually, the indigenous population including those settlers in the project site, traveled to Baguio to "trade" their goods and to buy the needs that they could not produce like rice and salt.

Later, vegetable cultivation was introduced by Chinese and Japanese immigrants who started farming in the southern towns of Benguet to supply the vegetable needs of Americans in Baguio City (Russell, 1989). Thus, using World War II as an important nodal point, the settlers in the study site intensified clearing of the forest and terracing along the mountain slopes in order for them to produce for this "market". The "selling" of their harvests was first demonstrated by the Chinese immigrants who rented and even bought terraced gardens in the area.

The high altitude of the area causes "andap" or frosting during the cold months of the year (December - January). It is usually observable early in the morning when dews in grass blades harden and turn white.

The postwar period saw the increase in the demands of semi-temperate vegetables especially because there is no supply competition from other areas. The tropical weather of the nearby low elevation communities makes the cultivation of these vegetables impossible thus; highland farmers become the sole suppliers in Luzon. As the vegetable industry started to boom, more families settled in the study site and expanded the "garden" terraces. This has become the pattern in similar communities that were formed and flourished near the Halsema highway. Malanes (2000) would describe this gradual population movement as population "seeking for cash".

In 1956, the settlement was politically recognized as a barangay. Today, it is composed of 21 sitios with a land area of 6,297.18 hectares making it the second largest barangay in the municipality where it is located (Malanes, 2000). In 2002, it recorded a population of 5,000, majority of which are indigenous. Unlike other indigenous communities that have concentrated settlements, the barangay spot map does not show any clustering of households.

The barangay remains to be a pioneer of commercial farming and one of the major producers of vegetables in the province of Benguet.

2.4 The Land, the People and their Worldview

A common cliché when a farming household in the community hits the "jackpot" price for his/her crop runs, "Mayat iman di inyat da ay nan-kutom ya inset di napo-an da si da-ida." (Goodwill is bestowed to that family because their parents have dealt with their ancestors well.) Such is reflective of the study site's indigenous worldview where the attainment of one's goal in life, or in this case, the attainment of material rewards requires not only hard work but the cooperation of both humans and "other-than-humans"[2]. As an indigenous community engaged in cash crop farming, what is interesting for an outside observer is its enduring local cosmology. This is to say that even everyday discourses of farming puts value to what the land can provide to humans, hence the relationship to it and its dwellers persists.

As early as grade school, children are already brought to the vegetable gardens where they can observe and later on do some tasks. When education fails, people go back to their farms, even coaxed to go back to farming. In fact, several community members who finished their university education still choose farming as their career. An idiom which says "siyang na dedan, mo esten di obla et waday pangil-an si agas di buway" (Just like any other job, if you work hard in the farm, you can still reap the rewards of your labor) teaches the value and dignity of manual labor. Again, a value taught that can only be meaningful when the backdrop is tilling the land. Compare this to another idiom – when one goes abroad for example, even with dollar income coming in, the common comment would be "nanalkod met di lagbo ed abroad" (income earned overseas may be definite but is still limited) implicating the premium given to land cultivation.

Communicating this cosmology that gives reverence to "other-than-human" world was seen when the elders in the community took the lead in responding to the phenomenon of suicide clustering. *Bagbaga* or the elders' counseling and the ritual offering at the three major entry points of the community in an attempt to put a stop to suicide clusters, made a mark in the collective memory of the respondents. These rituals saw the butchering of dogs and pigs to appease the dead and the unseen who were believed to have been displeased and so that "no one else will follow".

The mediating role of the elders was also felt

[2] In the words of Hallowel (1960) as observed in his Ojibwa material, worldview is the way an individual in a particular society sees himself or herself in relation to others; it is also cosmology as it encompasses ideas about nature of space, time and universe which has influence over people's lives.

when they gave their consent to the project team to proceed with the conduct of the research and extension activities despite the initial discomfort of some community members.

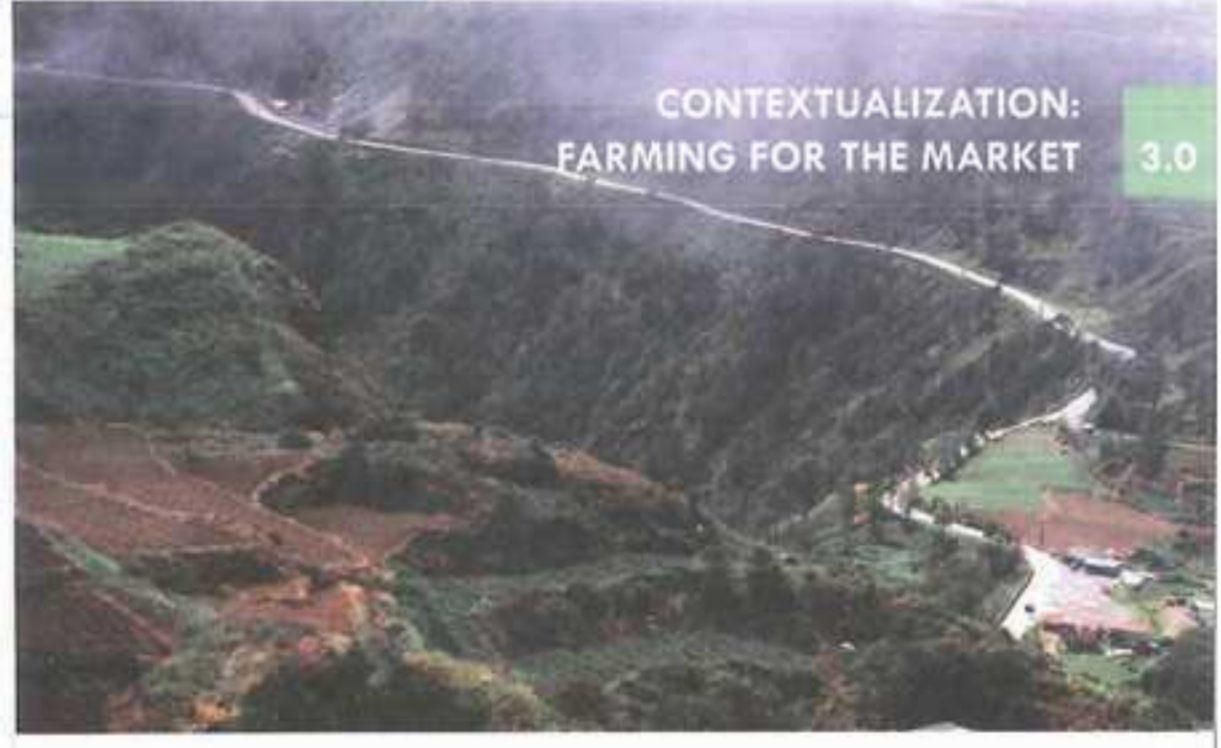
Indeed, despite the manifestation that the community no longer observes as many rituals like *sida* (cultural feast) as before, the elders are still looked up to as playing integrative roles.

The rhetorics of relationality, mutual obligation and reciprocity are seen in the continuing practice of *alluyon* or *binnadang*. *Alluyon* or mutual labor exchange is seen during harvest time or during times when one is to borrow money due to misfortunes in the family. The *alluyon*, even if seen in the light of making it more efficient to catch up with market price, is still a value of mutual cooperation and respect. As Abaya (2001) pointed out, one should not look at just the market value but also the social meanings attached to the practice – the practice of reciprocity. A respondent, for instance refused participating in one of the FGD sessions as he says "Schedule ti panag-kurta diay ka-alluyon ko." (Today is the harvest schedule of my *ka-alluyon* or my workmate in the *alluyon*.) This brings in the value of whom the work is being made for.

Even in a *pa-suplay* credit scheme[3], which is a common farming arrangement in the community, it is not unusual to encounter farmers who became wealthy and now assume a "supplier" role. In the community, with sheer hard work and dedication, one is not hampered from reaping the fruits of his/her labor. The value of treating your fellow humans well and fairly seems to be one defining character of the community. "Tan sik-ay nawad-an, sik-a di man-suplay sin ib-am," (because you have the resources, then you are to share these to your neighbors) is a common remark that elders say to those who are able.

In terms of communication, aspects of the oral tradition still persist and are expressed in satirical humor or *toknang* when transmission of knowledge is through informal discussions, during work time or in between wine-drinking or ritual observance. Traditionally, even in jest or teasing mode (such as the concept of *iyew* or constructive criticism) commentaries would set the bounds and boundaries of what is right knowledge or proper way of relating to other people, to the ancestors or even with nature. Today, *toknang* is a gendered practice that ushers in complex outcomes.

[3]The pa-suplay scheme is an informal credit arrangement which allows an agreement to be made between a "supplier" and a "suplay" or the farmer-being-supplied. The supplier will supply the cost of production and the one being supplied directly provides the farm management specifically labor. The profit sharing scheme depends on what both parties have agreed upon, but it is usually a 50-50 profit sharing scheme after the supplier deducts the face value of the loan, interest and other expenses.



CONTEXTUALIZATION: FARMING FOR THE MARKET 3.0

Vegetable production has long been associated with Benguet since the American occupation in the early 1900s. From small household vegetable production in the 1920s, it slowly grew in commercial scale by the 1930s with the Chinese and Japanese leading the expansion since they possess the knowledge of farming techniques (Boquiren, 1989; Aquino, 2004). By the postwar period, the market demand in Manila dramatically expanded the production of vegetables (HADP Appraisal Report, 1998). The title "Salad Bowl of the Philippines" is then attributed to the province of Benguet as it continues to supply the market nationwide and continues to employ more than 50% of the region's labor force (NEDA-RDP, 2012).

Alongside the expansion of the Benguet vegetable industry, are problems related to policies, marketing, technical, infrastructural and financial problems. The late 90s until mid-2000 saw series of setbacks – the infestation of diamond back moth (DBM) in the 70s, the DBM re-occurence in the early 90s prompting farmers to use cyanide, the leaf miner menace in 1999, the carrot seed controversy in 2001, and to the periodic frosting along Mt. Trail farms (Listino, 2002; Aquino, 2004). On top of these is the lifting of import restrictions and decrease of tariffs – causing major slow down in the industry (Tauli-Corpuz et.al., 2006).

Responses to these setbacks came from various sectors: the Department of Agriculture stressed on the importance of cooperatives; the academe, particularly BSU provided the much needed scientific research and technical intervention while exploring viability of a zonification program; the provincial government created the Benguet Vegetable Commission which would later take on the form of crop programming. While there have been on-going foreign-assisted projects, more ODA funded projects would be poured in-somehow an attempt to arrest the industry. In the meantime, the Benguet farming households ultimately became the *de facto* safety nets, oftentimes forcing these households to resort to various technologies including dependence on pesticides that give short term positive results, but can be life threatening in the long run. (Sidchogan-Batani et.al., 2004)

3.1 Political Economy

Average size of managed farms in the study site ranges from 0.25 hectare per household to more than one hectare. This translates to small, medium and large scale farms based on the 1995 land classification of the Department of Agriculture in the Cordillera region. Majority of the farmers in the study area has small to medium scale farm sizes.

Pa-suplay credit scheme and farm labor relations

As commercial production involves several work and resource ownership categories, a look into the production relations, to use Boquiren's term (1989) is helpful in regards to the description of the dynamics of Benguet commercial farms. Generally, classification of farmers such as big, medium and small is based on land area being farmed, whether owned or rented as well as the access and control over capital and labor resources.

As far as the study is concerned, respondents are classified into small and medium farm operators only. For the small farm operators, these refer to households who own the land they till, but may not have the capital for production. Most of the farmers encountered in the study site belongs to this category, with average landholdings of one-fourth of a hectare to one-half of a hectare.

The other farm category found in the study site is the medium-scale farm operators who own and manage their farms and still "supply" other farmers. They usually employ more than three farm workers. Relatively well-off and are called "suppliers", they also finance other farmers through the *pa-suplay* scheme. In farming communities in Benguet, capital for farm inputs has always been a problem. This has already been identified by Russell in an earlier study where she concluded that the analysis of factors underlying income distribution shows a negative curve with credit for middlemen (Russell, 1986).

The *pa-suplay* scheme becomes a more accessible alternative to address problems on capital. *Pa-suplay* as an informal credit system is quite popular as it is "accessible" than commercial banks or even cooperatives. Accessibility can be in terms of requirements/ conditions and physical proximity. Earlier, this supplier-supplied relationship is strongly based on consanguinity or affinity as there are no collaterals involved. It is therefore common to see young farmers entering into this credit scheme with their aunts or uncles and even their older siblings as the creditors (Sidchogan-Batani & Ngina, 2011).

The *pa-suplay* scheme also determines labor and production relations. In the study site, FGD data show that farmers employing *oblantes* or stay-in daily paid farm workers also allow their *oblantes* to enter into the *pa-suplay* agreement. According to another key informant, this kind of arrangement can only be found in this community. This is because other neighboring farming communities retain their *oblantes* as daily paid farm worker. What could explain for this is that the labor shortage has somehow convinced farm operators that to be able to retain continuous service of their farm helpers, "supplying them" can be an incentive. Indeed, other accounts show success stories for some migrant daily paid farm workers who entered into the *pa-suplay* agreement and were able to hit "jackpot" price allowing them to invest on farms of their own. Another respondent would say, there are several big-time farmers who were once being supplied and hit the jackpot price, not only once but several times. Today, they are already assuming the role of suppliers. This seems to be agreed upon by another migrant farm worker from the lowlands who talked about trying his luck into the scheme.

It is because of this *pa-suplay* scheme that a new variant of the scheme called *suplay-ayowan* evolved recently where the farmer-supplier negotiates a definite amount to be given to

the farmer-being-supplied at the end of the cropping season. This variant is made more simple *vis a vis* the 60-40 or 50-50 sharing system, in that the farmer-being supplied will "take care" (hence, *ayowan* or to care for) of the supplier's farm and get, for example PhP 20,000 whether or not the price is good or the crop goes bankrupt. For the one being supplied, this is a sure income, but there is a possibility that he/she can miss the opportunity of a jackpot price - which can easily be made when "things-go-right" (i.e., good weather, good price, hard work). This arrangement becomes attractive especially to younger farmers and when weather becomes erratic.

Russell (1986) who studied a farming community along Halsema highway in the early 80s was able to capture several drawbacks to a market based economy – pressures on land have resulted to the innovation and alteration of resource management activities. Along with this is indebtedness that is not only in terms of farm inputs and supplier-farmer agreements but also what Russel calls as "social indebtedness". The latter is seen in terms of emergency loans that do not have interests, agricultural "advice", free-rides-into town and holiday gifts (in a *pa-suplay* relationship). Since farming is perceived as a "hit or miss activity", farming practices point to the increasing dependency on chemicals, with little regard to their environmental or health effects. As one farmer in the FGD puts it, "Yan siya dedan, tapin di panag-galden da sa." (Indeed, those are all part of farming.)

In terms of labor, farmers are dependent on their relatives (Russell, 1986) then later, in the 90s, on farm wage labor from the lowlands and neighboring villages (Malanes, 2000). Nowadays, initial data reveal that with the younger generations moving out of the community, households are left with *oblantes* that are not always available and that can be quite costly. A common statement from the farmer - respondents would show that the use of chemicals like herbicides "has been a big help" so that throughout the production process, a farmer and his wife can just cultivate the land without any help. Pesticide use runs throughout the production and marketing process in all the three cropping periods that are stretched in a year.

Household farming: family-owned, family operated

Refracting on the dynamics of the study site, most farms continue to be family-owned and operated and as these are farming for the market, it is open to the volatility of commodity market, the variability of the climate and other market forces at play. As farmers try to

Table 2. Time use in one cropping of potato per 5,000 sq.m.*

NO.	FARM ACTIVITY	NO. OF HOURS SPENT		TOTAL
		FEMALE	MALE	
1	Cleaning/Weeding	146.5	115.5	262
2	Digging of plots	120	200	320
3	Plot levelling	40	304	344
4	Manuring (up to mixing of the manure)	13	44.5	57.5
5	Planting	117	101	218
6	Irrigation/Watering	25.5	69.5	95
7	**Spraying	0	105.5	105.5
8	***Cultivating/Hilling-up	101.5	159.5	261
8	Harvesting	5	11.5	16.5
9	Sorting and Packaging	1	21	22
10	Hauling/Transportation	0	9	9
	TOTAL	569.5	1,141	1,710.5 (214 days)

*Modified time use survey of selected vegetable farming areas in Benguet with one male and one female working with two helpers (Batani & Ngina, 2011). Time use is how a household spend their time in doing a farm activity.
**Spraying is done once a week during dry season and up to three times a week during rainy season.
***This is done twice; first during the sidedress fertilizer application and second during hilling-up.

behave according to market demands, their income is also dependent on the jackpot price. This means that there are many complexities involved in farming for cash done not only in an already fragile environment but also the whole ecosystem which belie the impression that the farmers simply keep on intensifying destruction of the environment.

Workload in a farming household

A typical day in a farming household puts adult members busy from five o'clock in the morning until six o'clock in the evening. Males usually go to the farm at around 5:30 a.m. and go back for breakfast around 8:00 a.m. then back to their farm again an hour after. Female adults start their day at 5:00 a.m. doing domestic work such as feeding of children, cooking, cleaning, and sometimes laundry. It is only when domestic work is done that they join their husbands in the farm. Early evenings are spent cooking and washing of clothes. Simultaneous work usually includes caring for children, cooking and dishwashing. The time use in Table 2 shows a typical farm activity and the hours spent by household members.

With husband and wife doing the farm work, they need 214 days (about 7 months) per cropping and with two farm helpers, and family labor, the number of days is cut down to three and a half months. If household tasks are included, usually shouldered by women and therefore classified as "unpaid work", then farm work is indeed very laborious.

In a recent time use study conducted in the study site, "unpaid work" for women is 37.37 hours per week while unpaid work for males is 15.65 (Sidchogan-Batani & Ngina, 2011). The unpaid work is on top of the farming and other informal work a household has to perform. Unpaid work refers to domestic work and other productive work that is confined within the household and yet it is necessary work for the sustainability of the family. The use of time use survey is helpful in putting value to unpaid work as it provides a detailed portrait of how individuals spend their time during a given period. It is illustrative of the nature of activities in which people engage in and for how long (AP-UNDP Human Development Report, 2010).

Farm production

Typically, farmers in the provinces produce vegetable goods while the capitalists in the cities produce processed goods. The basic

assumption in classical economics is that both are producers of their comparative advantage and consumers of what they cannot produce. In this simple model, farmers are regarded as the producers of vegetable goods and consumers of non-farm goods from the cities. Such roles were made distinct in understanding the dynamics of production, consumption and exchange. However, there is more in reality than what this model portrays. In the case of a farm household, not only is the farmer a producer, but also is a consumer of his/her own produce.

While the farmer's products are largely sold in the market, some are consumed in the household. Furthermore, their consumption of non-farm goods and services, such as food, clothing and education is also based on their profit from production. If their profit from vegetable production is high then they are able to purchase more and even avail of better quality goods and services. The profit does not only determine consumption *per se*, but also the allocation and distribution for needs and wants. If the family gains high profit then there is more to be allocated to each family member, which will not only be used for basic necessities but also for their wants or luxury goods. In this case, profit maximization becomes a goal and cost-saving mechanisms are employed to further maximize their profit.

Aside from labor-saving strategies in agricultural production, time-saving mechanisms are also utilized, as illustrated in Becker's New Household Economic Model. The model states that a family is composed of only one Utility Function, which means that a family or a household, more or less, satisfies the same needs and wants regardless of the size or number of family members. This approach is based on three assumptions: maximizing behavior; market equilibrium and stable preferences (Becker, 1979, as cited by Mattila-Wiro, 1999). Given these assumptions, including the assumption of equal allocation, it is not impossible for a family to have and satisfy the same needs and wants.

For vegetable famers, such as in the study site, farmers use most of their time for labor time. Working in their vegetable gardens is very much valued since it is their major source of income. It becomes a very significant part of their lives that the whole family is expected to lend a hand and spend time to help finish farm activities. Even housewives assume daily farming tasks and school children are expected to help when they are not in school.

Aside from the labor resources the farmers employ, they also utilize other farm inputs that may bring in more profit, such as the use of various pesticides. According to some farmers in the study site, the use of pesticides, particularly herbicides, makes production better by decreasing the number of days in

Table 3. Cost of farm variable inputs in a *pa-suplay* scheme for cabbage and potato production during dry season, 5,000 sq.m. of terraced garden of one household with two farmers, 2012

PRODUCTION STAGE	CABBAGE		POTATO	
	PARTICULARS	AMOUNT (PhP)	PARTICULARS	AMOUNT (PhP)
SEEDLING ESTABLISH-MENT AND MAINTE-NANCE	Seeds: 10 cans (25 g/can; PhP 355/can)	3,550	N/A	
	Lime: 2 sack (PhP 450/sack with transportation)	900		
	Chicken dung: 5 sacks (PhP 215/sack with transportation)	1,075		
	Pesticides	1,000		
	Plot preparation: 1 household labor for 3 days			
	Pesticide application: 1 household labor for 8 days (1 a week for 8 weeks)			
	Watering daily every morning for 8 weeks			
	Sub-total	6,525		
LAND PREPARATION -Clearing -Plot digging -Mixing of lime -Transplanting -Fertilizer application	Herbicide: 2 L	3,520	Herbicide: 2L	3,520
	Chicken dung: 80 sacks (PhP 215/sack with transportation)	17,200	Chicken Dung: 80 sacks (PhP 215/sack)	17,200
	Lime: 6 sacks (PhP 450/sack with transportation)	2,700	No lime needed	
	Herbicide application: 1 household labor for 1 day		Herbicide application: 1 household labor for 1 day	
	Plot preparation: 2 household labor and 3 ka-alluyon for 5 days		Plot preparation: 2 household labor and 3 ka-alluyon for 8 days	
	Lime application: 2 household labor and 1 ka-alluyon for 2 days		No lime application	
	Transplanting: 2 household labor and 1 ka-alluyon for 1 day		No transplanting	
	Chicken dung application: 2 household labor and 1 ka-alluyon for 2 days		Chicken dung application: 2 household labor and 1 ka-alluyon for 2 days	
	Sub-total	23,420	Sub-total	20,720
CROP ESTABLISHMENT AND MAINTENANCE -Hilling up -Weeding -Fertilizer Application -Pesticide Application			Tubers: 350 kg (PhP 45/kg)	15,750
	Chemical Fertilizer: 5 sacks N (PhP 1,200/sack); 5 sacks N-P-K (PhP 1,525/sack)	13,625	Chemical Fertilizer: 6 sacks N-P-K (PhP 1,525/sack)	9,150
	Pesticides: Fungicides and Insecticides	15,000	Pesticides: Fungicides and Insecticides	15,000
	Transplanting: 2 household labor for 3 days		Planting: 2 household labor for 3 days	
	N fertilizer application and hilling-up: 2 household labor and 1 ka-alluyon for 5 days		No N fertilizer needed	
	Weeding: 2 household labor for 2 days		No weeding needed	
	N-P-K fertilizer application: 2 household labor and 1 ka-alluyon for 2 days		N-P-K fertilizer application and hilling-up: 2 household labor and 1 ka-alluyon for 5 days	
	Pesticide application: 2 household labor for 12 days (1 a week in 12 weeks)		Pesticide application: 2 household labor for 12 days (1 a week in 12 weeks)	
	Watering: 1 time/week for 2 weeks then once a week for 10 weeks		Watering: one a week for 2 weeks then [illegible]	
	Sub-total	28,625	Sub-total	[illegible]
HARVESTING	8 hauling basket (PhP 150/basket)	1,200	25 hauling basket (PhP 150/basket)	3,750
	Harvest: 2 household labor and 10 ka-alluyon for 1 day per cut (maximum of 3 cuts)		Labor: 2 household labor and 10 ka-alluyon for 1 day	
	Farm-to-market transportation (PhP 2/kg for 15,000 kg total harvest for 3 cuts)	30,000	Farm-to-market transportation (PhP 2/kg for 8,000 kg total marketable size)	16,000
	Sub-total	31,200	Sub-total	19,750
	TOTAL COST	[illegible]	TOTAL COST	[illegible]

Table 4. Estimated profit of farmers from cabbage and potato harvest in a *pa-suplay* scheme during dry season, 5,000 sq.m. of terraced garden of one household with two farmers, 2012

*MIDDLEMAN PRICE (Wholesale price)	CABBAGE (Average harvest 3 cuts = 13,000 kg)			POTATO (Average harvest = 8,000 kg)		
	LOWEST PRICE (PhP 3/kg)	AVERAGE PRICE (PhP 15/kg)	"JACKPOT" PRICE (PhP 60/kg)	LOWEST PRICE (PhP 10/kg)	AVERAGE PRICE (PhP 25/kg)	"JACKPOT" PRICE (PhP 50/kg)
SALES (PhP)	39,000	195,000	780,000	80,000	200,000	400,000
LESS: COST OF PRODUCTION	85,500	85,500	85,500	97,180	97,180	97,180
FOOD "SUPPLIED"	16,970	16,970	16,970	16,970	16,970	16,970
WASTAGE (1.5%)	585	2,925	11,700	1,200	3,000	6,000
PROFIT (Loss)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
50% PROFIT SHARE	0	[illegible]	[illegible]	0	[illegible]	[illegible]
LESS: FOOD COUNTERPART	18,652	18,652	18,652	18,652	18,652	18,652
UNPAID LABOR						
**HOUSEHOLD LABOR	17,600	17,600	17,600	17,600	17,600	17,600
***LABOR FROM ALLUYON	8,100	8,100	8,100	3,200	3,200	3,200
NET PROFIT (Loss)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
INCOME/month/farmer			[illegible]			[illegible]

*Middlemen at the La Trinidad Trading Post are the only wholesale "buyers" of farmers' vegetable harvest in Benguet and Mountain Province. They decide for the "buying" price of the produce depending on the current demand of the "market" that they "supply" in Metro Manila and other major cities within and outside Luzon.
**22 working days per month (PhP 100/day) for an average of 2 household workers
***Labor cost is PhP 100/day and meal pegged at PhP 150/day
****As part of the pa-suplay agreement the following are the "supplied" items: 6 sacks rice (PhP 1,650/sack with transportation), 3 LPG tanks (PhP 1,000/tank), 2 cans Baguio oil (PhP 400/can), 12 kg live chicken (PhP 100/kg) during harvest. Farmer's counterpart is viand (PhP 1,000/month), 32 kg sugar (PhP 46/kg), 6 kg table salt (PhP 15/kg), 3 kg brewed coffee (PhP 180/kg), 2 bags instant coffee (PhP 70/bag), 2 kg malt drinks (PhP 180/kg)

clearing up of the gardens thereby decreasing the number of laborers needed. This lessens their costs; thus increasing their profit, and accordingly, this also gives them more free time, which they could spend as consumption time.

However, economically speaking, the increase in profit or in real wages does not really entail lesser time for work; instead it motivates people to work more. If the profit of the farmers increases, it will lead to more time spent in the farm. The time saved in clearing the farm with the use of herbicides is not really converted into consumption time like child-rearing but is still used as labor time – for other farm activities like tending to non-vegetable farms (e.g., cutflower gardens and potted ornamentals).

In some other cases, time saved with the use of pesticides are being spent in pleasure or leisure. For some farmers in the study site, this means meeting up with friends to drink or get drunk. Taking from estimates of a farmer-respondent, Table 3 shows the cost of variable input in "modern" farming for one-half hectare of land per cropping season. One cropping season for cabbage and potato lasts for four months.

The costs of these inputs are categorized according to the following stages of vegetable production: land preparation, crop establishment and maintenance and harvesting. Land preparation includes clearing, plot preparation, lime and chicken dung application. Planting includes planting/transplanting, irrigation/watering, basal fertilizer application/ top-dressing, pesticide application. Harvesting also includes gathering (cutting/digging), bagging, hauling, and transporting from the farm to the road and then to La Trinidad Trading Post which is located 70 kilometers away from the study site.

Under perfect competition, agricultural products are price takers. The market structure of agriculture is characterized by homogenous products, elastic demand and many sellers. Since farmers cannot dictate the price, a way to increase profit is to cut costs of production or wait for the jackpot price that is dependent on the forces of demand and supply in the market. The emergence of various cost-efficient means of farming, such as pesticides use, coupled with the marketing strategies used by suppliers of these technologies has led to massive "modern" farming practices.

Table 3 shows a heavy use of chemical farm inputs throughout the production process in a one half hectare of land. In the computation, it appears that chemical inputs share 64% in the

total production cost for cabbage and 47% for potato.

Cost-wise, the use of farm inputs allowed savings in labor cost. For instance, in land clearing, a day application of herbicide by one person is equivalent to two to three days of manual weeding by three workers. Labor wage in the study site is PhP 100/day. The laborers also get free meals (three meals and two snacks) that approximately amounts to PhP 150/day/worker. For a *pa-supply* scheme, food costs are shared between farmer and supplier (see table 4). In the study site, it is a common practice to have a *ka-alluyon*. In this mutual labor agreement, farmers exchange labor and help each other with the needed farm work. This labor cannot be monetized.

To ensure greater profits, spraying of insecticides and the use of fertilizers in maintenance and crop establishment helps in growing "first class" harvest preferred by middlemen wholesale buyers. This is the most costly stage as the farmers apply chemical inputs for an average of three times a month during dry season and seven times a month during rainy season.

As spraying (especially during dry season) is done occasionally, it appears that farmers have a lot of free time. In reality, farmers do not have really "much" time because they are engaged in other jobs. Some would work for other farms through the *por dia* (per day) labor scheme. For women, domestic work is an important task that has to be performed daily.

A half hectare of land yields approximately 13,000 kilos of cabbage heads and 8,000 kilos of potatoes. A kilo of cabbage or potato is passed on to middlemen at PhP 5 - PhP 50 a kilo. Although there is an opportunity of gaining high profits, these could also get very low, especially when produce are passed on to the middlemen at a low price.

Table 4 shows a comparative report on the possible profit of a farmer from the lowest wholesale price to the highest jackpot price of cabbage and potato. The total net earnings are computed based on the sales of the harvest from a one-half hectare farm for one cropping season or for four months less the cost of production, *pa-suplay* share and the hidden cost in the form of unpaid labor (household labor and *alluyon*) including food. Also deducted is the 1.5% considered wastage cost in production handling and transportation.

Production not only depends on inputs used, but also on external factors, such as weather variabilities and pests. Hence, diligent monitoring and time are allotted to ensure that these factors do not further lower the farmers' profits or contribute to their loss.

3.2 Pesticide sourcing, utilization and handling

Proliferation of the sale of various pesticides in the market gave more choices to farmers. They could buy from farm supplies, farmer's cooperatives, or from technicians. Some farmers buy from farmer's cooperatives and from particular technicians for convenience but most Benguet farmers prefer to buy pesticides from farm supplies found in La Trinidad or in Baguio City. They do not have a definite or regular time in buying the pesticides since they buy pesticides only as needed. The amount and type of pesticide they buy depends on the type of pests present in their vegetable gardens.

When asked who is sent to purchase the pesticides, most farmers claim that they themselves buy the pesticides, but there are also instances when they send some of their family members or *oblantes* to do so. Most often than not, farmers buy the pesticides when they deliver their farm produce to the La Trinidad Trading Post or to the Baguio City Public Market, also, because most of the farm supplies are located at the said places.

Pesticides are toxic and should be handled properly, so the farmers' practice of sending even their family members to buy pesticides poses some dilemma. The accessibility of pesticides to members of the family is also

unsafe since there are instances when pesticides are used to end one's life. If family members are allowed to purchase pesticides then it becomes more accessible to them as they could use it in interests other than in killing pests.

Majority of farmers have proper storage areas strictly used for pesticides and they even make use of padlocks to keep them out from other people most especially from children. However, their pesticide storages are found near their homes or even within the home itself, which necessitates the farmers to take into account health hazards aside from that of occupational hazards.

According to Helland, et.al., (2003), aside from occupational health hazards from the use of pesticides, there are also important factors that influence residential exposure. Farmers practicing precautionary measures have a lot to say on this. Even if other family members of the farmer are not directly exposed to the pesticides, they could still be exposed, more so, if the pesticides are kept in or near the house. Children and the elderly are more vulnerable to pesticide exposure since they are believed to have weaker immune system.

Furthermore, there had been cases not just in the Philippines where pesticides were used in ending one's life. One factor that should be considered regarding suicide is the accessibility of pesticides to those contemplating suicide. If the left-over pesticides are not properly kept or stored or if the pesticides are kept within the home, then it can become a handy tool for self-harm.

In preparing the pesticide for application, there are farmers who use ordinary spoons or bottle caps in measuring the amount of pesticides to be sprayed on their crop. Farmers use ordinary spoons since the measurements in the instructions uses spoonfuls and a lot of pesticides do not include measuring cups or instruments in their packaging. This poses a problem because this alternative measuring instrument does not exactly measure the exact amount written in the label. As a result, the pesticide's effectiveness is decreased thus, the next time the farmer prepares the same pesticide; they are forced to double the amount or to look for other "stronger" pesticides.

Finally, the pesticides are applied using knapsack sprayers. Data show that the protective gears used by the respondents when spraying pesticides in their gardens are just ordinary clothing or devices. Farmers are aware of necessary safety nets that they need to apply. However, there are some misconceptions such as the use of any long-sleeved shirt for protection and that they can hold the pesticide as long as they wash their hands or take a bath after spraying. These pose health hazards to the farmers because the safety gears or gadgets used are not adequate. These are risk factors that further the symptoms experienced by farmers due to pesticide exposure.

3.3 Uneven effects of globalization

With modernization, and now globalization permeating into the very lives of local communities, how globalization is expressed at the local level is an important topic that merits attention. For instance, questions on how technological advances used to increase income and how pesticide use/usage are subjectively apprehended at the individual and community levels, contribute to the perpetuation of specific helplessness.

The use of pesticide is said to be an indicator of modern farming which started during the Green Revolution program. This seems to appropriate the scenario of market oriented agricultural economies. In another study, it was affirmed that belief system as well as practices further jeopardize farmers to health risks. In a study of Nueva Ecija farmers in relation to pesticide handling and pesticide safety, it was found out that there are risk behaviors (Palis et. al., 2006). These risk behaviors would include perceptions of pesticide use, pesticide handling among others, perceptions in relation to pesticides *per se*, which affects farmers' health-seeking behaviors.

"You are what you spray" is an inflection of the popular cliché, "You are what you eat." This cliché was once considered an expression of vulgar ecology, yet if understood as a social act, then this can be meaningful and it shows the interelation of humans with this environment. The material world somehow shapes the character and consciousness of the people. Human action has external physical product/ output but is also shaping the activity: a farmer produces crops as an economic product but is also shaping a state of consciousness in the farmer. This view likewise ushers in the interventionist character of technology, (Moore, 1996) in this case, pesticide.

Commercial scale gardening that is chemical-based, has been historicized. It is a product of state policies and layers of government programs imposed at the farm level where correspondingly, farmers are made to accommodate, negotiate and eventually internalize as indicators of modern farming. The need for increasing cash in a resource-poor setting and the pesticide-addicted gardens, makes pesticide dependency phenomenal. As one farmer respondent said, by applying paraquat[1], you are not only instantly killing the weeds but are also making the soil sticky – which is what farmers want as garden plots can be maintained without so much hilling-up. Another respondent would say, "Ti piman paraquat ket katulungan ti farmers." (Paraquat is a help to farmers.) In this case, the use of such herbicide is an adaptive strategy in a changing agricultural landscape. With almost 50 years of chemical-based farming, and severe soil depletion that comes with such dependency, it seems to impress that the land can no longer be productive without chemicals.

[1]Paraquat is the active ingredient of a contact herbicide brand popular in the study site. According to the respondents, it can "wilt weeds in less than a minute". It is a highly toxic active ingredient banned in Europe and in some agricultural countries in Asia like Sri Lanka.

3.3a Pesticides and Suicides

Worldwide, pesticide as a means to self-poisoning has been studied and presented as psychiatric or biomedical case highlighting depression itself or depression as a risk factor, or as mental and behavioral disorders or dysfunctional attitudes of farmers (Jekkel, 2003; WHO, 2000, 2009). Other studies focused on suicide epidemiology (Gunnel et. al., 2007) and mainly led by public health advocates.

Locally, several studies have looked into pesticide poisoning and the corresponding farm beliefs and practices (Palis et. al., 2006; Lu, 2007) in Nueva Ecija and Benguet farmers, forms of acute pesticide poisoning and the idioms associated to it i.e., "knock out" in Central Thailand (Grandstaff & Srisupan, 2004), the environmental effects of pesticide use and misuse (Pingali & Roger, 1995; Grace et. al., 2010). Other studies devote a page or two on the heavy pesticide usage in Benguet (Boquiren & Regpala, 1993; Cheng, 1994). A recent local study of de Joya-Sibayan correlated serotonin level with pesticide residues and found a probabilistic relationship between serotonin level and pesticide exposure (de Joya - Sibayan, 2010).

Pesticide through self-poisoning is now considered by the WHO to be the commonest method of self-harm worldwide (WHO, 2006; Eddleston & Konradsen, 2006) making chemical farmers a high risk group to suicide (Behere & Bhise, 2009). Accessibility of pesticide in rural areas has been pointed out as a facilitating factor of suicide. It was also noted that self-poisoning occurs immediately (at least 10 or less) after an acute relationship crisis (Eddleston& Phillips, 2004) and that many do not intend to die. In another study, in South Korea, the use of paraquat by every two of three suicide cases was simply "because it was available when they attempted suicide" (Seok et. al., 2000). The everyday use of pesticide in households is an identified reason since the Green Revolution. In Sri Lanka, between 1950 and 1995 suicide rates increased eight fold and by 2005, rates have halved. This halving of suicide rate is due to Sri Lanka's regulatory controls on the import and sale of pesticides that are toxic to humans (Gunnel et. al., 2007). In a local study conducted by de Joya-Sibayan (2010), an interesting finding is that prolonged exposure to pesticides finds farmers experiencing anxiety and body malaise which are symptoms of depression.

What has been notably lacking is an understanding of the social construction of suicide in the context of chemical based farming, specifically the ingestion of the very pesticides utilized in their own farms. This scenario is more comprehensible, if seen in the context of the everyday use of pesticides in farming households as a product of historical and material conditions that have transformed rural farms into cash-based economy.

The Green Revolution marked the start of modern farming, which also marked the introduction of pesticides as a standard for ridding pests on farms. Modern farming is equated to monocropping and the use of chemicals as standards for production (Ofreneo, 1987; Tujan, 1999) ushering the corresponding network of dealers and loan sharks as well as pesticide company technicians who serve as pesticide conduits (Kenmore, 1987; Castillo, 1997) in rural farming communities. In the Cordillera region, development assistance in agriculture would reinforce market orientation of the region's agricultural sector (CDPC, 2003).

Yet most farms continue to be family-owned and operated business and are exposed to the volatility of the market, and specifically for the study site, the variability of weather patterns and the influences of government regulations.