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Contractual Arrangements in Agriculture (Northern and Central Luzon Component)

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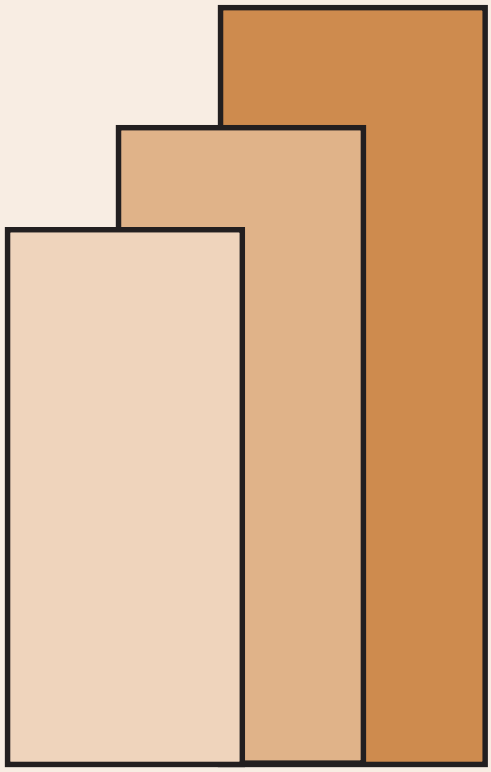

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CONTRACTUAL ARRANGEMENTS IN AGRICULTURE

(Northern and Central Luzon Component)

by

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A joint project of Philippine Institute for Development Studies (PIDS) and Central Luzon State University (CLSU)
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ABSTRACT

This study aimed to characterize and analyze the various contractual arrangements in selected agricultural commodities in parts of Central and Northern Luzon. Specifically, the objectives are to: i) characterize the nature, process and degree of various agricultural contracts involved in the production and marketing of mangoes, hogs, rice and selected vegetables and, ii) analyze the implications of the various contracting arrangements in these commodities in terms of efficiency and equity.

The research sites for this study consist of major producing provinces of the four specified commodities in selected parts of Northern and Central Luzon regions. For mango, Calasiao and San Carlos in Pangasinan, Iba and Masinloc in Zambales and Munoz in Nueva Ecija served as the study areas. For lowland vegetables, the municipalities of Talavera, Aliaga and San Jose City in Nueva Ecija, were primarily selected as study sites being major producers of eggplant, tomato, okra, onions and other vegetables. For hogs, Talavera, Munoz and San Jose City in Nueva Ecija where integrators and key informants are located constitute the sites of the study.

The nature, process and degree of the different contracting systems in the four selected agricultural commodities have been diverse. In most cases, however, the different contracts were outcomes of the farmers' need to adjust to the different production and market conditions surrounding the agricultural sector. The pervasiveness of sharecropping in many agricultural crops such as mango, rice and vegetables underscore the farmers' difficulty in raising capital, due to missing credit and insurance markets. The associated risks, seasonality and specialized nature of agricultural production have likewise complicated the production processes and patterns of contracts in these commodities. Access to credit and marketing institutions and functioning of insurance markets are essential for the transformation of subsistence-oriented asset-poor farmers.

Keywords:

Agricultural contracts, marketing, agricultural production, rice and mango production, contractual arrangements, agriculture sector

CONTRACTUAL ARRANGEMENTS IN AGRICULTURE
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ALMA M. DELA CRUZ [2/]

INTRODUCTION

Rationale

The agricultural sector has been undergoing dramatic changes in recent years with the adoption of new crops and technologies accompanied by the growing commercialization in agriculture and liberalization as a result of globalization. These entail an increasing demand for greater coordination between players at every level. At the production level, the most practical coordination mechanism is through contractual arrangement. Contractual arrangement in agriculture is becoming popular nowadays not only to ensure continuous supply of quality products but also to secure limited labor and material inputs supply especially during the peak of season. For some crops, owner cultivation has become unprofitable in the face of rising cost of material inputs and hired labor brought about by the increase in off-farm employment opportunities.

Agricultural contracts occur not only in the output side but also on the input side. Thus, the emergence of these contracting systems or arrangements has offered many opportunities for producers of output, suppliers of inputs, traders and middlemen. Both formal and informal systems co-exist, although the informal arrangement is more popular and therefore, widely

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accepted. The formal system is usually practiced in poultry, livestock, mango and for other crops in which contract growing is coursed through private enterprises, cooperatives and banks.

For most crops, the informal system is more widespread. Nevertheless, both systems have been formed to alleviate uncertainty, instability and unfairness in agricultural production and marketing, which were caused by the effects of commercialization in the agricultural sector. These contracts usually had structures that made them enforceable through a patron-client relationship, a debtor-creditor relationship, or suretyship.

The nature, process and degree of agricultural contracts have been diverse in the face of varying agro-ecosystem and local conditions. The nature of problems also seems to differ, presenting the need for an in-depth study. There is a need for the clarification of locally unique patterns of contracting systems, which presents a critical question for efficiency and equity hence, this study.

Objectives of the study

This study generally aims to characterize and analyze the various contractual arrangements in selected agricultural commodities in parts of Central and Northern Luzon.

Specifically, the objectives are to:

1. Characterize the nature, process and degree of various agricultural contracts involved in the production and marketing of mangoes, hogs, rice and selected vegetables.
2. Analyze the implications of the various contracting arrangements in these commodities in terms of efficiency and equity.

REVIEW OF LITERATURE

Agricultural Contracts

Issues in Contract Marketing System

According to Goodhue (2002) contract farming is a controversial aspect of the agricultural industrialization process due to its redistribution of control, risk and return of production. Contract farming changes the nature of the risk faced by farmers. Farmers exchange control over marketing and production management decisions for a guaranteed price. Inputs may be supplied by the contractor, as is the case in broilers. The contractor bears the risk due to changes in the relative prices of inputs and outputs that would be borne by an independent farmer and relative performance measures are used to remove some of the variance due to common production uncertainty from growers' income streams. Farmers differ in attributes such as farm size, income sources and management abilities. These differences will affect the outcome realized with the contracts.

Ota (1998) tackled the issues in the contract marketing system. In this system, farmers make contract with exporters or agro-industries to grow a certain crop before cultivation and to sell the products to those companies in accordance with the contract. It seems that this system was introduced by foreign direct investors in the agricultural sector of the country. An example is the case of contracted cultivation and marketing of young soybean in Chiang Mai Province.

This system of contracted cultivation and marketing is also adopted by the asparagus industry in Pathun Thani Province and other suburbs of Bangkok and Japonica rice grown in Chiang Mai. In Karasin Province in the Northeastern Region, tomato and hot pepper for seed production are grown under contract with agro-industries. This marketing system is expected to

stabilize farmer's income, avoiding the risks of marketing by the guarantee of products' market and so will accelerate the development of commercial agriculture.

Sykuta and Cook (2001) emphasized that at the producer level, where large-scale vertical integration of productive resources is relatively impractical, contracting plays a critical role on coordinating the activities and interest of trading parties in agriculture. Every transaction relationship involves three basic economic components: the allocation of value (distribution of gains from trade), the allocation of uncertainty (any associated financial risk) and the allocation of property rights to decisions bearing on the relationship. These three dimensions are inherently interdependent. For instance, a producer may demand a higher price for assuming the uncertainty of growing a new product or variety. A buyer may offer a price premium on the product decision. A fixed price contract eliminates nominal price uncertainty, but may create financial risk for either side as relative market prices change, for either inputs or related products. A fixed price contract may also affect both party's incentives and the way they exercise their respective decision rights, particularly with regard to product quality.

Stanley (2002) showed that although both piece-rates and relative payment contracts provide incentives for self-supervision (and perhaps social control), the relative payment contracts might contribute to involuntary unemployment and efficiency wage premium. A contractual earnings gap for relative payments is consistent with the incentive-compatibility mechanism and the profit maximization goal of contractors. The gathering activity is difficult to supervise, and the production setting is characterized by conflictive property rights changes. Both piece–rate and relative payments contracts have emerged in the contractor-gatherer relationship. There is higher level of overall income inequality in the community where relative payment contracts are most common, and there is a correlation between working under the

relative payments contract and being higher ranked. The different methods all demonstrate a naïve wage gap of 35% between gathering contracts, of which at least 40% may be attributed to "contractual rents" and other unobservables. The 20% premium to the relative payment contract per se occurs even after controlling the joint determination of contract choice and earnings. It appears that most gatherers would prefer to work under the relative payment system since they would receive a higher daily wage. Thus, it may be concluded that relative payment contracts with a firing penalty for self- supervision are not distribution-neutral. The empirical results show a worsening intra-village income distribution in those areas where multiple contractual arrangements exist. The use of these efficiency wage contracts could have broader path dependence implications. Such contracts may foster an economic environment favoring their continuance as the incentive for self- supervision is heightened through the reality of involuntary unemployment and an increasingly unattractive reservation wage. Extending the links between property rights, farm structure, changing reservation utility levels and the endogeneity of contractual design into a general equilibrium framework is a topic for further research. Likewise, study of the implications of contractual design for rural income distribution across a wider-range of extractive economies is needed.

The Biotechnology and Development Monitor (2000) reported on the existing contractual maize seed production and stated that virtually all seed companies contract farmers to multiply hybrid maize seeds. By doing so, the company delegates direct control over land and farm management. Farmers as seed growers are responsible for day-to-day decisions on the farm. The contractual agreement also gives freedom to the farmers to decide whether to continue or to terminate the agreement after each cropping season. Companies take this strategy to externalize the production risk intrinsic to seed multiplication. In the Philippines as well as in other

Southeast Asian countries, companies have difficulties in controlling the quantity and quality of commercial seed. The process requires constant supervision and careful crop management because reproduction in maize is very sensitive to environmental influences. This can only be controlled effectively through intensive, hands-on management. Natural conditions such as high temperatures, uncertain rainfall and high disease pressure have strong impact on yields. Seed yields are commonly lower than grain yields because of weak inbred parents, reduction of harvestable land due to the need to plant unproductive male parents, and higher quality standards that lead to high levels of rejected seeds. Aside from risk management, it is vital for companies to have a stable supply of genetically uniform seeds and to have sustained access to suitable seed fields. In Mindanao, the majority of maize farmers have been facing spiraling costs of agricultural inputs, rising interest rates, declining or unstable prices, and traders monopolizing the grain markets. To these farmers, Pioneer Hi-Bred made an offer difficult to refuse. The company would advance all inputs including free provision of parent seeds plus other incentives, provide technical assistance, guarantee access to the market and offer fixed purchase prices. The price of the product is agreed a priori, and is, in most cases, slightly higher than the price offered by traders. The price difference is, according to farmers, a major reason to sign the contract. More decisive, however, is the provision of a budget for agricultural production because normally these farmers find it difficult to raise capital.

Allen and Lueck (1992) used the model of differential incentives associated with the various contracts to explain the choice between cropshare and cash-rent contracts. Economists have focused on the choice among fixed-rent (cash-rent), fixed-wage, and share (cropshare) contracts as possible ways of combining land and labor through contracts. The fixed-wage contract is not a contract between a farmer and a landowner but rather a contract between a

farmer and an unskilled laborer. Economists have argued that share contracts tend to wither away as economies develop. But share contracts have flourished in American agriculture throughout this century and continue to be widespread.

Warning and Key (2001) performed an empirical analysis of the impact of a contract-farming program in Senegal. They examined the access of poorer community members to contracts and the effect of the program on the income of participants. The program performs very well on both counts: participants and non-participants are indistinguishable by wealth measures and farmers increase their income substantially by participating in the program. They attribute the former to the program's mobilization of local information through its use of village intermediaries, permitting the substitution of social collateral for physical collateral and making the program more accessible to the poor.

Agrawal (1999) develops a *generalized double-sided moral hazard model* of contract choice in agricultural production, with mutual monitoring of each other by the landlord and the tiller, who generally have different levels of farming efficiency and are risk-averse. Using this model, they formally proved that the optimal contract maximizes the output net of the risk-bearing and agency costs, of both the parties and carry out a simulation exercise which helps explain many of the tenancy-related issues. The difference in the farming efficiency of the two sides, often ignored in previous analysis, turns out to be the principal determinant of the contract offered to a tiller.

Baland, et.al. (2001) present an analysis of the coexistence of daily-wage and piece-rate contracts in agrarian economies. They showed that when individual effort is taken into account, daily-wage labourers typically form a convex set in the space of working ability. The most able and the least able labourers work on piece rates, as they can thus choose their own

level of effort. It also proved that, on a monopsonistic labour market, the use of both contracts in equilibrium results from the profitability of market segmentation. Imperfect substitutability between workers under different contracts and the downward rigidity of daily wages can also explain the coexistence of the two types of contracts in more general settings, e.g., perfect competition.

Schmitz and Sliwka (1999) analyzed an incomplete contracts model whether a supplier should be integrated if in addition to his investment level he chooses the degree of relationship specificity. A basic trade-off arises: while non-integration leads to higher investment incentives, potential synergies are foregone. Hence, integration can be optimal even though only the supplier makes an investment decision. This may also clarify the discussion on which activities belong to a firm's core competencies. Furthermore, it was shown that if specificity is contractible, less than the efficient degree of specificity will deliberately be chosen since investment incentives are thereby improved.

Prudham (2002) analyzed the logging sector in Oregon which is characterized by extensive subcontracting between wood-commodity manufacturing firms and independent logging contractors. Why is this so? Considerable recent scholarship has examined the dynamics of flexible production systems, including regional contractor networks, as prominent aspects of late capitalism. Although useful, existing accounts of flexibility are inadequate to explain why logging in particular would be subject to contract production relations. A second literature emphasizes the 'difference' of nature-centered sectors, particularly industrial agriculture. The author argued that a similar logic applies to logging. That is, natural sources to unpredictable variation and extensive, inconstant geographies restrict the predictability and calculability of

production, and the imposition of labor monitoring and discipline. Contracts are a strategy for firms to displace resulting risks and costs onto contractors, while at the same time inducing expert-based rationalization of production. Repeat contracting provides a means of capturing expert knowledge among reliable contractors with knowledge of the parent firm's lands and mills. This is a particularly appealing strategy for vertically and horizontally integrated firms with complex operational portfolios. However, though contracting is one flexibility strategy, Weyerhaeuser's Competitive Logging Program featuring restructured wage relations provides an alternative path to more flexible production, one that further illuminates some of the problems of nature-based production.

Hueth and Ligon (2001) focused on the mechanisms of coordination in agricultural contracts. The approach is intended to advance understanding of social relations of production and distribution of power in agrofood systems. Through an analysis of contracts between farmers and intermediaries (e.g., processors, shippers, consignment agents) for California fruits and vegetables, they identify three functions of contracts: they help to coordinate production, they provide incentives (and penalties) to induce particular behaviors, and they allow farmers and intermediaries to share risk. These functions are implemented via four policing instruments: input control, monitoring, quality measurement, and revenue sharing. The instruments are employed by intermediaries to mitigate "blind spots" in contracts and to control farmers' actions and the quality of their output. This mechanism design approach is complemented by a sociologically oriented analysis emphasizing the embeddedness of economic institutions. They problematized the stylized fashion in which the concept of authority has been treated in the contract farming literature, and proposed an alternative approach to studying new organizational forms and divisions of labor among farmers and intermediaries.

Milner and Pinker (2001) stated that firms increasingly use contingent labor to flexibly respond to demand in many environments. Labor supply agencies are growing to fill this need. As a result, firms and agencies are engaging in long-term contracts for labor supply. The paper developed mathematical models of the interaction between firms and labor supply agencies when demand and supply are uncertain. The article considered two models of labor supply uncertainty, termed productivity and availability uncertainty, and studied how each affects the nature of the contracts formed. These models reflect two major roles played by the labor supply agency. In the case of productivity uncertainty it was found out that it is possible to construct a contract that coordinates the firm and agency hiring in an optimal way. In contrast, it was shown that in environments characterized by availability uncertainty, optimal contracts are not possible. However, there is a large range of contract parameters for which both parties would benefit from a contract. They analyzed these and discussed the trade-offs that should be considered in contract negotiation.

Young and Burke (2001) obtained survey data which suggest that crop sharing contracts exhibit a much higher degree of uniformity than is warranted by economic fundamentals. They proposed a dynamic model of contract choice to explain this phenomenon. Landowners and tenants recontract periodically, taking into account expected returns as well as conformity with local practice. The resulting stochastic dynamical system is studied using techniques from statistical mechanics. The most likely states consist of patches where contractual terms are nearly uniform, separated by boundaries where the terms shift abruptly. These and other predictions of the model are borne out by survey data on agricultural contracts in Illinois.

Bogetoft and Olesen (2002) found that real contracts balanced a number of conflicting objectives that characterize the contracting situation. Contract theory provides useful insights but

the formal models used in theoretical analysis tend to focus on a few effects in stylized environments. The risk of a partial approach is that while improving one aspect of a contract, new and more serious problems may arise in other respects. Practical, theory-based contract design can therefore benefit from a more holistic, systemic approach. This paper offers a checklist that can support such an approach. The checklist combines theory with experiences from Danish agricultural contracts.

Hueth and Ligon (2002) formulated an agency model of contracts used in California's processing-tomato industry and estimated in three stages. First they estimated growers' stochastic production possibilities, and then, for a given vector of preference parameters, compute an optimal compensation schedule. Finally, they compared computed compensations with actual compensations and choose preference parameters to minimize distance between the two. Assuming perfect competition and risk neutrality for processors, they obtain an estimate of 0.08 for growers' measure of constant absolute risk aversion, and find that growers who face higher-powered incentives produce higher levels of soluble solids, at a cost that is 1.8 per cent greater than otherwise. Efficiency losses from information constraints are 1 per cent of mean compensation, whereas existing quality measurement improves efficiency by 1.08 per cent.

Ackerberg and Botticini (2002) stated that empirical work on contracts typically regresses contract choice on observed principal and agent characteristics. If (i) some of these characteristics are unobserved or partially observed and (ii) there are incentives whereby particular types of agents end up contracting with particular types of principals, estimated coefficients on the observed characteristics may be misleading. The paper addressed this endogenous matching problem using a data set on agricultural contracts between landlords and tenants in early Renaissance Tuscany controlling for endogeneity.

Tsoulouhas and Vukina (1999) analyzed optimal livestock production contracts between an integrator company and many independent growers in three similar industries: broiler, turkey and swine. The analysis provides an explanation for the simultaneous existence of distinct incentive schemes in these industries by examining the effects of bankruptcy. The key factors are shown to be the output price volatility and the firm size. With large companies dominating the broiler industry, a small price volatility facilitates the use of two-part piece rate tournaments. By contrast, given the prevalence of smaller companies in the swine industry, a larger price volatility generates a bankruptcy risk which renders the use of tournaments infeasible. Given the combination of medium-size companies in the turkey industry, an intermediate price volatility produces a mixed result when tournaments and fixed performance standards exist simultaneously.

Hueth and Ligon (2001) mentioned that relative performance schemes such as tournaments are commonly used in markets for a variety of livestock and processing commodities, while explicit versions of these schemes are rarely used in markets for fresh fruits and vegetables and specialty grains. They show how contracts for these latter commodities do in fact provide relative performance incentives, albeit indirectly via a payment mechanism that depends on market prices. In such contracts, compensation is often an increasing function of revenue; this implements a relative performance scheme by making each grower's payment an increasing function of his own output but a decreasing function of other's output.

Welsh and Hubbell (1999) stated that the 1980s and 1990s have witnessed substantial changes in the U.S. swine industry. The industry structure has shifted from relatively large numbers of hog (*Sus scrofa*) farm operators producing for open markets to fewer and larger farm operators raising hogs under contracts for intermediary firms or meatpackers. This shift has

resulted in debates over whether the movement from independent to contract hog production has proven beneficial or detrimental for manure management and pollution control. To shed light on these debates, they surveyed by mail independent and contract hog producers in the Southern USA and gathered data on the structure of their farms, their opinions on environmental issues in the hog industry, and their manure management strategies. The survey results indicated that contract producers maintain higher animal units per hectare and spread the hog manure over smaller areas than do independents. However, contract producers also realize they are pushing the adsorptive capacity of their farms and adopt ameliorating and monitoring technologies at higher rates than independent producers. They concluded that market structure is an important determinant of farm structure and environmental management regime, and that adoption of pollution control technologies is not equivalent to environmental performance.

Boger (2001) analyses the marketing arrangements between Polish hog producers and buyers at a time when high-quality markets are emerging. Interrelationships between four key factors are investigated: governance structures, prices, grading and investment in quality production. A sample of 200 Polish hog producers is analyzed. A multinomial logit analysis indicates that producers' choice between large processors as opposed to traders and local slaughterhouses can be predicted by type of contract, grading and quality. A cluster analysis reveals four distinct groups of farmers according to investment in specific assets, ability to safeguard assets, degree of coordination with buyers, use of grading and written contracts, and extent of bargaining power.

Allen and Lueck (1999) mentioned that in a dynamic contracting environment, increasing standards over time in light of past performance is known as the ratchet effect. Despite the recent

theoretical attention given to the ratchet effect, models that include these effects have not been empirically tested against contract data. This study used farm-level data on modern Great Plains agricultural cash rent and cropshare contracts to test for the presence of ratchet effects in the context of a principal-agent model with moral hazard. Limited evidence was found for the ratchet effect within share contracts, and no evidence that it is important for the choice of contract between cash rent and cropshare.

Hueth and Ligon (1999) stated that risk-averse farmers in the produce industry grow a product whose market price is often quite unpredictable. Shippers or other intermediaries shield the farmer from much of this price risk; however, actual contracts between growers and shippers vary considerably across commodities in the residual price risk growers face. It was hypothesized that imperfect quality measurement results in a moral hazard problem, and that price provides additional information regarding duality. As a consequence, an efficient contract does not shield growers from all idiosyncratic price risk. The authors examined this hypothesis for the case of fresh-market tomatoes.

Tied Contracts

Llanto (1989) defined tied contracts in credit i.e., where the loan is given on the promise or agreement that the lender will be the sole or principal buyer of the produce at mutually acceptable implicit interest rate.

Basu (2002) defined a segmented labor market as characterized by tied-labor contracts and involuntary unemployment in the lean season are optimal as compared to a labor hiring arrangement that guarantees full employment of labor in both seasons. Government intervention in the form of a specific subsidy targeted toward hiring of permanent laborers may raise the

welfare of all laborers while a specific subsidy directed toward the hiring of casual laborers or the institution of relief programs that absorb the rural unemployment in the lean season leads to the casual laborers in the economy being worse off. Not all laborers within the economy are offered tied-labor or permanent contracts over both seasons, thereby leading to involuntary unemployment in the lean season. Labor contracts provide partial insurance to risk averse laborers in the presence of output uncertainty and incomplete insurance markets. Contractual arrangements guarantee a remuneration that exceeds a laborer opportunity income may elicit loyalty and reduce the burden of supervision.

Land tenancy contracts

Gavian and Ehui (1999) showed that although the production efficiency of farming differs by tenure contract, the difference were relatively small and not attributable to the use of fewer variable inputs as a result of insecurity. Informally contracted lands were relatively less productive than the Peasant Association (PA) allocated lands. Borrowed lands were the least efficient, followed by shared and rental lands. With a Total Factor Productivity (TFP) level of 0.84, borrowed lands were the least productive. These were followed by shared lands (0.87) and rental lands (0.90). The land productivity levels for informally-contracted land were lower than unity, indicating that overall lower levels of TFP were due to increases in quantities of factor inputs without a corresponding increase in land productivity. Further decomposition of the factory intensity levels of identified chemical inputs is the major source of differences. Because of the relatively high use of chemical inputs on less insecure field it was suggested that other more important factors contribute to the low productivity levels of farming operations than tenure, such as soil quality, farmer endowments and farmer experience. In other words, productivity determines tenure than vice versa. Thus, there seems to be little evidence to say that

changing tenure arrangements per se will change productivity, unless it can also change soil quality and farm experience. The study supports the conclusions of those who argue that land tenure does not constrain productivity at the current level of development in Sub-Saharan Africa. The results of the study suggest that the government should assess farmers, demand for formalization of informal and land tenure contracts.

Fukui (1995) proved in his study that a high factor intensity is achieved under a sharecropping permanent labor contract in which the landowner maintains his reputation by allowing the laborer to apply a large amount of factor input while the laborer trusts the landowner and fulfills the contract in order to continuously received the premium produced by the higher factor intensity. This contractual arrangement is profitable for a landowner who faces a high opportunity income. The major thrust of this paper has been to present a contractual choice theory of sharecropping permanent labor under no constraint to land tenancy and to show evidence, based on a Philippine study, that the contract does not lead to an insufficient resources use like the Marshallian inefficiency.

Ghatak and Pandey (2000) analyzed optimal choice in agriculture when there is joint moral hazard on the part of the farmer in the supply of effort and the riskiness of the technique of cultivation. In the presence of limited liability, high powered incentive contracts such as fixed rental contracts will induce the farmer to adopt techniques of cultivation that are too risky from the point of view of the landlord. On the other hand, low powered incentive contracts such as fixed wage contracts will induce the farmer to supply too little effort. This paper showed that sharecropping contracts emerge as a natural solution to balance these two conflicting considerations. Sharecropping is a contractual arrangement that optimally trades off the costs of inducing the tenant to undertake the higher effort and lower risk. If there is moral hazard in effort

only, the optimal contract is shown to be a fixed rent contract. If there is moral hazard in risk-taking only, then the optimal contract turns out to be a fixed wage contract. Sharecropping contracts can emerge only when there is moral hazard in both effort and risk.

Garret and Xu (2003) investigated why sharecropping rose sharply in the postbellum South. Their hypothesis is that sharecropping was desirable because sharecropped farms could be more productive than owner-operated farms and perhaps more productive than rented farms. Using data from the postbellum South, findings showed strong empirical support for the hypothesis. Results showed that the output elasticity of sharecropped farms is higher than that of owner-operated farms on all occasions and that of rented farms on some occasions. The differences in productivity are statistically significant, and the results are very robust. These empirical results refute the long-held notion that sharecropping is inefficient. Contrary to the view that, like a tax, sharecropping produces disincentives to work, the results in this article suggest that sharecropping might have created an incentive among farmers for its rapid and widespread use in the postbellum South.

Principal-Agent Problem

Grossman and Oliver (1983) defines a principal as one who chooses the risk-sharing contract or incentive scheme to maximize his expected utility subject to the constraints that (a) the agent's expected utility is to lower than some pre-specified level (b) the agent utility is at stationary point.

The costs versus benefits approach also provide a clear separation of the two distinct roles the agent's output plays in the principal agent problem. On the other hand, the agent's output contributes positively to the principal's consumption, so the principal desire a higher

output. On the other hand, the agent's output is a signal to the principal about the agent's level of effort.

A principal is any person or firm that hires another person or firm to perform services. An agent is any person or firm hired to perform services for the principal. The principal offers or does not offer a contract to the agent. The agents either accept or reject the contract. If the agent accept the contract, the agent can either put forth a high effort or a low effort (the incentive compatibility decision).

Sherstyuk (2000) addresses the problem of the designing an optimal contract between a principal and an agent in the presence of moral hazard and limited liability on the part of the agent. If limited liability is not present, the optimal contract involves profit and risk sharing between the two parties, where the agent can be fined or rewarded on the basis of observed performance. Under limited liability, however, fines are not feasible. In the absence of incentive payment schemes, one way to deter agents from shirking is the threat of monitoring and dismissal, as in efficiency wage models. Another way involves wage adjustments according to the past performance in repeated relationships. Performance standards and targets have also been studied and used as a method to improve employees' performance, although their effectiveness depends on the relationship between the performance measure used and the principal's objective. Use of such performance standards, combined with an incentive reward scheme, is optimal to the principal. It was found that performance standards may benefit the principal if failing to meet the standard is costly to agent. It was assumed that such a cost exists and that it is non-monetary and exogenous.

Dubois (2002) introduced concerns about land fertility for landlords in a Principal-Agent model of sharecropping with moral hazard and showed that the optimal contract under limited

commitment reflects a trade-off between production and land quality maintenance. Using data from the Philippines, a model where the leasing out and contract choices are simultaneous is estimated and avoids the selectivity bias of observed contracts. Landlords prefer to use more incentive contracts for more fertile plots and less incentive ones when crop choices induce land overuse. Empirical tests reject the model of pure risk sharing in production and show the interest of taking land quality maintenance into account.

Information Asymmetry

Just, et, al., (2002) stated that information availability is a crucial component of efficient markets. Government has assumed an important role in providing economic information to decision-makers in agriculture. Data are relatively unprocessed or raw statements of fact. Information is defined as having been manipulated in some way. Data are statistical representations of past or present status. It defines information as analysis, synthesis and interpretive reports.

Kranton and Minehart (2001) revealed that relationship with extended family members, co-ethics, or “fictive kin” is a link that reduces information asymmetries. To capture these motivations they specify a game where buyers form links, then compete to obtain goods from their linked sellers. It was implicitly assumed that agents do not act cooperatively; they cannot write state-contingent, long-term binding contracts to set links, future prices, or side payments. It considered a stylized general setting: sellers can each produce one (indivisible) unit of output. Buyers desire one unit each and have private, uncertain valuations for a good. In our economic environment agents face uncertainty, asymmetric information, and contractual incompleteness. These features constrain the possible allocations of surplus and make efficiency more difficult to achieve.

Swine Production and Marketing

Industry Statistics

The livestock subsector which accounted for 13.96 percent of total agricultural output performed well as output grew by 3.85 percent in year 2002. Carabao and hog production expanded by 3.51 percent and 4.66 percent, respectively. These were attributed to increased inventory of animals and number of swine fatteners.

In value contribution to total agricultural output, swine production ranks second only to palay farming. This sub-sector has consistently been a contributor to total livestock output. In 2002, its production reached a thumping P86.77 billion, or a four percent growth over the 2001 output of P 83.54 billion.

The 11.063 million hogs in 2001 increased 5.3 percent to 11.65 million hogs in 2002. These figures represented a production of 1.67 million metric tons in 2002 up by 5.25 percent from 2001. The volume of output of 2001 was also a 4.40 percent improvement from 2002.

However, in recent months, there had been a substantial drop in farm gate prices of hogs. Some sectors attribute this to massive importation of pork and meat products. Importation data in the last four years, however, say otherwise. Volumes of imported meat (except for carabeef) had not significantly risen.

There were more pork imported in 2000 (49,962,929 kilos) compared with 2001 (44,451,713 kilos) and 2002 (49,724,766) but the hog sector was not restive then. Pork sourced from abroad accounts for less than four percent of total domestic supply. Still other sectors attribute the plunge of prices to importation of carabeef which is believed to substitute for pork in the wet markets (Animal Husbandry and Agricultural Journal, March 2003).

Swine is one of the most important agricultural commodities in the Philippines. During the period 1990 to 1999, swine has accounted for 77.6 percent of the total value of livestock production and 9.8 percent of the gross value of agricultural output. The supply and utilization for pork showed that the country has been partly dependent on importation of this commodity.

The total swine population in the Philippines for the year 2000 was estimated at 10.8 million heads, higher by 3.5 percent than the 1999 head count. Of the total inventory, the backyard and commercial sectors accounted for about 77.4 and 22.6 percent, respectively.

The swine commodity's share in the total value of agriculture and fishery and the total GDP in 1999 were 14.24 and 2.5 percent, respectively. The total swine population in the country as of December 4, 2002 was estimated at 11.65 million heads, recording an increase of 5.33 percent from previous year's head count. Of the total stocks, around 76.7 percent and 23.3 percent are coming from the backyard and commercial sub-sectors, respectively.

The top producing regions for hogs namely, Southern Tagalog, Central Luzon, Southern Mindanao, Western and Central Visayas contributed around 56 percent of the total inventory. These regions accounted for about 44.8 percent in the backyard sector and 92.8 percent in the commercial sector (Swine Industry Performance Report, Jan.- Dec. 2001).

The total gross value output of Philippine Agriculture in 1999 is 557.3 billion pesos. While the crop sector topped the whole agriculture sector with P 307 billion, livestock ranks 2nd at 94 billion pesos. On the other hand, in the livestock sub-sector, the swine industry is the biggest contributor at 74.9 billion pesos (Malcon, 2000).

Filipinos consume more pork (60%) than all other kinds of meat combined. The average per capita consumption of pork is 8.3 which is about 2.3 grams per day. It is significant to note that the rate of increase in the demand of pork does not at present show any sign of leveling

inspite of the rapid development of poultry meat as a potential substitute and the higher floating rate of retail prices. The demand of pork was noted to grow at a rate of 5.45% per annum for the whole Philippines and 5.56% for Central Luzon as a result of the rapid population growth in the country (Anonymous).

Labadan (2000) stated that the livestock and poultry industries, which are the key customers of the feed mills, have shown sluggish growth due mainly to rising production costs and low per capita consumption of pig and poultry meat. Globalization has also negatively impacted on these industries with the influx of cheap imported meat and chicken parts. Given this scenario, local farmers have either maintained or reduced their existing animal population.

In a survey conducted by Dr. Basilisa P. Reas of the American Soybean Society in 1999, the Philippines had the highest average hog feed cost per kilo compared to its Southeast Asian counterparts. This is chiefly due to the high cost of the two major raw materials in feed formulation – corn and soya. While the rest of our neighbors have an average corn price of P 4.61/kilo, the local feedmiller has to buy it at P 7.80; soya on the other hand is locally priced at P11.00/kilo vis-a-vis the average acquisition cost of P9.83/kilo in the other ASEAN countries.

Market Arrangements for Swine

Villar, et.al. (2001) stated that being the biggest and most organized industry among the local livestock industries, the swine industry provides business opportunities to Filipino entrepreneurs and creates employment, especially in rural areas that arises about 77.4 percent of the total inventory in the country. The production-marketing channel of the swine industry in the Philippines is composed of swine breeders, slaughter pig growers/raisers, traders, butchers/retailers and processors. The breeders produce quality pigs for breeding purposes, while the slaughter pig growers/raisers raise and grow hogs for slaughter. The hog traders and

butchers/retailers market, distribute pork and pork products. The butchers also convert live pigs into consumable pork cuts. On the other hand, the processor converts fresh pork into value-added processed pork products.

The key players of the Philippine swine industry can be grouped into swine producers and traders/processor. At present, markets for swine products are limited to domestic use. About 32.9 percent of the swine raisers sell market hogs to retailers. Except in the provinces of Quezon, Leyte and Zamboanga del Norte, hog raisers also rely on middlemen/agent in the disposition of hogs. Wholesalers are the major buyers of hog produced. About 86.3 percent of the hog raisers prefer selling live while 13.7 percent prefer selling slaughtered hogs. Age and weight are the main considerations in selling them. But there are times when backyard raisers are forced to sell or slaughter hogs when the need arises (BAS, 1999).

Given that the smallhold swine raisers become marginalized under full trade liberalization, it is given that they will always struggle to survive. The commercial sector and the smallhold raisers should be able to develop production and market modules such as modified contract growing scheme. This assures the market of the produce, stocks and feeds, etc. for smallhold raisers. On the other hand, the latter should be willing to avail of credit and at the same time organize and cooperate among themselves.

According to Gonzales (2000) the Philippines is a price taker in the world trade of livestock products. Therefore the relative competitiveness of he Philippine livestock products will be determined by quality, cost and price.

Sarian (2001) stated that in swine production, the name of the game is efficiency. That means, producing high quality pork at the cheapest possible cost. The problem in piggery is that feed which constitutes about 70 percent of the cost of the production is increasingly becoming

more expensive. Imported feed ingredients such as yellow corn (of which the locally produced is short every year), soybean, feed wheat, fish meal, vitamins and minerals have becoming more costly, especially with the deteriorating value of the peso vis-à-vis the dollar. Veterinary drugs for medication are mostly imported, hence their prices are also adversely affected by the dollar exchange rate.

Mango Production and Marketing

Production Statistics

Mango production is one of the priority crops under the High Value Crops Law of 1994 (RA 7900). The law among other things encourages the production of mango to replace some of the traditional exports. This led to increased production and consumption of mango over the years with the local markets of Metro Manila, Cebu and Davao serving as the main markets for both fresh and processed mango products.

BAS reported that mango production increased from 453,986 mt in 1997 to 884,272 mt by 2001, registering an increase of 94.78 percent. Mango producers were unable to sustain their production in year 2002 as the level slid by 2.87 percent from the previous year's record. In Ilocos region, some mango trees did not bear fruits because of a dry spell in weather. There were also reports of fake foliar fertilizer in Pangasinan and unfavorable weather during flowering stage in Western Visayas. The occurrence of "Ulop" or blackening of flowers in MIMAROPA and high cost of fertilizers in Central Luzon were also noted during the period (Animal Husbandry and Agricultural Journal, March 2003).

Hongkong is the largest importer of both fresh and processed mango, followed by Japan and Singapore. In terms of value, Japan has contributed the highest to the country's export

receipt for fresh mangoes due to the higher price offered than other Asian markets (FLRD, 1994).

Cara (1997) evaluated that the mango fruits consumption among Filipino locally is 90% of its total production. In the international scene, the country finds itself as the 9th mango producer of mango carabao and pico as leading cultivars. It ranks third among the exporters of fresh mango. Mango trees flower profusely in a year, the rest in the next one or two years before producing flower again. In line with this, the use of flower induction in helping the mango trees breaks it biennial bearing habits was introduced. As a result, using this technology is more convenient and economical as compared to smudging. It also provides a uniform and profuse flowering. In addition the article enumerates the factors that should be considered when applying the technology (a) older trees respond more readily to induction than the younger one. (b) flushes may respond to flower induction after 7-9 months. (c) Trees need a higher concentration. (2%) during wet months (July-November) than December to May (5%) and (d) trees with high yield during the preceeding season may not respond satisfactorily to induction in the following season; the carabao mango needs at least two flushing to restore its original vigor.

Pabuayon (2000) evaluated the performance of mango among the fruit crops in terms of production, volume and export continuation. It shows that mango has a relative share to all crops of 3.81%, 1.5% and 2.27% respectively. It also points out that mango is the second most important crop in terms of harvest area and GVA contribution. Mango plantations have expanded due to increased government support through the DA-KCCDP. Overall fruit productivity improved from 10.5 metric tons per hectare in 1990 to 12.60 metric tons in 1997 reflecting the growth of 2.80%.

It was found out that in Luzon, the largest mango areas are Pangasinan, Batangas, Nueva Ecija, Zambales and Bulacan. In Visayas, these are Guimaras, Negros Occidental, Iloilo and Cebu. In Mindanao, Davao del Sur and Agusan del Norte.

Rivera (2001) found out that mango traders are starting to organize and form cartels to regulate and standardize the price of mango nationwide for their self-interest. While growers are loosely organized to be able to establish a price level that will ensure their profitability.

It also explains that the distance of planting for the Philippine carabao mango should be closer to 10 meters apart in shallow top soil in acid region and not closer than 15 meters apart in deep fertile soil with regular rainfall. Sandy soil rich in organic matter with sufficient moisture content produce bigger fruits. However, too much moisture will tend fruits to crack and more watery, they are also easily infested. Weather condition has a great influence on tree flushing and flowering. Dry and hot condition both in the soil and atmosphere will induce flowering while cold, humid and moist soil will induce flushing. On the other hand, produce quality fruits are better in texture, taste firmness of the pulp and generally pass the export quality qualifications.

The Foundation Resource Linkages and Development (FRLD) provides baseline information on the different types of contract arrangement and their sharing agreement. Among these are the leaseholder, sprayer-trader, processor and exporters. The leaseholder type is a type of grower who does not own the trees but pay the owner a fixed amount for the temporary ownership of the trees over a certain period of time. Sprayer on the other hand, is a type of contractor who provides spraying services to the grower but do not own the trees. Contract buyers are traders who offer bids to grower either for the entire lot or per kilogram basis. In the case of processors and exporters, they finance the spraying operations of the grower and traders to guarantee their supply, depending on the number of trees and volume of fruits procured.

Mango growers with financial constraints, limited time or inadequate knowledge or cultural practices, avail a contract agreement to perform the needed production or postproduction services. The most common sharing agreement is 40:60 in Pangasinan, 50:50 in Bulacan, 25:75 in Batangas and Cebu, 33:67 in Guimaras, Davao City and Davao del Sur.

Protection and Care of Mango Flowers and Fruits

A sound cultural and management practices is the key to a successful mango production. Preparing the tree carefully for the reproduction stage is the most exhaustive. The tree should be allowed to flush with only healthy, well-developed flowers coming out of the terminal bud. Application of flower inducers should be done after having allowed at least eight months for the tree to manufacture and store enough carbohydrates. The leaves, which are the factory that produces carbohydrates through photosynthesis, should be protected from damage caused by insect pest and diseases. Any damages on the leaves render the factory less efficient.

Gibe (1997) recommended the use of KNO3 as flower inducer in spite of untoward incidents of deteriorating quality of mango fruits and worst dying trees because of the abusive use of chemicals beyond limits and improper management of mango trees. He also points out that, what is needed is the prevention of the extensive use of chemical beyond limits and proper management of mango trees. In this article the UPLB horticulturist found out that KNO3 is very effective in inducing flowering in mango. With the use of this as the active ingredient will result to the lengthening of the mango season, improvement of the productivity of mango trees and increase farm income.

Rice and Vegetable Production

The Rice Sector

Agriculture is the backbone of the Philippine economy, contributes 23 percent to the Gross National Product (GNP), employs 50 percent of the total labor force, provides job opportunities in the rural areas and generates foreign exchange. Of the total land area of 30 million hectare, 8.2 million ha or 29 percent of arable farmlands were devoted to production of agricultural crops. The area utilized for rice is 3.3 million hectares. Nearly 150 million households in Asia depend on rice cultivation for their livelihood (Caballero, 1995).

In humid and subhumid Asia, rice is the staple food and the single most important source of employment and income for the rural people. Rice is more important to the economy and people at lower income levels, and hence is an important intervention point for promotion of agricultural development and the alleviation of poverty. In countries with a per capita income of US$500 or less, rice accounts for 20-30% percent of the gross domestic product, 30-50% of the agricultural value added and 50-80% of the calories consumed by the people. Nearly 150 million households in Asia depend on rice cultivation for their livelihood. The urban poor and the rural landless, the most vulnerable groups with regard to food security, spend 50-70% of their incomes on rice. Therefore, most Asian governments regard rice as a strategically important commodity, and maintaining stability in rice prices is a key political objective (IRRI, 1999).

GPEP (1994) revealed that from 1983 to 1992, rice accounted for an average of 14.9% of the total value of the nation's agricultural production.

Hossain and Sombilla (1999) stated that of the three leading food crops, namely wheat, rice and maize, rice is by far mainly used directly as food. Human consumption accounts for 85 percent of total production of rice, compared to 60 percent of wheat and 25 percent for maize.

Rice remains the most important food crop for developing countries and accounts for a remarkably high proportion of total calorie intake in Asia

The International Food Policy Research Institute (IFRI) as reported by IRRI, (1999) estimates that the annual paddy rice demand in developing countries of Asia will be nearly 600 million tons by 2010. IFRI also estimates that total cereal (rice, maize, and wheat) demand in developing Asia will increase by around 35% over the same period. The major increase in rice demand will be to feed the bulk of the poor in Asia, who continue to rely on rice to provide up to 60% of their daily caloric intake. While a large portion of the demand for other cereals will be met through inter-regional trade, the major supply increase for rice must come from the existing rice fields of Asia.

In the last decade, the Phil. has been importing an average of over 100,000 mt of corn and close to 200,000 mt of rice per year. These imports represent close to three percent of domestic consumption for both rice and corn. Considered an agricultural country, the Phil. is expected to continue to depend on domestic production for a substantial proportion of its food needs. The Philippine has only more than 3 M hectares harvested area with an average yield of 3.4 tons per hectare in irrigated lowland rice areas. For the Philippines to be self-sufficient in rice, the current target of the government is to produce 5 – 6 tons per hectare. This yield level can easily be attained by planting existing varieties, practicing proper cultural management and avoiding various abiotic stresses. The development of new varieties will help sustain the high level of yield required and will also enable us to attain higher yield goals (Sebastian, et. al., 1999).

Asia Rice Foundation (2000) compiled statistics on rice consumption pattern and found out that an average Filipino consumes at least 103 kg per year. This a little more than 2 cavans.

Metro Manila alone gobble up 22,000 tons per day accounting for 16 % of the country's current rice consumption. International rice trade accounts for only 4% of world production, and primarily in quality rices. Major rice exporters include Thailand (36% of world total), the United States (19%), Vietnam (10%), and Pakistan (7%). Because the world market is thin and volatile, most country in Asia cannot depend on rice imports to meet the food needs of domestic populations. For instance, as pointed out by the International Rice Research Institute (IRRI), if China wanted to meet 10% of its domestic rice consumption needs through imports, world demand for rice would increase by 80%. The rice consumption pattern in Asia is but one of the 10 big facts about rice collated by the Asia Rice Foundation. The others were as follows:

1. More than 90% of the world's rice is grown and consumed in Asia, where people typically eat rice two or three times daily.
2. Hundreds of millions of the poor spend half to three-fourths of their incomes on rice-and only rice.
3. To plow one hectare of rice land in the traditional way, a farmer and his/her water buffalo must walk 80 kilometers.
4. It takes 5,000 liters of water to produce 1kg of irrigated rice.
5. More than 140,000 varieties of cultivated rice (the grass species *Oryza sativa*) are thought to exist but the exact number remain a mystery.
6. Three of the world's four most populous nations are rice-based societies: People's Republic of China, India and Indonesia. Together they have nearly 2.5 B people-almost half of the world's population.
7. Every year, 50 M new people are added to Asia's soaring population of 3.5 B.

8. Improved varieties are planted on three-fourths of Asia's rice land and are responsible for producing most of the continent's rice.
9. Asia is home to 250M rice farms. More are less than 1 hectare.

Vegetable production

Vegetable production is labor–intensive and earns high returns compared to production of other crops. Thus, vegetable production creates employment and raises income. Vegetable production also requires skills critical for development. Commercial growers who manage to integrate four or five vegetable crops probably have the skills necessary to run almost any related business (Centerpoint, 2001).

Villareal and Paje (1990) mentioned that vegetable production in the Philippines during the 1980's has been characterized by a yearly fluctuation in the volume of production, a continuous increase in the value of production. The national average yield has been consistently low at about five tons per hectare.

A number of biophysical, socio-cultural and economic factors limit the production of vegetables. These include climatic conditions, soil conditions, availability and cost of seeds; inadequate credit facilities; poor post-handling and marketing practices and others.

Rasco et.al. (1988) stated that the common vegetables produced and traded in the Philippines include tomato, garlic, eggplant, onion, cabbage, squash, green onion, pechay, bitter gourd, mustard, bottle gourd and cucumber.

Eclipse (1993) stated that vegetables are perishable, hence, they cannot be stored for long periods. They should be consumed or sold shortly after the harvest. Marketing is done in bulk depending upon the agreement of the producers and buyers in a given locality. At the farm level, a farmer's popular practice called the "pakyawan" system is worthwhile. However, net profit is

usually higher in a cooperative sale since this way, transfer of cost and other related payments are minimized. Prevailing commodity price in any locality is always been dictated by the supply and demand. Thus, the farmer's choice on the type of crops and period to grow must be properly planned and the cost and return analyzed to attain greater profitability.

AVRDC (1990) mentioned that successful production of vegetables is not an end goal. The grower must be able to sell his product at a price that would give the most profit. Decision on how the products should be marketed and in what form is usually done before the crops are harvested by analyzing which alternative give better returns. Farm records are used in analyzing the profitability of the farm with the cost-and-return analysis. Hands on cash inputs are assigned with money value and these are added to the cash expenses incurred in the production of the vegetables, the summation of which is called production cost. The income that the grower gets from his vegetables is his returns.

Philippines Eggplant Industry

Eggplant ranked first among the vegetables grown in the country. In 1999, the eggplant industry in the Philippines ranked 7th among the world's top growers of this fruit vegetable. Eggplant was planted in 16,425 hectares of land in 1990. By 1994, this area dropped to only 7,559 hectares with a total produce of 76,636,000 kg. In 1997, the area increased to 11,888 hectares that produced 85,383,000 kg of fruits worth P 1.58 billion. In 2000, the cost of eggplant production was P 92,123.00 per hectare. At an average yield of 18,000 kg per hectare, the farmers got a gross income of P 180,000.00 and a net income of P 87,877.00 per hectare. The national average wholesale price for eggplant was P 11.43 per kg in 1998. the per capita consumption for eggplant in 1998 was 2.27 kg per year. This lowered to 9.6 percent from the

previous year. Of the total eggplant production in 1998, some 38,000 kg were used for seed production and 14,412 kg for feeds or other uses (Greenfields, 2003).

Vegetable per capita consumption

According to FNRI the usual diet of the Filipino household is rice-fish-vegetable. The intake of rice and products (282 g) constitutes 1/3 of the total food consumed per capita per day (803 g) while the intake of vegetable at 106 g per capita per day is made up of green leafy vegetables (30 g) and other vegetables (76 g).

METHODOLOGY

This project focused its analysis on four commodities to wit: mango, hogs, vegetables and rice for which data were collected from parts of Northern and Central Luzon. For the purpose of comparison, additional data for mango and rice from the Visayas were provided by the counterpart researcher in that area covering the province of Iloilo in which seven municipalities were identified as the major mango producers namely: Leon, Guimbal, Tubungan, Alimodian, Cabatuan, Pavia, Passi. Other municipalities have also some mango plantations such as Janiuay, Balasan, and others. In the province of Guimaras, all municipalities are mango-producing areas.

Data for the study were obtained through key interview and actual field visitation of study areas. Major producing provinces, municipalities and barangays of the four specified agricultural commodities were identified and chosen purposively as the sites of the study. Survey instruments suitable for each commodity were then prepared and pre-testing was performed prior to actual survey.

The focus of inquiry emphasized the existing contractual arrangements observed in the four commodities identified earlier. Various contracts unique to each commodity were analyzed as to input control, risk sharing and output/revenue distribution. The implications of the different contracting arrangements in these industries on efficiency and equity grounds were tackled subsequently.

Sample Respondents

The sample respondents in Luzon consist of farmer-growers, traders, and key informants engaged in the production and marketing of the four commodities mentioned above. The

respondents were purposively selected due to their experience and ample knowledge of the different contracting systems about these commodities.

The respondents for mango in the Visayas consist of seven (7) growers, two (2) sprayers, and one (1) contractual supervisor. number of respondents by study sites is shown in table 1 below.

Table 1. Number of sample respondents by commodity and location

COMMODITY	REGION/ PROVINCE	TYPE OF RESPONDENT	NO. OF SAMPLE RESPONDENTS
Mango - Luzon	II – Pangasinan	Farmer-Grower	5
	Calasiao	Leaseholder	5
	Sn. Carlos	Sprayer-trader	5
		Sub-total	**15**
	II- Zambales	Farmer-Grower	6
	Iba	Leaseholder	2
	Masinloc	Sprayer-trader	5
		Contract buyer	2
		Key informant	1
		Sub-total	**16**
	III- Nueva Ecija	Farmer-Grower	2
	CLSU	Sprayer-trader	2
	Munoz	Key informant	1
	Talavera	Sub-total	**5**
		Total	**36**
Mango - Visayas	VI- Iloilo	Farmer-Grower	7
		Sprayers	2
		Supervisor/Manager	2
		Total	**11**
Rice-Vegetables	III- Nueva Ecija	Farmer-Grower	25
	Aliaga	Trader	5
	Sn. Jose City	Grand Total	**30**
	Talavera		
	Guimba		
	Munoz		
Hogs	III – Nueva Ecija	Farmer-Grower	2
	Munoz	Trader	1
	Talavera	Key informant	4
	San Jose City	Grand Total	**7**
		GRAND TOTAL	**84**

Conceptual Framework

This section provides the framework to explain the various contractual arrangements observed in mango, hogs, rice and vegetables.

The agricultural scenario in the Philippines is neither perfect nor does it behaves in an ideal way. Some market mechanisms do not function properly leading to uncertainty in production. The agriculture sector is characterized by the presence of risks (production and price) and market imperfections. This has prompted landlords and tenant-farmers to seek various types of contract arrangements suitable to their needs. Contractual arrangements have become an important mechanism in organizing agricultural production and has emerged as the natural choice of farmers as they try to optimize their income.

Moreover, as the food system moves toward greater specialization and segregation of agricultural products, more coordination is required especially in production and marketing. To improve coordination mechanism, contract growing offers to perform three functions to wit: i) to coordinate production, ii) to provide incentives (and penalties) to induce particular behavior and iii) they allow farmer and intermediaries to share risks. These functions are implemented in four policing instruments: input control, monitoring, quality measurement, and revenue sharing (Wolf, S. et. al., 2001).

Contract farming redistributes control, risk and return of production. It has been defined as an agreement between farmers and processing and or marketing firms under forward agreements usually at predetermined prices for the production and supply of agricultural products (Eaton and Shepherd, 2001).

Contracted cultivation stabilize farmer’s income by avoiding market instability and thus, lowers market risk, accelerate the development of commercial agriculture, provides greater

access to inputs and financing and ensure a guaranteed supply of farm produce. Through contract growing scheme, the contractor is not only able to control quality but also minimize risk and hence, increases contractors' capability to expand and increase volume in order to attain economies of scale.

Farmers differ in attributes such as farm size, income sources and management abilities. These differences will affect the outcome realized with the contracts. Contract farming changes the nature of the risk faced by the farmer. For instance, those products offering the highest returns are likely going to be ones that require higher degrees of managerial effort by producers, coordination between producers and the contractor, and product specificity on the side of the contractor. All of these suggest that the contract with the producers will be more complete and specific in its requirements.

Similarly, capital constraints may also induce labor contracts, especially during the peak of planting and harvesting season when family labor is not sufficient and household lack the liquidity to pay for hired labor. Different reasons and motivation will be reflected in the type of contracts chosen by firms and farmers.

Under the assumptions of perfect markets and no risk, an efficient incentive system requires that the contract holder be the residual claimant to the output (Varian, 1993). Following this, economists considered sharecropping inefficient and became the well known Marshallian theory of sharecropping. According to the Marshallian theory, sharecropping leads to Pareto-inefficient allocation of labor because sharecroppers are paid only a percentage, rather than all, of their marginal product of labor and thus would rationally reduce their work effort (Garrett and Xu, 2003). Such sharing arrangement would induce the contract holder to produce the optimal level of output where the marginal product of the worker's extra effort equals the marginal cost

of applying that effort. Given these assumptions, owner-cultivated and fixed-rental tenancy should thus result in an efficient resource allocation (Ahmed, et. al., 2002).

However, these theoretical arguments have been contradicted by other authors. As cited by Ghatak and Pandey, (2000) the first and the most well known one is developed by Stiglitz (1974) is based on the trade-off between the landlord's need to provide incentives as well as insurance to the tenant. A fixed rental contract is optimal from the point of view of incentives, but it puts all the risk of crop failure on the tenant. A sharecropping is shown to achieve the right balance between risk-sharing and incentive provision. A second theory proposed by Eswaran and Kotwal (1985) argues that sharecropping enables pooling non-contractible inputs and resources of both the landlord and the tenant. For example, the landlord maybe better in providing managerial, whereas the tenant maybe better in providing supervisory effort. However, both parties need to be given incentives to provide these inputs and this is precisely what a sharecrop does. Otsuka, et al. (1993) examine the long term agrarian contracts to show that share tenancy is more efficient than fixed wage permanent labor (as cited by Dubois, 2002).

In the light of the above premise, this study wish to examine the prevailing contracts in mango, hogs, rice and vegetables and determine the production and market related factors that influence the different contract arrangements in terms of efficiency and equity (see fig. 1). Better information on the relative efficiency and equity of contracts would provide a better indication of how contract system affect resource use and thereby the overall productivity of farming operation.

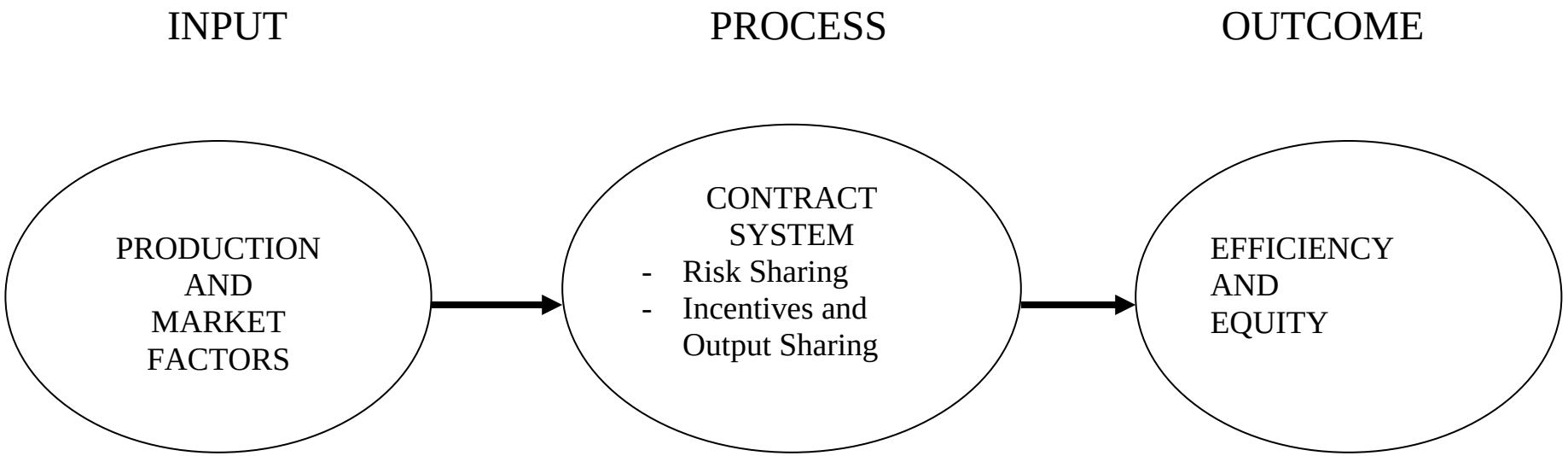

Fig. 1. Conceptual Framework of the Study

RESULTS AND DISCUSSION

Profile of the Study Areas

The research sites for this study consist of major producing provinces for each of the four specified commodities in parts of Northern and Central Luzon regions.

For mango, the three top producing provinces, namely: Pangasinan in Ilocos Region, Zambales and Nueva Ecija in Central Luzon served as the study areas. From each province, two major mango producing municipalities/cities were chosen which include Calasiao and San Carlos in Pangasinan; Iba and Masinloc in Zambales. In Nueva Ecija, Munoz served as the study area. In addition, contractors based in Talavera but serving other areas like Jaen., Sn. Isidro and San Antonio provided key information.

For lowland rice and vegetables, Nueva Ecija was primarily selected as study site being a major producer of rice, eggplant, tomato, okra, onions and other vegetables. Specifically, the municipalities of Talavera, Aliaga and San Jose City are the major production areas hence, served as study sites.

For hogs, Talavera, Munoz and San Jose City in Nueva Ecija where integrators and key informants are located constitute the subject of the study.

A brief description/profile of the three provincial areas and the municipalities covered were obtained from their respective Planning and Development offices and cited below.

I. Nueva Ecija

Nueva Ecija is located in the Western part of the Central Luzon with a total land area of 550,718 hectares. It covered a fairly large portion of the fertile plains of Central Luzon and thus, it is known for rice, vegetables and livestock production.

Tarlac bound the province in the North with Pangasinan and Nueva Vizcaya, on the South by Bulacan, Quezon and Pampanga on the East and on the West, respectively. It is also bounded by the Sierra Madre Mountains on the East, Caraballo Mountains on the North and Cordillera Mountains on the West.

Pampanga rivers and its tributaries nourish the province's lands. There are three large rivers in the province namely: Pampanga river which cuts through the mid stream of the province, Rio Chico along the North and Peñaranda river along the South.

There are two pronounced seasons in Nueva Ecija, the dry and wet seasons. The wet/rainy season lasts between May to November while dry season starts on December and ends April. The soil (Maligaya clay loam series) and its type 1 climate make it suitable for rice and vegetables production.

In fact, the province of Nueva Ecija is the nearest major source of vegetables and shares about 17 percent of the total supply of Metro Manila (Department of Agriculture, 1997). The province has a total vegetable production area of 19,910.2 hectares. The average productions are 8.2 and 4.4 tons per hectare during the dry and wet season, respectively. A total of 17,179 farmers are engaged in vegetable farming with an average land holding capacity of 1.2 hectares. The common lowland vegetables found in the area are okra, ampalaya, eggplant, tomato, green and red chili, onion, saluyot, sitao, squash, upo and soybeans.

The top three municipalities producing vegetables in Nueva Ecija are: Aliaga, San Jose City, Talavera which are briefly described below.

A. Aliaga

The municipality of Aliaga is located in the Northern-Eastern part of the province of Nueva Ecija. It is bounded on the North by the municipalities of Quezon, Sto. Domingo, and

Talavera; on the South by the municipalities of Zaragoza and Sta. Rosa and Cabanatuan City; and on the West by the municipalities of Zaragoza and Licab.

The distance of Aliaga from the nearest city (i.e., Cabanatuan City) is about 21 kms. while it is one hundred thirty eight (138) kms. away from Manila.

Aliaga has a total land area of 10,263.39 hectares while that of the province of Nueva Ecija is 5,284.3 square kilometers. The town's total agricultural land area is 8,560.69 hectares or 83.41percent of the whole area. About 666.88 hectares or 7.79 percent of the total agricultural land area is devoted to vegetables.

Aliaga is composed of 26 barangays. The climate of Aliaga can be described as mild and pleasant. The means of transportation is by bus or jeep. The total number of population is about 50,004 of which 50.63 percent are male and 49.37 percent are female (as of 2002).

Aliaga as an agricultural-based economy has land/soil categorized into four kinds such as Quinga silt loam, Zaragoza clay, Quinga clay loam, Quinga fine sand which is suitable to farming. Thus, the majority of the population depends on agriculture as their means of livelihood. Average land holding capacity per farmer was 1.66 hectares.

Intercropping of vegetables is a common practice among rice farmers especially those with insufficient irrigation and water supply. Eggplant, tomatoes, ampalaya and others are usually intercropped with palay. The municipality is classified as one of the top rice and vegetable producers in Nueva Ecija.

B. San Jose City

San Jose City is situated in the northern part of Nueva Ecija, 160 kms. North of Manila, 116 kms. South of Baguio City and approximately 150 kms. West of the Clark Special Economic Zone. It is nestled at the foot of the Caraballo Mountains on the East; municipality of Carranglan

in the North, municipalities of Lupao and Talugtog on the West and Muñoz and Talavera on the South.

The city covers a land area of 18,725 hectares situating 38 barangays equivalent to 9.54 percent of the total land area of Nueva Ecija. About 13,482 hectares or 72 percent of the total land area of San Jose City is cultivated for agricultural purposes.

San Jose City has four major soil types based on the soil taxonomy map of Nueva Ecija. These are Maligaya clay loam, Maligaya silt loam, Annam clay loam, and Umingan silt loam.

The City of San Jose has a total population of 110,276 as per year 2000 census of population conducted by the City Population Office. The city is also accounted as one of the major producers of vegetables and fruits because of its high production output per hectare. Onion and other high yielding variety of vegetables are secondary crops with an average yield of 1713.9 metric tons. Other crops are tomato, okra, eggplant, ampalaya, corn, squash, mango, and garlic.

The average land holding capacity for an individual farmer under irrigated condition is 1.67 hectares while for rainfed farm it is 1.98 hectares.

C. Talavera

The municipality of Talavera is located at the central part of Nueva Ecija, 14 kms. away from Cabanatuan City; 30 kilometers from San Jose City and 130 kilometers away from Manila. It is bounded on the South by Cabanatuan City; on the Southwest by Aliaga; on the Northwest by Sto. Domingo; on the East by Llanera and San Jose City and on the Northeast by the Science City of Muñoz. The municipality covers a total land area of 14,255.54 hectares spread out in the 53 barangays, 8 percent of which are districts within the Poblacion proper and 45 percent of which are agricultural barangays in the rural areas.

Talavera's land area accounts only as 2.59% of the land area of the whole province of Nueva Ecija. As an agricultural municipality, it has soil types of Quingua silt loam, Quingua clay loam., Quingua fine sand, Maligaya clay loam, and Maligaya silt loam.

The year 2001 total population of 100,641 is distributed over 53 barangays. The existing land uses of the municipality places 79.23 percent of the total land areas devoted to agriculture. This accounts for about 11,295.7782 hectares. These refer to land areas intended for cultivation and fishing activities. The primary crop planted in the municipality is palay, while the secondary crops include corn, tomatoes, onion, squash and other vegetables. The most popular crops planted during the dry season are onion, tomatoes, squash and watermelon for the less irrigated area. Out of the total agricultural area of 11,295.7782 about 58.16 percent are covered by the Comprehensive Agrarian Reform Program (CARP).

II. Pangasinan

Pangasinan abounds with fishery products and is known for bangus and shrimps culture. It is also known for its delicious mangoes, aside from rice. It is one of the provinces under the Ilocos Region and is bounded on the North by Lingayen Gulf and La Union, on the South by Tarlac, on the East by Nueva Ecija and on the West side of the province are the municipalities of Calasio and San Carlos City. The province has well-developed road system and thus, accessible to all types of vehicles. It is approximately 212 km North of Metro Manila and 80 km Southeast of Baguio City. The terrain of Pangasinan is relatively flat and it has four soil types which include San Miguel silty clay loam, San Miguel silt loam, Pangasinan fine sand and hydrosol making it suitable for corn, tobacco and mango farm areas. Dry months starts December lasting up to April while the rest of the year are wet (FLRDI report).

Of the four provinces in the Ilocos Region, Pangasinan has the largest area totaling 5,368.18 square kilometers or 536,818 hectares. It has four cities, namely, Dagupan City, San Carlos City, Urdaneta City and Alaminos City, 44 municipalities and 1346 barangays. Traversed by the National Highway and its Western localities along the blue waters of the South China Sea, it is accessible by all forms of transportation. By land, through the highways; by sea via its 14 seaports among which are in Sual and along the Lingayen Gulf; and by air, on its two feeder airports, one of which is in the Municipality of Lingayen, the seat of the Provincial Government.

The municipalities of Calasiao and the City of San Carlos are the major mango producing areas in the province. In these places abound the buying stations of exporters or contract buyers of mango especially during the peak of season.

A. Calasiao

The municipality of Calasiao with a total area of 53.4 square kilometers or 5,339 hectares lies in the upper half of Central Pangasinan. It is bounded on the North by Dagupan City and on the South by San Carlos City, Binmaley on the West, and the Municipality of Mangaldan and the Municipality of Sta. Barbara on its Northeastern and Eastern side, respectively.

The municipality is divided into 24 barangays and 70 sitios. It has a total land area coverage of 5,339 hectares. Poblacion West and East, Bued, Gabon, San Miguel, Nalsian, 20 percent of Ambonao, 30 percent of Banaoag are considered urban barangays and have an approximate land area of 746.09 hectares equivalent to 13.37 percent of the municipal land. The remaining 4,592.91 hectares comprises the rural area.

The whole municipality of Calasiao is an unbroken piece of land with a slope that varies from zero to maximum of four percent. Only rivers and streams that cross the municipality disturb its continuity.

The immediate implication of the relatively flat terrain (0-4% slope) of the town is that any portion of the town can be developed considering only its physical make-up into residential, commercial or other functional areas. One hundred percent (100%) of the town's land area is habitable. From the viewpoint of agriculture, all suitable farm areas in the municipality can be easily irrigated especially with the presence of rivers.

This relative flatness (habitability) of the land explains also in some way, the manner in which the residential areas have been so evenly extended with easy road construction as seen from the existing network of roads/streets.

Calasiao has two distinct seasons, the dry and wet season. Dry season occurs during the months of November to April, while wet season for the rest of the year that is from the month of May to October. Calasiao is given protection by the mountain barriers in the Western part of the province and nearby towns from the Northwest monsoon and from trade winds, but in spite of this, its environs are still frequently subject to the damage caused by typhoons. In year 2000, the heaviest rainfall was during the month of July with an average rainfall of 1,191.70 millimeters.

For the past five years, Calasiao has an average rainfall of 191.39 per year. It was observed that in the 1999, the number of rainfall significantly increased. The municipality has a relative humidity of 84.55 percent per month in the minimum. Generally, the climate of Calasiao is suitable to agriculture.

Based on the year 2000 municipal survey, the population of Calasiao is 77,039 with an absolute increase of 11,088 as compared to the 1994 population of 65,951.

B. San Carlos City

The City of San Carlos is located in the central part of Pangasinan. It is bounded by the municipalities of Binmaley and Calasiao in the North. Malasiqui in the East, Aguilar in the West and Urbiztondo and Basista on the South. It is approximately twenty minutes ride from the City of Dagupan. The city falls within the latitude of $15^0$15 minutes to $15^0$59 minutes North and longitudes $120^0$14 minutes to $120^0$25 minutes West.

San Carlos City has a total of 86 barangays, 15 of which are found in the Poblacion area and 71 in the rural areas. It has a total land area of 170.87 square kilometer occupying about 3.18 percent of the total area of Pangasinan.

Based on the existing land use of the Ilocos Region made by the Department of Agriculture, the City has different land uses namely: settlement area, agricultural, (this consists of lands planted to seasonal crop and annual perennial crops which has an area of 148.21 square kilometers covering about 86.74 percent of the total area) and miscellaneous land use. Fruit trees are planted in vastly areas of 1086.98 hectares.

Among the 46 municipalities and three cities in Pangasinan, San Carlos City has the highest population, even higher than Dagupan City. San Carlos City has an actual population of 154,264 as of May 1, 2002 (based on the 2000 census of population).

The Hernandez type of climate classification under PAGASA defines the climate of San Carlos City as dry type D. This type contains an insufficient distribution of rainfall with 6 dry months utmost. Usually, the dry season occurs during the months of November to April and the wet during the rest of the year.

The total annual rainfall in San Carlos City is 2,409 millimeters (mm) with a monthly of 201 mm. Maximum rainfall is observed during the month of August with a rainfall mean of 582

mm, while the minimum is observed during the month of January and February with the rainfall mean of 8 mm and 13mm, respectively. The mean annual number of rainy days is 175.

The mean annual air temperature in the city is 27.27 degrees centigrade. April and May were observed to be the hottest months with temperatures of 28.86 degrees centigrade and 28.92 degrees centigrade, respectively, while the coldest month is January having a temperature of 25.86 degrees centigrade.

III. Zambales

Zambales, the home of Mt Pinatubo is occupying a land area of about 371,440 hectares that lies along the western coast of Central Luzon. It covers all the coastal plains and valleys from Lingayen Gulf down South toward Subic Bay. It has common boundaries with the province of Pangasinan on the North, provinces of Tarlac and Pampanga on the East, and the province of Bataan on the South. The China Sea lies on the West. The terrain is irregular as the whole Zambales Mountain Range traverses the whole length of the province. The mountains occupy the eastern and central portions while the coastal plains lie along the West. It is dry from November to April, and wet from May to October. Iba, the capital town, and Masinloc were the areas considered in the study being the major producers of mango. Iba is located at the central part of the province while Mansinloc is at the northern portion. They are approximately 210 km and 245 kms. away from Metro Manila, respectively. Similar to the other Luzon provinces, it can be reached by different types of land transportation facilities such as buses, jeepneys, cars, trucks that passes through the concrete and paved national highways (FLRDI report).

Zambales along with Nueva Ecija is found in the Central Luzon Region. Similar to Pangasinan the province offers abundant marine products. The average elevation is estimated at 2,500 feet above sea level.

Zambales is potentially gifted for mango production. In fact it became famous worldwide when it was featured in the 1995 Guinness Book of Record as the producer of the sweetest mango in the world. There are 8,344 hectares planted to all kinds of mango in the province. Carabao mango has 6,574 hectares (78 % of total area planted) with 381,196 trees where 270,716 are fruitbearing producing 7,538,478 kilograms. Majority of the farmers are small growers with 4,444 hectares mostly found in the backyards of 5,845 producers. Commercially grown trees occupies 2,130 hectares or 32 percent of the total area planted to carabao mango with 214 growers (Zambales Mango Industry Development Plan).

A. Iba

Iba, one of the oldest municipalities of Zambales, has a total land area of 15,338 hectares with fourteen (14) barangays with a total population of 34,533 covering 7,115 households as of year 2002. There are seven (7) urban barangays and seven (7) rural. Urban barangay areas are as follows: Zone I to VI with a total area of 85 hectares and Palanginan with 7,103 hectares. It is hemmed in by Botolan on the South, Palauig on the North, and China Sea on the West and mountain ranges on the East. It is described more or less oblong in shape.

Iba is centrally located in the province. Being the capital town, it is the seat of the provincial capitol. Although the town is located in the low area, destructive floods seldom ravage the place. It is also prone to typhoons because of its geographical location.

Unlike other towns of the province, Iba has a unique geographical feature for it lies between the sea and mountain ranges. The western section of the municipality of Iba is a gentle sloping coastline plain with elevations of 5-10 meters above the main sea level. Some 7 kilometers farther east, abrupt increases in elevation maybe seen. Hills and mountains with elevations ranging from 20-600 meters occupy this municipality.

The town, like any other town of the province, is blessed with a mild climate of two types: the rainy and the dry seasons. Iba's climate is no different from the other towns where rainy season begins from June and ends in September, while the dry season is from October to May. An average of 43.15 centimeters deep is noted with a temperature of 22 degrees centigrade is observed during rainfalls. The highest temperature experienced during this season is 24 degrees centigrade while the lowest is 19.18 degrees centigrade. A temperature as high as 35 degrees centigrade characterizes Iba.

Soil types vary from sandy to loamy. Sandy muddy soil can be found along the swamp lands. Sandy soil can be found in the coastal barangays, sandy clay loam soil which is prevalent in almost all barangays are suitable to rice, sugarcane and all types of vegetables. The presence of clay loam or red clay in Bangantalinga was noted, which is the future source of bricks and bricks - by - products of the barangay.

Mango trees abound in Iba, Amungan, San Agustin and Palanginan with an average yield of 11.0 mt per hectare. Lush vegetables and ricelands are familiar sights in San Agustin, Amungan, Bangantalinga, Sta. Barbara, Dirita-Baloguen and where vegetables like ampalaya, okra, eggplant, tomato and others fill the farm after harvest time

This town is easily accessible to Manila and Pangasinan by land transportation.

B. Masinloc

The municipality of Masinloc consists of 11 agricultural barangays and 2 non-agricultural barangays with a total land area of 30,600 hectares comprised of largely forest areas (76 %) and the rest are crop production areas (7.5 %), industrial areas (7.3 %), grazing and pasture areas (6.4 %). By area, it is approximately two-thirds mountaintop on the East extending to the Masinloc Bay.

The climate of Masinloc is like any other coastal town of Zambales where most of the time, the air is cool and invigorating to health. It has a pronounced dry and wet season. The dry season occurs from October to May and the wet season on the last week of May up to September. Typhoon that emanates from China Sea, though it rarely happens will be more destructive when it hits the town than that coming from the Pacific Ocean.

As of May 2000, Masinloc has a total population of 39,724 covering 7,790 households distributed among 13 barangays.

It produces agricultural commodities such as rice, rootcrops (sweet potato, ube, cassava and others), corn, fruits (mango) and vegetables.

Contractual Arrangements in Mango Production and Marketing

Product Description

Carabao mango or Manila Super Mango is one of the major fruits of the Philippines and it has contributed substantially to the generation of foreign exchange earnings. According to BAS (1999), fresh mango hold on to the 10th place among agricultural products exported in 1999. Hongkong was our number one buyer purchasing about $ 18.92 M worth of this commodity. Minor buyers were Japan ($ 12.74 M); Singapore ($ 0.45 M) and People's Republic of China ($0.34 Million).

As a tropical fruit mango is known for its rich, succulent taste and can be eaten raw or ripe or in processed form such as dried mango, mango juice or candies. Thus, it has gained popularity and is known as the national fruit of the Philippines.

Mango Production System

Mango farmers can be classified either **as backyard** or **commercial** growers. **Backyard** growers are those with 20 trees or less while **commercial farms** are those having more than 20 trees. Most growers in Pangasinan and Zambales operate on a backyard scale and practice contract foliar spraying of trees to maximize volume of fruits. They see to it that proper cultural and management practices are employed in the care of trees to prolong its productive stage.

Mango production consist of a series of activities starting from identification of mature productive trees for flower induction up to care of fruits, harvesting, sorting, packaging and final marketing. During the early phase of growth of the trees the farmer-grower performs activities such as irrigation, fertilization, pruning, weeding and other cultural management practices necessary to ensure good harvest of fruits. Table 2 below shows the details of farm practices done at each stage of mango production process to ensure maximum yield.

Table 2. Production System/Process in Mango Growing

ACTIVITIES	DESCRIPTION OF PRACTICES
Selection of trees	Only mature trees with dark green and brittle leaves are ready for flower induction.
Flower Induction	About 5 kg of KNO3 is dissolved in 200 liters of water to have a 2.5 % solution. The mixture is stirred continuously until a homogenous solution is attained. Trees are thoroughly sprayed to "run-off ." Second spraying is done 3 days after the first application to ensure flowering.
Care of flowers and fruits	Spraying of insecticide mixed with foliar fertilizer is done upon observing the appearance of buds, 7-15 days after first flower induction. Twenty milliliters of foliar fertilizer per 16 liters of water is mixed with 17 milliliters of insecticide per 16 liters of water. The application of foliar-insecticide solution is repeated at 7 days interval to prevent attack of insect pests and suspended only at full bloom stage.
Fruit bagging	Not widely practiced and if ever done only fruits at the bottom portion of the canopy are wrapped with old newspapers to provide physical barriers, preventing female flies from ovipositing on the fruits.
Safeguarding of trees	To avoid pilferage, guarding of trees daily for 24 hours is done when fruits reached tablespoon size.
Harvesting of fruits	The fruits are ready for harvest 125 days after flower induction (DAFI). The fruits are harvested by handpicking and by using picking pole.
Sorting, classifying and grading	Harvested fruits are classified as good and reject. Good fruits are those without blemish or stain. Fruits are sized as Super Small (SS), Small (S), Medium (M), Large (L) and Extra Large (XL).
Packaging	Fruits are packed in kaing (21kg) for local consumption, crates (25 kg) or cartons (12 kg) for export grades quality.
Marketing	Fruits are sold by size (SS, S, M, L XL) or assorted (123 /inverted packing mode).

Upon reaching fruit bearing stage mango farmers can choose between **own cultivation** (where farmer takes care of the growing and spraying of trees) and **contract growing**. In **contract growing** the performance of spraying and other production activities now rest on the contractor who is either a **lessee**, a **sprayer**, a **sprayer-trader** or a **contract buyer**.

Constraints such as limited capital to defray spraying and labor expenses caused farmers/tree-owners to engage in contract growing. Others identified the lack of technical know-how as the main reason for seeking the services of the contractor/sprayer. In all cases, however, the farmer sees to it that spraying of flower inducers and chemicals are not abusive to prevent early death of trees and avoid the occurrence of other pathological diseases. Contractors may also render fertilization of trees in case of long-term contract (usually 2-5 years), as this will enable them to recover whatever losses are incurred in the first fruiting. However, this is not common because it entails additional cost on the part of the contractors. In addition, most contracts are short-term, i.e., one season only. Renegotiation or repeat contract is done upon agreement of farmer and contractor which in the long-term leads to the "suki" (patron-client) relationship.

Types of Mango Contract Arrangement

This section describes the different contracting systems in mango production and marketing with due emphasis on input control, incentives, risks and revenue/output sharing.

Mango contract growing is a profitable enterprise in Pangasinan, Zambales and Nueva Ecija. These provinces are ideal sites for mango production considering their favorable climatic and soil conditions. The mango industry boomed in these areas when chemical flower inducers such as potassium nitrate (KNO3) were introduced and eventually gained acceptability and popularity. These flower inducers have solved the problem of seasonal fruiting or the biennial

characteristics of mango. Thus, this made possible the production of mango fruits almost throughout the year. Also, the use of other chemicals such as foliar fertilizers, insecticides and fungicides complements the effectiveness of these flower inducers. However, the use of these chemicals has increased production cost, thus reducing the additional profit derived from the increase in yield. Also, most farmer-growers lack not only the capital to finance production activities but also the skills in doing the tedious work of spraying. Subsequently, the rise in cost together with the farmer's lack of technical knowledge has encouraged the wide adoption of contract growing in mango. Moreover, owner cultivation has become unprofitable due to the rise in the cost of labor brought about by the specialized nature of work and the increase in off-farm opportunities.

Mango contract growing can be classified into three modes: i) Leasehold contract ii) Sharing scheme and, iii) Contract buying.

A. Leasehold contract with Sprayer-traders

Leasehold contract involves the leasing out of mango trees for a minimum period of one year in exchange for temporary ownership of the trees. This usually involves a written agreement especially for commercial farms (see appendix D for sample of contract agreement). The payment consists of a fixed amount of cash-rent given to the owner of trees normally upon the start of the contract or prior to the carrying out of spraying activities. The terms of payment begins with a downpayment of 50% to the farmer-owner and the remaining amount to be paid during the end of harvest period. The fixed payment may range from P 200.00 per tree for small sized trees normally less than 20 years of age to P 3,500.00 per tree for century old trees with big and wide canopy.

Since the contractor assumes temporary ownership of the trees, he is given full authority in managing the trees as well as in performing production activities such as spraying of flower inducers, insecticides/pesticides application, pruning, fruit bagging, safeguarding and harvesting of fruits with the help of hired laborers. The contractor shoulders all the risks involved in the production and marketing of the produce. These include adverse weather condition such as rain and insect damages. If necessary, they adjust spraying schedules or perform repeat spraying depending on the damage done on the crop. Spraying of trees is done 3x or more or until all the trees have bear fruits. Price variability in both inputs and outputs are likewise borne by the contractor. Since the farmer-owners do not share in the output, this gives the contractor full control over marketing of the mango fruits. Thus, according to contractors they prefer this kind of arrangement because they can exercise better control over production and marketing activities. However, this also induces contractors to adopt more risky techniques according to farmers. Thus, the tree-owners shoulder potential risks associated with deterioration of trees (non- fruit bearing or shortened productive life) or worst death of trees due to over spraying. Two farmer-growers in Nueva Ecija reported having experienced death of trees after entering into a leasehold contract with a foreign contractor. To avoid a repeat of the problem the farmers have shifted to the output-sharing arrangement. This is consistent with Basu (2002) who stated that sharecropping contracts may emerge as an optimal contract to discourage the tenant from choosing too much risk.

B. Output-Sharing Scheme with either Sprayers only or Sprayer-traders

Another type of contract arrangement in mango which is very popular is the output-sharing scheme wherein the farmer-grower shares in the output of the mango trees with the contractor who is either a **sprayer only** or a **sprayer-trader**. The **sprayer** is one who specializes

only in the care and management of trees particularly in the spraying of trees with the application of flower inducers and chemicals (insecticide, fungicide, foliar fertilizer) and gets his share of output as payment for his services. They are not involved in the buying of share (fruits) from the farmer. They sell their fruits to other traders in the locality. On the other hand, the **sprayer-trader** performs similar function as the sprayer but in addition he is also involved in the buying and selling of mango fruits. The sprayer -trader also takes care of the safeguarding of the subject trees as well as harvesting and packaging of mango fruits. The sprayer-trader shoulders all expenses that maybe incurred in the operation. The farmer may choose to sell or not his share of fruits to the sprayer who also acts as trader for mango fruits. For convenience however, most farmers simply sell their fruits to the sprayer-trader.

The common sharing schemes in the study areas are 50:50 wherein farmers share 50 % of the total harvest or gross sale of fruits (if he choose to sell his share) and the remaining half goes to the contractor while in the 60:40, the contractor gets a slightly bigger share of 60 % and the remaining 40 % is shared to the farmer-owner of trees. The sharing ratio depends on the location of the farm, the age and number of trees owned. Usually, the contractor gets a larger share when the production environment becomes unfavorable or when the location of the farm is too distant and his capital infusion becomes greater than normal cost. Under the output-sharing arrangement both farmer and contractor share in the inherent risks in production and marketing stage.

In the province of Iloilo, sharing scheme was also observed since growers are mainly small scale, owning two (2) to ten (10) mango trees and most mango farms are rainfed. There are some large-scale mango farms especially in Guimbal, Leon and Balasan, which tend up to fifty (50) trees. One respondent in the province of Guimaras, however, reported having planted 2,800 trees but currently, only 600 trees reached maturity due to human intervention. Contractual

arrangements happen primarily on the spraying and marketing side. The owner of the mango tree usually does nothing in the process except the planting of the tree, guarding it from human interventions (robbery, woodcutting) and weeding. The owner considers these activities trivial and does not put monetary value on them. When the tree matures, sprayers would contract the owner to spray the trees with flowering formula (such as “mangoton”), and then about a week later, with insecticide. Insecticide spraying is usually at the prerogative of the sprayer, who assesses the condition of the plant especially in terms of pest infestation. During harvest time, the sprayer gets ¾ of the gross sales while the owner gets ¼ of the same.

C. Contract buying scheme with traders/exporters

The third type of contract in mango is the contract-buying scheme with traders or exporters. Here the contract buyers do not provide spraying services nor are they involved in any production activity. They specialized only in marketing by simply buying the mango fruits from the farmer-growers (these are those farmers who have opted for own cultivation and spraying of mango trees or may have asked the services of a sprayer only). The contract buyer, usually seek the services of commission agents (ahente) to communicate with the farmer-grower at the beginning of the fruiting stage or at harvesting season and provide cash advances or marketing services (such as transportation and packaging including crates and boxes) to tree-owners. The buyer makes sure that all the fruits are sold to him at a predetermined price (based on the prevailing market price) that is acceptable to the farmer/tree owners. Aside from farmers, the contract buyer may also deal with sprayers and sprayer-traders especially if he has to satisfy a big volume quota with an exporter. Some contract buyers may get cash advances (ranging from P 50,000.00 to P 200,000.00) from an exporter in exchange for a guaranteed supply of mango fruits. In this scheme, the farmer-grower bears the production risks while minimizing marketing

risks with a sure market outlet provided by the contract buyer. The contract-buyer faces the risks associated with marketing of fruits such as perishability or quality deterioration, size variability of fruits and output price variability.

Contract buying arrangement for mango in the Visayas is very similar. Particularly during harvest time in Iloilo, middlemen (agents) roam around areas with mangoes and offer contracts with tree-owners to purchase mango fruits. When tree-owner and agent agree on the price offered (the price was actually given by the contract buyer and was estimated in consideration of the prevailing market price), the middlemen will call for the contract buyer who agrees to purchase all the fruits of the trees. Price ranges from P8/kg to P30/kg. The contract buyer shoulders all transportation costs. The middleman gets 1-2 pesos per kilogram of fruits as commission. The contract buyers then sell the fruits to wholesalers in the different town markets or to processing factories in Cebu. There is one processing factory in Guimaras but none was reported in Panay.

One respondent in Guimaras reported that marketing of his mango was contracted out to a private company. The company exports mango to Hong Kong and the U.S.A. The contract was aborted in the late 90's due to mistrust with the marketing firm. The respondent claimed that the marketing firm deliberately allowed the rejection of the products by the Japanese Embassy apparently due to suspected pest infestation.

Figure 2 below shows the production and marketing flow of mango (adopted from Mamaril et. al, 1993).

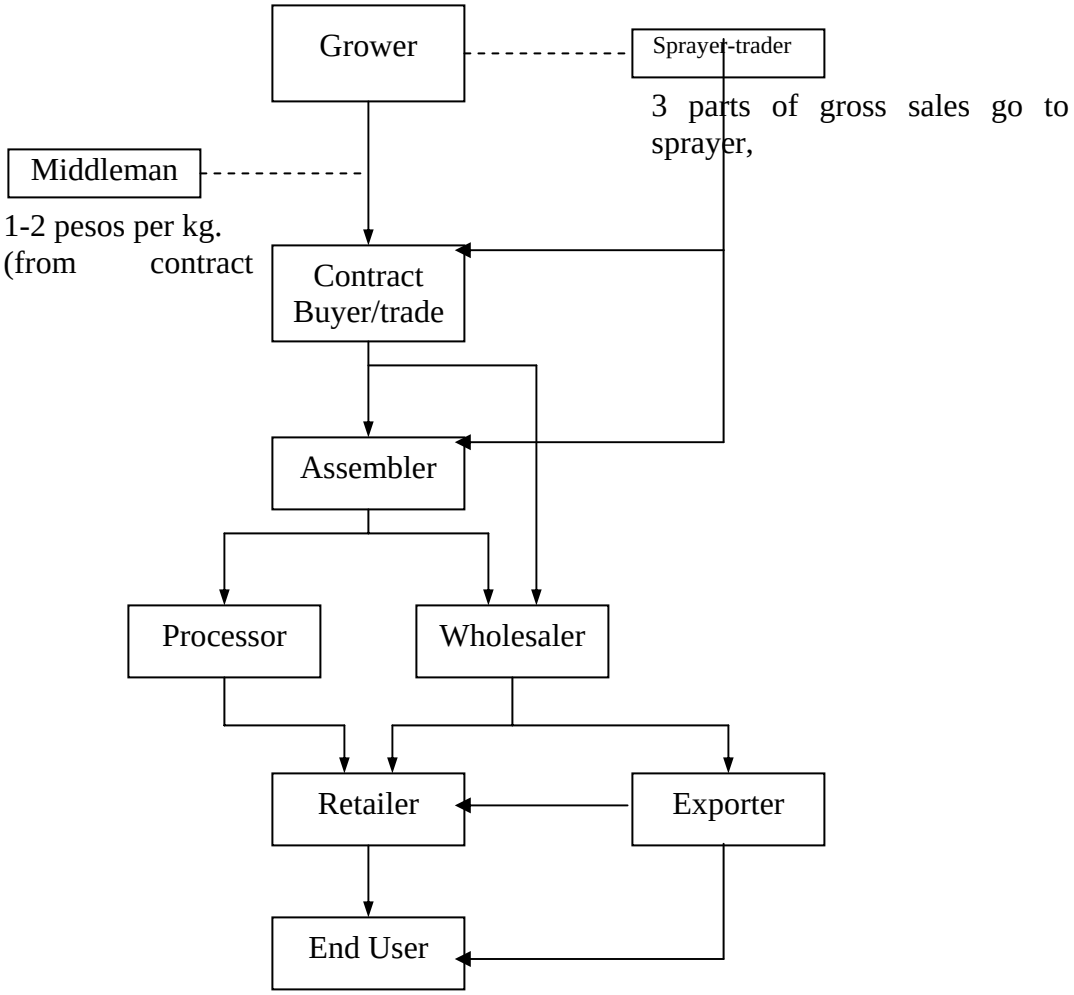

Fig. 2. Production and Marketing Flow of Mango

Another respondent from Guimaras is a contractual supervisor. He is an expert in farm management especially in pest control. He gets 75% of the gross sales and 25% goes to the farm owner. He shoulders the costs and takes charge of hiring of labor and marketing. He is currently supervising 5 contracts on lots of different ownership.

Reasons for engaging in Mango Contract Growing

The farmer-growers cited several reasons for engaging into mango contract growing specifically: mango is a profitable business and thus, a good source of income, lack of capital and equipment to undertake mango production activities by himself such as spraying, lack of technical knowledge in spraying mango, inability to perform rigorous production and supervision activities due to old age and poor physical condition, lack of workers to do the spraying, lack of time for those employed or engaged in other businesses and difficulty in marketing of fruits.

On the other hand, contractors engaged into mango contract growing primarily because of good profit, there is no need for them to own land and trees as long as they have sufficient capital for spraying, harvesting and other needs. Some are also engaged in related businesses such as agricultural supply hence, the integration of mango contract spraying is suitable.

Factors considered in Mango Contract Growing

Farmers and contractors likewise identified factors important to mango contract growing. These include location of farm, type of farm, age of trees, number of trees, types of trees, mango varieties, availability of workers and transportation.

Location of farm. Farms that are located along roads or near the highways are preferred by contract buyers because it facilitates transport and hauling of mango fruits especially during harvesting season. The sharing scheme between contract buyers and farmer-growers varies with the distance of the farm from the trading post or town centers. The share of the farmer-grower diminishes with distance i.e., those located in remote areas get lesser share. Peace and order condition is also a major consideration in choosing farm location for contract growing. The relatively peaceful and safe places become advantageous to both the farmer-grower and contractors. The contractor demands greater share where there is peace and order problem and

when incidence of pilferage is high such as in far-flung barangays and in the mountain areas. Farm must also be located where there is good source of water as this is essential in spraying activities.

Types of farm. Contractors prefer farms that are compact, as this will minimize cost in spraying and harvesting activities. Likewise, safeguarding of fruits and monitoring is easier for compact farms. However, contractors who need to satisfy certain quota for volume of production may also contract out with farms that are scattered as long as there is sufficient number of trees to be sprayed on to guarantee profit. The most predominant planting distance for mango is 10 x 10 m in straight row planting. Experts however, recommend either 15 x 20 or 20 x 20 m to avoid overshading of trees.

Age of trees. Trees that are mature and fruit bearing are chosen by contractors to ensure good fruit bloom. Century old trees are known to give greater and better yield than younger trees. On the average, grafted trees bear fruit after 3 years while those that are seeded bear fruits between 7-8 years. Mature trees are those with dark green and brittle leaves and are responsive to flower inducers. Immature trees are not fit for spraying and are marked for the next spraying period.

Number of trees. The more trees a farmer have, the more labor cost effective it becomes to manage hence contractors prefer those with 100 or more trees per farm. The share of the farmer becomes greater as the number of trees being maintained in the farm rises. Sharing scheme becomes advantageous to the grower as his number of trees increases.

Table 3. Types of Mango Contract Arrangements

Type of Contract	Sharing Scheme	Description
Leasehold contract	Fixed per tree	Under this agreement, there is no sharing of output involved between contractors and farmers. The farmer only leased out his trees for a certain period of time in exchange for a fixed amount of money or rent which is usually paid in cash by the contractor at the beginning of the season. The lease contract usually lasts for an average of 1 year to enable the contractor to recover expenses in case of losses during the first fruiting season. The lessee will then become the temporary owner of the trees. This usually involved a written agreement for large-scale farms. In the case of small-scale farmers/lessors with an average of 20 trees planted usually there is no written agreement signed.
Output Sharing scheme	50:50 or 60:40	This means that 50 or 40% of the Gross Sale or total harvest goes to the farmer or the owner of the trees while the remaining 50 or 60% goes to the contractor. Contractors usually give or pay the share of the farmer after the harvest period. There is no fixed duration of contract under this agreement as long as farmers are willing to contract out their trees. Sprayer or Sprayer-trader intermediaries provide spraying services to the growers. They do not own the trees but shoulder all the expenses involved in the spraying and production of mango. Depending on the agreement made sprayer-traders also buy the farmer's share of fruits apart from the share they obtained as payment for their spraying services. They take charge of harvesting, packaging, transporting and selling of fruits. Sprayer-traders shoulder all the risks involved in the production and marketing of the produce. These include weather problems and insect damages to which they adjust spraying and/or practice repeat spraying depending on the damage done on the crop. The contractors provide the hired labor utilized in mango farming. Some contractors maintain permanent laborers. The usual payment is 5% of the gross income share of the contractor in mango. Workers are being paid on installment basis. After marketing of the fruits, all the cash advances incurred by the laborers will be deducted from their share (5% of gross income). The remaining amount is given in cash to the laborers after marketing all the fruits. Farmers who availed of contract spraying of their mango trees have nothing else to do but to wait for their share of fruits at harvest time. However, they see to it that the contractors do not abuse their trees. Among the farm activities, irrigation, weeding and pruning are participated in by some farmers to help the contractors. Farmer-growers utilized family labor in the performance of their tasks.
Contract buying	Per kg payment based on size of fruits	Contract buying is another form of contract agreement in mango. Contract buyers do not provide spraying services to the owners of the trees but specialize only in buying the fruits. They roam around in different areas and contact the producers of mango before harvest time and offer price based on prevailing market price for different sizes of fruits. They also provide the materials used in harvesting and packaging. Advance payment is done before the harvest period to ensure that the fruits would be sold to them.

Types of trees. Grafted trees bear fruit earlier than seeded trees, hence are preferred by growers because they can reap early returns from their investment. However, grafted trees have shorter life span than seed-propagated trees. Grafted trees are preferred but unavailable due to limited seedling propagators. Seeded trees have sturdy trunk, profuse branching, and more stable root system resulting to longer productive life. Replanting is done to replace old, non-fruit bearing mango trees and those varieties that are undesired.

Variety of mango fruits. Carabao mango is the most widely accepted mango fruit variety as they are suitable for export and local consumption. A mature “carabao” mango fruit is oblong, asymmetrical in form, with rounded base and a more anterior shoulder. It has a tender and succulent flesh with delicate flavor. Other mango cultivars include indian mango, piko, pahutan, bioco and apple mango which are suitable only for domestic or local consumption hence, less popular.

Availability of workers. Mango contract growing requires a considerable number of workers to do the spraying and harvesting activities. These entail hiring of permanent workers as well as casual/hired labor. Permanent workers need to be trained in order to develop good skills in mango production and facilitate uptake of technologies. Casual laborers on the other hand, are hired especially during peak of season to supplement permanent labor. Workers that can climb trees are paid higher than those who do the ground activities. During harvesting, the classifiers are also paid higher than those who do the usual packaging. Only male workers do the spraying activities while female workers maybe hired in packaging or sorting of fruits.

Availability of transportation. Contract buyers and sprayer-traders must provide transportation vehicles such as jeep, truck or elf in hauling equipment and inputs during the production stage as well as in transporting fruits during harvesting period. Fruits are brought to

buying stations or exporters or shipped out to Metro Manila and other areas for wholesale and retail distribution.

Efficiency & Equity Issues: Incentives, Output Control and Risk Sharing

In a world with complete markets, a risk neutral intermediary ought to insure risk-averse producers against all idiosyncratic risk, as it would be costless to do so (Wilson, 1968). Moreover, an efficient contract between grower and intermediary would make the grower's compensation depend on profits realized by the intermediary, and not on prices or production (Hueth and Ligon, 1999). Under the assumptions of perfect markets and no risk, an efficient incentive system requires that the contract holder be the residual claimant to the output (Varian, 1993). Such an arrangement would induce the contract holder to produce the optimal level of output where the marginal product of the worker's extra effort equals the marginal cost of applying that effort. Given these assumptions, owner-cultivated and fixed-rental tenancy should thus result in an efficient resource allocation (Ahmed, et. al., 2002).

Based on the above premise, sharecropping would result in an inefficient allocation of resources as well as reduced incentives to improve agricultural productivity because the sharecropper receives as marginal revenue only a fraction of the value of his/her marginal product of labor or other inputs at the optimum level.

In so far as mango production is concern, sharecropping is the most predominant mode of payment for contract growing/spraying. Contract growing/spraying provides a cushion for mango farmers/growers with financial constraints, limited time or inadequate knowledge on cultural practices. Activities undertaken by farmers during production are limited to smudging, pruning, weeding, irrigation, fertilization and safeguarding of trees. On the other hand, the contractors perform the more specialized production activities such as flower induction, pruning,

deblossoming, foliar fertilization, pest control, fruit bagging, safeguarding of the trees, harvesting and marketing. Contractors are concerned with ways to maximize volume of production and profit. On the other hand, growers need to be assured of proper cultural management practices to prolong the productive life of their mango trees.

Output sharing of mango fruits ensures marketing outlet and guaranteed returns to farmers. Contractors on the other hand, exercise input control to minimize costs and risks. Contractors try to maximize profit through expansion of volume of production by maintaining multiple contracts with various tree-owners during the peak of season thereby achieving economies of scale. The common output sharing schemes for mango are 50:50, 60:40, or 70:30 in favor of the contractor or buyer who gets a bigger share (50 – 70 %) of the total harvest of output or gross sale and the farmer received a lesser share (30 – 50%). The share of the contractor even gets larger for farms that are fragmented, with only a few trees, and those that are located in distant places. Conversely, the farmer gets better share for century old trees, farms that are compact and secured, and those with easy access to water and transport vehicles.

Production risks such as rain, pests and diseases and price risks due to variability of input and output prices are all borne by the contractor. Through contract growing, farmers are able to insulate themselves from these kinds of risks. But, the grower share in the risks associated with price variability of output under the output-sharing scheme.

Conversely, under the leasehold contract, except for the risks involved in case of deterioration or death of trees, which the farmer faces, all risks are borne by the contractor. Non-renewal of contract for the next season and payment of penalties depending on the age of trees are imposed on the contractor in case of death of trees due to abusive or improper cultural and management practices (for details see Appendix D for sample of mango contract). The

occurrence of death of trees was noted in particular under the leasehold contract wherein a fixed amount of rent per tree is paid to farmer-growers in exchange for temporary ownership of trees. This observation is congruent with Ghatak and Pandey (2000) who stated that in the presence of limited liability, high powered incentive contracts such as fixed rental contracts will induce the farmer to adopt techniques of cultivation that are too risky from the point of view of the landlord. The leasehold contract being fixed price eliminates nominal price uncertainty for farmer-growers, but may create financial risks for both of them as relative prices of inputs and outputs changes. Basu (2002) showed that sharecropping contracts may emerge as an optimal contract to discourage the tenant from choosing too much risk.

Over-all, given the uncertain conditions surrounding the agricultural sector, sharecropping has emerged as a superior form of contract in mango production. Contract spraying and sharecropping in mango was perceived as the "second-best" efficient mode of production in the presence of farmer's lack of technical skills to do the specialized production activities and the lack of capital to purchase inputs and pay labor wages. Although the farmer-grower gets only a fraction of total produce instead of the entire output, he sees sharecropping as a way to maintain his livelihood. The contractor on the other hand, who has some capital, engages in contract growing to earn income plus a chance to increase his profit by achieving scale economies of operation thru multiple contracts with different tree-owners. Thus, risk sharing becomes an important motivation for the wide acceptability of sharecropping system in mango production and marketing.

An equal sharing of output (50:50) remains as the optimal distribution for growers who provide the land and the trees while the contractors provide the operating capital and technical skills.

Contractual Arrangements in Swine Production and Marketing

Product Description

The center of growth of the livestock sub-sector of Philippine agriculture is the swine industry, which accounts for 80 percent of the sub-sector' gross output. Being the biggest and the most organized industry among the local livestock industries, the swine industry provides opportunities to Filipino entrepreneurs and creates employment, especially in rural areas where arises almost 77% of the total inventory in the country. The annual per capita consumption of pork in 2001 was 13.35 kg per year excluding offals and processed meat (Swine Industry Performance Report, Jan. – Dec. 2001).

With an increasing population, the demand for pork does not at present show any leveling inspite of the development of poultry meat as a potential substitute. However, swine production is becoming costly, as feeds, which constitute almost 70% of the cost of production, is increasingly becoming more expensive. Ways to cut on costs have been instituted to make pig farming more profitable. One strategy is to develop production and market modules such as hog contract growing, which provides good stocks and feeds and provides an assured market of the produce of hog raisers. Hog contract growing is a scheme whereby a grower enters into contract with an integrator or contract buyer for the purpose of growing hogs up to marketable age and in return received a fixed payment rate plus additional incentives in case of good performance.

The types of production system in hogs are characterized hereunder.

Swine Production System

Swine can be raised both under backyard or commercial scale. Backyard production entails raising of pigs 20 heads or less primarily as a source of additional income and to meet

emergency needs. Commercial scale of production is largely for income generation and requires significant investment in housing and operating capital.

Success in hog production depends mainly in the growth performance of the animals. Usually, this is influenced by several factors such as type of breed or strain, feeding practices, and effectiveness of the healthcare and cultural management practices adopted by the farm. Whatever type of farm, the production process in hog production follows that of fig. 2 below. Growing of hogs up to marketable age weighing 80 kg more or less requires 120 to 150 days.

A. Backyard Raising

Small-scale or backyard hog raisers are an important segment of the hog industry. Almost 80 percent of the total swine production in the country is in the hands of the backyard producers. Many of the raisers' farms are located in their backyards and may even reached medium-scale operations, with sow levels ranging from six to 20 heads. Backyard swine raising involved the growing of pigs for specific needs and proceeds of pork sale is used for purposes such as tuition fee payment, food for special occasion, emergency needs, travel or as a secondary source of income. Most backyard raisers are independent growers with limited capital thus, animals are finished poorly, and reaching the market age quite delayed due to poor genetics. At market age animals are sold on a per head basis known as "bultohan" usually through a middleman, trader or meat wholesaler-retailer. Oftentimes, raisers choose to slaughter animals at home and retailed in fresh warm meat portions to neighbors, relatives and friends payable during payday for those who are employed in offices or at harvest time for those who are engaged in farming.

This piggy-banking system of production will remain as the dominant production scheme considering the constraint in capital of small households.

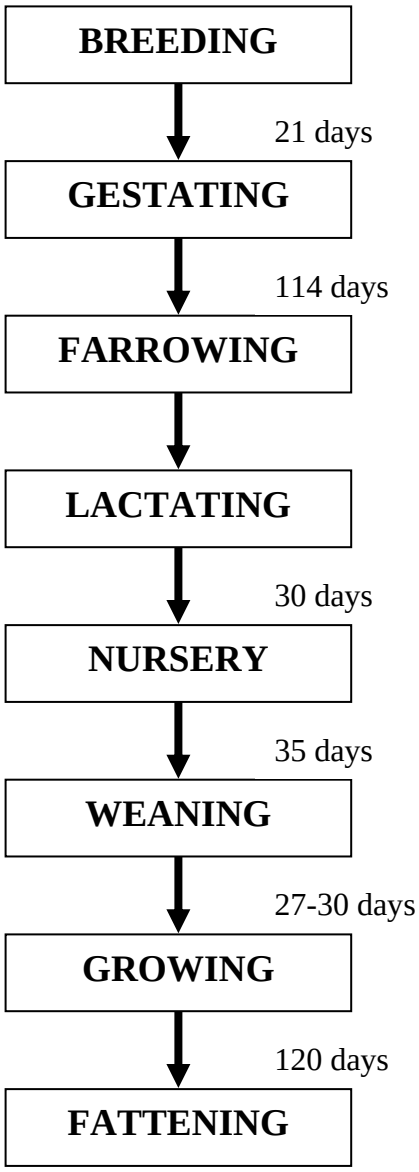

Fig. 3. Production Process Flow for Hogs

Table 4. Production System in Hog Growing

PARAMETER	BACKYARD	COMMERCIAL
Organization	Not organized, limited resources, low efficiency	Technically and resource-ready
Herd size	20 heads or less	more than 20 heads
No. of sow level	1-5; 6 to more than 20 for medium scale	Varies from 1000 up to 120,000 sow level for large scale pig farms integrated with commercial feed mills
Breeder Stocks	Native/country pigs, mixed breeds	Own/self/imported purebreds
Housing	Bamboo, wooden slabs and nipa concrete with roofing, tied animals under house or in trees	Elaborate concrete housing facilities and strictly follows integrator's specification.
Purpose of raising	As piggy banking to meet emergency needs, tuition fee, food for special occasions.	Profit or income oriented; practices genetic improvement and breeding program.
Breeding performance	low reproductive performance, Long farrowing interval, low litter size, low conception rate	High reproductive performance, short farrowing interval (57 days) average litter size of 9 or more,
Boar services	Boar for hire	Own boar/ artificial insemination
Feeds	Own feeding, cooked feeds, kitchen refuse, high energy ration, crop by- products	Commercial feeds, formulate their own feed ration, imported
Veterinary and health; Technical services provider	Inadequate veterinary facilities., prone to disease outbreak, uses commercial veterinary drugs; seek govt. veterinary services	Imported medication; maintains own veterinarian and/or private consultant, with adequate veterinary facilities.
Mortality rate	High mortality	Low mortality
Support services	Government/LGU's	Drug companies
Buyer	Middlemen/traders	Integrator company/contract buyer
Unit of selling	Per head (bultohan)	Per kg live weight
Pricing	Low usually per head	High usually per kg live weight
Quality of meat	Low quality, fatty meat; caters to public wet markets	High quality cuts and more lean carcasses; caters to supermarket and malls
Water disposal	Compost pit, discharged through river banks or canals leaving the waste in the areas or surroundings, septic tank	Biogas digester, waste disposal system

B. Commercial Swine Production

A hog farm is considered commercial if herd size reached more than 20 or may have 1000 to 120,000 sow level for large-scale pig farms integrated with commercial feed mills. Commercial farms are highly organized, technically and resource ready to produce pigs with high average daily gain in weight (0.492 kg), with excellent feed conversion ratio; thin backfat (1.2 cm); good carcass quality (high percentage of lean meat); high dressing percentage; long carcass and a superior loin eye.

Commercial hog growers demonstrate high production efficiency and are keen on integrator type of contracts described below.

Types of Hog Growing Contracts

A. Contract Growing with Integrator or Processing Company

Contract growing plays a significant role in swine production. One type of contract that is frequently observed in broiler and swine production is an integrator contract, where an integrator company writes a contract with an independent farmer (grower). The contract binds the farmer to specific production practices predetermined apriori by the integrator based on technologically accepted performance standards. Integrator companies offer many types of contracts but all types provide two elements. The first element is the division of responsibility of providing inputs and the other is the method use to determine growers' compensation. Under this scenario, hog contract growing is supposedly more profitable because it provides a higher standard of housing, equipment and feeding management as stipulated in the contract agreement. Here all the materials necessary for efficient swine production such as feeds, medication, technical services are provided by the integrators including the piglets to be grown.

Typically, an integrator owns and operates a breeding farm, feedmill, processing plant and transport vehicles for hauling of feeds and live animals. The firm also decides on the volume of production, the number of batches and the specifications (capacity) of the technological unit (farm).

The contracting grower who maintains, manages and operates the enterprise provides the housing, labor, and utilities such as water, and light, feed bodega, piggery equipment and other facilities. The grower must also have the necessary training, knowledge and experience to undertake hog production. He must also secure business licenses, permits and performance bond in the amount of P400 per pig prior to signing of a written contract. The agreement is usually for a period of 3 years renewable upon mutual consent of integrator and grower.

The production process starts with the delivery of about 400 piglets usually 22 kg in weight to be fattened within 180 days or 26 weeks. Hogs must reached the desired weight of 85 kg to entitle the grower his basic fee of P 2.00 per kg for the first 85 kg and in addition received P2.00 per kg above 95 kg per head harvested. Premium pay is also granted based on farm's performance as measured by the parameters feed conversion ratio (FCR), average daily gain (ADG) and quality of carcass or meat. Farm personnel also receive incentive pay in the form of performance bonus premium based on the overall performance of the farm. On the contrary, a penalty is also imposed if the farm fails to achieve the set production standards for FCR (3.20) and mortality allowance (1%). The grower may avail of cash advances from the integrator during the 30^{th}, 60^{th} and 90^{th} day of the cycle, which is deducted from the total grower's fee at the final liquidation or end of the cycle. Growers are also accountable for feeds, veterinary medicines, equipment and other facilities furnished by the integrator, all of which are covered by trust receipts. The integrator does the weighing, hauling and marketing of hogs. This scheme

assumes lesser production and marketing risk for the farmer grower because of highly supervised production activities and assured market outlet.

B. Buy-back Contract Scheme with traders or feed suppliers

Another form of hog contract growing has evolved at the backyard level usually with a hog trader or middleman. The production process involves the delivery of 10 – 25 heads of fully vaccinated ready to grow piglets to the farmer-grower who is willing to provide housing, labor, water and light utilities and raised the pigs for 120 days (4 months) more or less. The trader or contract buyer provides the feeds, approximately 4 bags per head delivered or picked-up on staggered basis depending on the request of the farmer. The grower may also request for cash advances as the need arises. The contract buyer has the exclusive privilege of marketing (buying-back) the produce at prevailing market price or maybe higher by one or two pesos per kilogram liveweight. This kind of arrangement ensures the trader/middleman a steady supply of animals for trading or slaughtering.

In this mode of contract, the 50:50 and 60:40 sharing schemes are the most prevalent arrangement wherein a farmer-grower shares 40-50% of net income after all expenses (feeds, cash advances and cost of piglets) have been deducted while the remaining portion goes to the contract buyer. There are no technical performance standards to be met by the raiser under this contract scheme as long as he delivers the output to the trader. In case of death of animals, the amount is deducted from the gross sales prior to the sharing of net returns.

In some cases, the farmers provide his own piglets, the sharing scheme becomes 80:20 in favor of the farmer-grower while the contract buyer takes care of the feeds and marketing aspect of operation.

Recently, feed manufacturers have also initiated production contracts with independent hog growers to boost sales of feeds. Under this scheme, feed manufacturers supply feeds and piglets, provide technical and marketing assistance thru trainings, seminar and veterinary health services on hog production to farmers free of charge. These kinds of extension services are commonly coursed through farmers' cooperatives or non-government organizations (NGO) in the locality. Feed companies also offer 10 – 20% discounts for purchases of big volume of feeds, which benefits both the contract buyer and grower arising from the reduced feed cost. Under this arrangement, farmer's net profit share may ranged from P500 – 1,500 per head depending on the prevailing market price per kg liveweight of the animals. Empty sacks of feeds can be sold at P5 each and provides additional revenue to farmer-growers.

In some cases, contract buyers may opt to provide only the piglets to the growers. This is simply called "paalaga" system. When animals are sold, the grower will reimbursed only the cost of piglets which is more or less P 1,200.00 per head. The grower could sell his output to any buyer who would offer the highest price bid.

Efficiency and Equity Issues: Incentives, Output Control and Risk Sharing

In the integrator type of hog contract growing, the firm controls the marketing and production management decisions in the farm to ensure best quality of output. This kind of contract was introduced by the firms (integrators) themselves to assure timely delivery and maintain high quality and safety standards for processed meat products. In return, the grower is assured of a guaranteed price for his output plus incentives based on technologically determined performance standards set a priori by the integrator. Likewise, penalties are imposed in case of failure to meet targets or desired output size or weight, feed conversion efficiency, average daily gain and mortality or livability rate. The basic fees assure the grower of a minimum guaranteed

income while the premium payments and performance bonuses encourage the grower to improve further his productivity. Thus, in this type of contract, the grower's income is made to depend in some fashion on the consequences of his efforts. This provides incentive to the grower to carry out his work efficiently. However, since the product of his work depends not only on his own action but also on the inputs provided by the company as well on certain factors beyond his control, this renders grower's income variable. An optimal contract should seek a balance between providing work incentives for the grower and lessening his exposure to risks.

Both the integrator and farmer-grower share in the output of the farm and in risk-taking at the production and marketing stages. The grower shoulders most of the production risks as he invests in hog pens and capital equipment while the integrator bears most of the marketing risks due to changes in relative prices of inputs and outputs. Indeed, contracts are a strategy for firms to displace resulting risks and costs onto growers, while at the same time inducing an expert-based rationalization of production. Moreover, repeat contracting would be beneficial to the firm as this would provide a means of capturing expert knowledge among reliable growers with familiarity of the firm's processing requirements (Prudham, 2002).

In terms of efficiency, since grower's income depends on his action, he has incentive to carry out his effort efficiently. But some growers interviewed under this mode of contract mentioned that compared to independent growing system, farm profit is lesser or reduced under this scheme. Accordingly, the payment they received is just enough to cover cost of labor and investment (housing and equipment) as the firm has control over prices of both input and output. Likewise, decision-making as to farm management is very limited on the part of the grower and his movement in the farm largely restricted because of the presence of a firm's technical supervisor who strictly implements and monitors daily farm activities. Nonetheless, this

arrangement provides opportunity for them to ensure continuous production and thus recovery of their investment in the long run. Farm operation maybe carried out without the need to worry about availability of operating capital. But it was mentioned by the growers that integrators somehow introduces production uncertainty to the farm by way of introducing unknown feed mixes and new untried genetic stocks or breeds of animals. The farmer-grower simply accepts whatever feeds and animals delivered to the farm by the company. Thus, farmer-growers are made to bear income risk due to variability in the inputs assigned to them by the integrator. Nevertheless, being risk averse, the growers prefer a certain guaranteed income to an uncertain one. Indeed, one of the main purposes that contracts serve is to provide insurance to risk averse growers. But the integrator cannot provide full insurance to the growers, meaning that payment schemes cannot be independent of realized output, because it cannot observe the grower's efforts completely. Tsoulouhas and Vukina (1999) stated that with a fixed performance standard, unlike with a tournament, the grower's payment is not fully immune from common uncertainty because of pre-determined performance standards.

Overall, the integrator type of contract, although it is incentive inefficient because of the presence of production uncertainty and restricted participation of growers, would still be best for commercial growers who find difficulty in raising capital and lacks the technical expertise to undertake specialized type of production. High quality products and assured income for growers and stability of production are among the advantages offered by this type of contract.

In the buy back scheme, growers are insulated from the imposition of penalties in case of failure to meet desired performance standards thus, quality of outputs and income are usually low hence, likewise not efficient. Nonetheless, for small households, this "piggy banking"

scheme would offer “second best” alternative to utilize family labor, meet subsistence needs and provide livelihood.

Contractual Arrangements in Rice and Vegetable Production and Marketing

Product Description

A. Palay/Rice

Palay or rice is the primary crop grown both in Northern and Central Luzon region being the country's staple food. These two regions provide most of the milled rice requirements of Metro Manila and nearby areas. Palay production in these areas has basically two cropping seasons: the wet or main crop and dry or second crop. The wet season or main cropping season starts from May to June with harvesting done in October to December while the second or dry season crop starts from December to January with harvesting from March to April.

According to NFA, Filipinos consume 103 kilos of rice per capita per year. Considering the cheapest price of P14 per kilo (NFA rice), the average Filipino spends about P1,442.00 per year on rice equivalent to P8,652 for an average Filipino household of six. This makes rice an important commodity for all.

B. Vegetables

Vegetable production in the Philippines is logically fragmented small-scale wholesaler farming rather than market oriented farming. Vegetables are usually grown as secondary crops to rice and other agricultural products. There is, however, a concentration of vegetable production in regions such as the Ilocos, Central Luzon, Southern Tagalog, Northern Mindanao, and Central Visayas. Benguet is the major producer and supplier of temperate vegetables in Northern Luzon and Metro Manila.

Vegetable production, which accounted for 52.99 percent of total agricultural output, grew by 2.58 percent in year 2000 (BAS 2001). Vegetables are high valued crops, and tend to be given large amount of fertilizers and chemicals.

Nutritionists recommend that people eat at least 300 grams of vegetable everyday. Many developing countries cannot meet even one half of the recommended level thus, resulting to micronutrient deficiency. In the Philippines, consumption of vegetable per capita is 209 grams per day, which do not meet the nutrient requirements per day. Taiwan and Vietnam had higher per capita consumption with 510 grams per day and 348 grams per day, respectively.

Lowland vegetables include eggplant, tomatoes, ampalaya, onion, garlic, squash, gourd, cucumber and leafy vegetables such as pechay and mustard. This study focuses on contract growing schemes commonly observed in these crops.

Rice Production System

Rice cultivation starts with seedbed preparation at the beginning of the season usually done in a 400 m^2 area for one hectare farm. The area is divided into 10 or more plots where seeds are broadcasted evenly. Seedlings are fertilized 7 - 10 days after sowing (DAS) and 4 – 7 days before pulling (approximately, 18 – 21 DAS). Land preparation activities consisting of repair of dikes, plowing and harrowing (2-3 times) ensue. After 25-30 days, pulling and bundling of seedlings is done a day before transplanting. Direct seeding is another method of crop establishment which is often practiced during the dry season when there is better control of water, otherwise, transplanting is preferred by farmers. After transplanting or seeding, crop care activities which involve replanting, herbicide application, fertilization (side-dressing and top-dressing), spraying of insecticides or pesticides, irrigation/water management, weeding and rouging is done to ensure good yield. Harvesting of crops is ready 90 – 110 days after transplanting (DAT) for short maturing varieties. Threshing, hauling and drying of palay are done immediately after harvesting. Drying of palay to 14 % moisture content is necessary before

storage or marketing of produce to command a higher price. Table 7 shows the complete list of production activities for rice farming.

Vegetable Production System

Vegetable production is normally done in between rice cultivation for most farming areas. In rainfed areas, vegetables are planted during the dry season when water supply is limited. However, for commercial farms vegetable production is done whole year round consisting of 4 –5 different kinds of crops..

Vegetable producers in the Philippines can be classified as home gardener, market gardeners, truck farmer, farmers growing for processing, forced vegetable grower and seed producers. How they are classified depends on how they produce or market their crops (Rasco, 1988).

Vegetable production process (shown in table 5) starts with the sowing of seeds in nursery beds or directly into prepared beds in the field where the seedling thrives and later transplanted. Seeds are broadcasted and slightly raked into the soil. Irrigation is required to maintain constant plant growth. Complete fertilizer is applied before sowing and transplanting while nitrogen topdressing is frequently required to obtain full crop development. Higher yields maybe obtained with good cultural methods.

Processing adds value to vegetables. Vegetables for processing are harvested once but their demand is year-round. The entire crop is picked and processed within a short period. Materials for such products have to meet definite standards of quality, so vegetable rejects from the fresh market cannot be used. This is commonly done for cucumber and tomatoes.

Backyard vegetable production is characterized by high degree of heterogeneity, small-scale nature of production, direct marketing and perishability and unpredictability of output. The

small amount of output is sold at nearby markets, retailer or directly to consumer, with limited bargaining power and disaggregated market (see table 6 for details).

Commercial production usually entails integration of 4 or 5 vegetable crops for whole year round production. Produce is sold through middlemen either after harvest or under pre-harvest contract arrangement, or to central wholesale markets or simply wholesale markets. Selling commission of middlemen and transportation costs are usually deducted from proceeds of sale.

Table 5. Production Practices in Vegetable Farming

Cultural practices	**Description of practices**
Land preparation	Using small and big machines such as rotavator and handtractor
No. of plowing	1 to 2 times per cropping
No. of harrowing	1 to 2 times per cropping
No. of furrowing	Once per cropping
Planting method	Direct sowing and broadcasting
Fertilizer application Type of fertilizers Method of application Frequency of fertilizer application	 Complete, Urea/Nitrogen Basal, top dressing 1 to 2 times per cultivation
Chemical application Type of chemical Method of application Frequency of chemical application Time of chemical application	 Commercial Spraying, Several as needed 10-15 DAS and 2 to 3 days interval thereafter
Sources of irrigation	Pump
Type of weeding Frequency of weeding	Manual, chemical application 5 times
Method of harvesting No. of harvesting	Manual 1 to 4 times a week
Crop duration	3-5 months
Processing	Varies with the kinds of vegetables; 2 months for cucumber

Table 6. Production System in Vegetable Farming

Item/activities	Commercial production for local market	Commercial production for export/processing
Area cultivated	1 to 5 hectares	5 to 25 hectares
Source of seed	Own seeds, commercial seeds	Firm or company, imported seeds, hybrids
Technical services	Farmer's knowledge	Technician from firm
Common vegetable grown	Tomato, eggplant, ampalaya, and others	Okra, onion, cucumber
Purpose of cultivation	Local and home consumption, for profit.	Foreign exchange, profit-oriented, seed production
Market outlet	Multi-mktg. channels, local market	Exporter/Foreign market
Quality of vegetable produced	Low quality, assorted and ungraded	High quality, classified and graded
Packaging materials	Plastic	Cartons
Type of crops	Adaptable for year-round planting	Highly seasonal
Level of production	Low yield	High yielding
Cultural Management	Traditional	High technology
Source of price information	Local buyers, fluctuating	Exporters, pre-determined
Source of credit	Private individuals	Exporters, firm or company
Unit of selling	in kg, Fresh form	in kg, Fresh or processed form

Types of Rice Contract Growing Arrangement

A. Contractual Labor Arrangement

1) " Porsiyentohan" permanent labor contract

The most popular form of labor contract in rice farming nowadays is the so called **"porsiyentohan"** which has evolved from the terms "**kasugpong or barok**". Under this system the farmer/landowner hires a permanent worker who receives a share of the crop as his remuneration for one season usually paid at harvest time. The worker usually does not live with the farmer-owner and therefore more free to work on other farms. They perform similar tasks like the "kasugpong or barok" such as seedbed preparation, cleaning and repair of dikes,

application of fertilizer, spraying, replanting and irrigating. They may also obtain cash credit from the farmer-owner without interest to meet their subsistence (monthly rice consumption, bagoong and salt) or emergency needs (medical expenses in case of illness) deductible from their cropshare at harvest time. The worker's cropshare usually range between 10-12% of gross yield. If the permanent worker stays in the farm to tend animals such as chicken and goats, he is given free daily meals (breakfast, lunch and dinner). In the rainfed areas, "porsiyentohan" is usually preferred during the second crop (where yield is normally higher) to give incentives to permanent laborers to work harder and ensure timely and sufficient irrigation during the entire season. Conversely, a fixed-wage labor contract is chosen during the main (wet) crop season wherein a worker receives P2,000 monthly for the care of a minimum of 5 hectares cropland. In case of good harvest bonus or extra pay is given to workers.

2) "Kasama" sharing system

There are two kinds of "**kasama**" system in rice-vegetable farming. The first one is where the "kasama" is the landowner cultivator who lacks the capital to finance farm operation. In this system the "kasama" provides the land, hires laborers, supervises all farm activities and manages the entire farm operation while the "**kapitalista**" or financier on the other hand, provides the cash capital needed for the purchase of material inputs, payment of labor wages and all other expenses that would be incurred in production. At harvest time, after deducting all expenses incurred, they equally share (50:50) in the net sales or net return.

The second type is where the "kasama" is the tenant-tiller of the farm and performs production activities such as cleaning and repair of dikes, fertilizer application, spraying of insecticides, irrigation and others. In other words, the "kasama" provides all the labor inputs while the landowner (aside from providing the land) shoulders the cost of transplanting and

harvesting and supplies the capital needed for the purchase of material inputs such as seeds, chemicals and fertilizers. The cost of seeds, chemicals, fertilizers and labor for transplanting and harvesting are deducted from the gross return/sale after which the net return is shared equally (50:50) between the landowner and farmer-tiller (kasama).

Table 7 stipulates the tasks performed under the “kasama” and “porsiyentohan” systems vs. the owner cultivation scheme. The “porsiyentohan” is the predominant system of labor contracts in most farming areas because it is simple to implement and the tasks to be performed are clearly specified and easily delineated. Under the “kasama” system, the farmer has incentive to supply his own labor and that of his family in order to minimize cost and thereby increase his profit share.

3) Hired labor contract

Different kinds of hired labor contracts have evolved over time in the rice farming community. Before, hired labor are normally paid in cash after the completion of the assigned tasks. At present, most labor activities are paid in kind because farmers lack capital to finance operation.

For cash payment, the “**tampa**” system is one form of payment that is very popular and highly acceptable to both farmers and workers. The “tampa” or advance payment is given to contracted hired labor usually one week or two before the set schedule of activities in exchange for a commitment to do specific production tasks such as pulling of seedlings, transplanting and harvesting activities. The contract is made between the “**kabesilya**” or group leader and the farmer-owner. Labor wages for transplanting is paid cash thru the “kabesilya” who distributes the payment to his laborers less his commission of about P10.00 per person. During lean months, the workers can get his “tampa” long before the start of the season but usually the wage rate is

P5 – P10 less than the prevailing wage rate. These workers are normally those residing within the villages and are known personally by the farmer. Transient workers (those living outside the villages) are normally not given “tampa” for fear that they will not be around when farming season begins. The “tampa” system assures the farmer-owner of labor availability even during the peak of farming activities. Sometimes, the same group of workers who performed the transplanting will also do the harvesting activities under the supervision of the “kabesilya”.

During harvesting, labor wages are normally paid in kind known as “**hunosan**” or sharecropping where the harvesters gets 1 cavan for every 14 or 15 cavans harvested palay. Some workers prefer the so called “**kabanan**” wherein they get cash payment of P20 – 30 per cavan of palay harvested. When the worker knows that prices of palay is high he prefers the “hunosan” system. This is especially true during the dry season (second crop) when palay are of good quality hence, command better prices in the market. On the contrary, “kabanan” becomes attractive during the wet season when palay prices are expectedly low. The rate and the system of payment are also based on the crop stand in the field. If the worker sees that the palay crop in the field has a good stand and chances are high that yield would be greater he chooses the “hunosan” or sharecropping system otherwise, he favors the cash payment or “kabanan”.

3) Contract hiring of tractors and threshers

This scheme provides that tractor-owner who prepares the land during the beginning of the season get the assurance of threshing the palay come harvest time. The farmer pays the tractor-owner a partial amount (usually half of the total cost of land preparation ranging from P 1,200 to P 1,500 per hectare) to cover cost of food, operator’s fee, diesel and oil while the remaining half is payable upon harvest. This will give assurance to the operator that he will also

perform the threshing activities. The threshing activity is paid in kind of about 6 to 7 cavans per 100 cavan threshed palay. This is also known as “hunosan”.

B. Credit-Marketing Tie-Up

Most farmers lack capital to finance farm operation. In the absence of credit from formal institutions such as banks and lending agencies, private lenders consisting of palay traders, rice millers and agricultural input suppliers serve as loan providers to farmers.

Traders and rice millers provide capital to farmer-cultivators with an interest charge ranging from 5 – 10 % monthly payable in kind (palay) at harvest time. This ensures adequate supply of palay for trading and milling activities. Ricemillers also provide sacks and trucking services to farmers during harvest time. Price negotiation is usually done with the aid of palay agents who are paid on commission basis (per kilo of palay). Price offered for palay is lower for pick-up than those that are delivered to the rice mill or trading post.

Palay deposits are also accepted by ricemillers from commercial farmers or big landowners who lack storage facilities while waiting for higher prices during the lean months usually during the months of June to August. Upon deposit of palay to the warehouse/ricemill, the farmer gets his palay deposit slip stating therein the number of kilos of palay deposited and the minimum guaranteed price per kilo as agreed upon by the farmer and ricemiller. This agreement provides assurance to the depositor that when he desires to liquidate his palay deposits he will then receive the guaranteed price or the prevailing market price whichever is higher. The ricemiller on the other hand, was able to secure a steady supply of palay during the season, which he can immediately mill and therefore utilize the sales proceeds as additional capital to earn profit until after the depositor liquidates his palay.

Agricultural input suppliers, on the other hand, provide inputs such as fertilizers and chemicals payable at the end of harvest period in kind (palay equivalent of loan) or in cash without interest charge but input suppliers implicitly charges interest thru higher prices of inputs computed based on number of days or months prior to harvest.

Cooperatives also provide production loan in kind (fertilizers and insecticides) or in cash to farmer-members at minimal interest rate of 3-5% payable at the end of harvest period. The cooperative also acts as the marketing arm of farmers by buying and selling their palay produce. Thru patronizing the cooperatives the farmer-members can avail of volume discounts for inputs (such as fertilizers, seeds and chemicals) and higher bargaining price for outputs.

In the Visayas, likewise, sharecropping and tenancy arrangements are very common aspect of rice production. There are at least two schemes observed in the tenancy arrangement with respect to the percentage partition of output: *hunos-gastos* and *tersia* schemes. The *hunos-gastos* was the predominant scheme until the late 80's when new policies were recommended by the Department of Agriculture and Department of Agrarian Reform. In this scheme, the cost of operating the farm is being shouldered by one of the parties. The cost is then reimbursed to the party concerned after the produce is sold. Once the cost has been deducted from the gross sales, the remaining amount of money is divided equally (*50-50*) between the landowner and the tenant. The primary problem in this scheme is the source of working capital. In cases where the tenant shoulders the working capital, he usually gets it through informal loans (usually through the *alili* system or private lenders), which requires a very high interest rate paid in terms of rice. There were also some times when no one has the capacity to lend money, so the tenant farmer cannot begin the operation. In cases where the landowner shoulders the working capital, the difficulty of the situation is alleviated, except in a few cases where the landowner fails to provide

the capital due to circumstances outside the scope of the farm (his personal reasons or due to his other businesses). In such cases the tenant is caught penniless, wholly unprepared and falsely expectant.

The new tenancy scheme, which is currently practiced by most respondents, is called the *tersia* system. In this system, the tenant is responsible for almost the entire operation and gets the larger share of output. The percentage share of output varies among the farms surveyed, depending on preference as agreed upon by tenants and landowners. The most common percentage partition ratio between landowner and tenant is 1 for every 3 units of output, which means that 1/3 of the produce goes to the landowner and 2/3 goes to the tenant. In some farms, however, 25% goes to the landowner and 75 % is shared to the tenant. Still in other farms, one part is taken by the landowner and four parts is given to the tenant, which means that the landowner gets only 20% of the produce and gives 80% to the tenant. One advantage of *tersia* system is that the tenant is in control of the farm, which also means that he is usually prepared to face the different farm tasks such financing and looking for inputs.

With respect to the kind being partitioned, the arrangement may be based on sharing the palay (*produkto*) or sharing the income generated (*kwarta-parte*). The choice between these systems is purely for convenience and all respondents agree that there is not much difference in the over-all effect between these two styles.

Next to tenancy is the contractualization of seasonal mass laborers. This activity is needed in the planting and harvesting stage. Around twenty (20) workers are needed to accomplish the planting and harvesting of one hectare of farmland in one day. During planting, the laborers are paid a regular daily wage of around 60-80 pesos. During harvesting, however, the respondents reportedly practice crop sharing, or income sharing. There are varying systems

to this effect, but the usual practice is the *pito-pito* system, in which six (6) parts of the produce/gross sales go to the farmer while the seventh part is divided equally among the laborers. The farm laborers participating in planting and harvesting activities are relatives or neighbors of the farmer concerned. This part of the production process is necessarily contractual because of the irregularity of the availability of the job. The *pito-pito* contractual system and its variants (*walo-walo*, etc.) are very acceptable to both farmer and laborers due to the following reason: in cases of good harvest, the laborers receive a big amount of money or product while in cases of poor harvest, the farmers shares the cost with the laborers.

The third level of contractual arrangements in labor as input of production is the employment of skills with equipment. Small farms usually do not have necessary equipment such as *kuliglig*, (harrow, used to even out the rice fields after plowing), *labay* (rake) and threshers. The farmer pays around 1,500-1,800 pesos for *kuliglig* of one hectare of farmland; and around 250 pesos for *labay* of the same area. For threshing, the owner of the thresher usually gets the twenty-fifth ($^{1}/_{25}$) of the *palay* threshed out.

Regarding other inputs of production, some respondents revealed that relatively larger farms are supplied with farm inputs (fertilizer and pesticide) on credit by local agricultural stores with the arrangement that their palay will be sold to that store, but when this scheme was asked of the identified agricultural store, it was denied. Some respondents also revealed availing the services of cooperatives and NGOs especially on distribution of farm inputs (including seeds) on credit.

As to source of funds, very seldom do small farmers borrow money from banks because of the long process involved. All respondents who are farming below two (2) hectares said that majority of their financing comes from informal credit given by individuals (called *alili*) with a

Table 7. Schedule of production activities/tasks performed by Owner-cultivator, Kasama and Porsiyentohan.

Farm Activities/Tasks	Owner-cultivator			Owner with Porsiyentohan				Owner with Kasama			
	O	FL	HL	O	FL	P	HL	O	F/K	FL	HL
Cleaning and repair of dikes			X				X		X	X	
Plowing			X				X				X
Harrowing			X				X				X
Final harrowing			X				X				X
Seed Selection	X	X		X				X	X		
Seedbed Preparation	X	X				X	X		X		
Pulling of Seedlings			X				X				X
Transplanting			X				X				X
Direct Seeding	X	X	X			X	X		X		X
Replanting	X	X	X			X			X		
Irrigating	X	X				X			X		
Fertilizing	X	X	X			X	X		X		
Weed Control											
Spraying of chemicals			X			X			X		
Handweeding			X			X			X		
Rotary weeding			X			X			X		
Insecticide Application			X			X			X		
Harvesting			X				X				X
Hauling and Threshing Palay			X				X				X
Drying	X	X	X			X	X		X		X
Monitoring of farm activities	X			X		X		X	X		

where: O = owner, FL = family labor, HL = hired labor, P = porsiyentohan, F/K = farmer/kasama

promised amount of palay after harvest. Usually, individuals give P400 in exchange of 2 sacks of palay, but the amount of palay sometimes varies depending on the length of time from borrowing of money to harvest.

Types of Vegetable Contract Growing Arrangement

Contract farming in vegetables is practiced on a limited scale. Usually it is confined to vegetables for export such as onion and okra or for off-season vegetables such as tomato, watermelon or vegetables for processing such as cucumber. The following section covers the contractual schemes observed in these plant crops.

A. Production and marketing tie-up with trader-exporters or processors

Under the production and marketing tie-up, the price of output and other marketing arrangements are specified prior to implementation of actual production including the fixed payment rate per unit of output. The contracting firm states specific production and post harvest requirements to be fulfilled by the growers such as variety to be grown, size, number of batches/cycle and schedule of harvest and delivery. As a requirement, a farm plan and budget is prepared per season to serve as guide to growers and contracting firms. Land is owned and provided by the farmer. He strictly adheres to the cultural and management practices recommended by the company. He is also responsible for hiring labor to do the production or field activities and may avail of cash advances to pay for other production expenses. All production cash advances of the farmer-grower and the corresponding peso equivalent of the farm inputs are deducted upon liquidation of the farmer-grower usually when the planted crops have already harvested.

Specific contracts vary according to the commodity to be produced such as those involving okra, onion and cucumber. These in turn are tackled below.

Onion and Okra

Onion and okra contract growing follows basically the same production and marketing processes. The usual contract involves the exporter (company) who finances production including the provision of seeds, fertilizers, chemicals and technology. The company becomes the exclusive buyer of the output at pre-agreed price (per kilogram output). All onion and okra procured by the company are exported to Japan and sorted, graded, weighed and packed before finally shipped for export. The company hires technicians, quality controllers, classifiers and casual laborers to perform different tasks involved in the production and marketing of crops. Technicians supervise field production activities while quality controllers/checkers are responsible in recording daily inventories and in quality controlling of packed onions and okras. Casual workers do the loading and unloading of outputs and farm inputs in the warehouse, cleaning, processing, packaging and repackaging of products if needed.

Onions are classified according to size such as small, medium, large and extra large and placed in onion sacks containing 21 kg per sack for export grades and 25 kg per sack for domestic grades. Domestic grades onions are priced lower than export quality ones. Onions are air dried in the warehouse for 24 hours using industrial blowers. Repacking of onions consist of packing 3 to 5 pieces per net and then placed in carton boxes containing 24 to 36 packs and loaded to a container van containing 1080 cartons.

Okras are also packed in net bags containing 9 to 10 pieces per net bag for medium sized pods and 8 pieces per net bag for large sized pods and packed in cartons each containing 40 net bags.

When all crops have been harvested, the settlement of payment due the grower is done after deducting all the cash advances and cost of seeds and other inputs provided by the firm or

company. For onion, the farmer is charged an additional interest rate of 2 to 3 percent per month on total cost of production financed by the company. For okra, no additional interest is charged to farmer-growers.

Table 8. Okra packing specification

Size	No. of pods per net bag	No. of net bags per carton
Medium	9-10 pcs.	40 nets
Large	8 pcs.	40 nets

Table 9. Onion packing specification

Grade/Quality	Weight per net bag
Export grade	21 kg
Domestic grade	25 kg

Pickled Cucumber

For cucumber, the processing company will provide the seeds and cash advances before planting of crop. Price of cucumber (per kilogram) is pre-determined and varies based on the quality and size of fruits whether good, oversized or reject. A field technician from the company will visit the farm during the production and processing stages or until goods are completely fermented or pickled. The contract grower will provide the land, labor and is responsible for transporting the pickled cucumber to the company. The farmer-grower can avail of cash advances up to 50% of the predetermined value of the crops. The liquidation of payment is done three weeks after delivery. For every delivery of crop, 50% will be paid in cash to the contract grower while the remaining 50% will account for the cash advances released before planting operation has begun. Fresh cucumbers are priced P 3.00, P 2.00 and P1.00 per kg for good,

oversized and reject fruits, respectively. Oversized and rejects are sold locally in public markets or processed by local households as home-made pickles which has gained popularity in the area either for their own home consumption or sold in nearby community markets.

Only good cucumber fruits are further processed into pickled form. The contract grower will shoulder the additional expenses incurred in the processing of the cucumber, which is normally offset by a higher price of pickled fruits of about P12.00 per kilogram. Delivery or transport of the pickled cucumber depends on the advised of the company, which is usually made three days before the actual delivery is done. The fermentation process for pickled cucumber is done in drums containing 160 kilos each. During the fermentation stage, at least two people will check and turn over the mixture (circulation process) everyday for fifteen days period. If the climate is cold, adding of salt is needed to maintain the required pH content of the cucumber. Maintenance of the pH is strictly monitored. For better processing, a water pump is used in the circulation process in order to blend well the cucumber with the water and salt mixture. The percent recovery in processing of cucumber was recorded at 87.5%.

To attain economies of scale, contract growers may obtain additional land for cucumber cultivation. A leasehold contract of P5,000.00 per hectare is being paid to interested owners of land per production cycle.

Another arrangement is the so-called commission type of payment wherein the landowner shares one peso payment for every kilogram of cucumber produced in return for the provision of land, water pump and laborers as planters to manage the farm.

B. Pre-harvest marketing contract or “pakyawan system” with traders

The “pakyawan” system is another form of contract agreement in marketing of vegetables, such as eggplant, tomatoes and watermelon, wherein traders assess the fruits and

plant situation as the basis of buying. Basically, traders or prospective buyers assess the expected yield based on the kg seed planted or through ocular field inspection and then negotiate prices with the farmer-owner. The value of harvestable crops in the field is done by random counting of fruit clusters before a price quotation is made. Buyers dictate the price of vegetables (per kilogram) based on their prior knowledge of prices in the market. Once prices are determined through bargaining, buyers schedule the dates of harvest and provide labor for harvesting and transportation of produced goods to the market. Buyers themselves also take care of the harvesting of vegetables, which is done several times until all crops are harvested. Cash advances may be given to farmers ranging from P 20,000.00 to P 30,000.00 per hectare to make sure that the vegetables are sold to him (the trader) particularly during the first harvest. Farmers inform or contact the traders usually in advance during the season about his crop and scheduled harvest.

In the case of watermelon, if a hectare can produce 60-70 carts or “kariton”, the farmer will receive more or less P120,000.00 per hectare. Otherwise, the price will be based on a per “kariton” produced valued at P1, 200 to P1,500.00 each depending on the size of fruits and quality.

C. Output-sharing labor contract arrangement

Vegetable production is characterized by seasonal and labor-intensive production. The method of labor contract that is popular among those planting fruits and vegetables (such as onion, watermelon, melon, eggplant and others) after rice farming operation is the “kasama” system. The “kasama” provides his labor and technical expertise from planting to harvesting of crops and in return gets 50 % of net return after all expenses have been deducted from gross sales of output. The “kasama” is also responsible in looking for prospective buyers or sales agents to

buy the fruits. To meet his subsistence needs the “kasama” may get cash advances from the farmer-owner deductible from his cropshare at harvest time.

Production of watermelon, eggplant, tomato and ampalaya is usually tied with “kasama” labor contracts on 50:50 sharing scheme either with permanent or transient workers who takes care of digging holes, planting, watering, fertilization and care of crops. These contract workers of watermelon usually contact the farmer-owners immediately after harvesting of palay during the wet season. The contract stipulates equal sharing of net income except for ampalaya with 75:25 ratio in favor of the landowner because it is more capital intensive (due to trellising materials) than the other vegetable crops. Farm workers can get cash advances and one cavan of rice on a monthly basis from the landowner to meet subsistence needs. These are then deducted upon liquidation of the net share of the contract labor, which is 50% of net income. The workers provide the labor inputs while the landowner shoulders all other production expenses aside from the provision of land and water for cultivation, sprinklers, tools and equipment for crop care. In case of force majeuere due to typhoon and infestation during the growing season, farm workers/ contract growers for watermelon, melon or cucumber may opt to abandon the field to the disadvantage of the landowner/financier.

Likewise for most vegetables, the credit-marketing tie-up is the most common practice wherein traders provide inputs such as fertilizers and insecticides to farmer-cultivator payable at harvest time upon selling of vegetables with no interest charges. Traders pick-up the vegetables right at the farm and pays the vegetable growers after the sale of output. Traders may negotiate with vegetable growers prior to maturity or harvest who conducts actual field inspection to assess expected output based on kg seed planted per hectare and initially gives 50% down payment and the remaining 50% is paid after selling all output is completed.

Efficiency and Equity Issues: Incentives, Output Control and Risk sharing

Based on the different contract schemes described above on rice, it has been shown evidently that sharecropping is the most common mode of labor contract between landowners and farmer-tillers or between farmers and hired workers in rice production. However, economists considered sharecropping inefficient. As cited by Chattopadhyay and Sengupta (2001), Marshall (1920) argued that tenant farmers cannot act optimally because he gets only a fraction of the total produce instead of the entire output thus, he has no incentive to optimize the total production. Therefore, sharecropping leads to inefficient allocation of resources.

Nevertheless, sharecropping throughout time has become an important method of agricultural production not only in rice but in other crops as well like fruits and vegetables. One of the most compelling arguments for the acceptability of sharecropping arrangement in agriculture is the lack of capital to finance farm operation. Credit is scarce or completely unavailable to small farmers. Banks and formal lending institutions have long tedious loan process unsuitable for small farmers. The rising cost of material inputs as well as labor and the absence of much needed capital makes farming extremely difficult nowadays. Consequently, this prompted farmers to look for better working arrangement such as sharecropping which does not require direct cash payment or outlay to workers. Workers, being risk averse, are willing to accept these contracts because it guarantees a certain income. Bardhan (1983) as cited by Basu (2002) stated that the motive for labor-tying stems from the fact that labor contracts provide partial insurance to risk-averse laborers in the presence of output uncertainty and incomplete insurance markets. Likewise, Eswaran and Kotwal (1985), posit that laborers have an incentive to shirk and as a result, contractual arrangements that guarantee a remuneration that exceeds a laborer's opportunity income may elicit loyalty and reduce the burden of supervision.

The farming community sees sharecropping as an incentive to work and a 50:50 sharing scheme is reasonable enough to pay workers for their labor, the only resource they own so far. Thus, sharecropping provides means for risk sharing in the absence of credit and insurance markets.

In the case of vegetables, new emerging production and marketing systems are actively operating to facilitate minimum types of contracts. The interactions between land, labor, material inputs and output markets result to different levels of efficiency associated with various contracting systems. Because of production risks such as perishability, labor and material intensiveness of cultivation, production and marketing tie-up with firms or traders has gained wide acceptance in vegetable production. This tie-up was necessary to dispose output immediately and minimize losses due to perishability and high transportation cost. Contracting out his land with a firm ensures a guaranteed profit to the farmer based on fixed price per unit of output. For export vegetable crops, high prices serve as incentives for landowners and permanent laborers to maintain intensive cultivation. Grading, cleaning, sorting, packaging and processing create substantial value added to vegetable crops such as onion, okra and cucumber. Additional costs are incurred in the process but are fully compensated through higher prices.

In the case of some vegetables (such as in ampalaya and watermelon production), the specialized nature of production and capital constraints have induced labor contracts because farming households lack the liquidity to pay wages of hired labor. This situation is one of the primary reasons for the popularity of sharecropping arrangement.

Hart 1986 as cited by Stanley 2001 revealed that output-sharing scheme proved effective in sustaining not only loyalty but also productivity of permanent workers especially in maintaining good quality of produce. Permanent workers are indispensable for specialized crops

and for activities requiring special skills. Sharecropping contracts receive worker's loyalty and other non-marketed services, such as political support and asset protection.

Under the production and marketing tie-up with exporters, risks normally assumed by farmers are now shifted to exporters or contract buyers. In the case of "pakyawan" and tied labor contracts both production and marketing risks are borne by the farmer-cultivator.

Overall, for small rice-farmers with no capital, sharecropping would still be the best method to sustain his subsistence and livelihood whereas for vegetable production where capital is intensive and specialized labor are necessary, a production and marketing tie-up with a firm or trader at a fixed price per unit of output would be the most efficient way to reward growers for their efforts to produce high quality vegetables.

SUMMARY, CONCLUSION AND RECOMMENDATION

This study generally aims to characterize and analyze in terms of efficiency and equity, the various contractual arrangements in selected agricultural commodities namely: mango, swine rice and vegetables.

The research sites for this study consist of major producing provinces for each of the four specified commodities in parts of Northern and Central Luzon regions. For mango, Calasiao and San Carlos in Pangasinan, Iba and Masinloc in Zambales and Munoz in Nueva Ecija served as the study areas. For lowland vegetables, the municipalities of Talavera, Aliaga and San Jose City in Nueva Ecija, were primarily selected as study sites being major producers of eggplant, tomato, okra, onions and other vegetables. For hogs, Talavera, Munoz and San Jose City in Nueva Ecija where integrators and key informants are located constitute the sites of the study.

Mango contract growing is a profitable enterprise in Pangasinan, Zambales and Nueva Ecija. Results of the study revealed that contractual arrangements in mango were initiated by the introduction of commercial flower inducers which has solved the problem of seasonal fruiting or biennial characteristics of mango. This has increase productivity of mango trees and made possible the production of mango almost throughout the year. Lack of technical knowledge and limited capital has encouraged farmers to seek contract-spraying services of sprayers or sprayer-traders.

There are three types of mango contract growing, namely: i) Leasehold contract ii) Output-sharing scheme and iii) Contract buying. Under both leasehold and contract sharing arrangements contractor performs production activities such as flower induction, pruning, deblossoming, foliar fertilization, pest control, fruit bagging, safeguarding of the trees, harvesting and marketing. In addition, the farmer-grower performs such other activities like

irrigation, fertilization, pruning, weeding and other cultural management practices. Leasehold contract consists of fixed payment to farmers ranging from P 200.00 (for small sized trees) to P3500.00 per tree (for century old trees) in exchange for temporary ownership of trees for a period of one year or more. Under the output-sharing arrangement, the gross harvest of fruits is shared between the farmer and the contractor under 50:50 or 40:60 ratio. Contract buyers on the contrary, specializes in the marketing of mango fruits beginning with the assembly of fruits during harvest time, provision of harvesting and packaging materials, exporting and selling of fruits to final consumers.

Among the three types of mango contract arrangements, output-sharing is the most popular and has flourished since the advent of flower inducers. Contract spraying provides a cushion for mango growers with financial constraints, limited time or inadequate knowledge on cultural and management practices of mango trees. Contract spraying ensures marketing outlet and guaranteed returns to farmers. Contractors on the other hand, exercise input control to minimize costs and risks and maximize profit as it expand volume of production to attain economies of scale. Both mango grower and contractor gain from the contract arrangement although most of the time the contractor (sprayer or trader) benefits more because he is able to dictate prices of output to farmers and is more knowledgeable of supply and demand situation.

Production risks such as rain, pests and diseases, price risks due to variability of input and output prices are all borne by the contractor. Through contract growing, farmers are able to insulate themselves from these kinds of risks. Under the output-sharing scheme, the grower share in the risks associated with price variability of output. Conversely, under the leasehold contract, except for the risks involved in case of deterioration or death of trees which the farmer faces, all risks are borne by the contractor. Contract spraying and 50:50 sharecropping of mango is the best

available mode of production to generate income for mango growers and at the same time harnessed the technical expertise and ensure a reasonable return for contractor's capital.

Small–scale or backyard hog raising is the most important segment of the hog industry and will remain as the dominant production scheme considering the constraint in capital of farm households. Commercial farms are keen on the integrator type of contract. Under the integrator type of hog contract, the optimal contract involves profit and risk sharing between two parties: the grower and integrator. The grower can be rewarded or fined on the basis of observed performance. The company advances all feeds, piglets, and technical assistance under strict production management. Growers provide the facilities such pigpens and equipment, labor and secure the necessary business permits. Success in hog production therefore, depends mainly in the growth performance of the animals.

Conversely, backyard raisers take charge of raising animals up to marketable age and establish their own contact with traders in marketing their produce. The backyard scheme is a modification of the "paalaga" system wherein the farmer grower provides housing, labor, light and water utilities and raised the pigs for 120 days (4 months) more or less. The trader or contract buyer provides the feeds or cash advances has the exclusive privilege of marketing (buying-back) the produce at prevailing market price or sometimes lower or higher by one or two pesos. The 50:50 and 60:40 sharing schemes are the most prevalent arrangement wherein a farmer-grower shares 40-50% of net income after all expenses (feeds, cash advances and cost of piglets) have been deducted and the remaining portion goes to the contract buyer. There are no technical performance standards to be met by the grower under this contract scheme. This kind of arrangement ensures the trader/middleman a steady supply of animals for trading or slaughtering.

An optimal contract should seek a balance between providing work incentives for the grower and lessening his exposure to risks. Being risk averse, the growers prefer a certain income to an uncertain one. In summary, the integrator type of contract, although it is incentive inefficient because of the presence of production uncertainty and restricted participation of growers, would still be best for commercial growers who find difficulty in raising capital and lack the technical expertise to undertake specialized type of production. High quality products, assured income for growers and stability of production are among the advantages offered by this type of contract.

In the buy back scheme, growers are insulated from the imposition of penalties in case of failure to meet desired performance standards thus, quality of outputs and income are usually low hence, likewise not efficient. Nonetheless, for small households, this “piggy banking” scheme would offer “second best” alternative to utilize family labor, meet subsistence needs and provide livelihood.

In rice, sharecropping and tenancy arrangement has become an important aspect of agricultural production. Sharecropping system involving “**porsiyentohan**” and “**kasama**” provide incentives to permanent workers to work harder in order to increase crop share. The “porsiyentohan” is the predominant system of labor contracts in most farming areas because it is simple to implement and the tasks to be performed are clearly specified and easily delineated. Under the “kasama” system, the farmer has incentive to supply his own labor and that of his family in order to minimize cost and thereby increase his profit share.

Contract farming in vegetables is practiced on a limited scale. Usually it is confined to vegetables for export such as onion and okra or for off-season vegetables such as tomato, watermelon or vegetables for processing such as cucumber. The usual contract involves the

exporter (company) who finances production including the provision of seeds, fertilizers, chemicals and technology. The company becomes the exclusive buyer of the output at pre-agreed price. As a requirement, the farmer strictly adheres to the cultural and management practices recommended by the company.

New production and marketing systems are actively operating to facilitate minimum types of contracts in vegetables. The interactions between land, labor, material inputs and output markets result to different levels of efficiency associated with various contracting systems. Because of production risks such as seasonality, perishability, labor and material intensiveness of cultivation, production and marketing tie-up with firms or traders has gained wide acceptance in vegetable production. This tie-up was necessary to dispose output immediately and minimize losses due to perishability and high transportation cost. Contracting out his land with a firm ensures a guaranteed profit to the farmer based on fixed price per unit of output. For export vegetable crops, high prices serve as incentives for landowners and permanent laborers to maintain intensive cultivation. The intensive and specialized nature of vegetable production in addition to capital constraints has induced labor contracts. During lean months, most farming households lack the liquidity to pay wages of hired labor. This prompted farmers and workers to look for better working arrangement and this is precisely the reason for the popularity of sharecropping arrangements such the “porsiyentohan” and “kasama” system. Sharecropping provides an alternative to wage employment opportunities and through time induces loyalty and productivity of farm labor.

Overall assessment of mango contracts reveals that contract spraying and equal sharing of output or sales will help backyard growers secure a guaranteed return for their mango trees. To avoid the problem of death of trees, a restriction on the frequency of flower induction and

pesticide application as well as close supervision and monitoring should be an important component not only of leasehold contracts but all other mango contract systems. For large-scale farms, own spraying of trees will be more profitable and efficient since economies of scale can easily be achieved. This will warrant full returns to owner's efforts. Moreover, technical assistance and training on proper mango cultural and management practices will help growers maximize the productivity of their trees and thereby, profit. Manufacturers of mango flower inducers and chemicals can be tapped to provide technical assistance and extension services to our farmer-growers.

For hogs, backyard raisers should strive to improve the performance and quality of their animals through proper selection of swine breeds and good feeding practices as this will command better prices for their output and thereby increase their profit. The existing production modules/contracts for backyard raisers would be more efficient if raisers would organize themselves and cooperate. Cooperatives can provide capital thru credit, serve as venue for trainings and seminars on profitable piggery enterprise and provide discounts for volume purchase of feeds and piglets. It can also function as marketing arm of raisers, with better bargaining power in determining market prices. For commercial raisers with sufficient capital, independent growing scheme will provide better control of both production and marketing aspect of operation. For raisers with limited capital, the integrator contract ensures guaranteed income, stability of operation and high quality products.

For small rice-farmers with no capital, sharecropping would still be the best method to meet his subsistence and livelihood whereas for vegetable production where capital is intensive and specialized labor are necessary, a production and marketing tie-up with a firm or trader at a fixed price per unit of output would be the most efficient way to reward growers for their efforts

to produce high-quality vegetables. To improve productivity and efficiency, constraints to vegetable production such as high incidence of pest and diseases especially on leafy vegetables resulting to limited area planted, improper handling and perishability, lack of storage facilities resulting to quality deterioration and lack of market information have to be addressed.

The nature, process and degree of the different contracting systems in the four selected agricultural commodities have been diverse. In most cases, however, the different contracts were outcomes of the farmers' need to adjust to the different production and market conditions surrounding the agricultural sector. The pervasiveness of sharecropping in many agricultural crops such as mango, rice and vegetables underscore the farmers' difficulty in raising capital, due to missing credit and insurance markets. The associated risks, seasonality and specialized nature of agricultural production has likewise, complicated the production process and patterns of contracts in these commodities. Access to credit and marketing institutions and functioning of insurance markets are essential for the transformation of subsistence-oriented asset-poor farmers.

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APPENDICES

APPENDIX A
QUESTIONNAIRE FOR MANGO CONTRACT STUDY

I. General Information:

Province / Region _____ Name of Municipality: _____ Class of Municipality: _____
Name of Barangay: _____ Class of Barangay: _____ Type of Barangay: □ Irrigated □ Rainfed or non-irrigated
Name of respondent: _____ Age: _____ Sex: _____ Educational Attainment: _____
Civil Status: _____ No. of Children: □ Male _____ □ Female _____
Membership to Cooperative or organization related to mango: □ Yes, specify _____
Main source of income & amount: _____ Income Derived from mango & amount _____ Other Income & Amount: _____
When and how mango contract growing started in the locality _____

II. Production Organization:

1. Type of Respondent: □ Farmer/Grower □ Leaseholder □ Sprayer-Trader □ Contract Buyer □ Processor-Exporter
   When and how mango contract growing business was started: _____
   Reasons for engaging in mango contract growing _____
   No. of years under present contracting system:_____ ____Duration of contract:_____ No. of prodn. cycles per year _____
   Total Number of Trees Owned/Contracted: □ Fruit bearing _____ Approximate age of trees:_____
   Variety: _____ □ Non-fruit bearing _____Approximate age of trees: _____ Variety: _____
   Initial Capitalization: : □ Land _____ □ Land Development _____ □ Trees _____ □ others, specify _____
   Present Capitalization: □ Land _____ □ Land Development _____ □ Trees _____ □ others, specify _____
   No. of employees/ workers: _____ □ Temporary _____ □ Permanent _____ □ Male _____ □ Female _____

2. Factors considered in Site Selection for Contract Growing:

Factor	Provide Detailed Description of Practice
□ Location of Farm	_____
□ Type of farm (compact or scattered)	_____
□ Age of trees	_____
□ No. of trees	_____
□ Type of trees (Seeded or Grafted)	_____
□ Variety of trees (Carabao, Pico, etc)	_____
□ Availability of workers	_____
□ Availability of transportation	_____
□ Others, specify	_____

3. Production Activities/stages under contract

Activities Performed	Materials used				Labor input					Freq. of application	Details of Practices	Supervision required [a]	Problems encountered
	Type	Qty	Cost	Source	M	F	wage	Cost	Source				
Smudging													
Flower Induction													
Pruning													
Deblossoming													
Mulching													
Fertilization													
Pest Control/													
Weeding													
Fruit –bagging													
Irrigation													
Safeguarding of trees													
Others, specify													

[a] Supervision: High (everyday), Low (weekly), Limited (monthly), None

4. Harvesting and Post-harvest Activities:

Activities Performed	Materials used				Labor input					Frequency of application	Details of Practices	Supervision required [a]	Problems encountered
	Type	Qty	Cost	Source	M	F	wage	Cost	Source				
Harvesting of fruits													
Hot water treatment													
Packaging													
Storage													
Others, specify													

[a] Supervision: High (everyday), Low (weekly), Limited (monthly), None

III. Types of risks encountered (Agency Issues):

a) Production/Natural risks (pls. check appropriate box)

Action taken/Penalties imposed

- ☐ Death of trees due to pathological disease _____
- ☐ Death of trees due to inappropriate practices or negligence _____
- ☐ Adverse Weather condition such as rain & wind _____
- ☐ Others, specify _____ _____

b) Sources of Price risks (Indicate the possible origins of risks)

	1st Fruiting	2nd Fruiting	Description
☐ Variability in output prices:	_____	_____	_____
☐ Variability in input prices:			
☐ Labor	_____	_____	_____
☐ Chemical	_____	_____	_____
☐ Others, specify:	_____	_____	_____

c) Availability of alternative inputs in the community (pls. check appropriate box)

		Always Available		Partly Available		Not Available	
		1st fruiting	2nd fruiting	1st fruiting	2nd fruiting	1st fruiting	2nd fruiting
□	Labor	□	□	□	□	□	□
□	Capital	□	□	□	□	□	□
□	Credit	□	□	□	□	□	□
□	Intermediate inputs (list)	□	□	□	□	□	□

d) Other types of risks per season specify:

IV. Performance/output indicators for each of the following activities:

Activity	Type of Contract		Output Share				Compensation to Agent or Rent Received by Principal[1]		Tied Contract[2]	
	1st Fruiting	2nd Fruiting	1st Fruiting		2nd Fruiting		1st Fruiting	2nd Fruiting	1st Fruiting	2nd Fruiting
			Principal	Agent	Principal	Agent				
Production										
Processing										
Marketing										

[1] Applies for fixed wage and leasehold contracts
[2] Indicate whether the contract is tied to: credit, intermediate inputs, land or other forms of insurance

APPENDIX B
QUESTIONNAIRE FOR HOG CONTRACT STUDY

I. General Information:

Province / Region _____ Name of Municipality: _____ Class of Municipality: _____
Name of Barangay: _____ Class of Barangay: _____ Type of Barangay: □ Irrigated □ Rainfed or Non-irrigated
Name of respondent: _____ Age: _____ Sex: _____ Educational Attainment: _____
Civil Status: _____ No. of Children: □ Male _____ □ Female _____
Membership to Cooperative or Organization related to hogs: □ Yes, specify _____
Main source of income & amount: _____ Income Derived from hog growing _____ Other Income & Amount: _____
When and how swine contract growing started in the locality: _____

II. Production Organization:

1. Type of Respondent: □ Farmer/Grower □ Integrator □ Contract Buyer □ Feed Processor □ Others, specify _____
   When and how swine contract growing business was started: _____
   Reasons for engaging in hog contract growing: _____
   No. of years under present contracting system: _____ Duration of contract: _____ No. of prodn. cycles/year:_____
   Total Number of Head Owned/Contracted _____ Approximate age of animals: _____ Breed: _____
   Initial capitalization: □ Animal stock _____ □ Pig pens _____ □ Equipment _____ □ others, specify _____
   Present Capitalization: □ Animal stock _____ □ Pig pens _____ □ Equipment _____ □ others, specify _____
   No. of employees/ workers: _____ □ Temporary _____ □ Permanent _____ □ Male _____ □ Female _____

2. Factors considered in Site Selection for Contract Growing:

Factor	Provide Detailed Description of Practice
□ Location of Farm	_____
□ Availability of piggery houses & equipment	_____
□ Availability of water & light	_____
□ Availability of waste disposal facilities	_____
□ Availability of permits & licenses	_____
□ Availability of workers	_____
□ Availability of transportation	_____
□ Environmental concerns	_____
□ Others, specify	_____

3. Production Activities/stages under contract

Activities Performed	Materials used				Labor input					Frequency of application	Details of Practices	Supervision required [a]	Problems encountered
	Type	Qty	Cost	Source	M	F	wage	Cost	Source				
Farm layout													
Housing, bodega & piggery equipment													
Acquisition of stocks/breeds													
Feeds & Feeding, nutrition practices													
Medication & Vaccination plans													
Disinfection/ Sanitation/ quarantine practices													
Waste management													
Light, power & water supply													
Training/ Technical assistance													
Others, specify													

[a] Supervision: High (everyday), Low (weekly), Limited (monthly), None

4. Marketing of animals

Activities Performed	Materials Used			Labor Input				Frequency of application	Details of Practices	Source of Input materials or Labor	Supervision required [a]	Problems encountered
	Type	Qty	Cost	M	F	Wage	Cost					
Selection of animals for sale												
Weighing												
Hauling												
Marketing outlet												
Pricing												
Processing												
Others, specify												

[a] Supervision: High (everyday), Low (weekly), Limited (monthly), None

III. Types of risks encountered (Agency Issues):

b) Production/Natural risks (pls. check appropriate box)

Action taken/Penalties imposed

- ☐ Death or injury of animals _____
- ☐ Epidemic or outbreak of diseases _____
- ☐ Adverse Weather condition such flood _____
- ☐ Others, specify _____ _____

b) Sources of Price risks (Indicate the possible origins of risks)

		Specify Production cycle	Description
□	Variability in output prices:	_____	_____
□	Variability in input prices:		
	□ Labor	_____	_____
	□ Feeds & Vets	_____	_____
	□ Others, specify:	_____	_____

c) Availability of alternative inputs in the community (pls. check appropriate box)

		Always Available		Partly Available		Not Available	
		1st cycle	2nd cycle	1st cycle	2nd cycle	1st cycle	2nd cycle
□	Labor	□	□	□	□	□	□
□	Capital	□	□	□	□	□	□
□	Credit	□	□	□	□	□	□
□	Intermediate inputs (list)	□	□	□	□	□	□

d) Other types of risks per season specify:

_____

_____

_____

IV. Performance/output indicators for each of the following activities:

Activity/Indicators	Type of contract	Prescribed Allowance	Output Share		Compensation to Agent or Rent Received by Principal[3]		Tied Contract[4]
			Principal	Agent	Principal	Agent	
Production							
Grow-out period							
Desired weight/size							
Basic fee							
Feed Conversion ratio							
Average daily gain							
Mortality rate							
Recovery rate							
Prime size incentive							
Performance bonus							
Livability Bonus							
Environmental protection fee							
Harvesting							
Penalties							
Surety bond							
Damages & losses							
Marketing							
Payment of grower's fee							
Weighing							
Hauling							
Processing							
Premium quality incentive							
Others, specify							

[3] Applies for fixed wage and leasehold contracts
[4] Indicate whether the contract is tied to: credit, intermediate inputs, land or other forms of insurance

APPENDIX C
QUESTIONNAIRE FOR RICE-VEGETABLE CONTRACT STUDY

I. General Information:

Province / Region _____ Name of Municipality: _____ Class of Municipality: _____
Name of Barangay: _____ Class of Barangay: _____ Type of Barangay: □ Irrigated □ Rainfed or non-irrigated
Name of respondent: _____ Age: _____ Sex: _____ Educational Attainment: _____
Civil Status: _____ No. of Children: □ Male _____ □ Female _____
Membership to Cooperative □ Yes, specify_____ Organization related to vegetable: _____
Main source of income & amount: _____ Income Derived from vegetable & amount _____ Other Income & Amount: _____
When and how vegetable contract growing started in the locality _____

II. Production Organization:

1. Type of Respondent: □ Farmer/Grower □ Input-trader □ Trader □ Contract Buyer □ Processor-Exporter
   Total Land Area:_____ Total Area Cultivated for vegetable: _____ Total Area Cultivated for other crops:_____
   When and how vegetable contract growing business was started: _____
   Reasons for engaging in vegetable contract growing _____
   No. of years under present contracting system: _____ Duration of contract:_____ No. of prodn. cycles per year _____
   Initial capitalization: □ Land _____ □ Land Development _____ □ Operating Capital _____ □ others, specify _____
   Present capitalization: □ Land _____ □ Land Development _____ □ Operating Capital _____ □ others, specify _____
   No. of employees/ workers: _____ □ Temporary _____ □ Permanent _____ □ Male _____ □ Female _____

2. Factors considered in Site Selection for Contract Growing:

Factors	Provide Detailed Description of Practice
□ Location of Farm	_____
□ Type of farm (lowland, upland)	_____
□ Type of soil	_____
□ Availability of irrigation	_____
□ Availability of workers	_____
□ Accessibility to transportation	_____
□ Others, specify	_____

3. Production Activities/stages under contract

Activities Performed	Materials used				Labor input					Frequency of application	Details of Practices	Supervision required [a]	Problems encountered
	Type	Qty	Cost	Source	M	F	wage	Cost	Source				
Plowing													
Harrowing													
Furrowing													
Seed Bed Preparation													
Trellising Preparation													
Labor for Planting													
Fertilizer Application													
Pesticide Application													
Weed Control													
Harvesting of vegetables													
Sorting/ Grading													
Packaging													
Transportation													
Storage													
Others, specify													

[a] Supervision: High (everyday), Low (weekly), Limited (monthly), None

III. Types of risks encountered (Agency Issues):

c) Production/Natural risks (pls. check appropriate box)

Action taken/Penalties imposed

- ☐ pest & diseases _____
- ☐ inappropriate practices or negligence in the use of chemicals_____
- ☐ Adverse Weather condition such as rain & wind _____
- ☐ poaching/losses_____
- ☐ Others, specify _____

b) Sources of Price risks (Indicate the possible origins of risks)

	1st harvest	2nd harvest	Description
☐ % Variability in output prices:	_____	_____	_____
☐ %Variability in input prices:			
☐ Labor	_____	_____	_____
☐ Chemical	_____	_____	_____
☐ Others, specify:	_____	_____	_____

c) Availability of alternative inputs in the community (pls. check appropriate box)

	Always Available		Partly Available		Not Available	
	1st harvest	2nd harvest	1st harvest	2nd harvest	1st harvest	2nd harvest
☐ Labor	☐	☐	☐	☐	☐	☐
☐ Capital	☐	☐	☐	☐	☐	☐
☐ Credit	☐	☐	☐	☐	☐	☐
☐ Intermediate inputs (list)	☐	☐	☐	☐	☐	☐

d) Other types of risks per season specify:

_____

_____

_____

IV. Performance/output indicators for each of the following activities:

Activity	Type of Contract		Output Share				Compensation to Agent or Rent Received by Principal[5]		Tied Contract[6]	
	1st harvest	2nd harvest	1st harvest		2nd harvest		1st harvest	2nd harvest	1st harvest	2nd harvest
			Principal	Agent	Principal	Agent				
Production										
Processing										
Marketing										

[5] Applies for fixed wage and leasehold contracts
[6] Indicate whether the contract is tied to: credit, intermediate inputs, land or other forms of insurance

APPENDIX D
SAMPLE MANGO PRODUCTION CONTRACT

KNOW ALL MEN BY THESE PRESENTS:

This **CONTRACT**, made and entered by and between:

The _____, a government/private institution, with principal office _____ represented by _____, herein referred to as the **OWNER.**

-and-

_____, of legal age, Filipino citizen, married, and a resident of _____, herein referred to as the **CONTRACTOR.**

W I T N E S S E T H:

WHEREAS, on _____ a sealed canvass was submitted to the _____ for the purpose of awarding to the highest bidder a contract on sharing basis for spraying, caring, safeguarding and harvesting of ____ mango trees inside its reservation.

WHEREAS, subject matter of the bid award shall be in accordance with the following terms and conditions to wit;

1. Only " carabao" mango trees located inside the reservation including those trees inside the yards of Faculty/ Staff members, offices and dormitories shall be covered by the contract.

Classification	**No. of Trees**
a. XYZ Mango-Goat Project (10 years and below)	500
b. ABC Site (10 years and below)	400

c. AMC Project Site	(10 years and below)	347
	total	1,247

2. All mango trees regardless of its present growth status except those affected by severe pathological or physiological disorders or both shall form part of the number of trees for share contract.

3. Care and management including application of flower inducer, spraying of chemicals (insecticide, fungicides, foliar fertilizer) and safeguarding of the subject trees as well as the harvesting of mango fruits shall be the responsibility of the contractor. All expenses that maybe incurred under this contract shall be borne by the contractor.

4. Application of chemicals, flower inducers, care and management practices that shall be employed by the contract shall be subject to the approval of the UAP Management and shall be in accordance with modern farm techniques and management.

5. Application of flower inducer to the mango fruits shall only be once during the year under contract, the contractor shall have the capability/ skills in determining matured trees which have the physiological ability to flower when applied with the chemical inducer.

6. Contractor shall give priority to the university Faculty and Staff Members and students in the sale of good quality mango fruits which should be 10% lower than the market price in the locality.

7. The owner of the trees have the option to sell its share rather to contractor or any willing buyer based on the current market price in terms available.

8. The period of this contract for one (1) season only shall take effect within ten (10) working days from the date of signing of this contract; otherwise if the contractor will not commence work on the specified date, the owner has the option to declare this contract null and void and no force and effect.

9. The owner, through its Management, reserves its right to have free access within the project in the conduct of supervision and inspection of the works being undertaken by the contractor.

10. Duration of contract shall be from _____ to _____.

11. That the sharing shall be 39.75% for the contractor and 60.25% for the owner

12. That, there will be10% share of faculty and staff from the harvest where mango trees are located in their yards. Such share will be taken before the sharing of contractor and the owner shall be done.

13. The contractor is held responsible for upkeeping the trees during the period of the contract. If death of trees occurred due to negligence or inappropriate practices during the period of the contract, the contractor shall be penalized as follows:

a. Immediate cancellation/ revocation of the contract

b. Payment of computed income per tree per year for 10 years as follows:

b.1 18-15 years old- P1,000/ tree/ year

b.2 16 and above- P4,000/tree/ year

This provision shall not be applied to damages caused by Force Majeure.

NOW, THEREFORE, for and in consideration of the foregoing and their mutual covenant herein above stipulated, the **CONTRACT BY THESE** presents **AGREES** and

ACCEPTS, to undertake the aforesaid jobs under the supervision and control of the _____ referred to as the **OWNER**.

Finally, the **CONTRACTOR** hereby agree that sharing shall be done during each picking of mango fruits based from the sharing percentages indicated in this contract.

The parties likewise agree that the expenses in the preparation and execution of this instrument together with the Notarial fees and documentary stamps shall be done by the **CONTRACTOR.**

IN WITNESS WHEREOF, the parties hereto have affixed their signatures below this _____ of _____ 2003 at _____.

APPENDIX E
SAMPLE HOG GROWING CONTRACT

KNOW ALL MEN BY THESE PRESENTS:

This agreement, entered into by and between:

_____, a corporation duly organized and existing under and by virtue of the laws of the Philippines with principal offices at _____

_____represented in this act by its president and Chief Operating Officer _____ hereinafter referred to as "XYZ"

-and-

_____, Filipino, of legal age, with address at _____

_____, hereinafter referred to as the " GROWER"

WITHNESSETH: That

WHEREAS, XYZ is engaged in the business of, breeding, growing, slaughtering and marketing of pigs;

WHEREAS, the GROWER is engaged in business of growing, raising, and caring for pigs and its desirous to grow, raise and care for pigs owned by and belonging to XYZ;

WHEREAS, XYZ has agreed to enter into this Agreement on the basis of GROWER's warranty and representation that he/she/it has the necessary housing, light, power and water supply, feed bodega, piggery equipment, training, knowledge, manpower and experience to assure this undertaking;

NOW THEREFORE, for and in consideration of the foregoing premises, undertakings of the mutual covenants hereinafter set forth, the parties have agreed as they hereby agree as follows:

ARTICLE I

GROWER'S UNDERTAKINGS

Section 1.1 To provide, proper housing for a minimum of 400 pigs, feed bodega, piggery equipment, materials and supplies for purposes of hygiene and sanitation, skilled labor at a minimum of 1 hogman per 250 hogs, waste disposal facilities, water, power and light for the efficient and successful growing, raising and caring of XYZ pigs to 180 days
(26) weeks more or less, as determined by XYZ. Said property and facilities are located at _____.

Section 1.2 Farm-in-Charge. To appoint a farm-in-charge who will (a) receive pigs, feeds, veterinary and other supplies from XYZ, (b) serve as link to XYZ personnel in the implementation of standard operating procedures, (c) act as team leader for the other hogmen, (d) maintain farm records as required by XYZ, and (e) dispatch pigs. The GROWER shall provide XYZthe name and qualifications of the Farm-in-Charge prior to every seeding.

Section 1.3 To provide a logbook to contain communications from XYZ personnel.

Section 1.4 To abide by XYZ's requirements regarding feeding, sanitation and environmental control, farm operation and swine medications may from time to time be set by XYZ.

Section 1.5 To allow XYZ or its duly authorized representative to have access to his/her/ its premises at any time for the purpose of determining compliance with terms and conditions of this Agreement.

Section 1.6 To hold in trust for XYZ, such number of pigs, quantity of feeds, veterinary medicines, facilities, equipment and other items which XYZ may provide for the purposes of this Agreement, with the express understanding that the same shall be utilized strictly for the attainment of the purposes of this Agreement and that the same shall not be sold, disposed, ceded, mortgaged, encumbered or in any way alienated without the previous written approval of XYZ. To evidence this special relationship, the GROWER shall be required to execute the necessary trust receipts.

Any agreement, sale, disposal, mortgage, encumbrance made and executed by the GROWER in violation of the preceeding paragraph shall be VOID and no force and effect and in no case shall XYZ be bound by such agreement, sales, disposal mortgage or encumbrance. The GROWER further undertakes to make a complete disclosure of the terms of disposal, mortgage or encumbrance. The GROWER further undertakes to make a complete disclosure of the terms and conditions of this agreement in the event that he/ she/ it would seek additional financial assistance from third parties, banks and/ or financial institutions to carry out this Agreement.

Section 1.7 To comply faithfully with all applicable and/ permanent laws, rules and regulations, whether national or local, insofar as it may effect his/her/its piggery operations under this Agreement.

Section 1.8 To secure all permits and licenses required in connection with his/her/its business/piggery operations and pay the corresponding fees and taxes required, due or imposable by virtue of this Agreement.

Section 1.9 To provide an acceptable weighing scale for pigs and feeds with a capacity of at least 300 kilograms.

Section 1.10 To maintain and implement a sound medication program only in strict compliance with XYZ's recommendations and protocol.

Section 1.11 In case of abnormal or unusual mortality of the animals given to him/her/it in trust, the GROWER shall give prompt notice to XYZ immediately from its occurrence for the purpose of verifying and confirming the causes thereof and to enable the XYZ representative to give proper advice to control such occurrence.

For this purpose, the GROWER shall allow XYZ's representatives to inspect all mortality carcasses prior to disposal. Losses or depletion of the number of XYZ pigs in the possession of the GROWER shall likewise be reported promptly to XYZ.

Section 1.12 The GROWER warrants that he/she/it will maintain an adequate maintenance and sanitation program for his/her/its piggery houses, power, light and water, equipment, bodega and surroundings in accordance with XYZ's recommendations, as well as such other special maintenance and sanitation program which maybe required by XYZ from time to time for the GROWER'S and XYZ's interest.

Section 1.13 The GROWER also warrants that he/she/it will comply with all labor laws and labor standards required under the Labor Code in dealing with all to his/her/its employees employed in his/her/its piggery operation. The GROWER further warrants to XYZ free and harmless from any claim(s) of any person(s) arising out of his/her/its compliance or non-compliance with the requirements of labor laws and labor standards.

Section 1.14 The GROWER hereby undertakes not to allow or permit any person (s) not connected to his/her/its piggery operations access or entry to hi/her/its farm unless so authorized in writing by XYZ.

Section 1.15 To make available for seeding the facilities mentioned in Section 1.1, with seven (7) days after the last harvest subject to clearance from XYZ. In the event that the facilities are not available for seeding by the grower, XYZ at its option may take over the preparation and/ or operation of the facility. The cost incurred by XYZ as a result of this will be charged to the GROWER.

Section 1.16 Water. The GROWER agrees to supply water to the pigs at all times. The repair and maintanance of all waterlines and equipment necessary to provide continuous supply of water to every animal will be the responsibility of the GROWER.

ARTICLE II

XYZ'S UNDERTAKINGS

Section 2.1 To provide a minimum of _____ hogs per growth cycle, with an average weight of 22 kilolgrams or less within a period of one (1) to two (2) weeks, as soon as facilities mentioned in Section 1.1 conform to XYZ requirements.

Section 2.2 To provide GROWER the corresponding feed requirements for the duration of every growth cycle.

Section 2.3 To provide veterinary medicines for treatment of diseases as may be needed or required in accordance with XYZ's recommended protocol except materials and supplies specially for purposes of hygiene and sanitation which shall be provided for the GROWER.

Section 2.4 To haul the finished pigs from the GROWER's farm or to dispose or sell the same at the GROWER's farm. Finished pigs are those that have been grown to 180 days (26 weeks), more or less, or those that have reached 90 kilograms, more or less as determined by XYZ.

Section 2.5 To maintain records of GROWER's account.

Section 2.6 To furnish GROWER with pertinent documents such as trust receipts, liquidation sheets for pigs, feeds, medicines and other pertinent documents.

ARTICLE III

GROWING FEES AND CHARGES

Section 3.1 Base Pay. For and in consideration of the growing, raising and caring of the pigs of XYZ to 180 days (26 weeks) more or less or up to 90 kilograms, more or less, XYZ shall pay the GROWER P2.00/ kg. for the first 85 kilos per head harvested. In addition, XYZ shall pay the grower another P2.00/ kg, above 95 kilos per head harvested.

Section 3.2 Premium Pay. In addition, XYZ shall pay the GROWER a premium pay based on the farm's performance. The performance parameters to be considered in the computation of premium pay are Feed Conversion Ration (FCR), Average Daily Gain (ADG) and Quality. The Quality parameter refers to the percentage of hogs harvested that fall within the target weight range of 90-95 kilos (MMP/ slaughterhouse weight).

Each parameter shall have an equivalent fee per head and points based on the farm's performance for the cycle.

In addition, XYZ shall pay the GROWER a performance bonus premium based on the farm's over-all performance. The performance bonus premium is computed by adding the obtained points to determine the level of performance of the farm which in turn has a corresponding fee per head. The performance bonus premium shall be given to the farm personnel as an incentive apart from other incentives they are receiving.

CONVENTIONAL DESIGN PAYMENT SCHEME

FCR PREMIUM

From	To	Fee/ head	Points
Below	2.79	P40.00	30
2.80	2.82	34.00	28
2.83	2.85	30.00	25
2.86	2.88	26.00	23
2.89	2.91	22.00	22
2.92	2.94	18.00	21
2.95	2.97	16.00	20
2.98	3.00	14.00	18
3.01	3.03	13.00	16
3.04	3.06	11.00	14
3.07	3.09	9.00	12
3.10	3.12	7.00	10
3.13	3.15	3.00	8
3.16	3.19	0.00	5
3.20	Above	Penalty	0

The premium pay applies only if the farm reaches an average harvest weight of 86 kilos on normal growing period. Otherwise, only the base pay, environmental protection fee and mortality incentive shall be paid to the GROWER. Moreover, the premium pay will be

multiplied only to the number of hogs that were harvested in the farm. This is derived using the performance premium table.

ADG PREMIUM

From	To	Fee/ head	Points
Below	579	0.00	0
580	589	2.00	2
590	599	5.00	5
600	609	8.00	8
610	619	11.00	10
620	629	13.00	14
630	639	14.00	16
640	649	16.00	18
650	659	18.00	20
660	669	20.00	21
670	679	22.00	22
680	689	24.00	23
690	699	26.00	24
700	Above	30.00	25

QUALITY PREMIUM

From	To	Fee/ head	Points
Below	74.99 %	0.00	0
75.00 %	76.99 %	1.00	2
77.00 %	78.00 %	3.00	5
79.00 %	79.00 %	5.00	8
80.00 %	80.99 %	7.00	10
81.00 %	81.99 %	9.00	12
82.00 %	82.99 %	11.00	14
83.00 %	83.99 %	13.00	16
84.00 %	84.99 %	14.00	18
85.00 %	85.99 %	15.00	22
86.00 %	86.99 %	17.00	24
87.00 %	87.99 %	19.00	26
88.00 %	88.99 %	21.00	28
89.00 %	89.99 %	23.00	30
90.00 %	90.99 %	25.00	32
91.00 %	91.99 %	29.00	34
92.00 %	92.99 %	33.00	36
93.00 %	93.99 %	37.00	38
94.00 %	94.99 %	41.00	40
95.00 %	Above	46.00	45

PERFORMANCE BONUS PREMIUM (for farm personnel)

	From	To	Fee/ Head
Poor	Below	30	0.00
Acceptable	31	55	1.00
Average	56	65	2.00
Target Performance	66	75	3.00
Excellent	76	Above	4.00

Section 3.3 Environmental Protection Fee. XYZ shall pay the GROWER an Environmental Protection Fee for having a complete and functional pollution control system in the farm that ensures proper management of wastes as approved by XYZ. This fee is equivalent to P35. 00 per head harvested.

The following waste water facilities must be present to obtain the environmental protection fee:

a. Solid-Liquid Waste Separator
b. Aerator
c. Solid Collection Pond/ Sump Pit
d. Three (3) Earth Lagoons (5, 300 cu.meter)
e. Desludging Pump
f. Manure Trailer
g. Drying Bed
h. Gates/Pipes
i. Separator Base

Section 3.4 FCR Penalty. If FCR for the cycle is 3.20 or above, the grower shall pay XYZ on the present cycle an FCR penalty equivalent to the number of kilos of feeds consumed above the said limit, multiplied by the present cost per kilo of feeds as determined by the XYZ Finance Department. This will be computed as follows:

Total weight gain X actual FCR

Less: Total weight gain X 3.19

Multiplied by: Average Cost per kilo of feeds

Section 3.5 Mortality Incentive/ Livability Bonus . If mortality for the batch is less than 1.00 %, XYZ shall pay the GROWER a Livability Bonus computed as follows:

Heads Seeded X (1.00% - Actual Mortality %)

X Weighted Average Selling Price as determined by XYZ

X Average Harvest Weight

Livability Bonus

Section 3.6 Mortality Penalty. Mortalities in excessof 1 % allowance based on the number of pigs delivered shall be charged to the grower at P2,500 per pig. Depletion which cannot be accounted for shall be charged to GROWER at prevailing market price for prime pig, and based on the average weight of total pigs produced during the cycle.

Section 3.7 Empty Feed Sacks. The GROWER may sell the empty feed sacks for additional revenue.

Section 3.8 Cash Advances. Upon written request of the GROWER, on the sole option of XYZ cash advances can be availed of on the 30th, 60th, and 90th day of the cycle. Each cash advance, shall not be more than 25 % of the expected GROWER's fee. XYZ has the option to reduce or increase the amount of cash advance depending on the previous performance of the GROWER.

All cash advances shall be deducted from the Total Grower's Fee at the final liquidation.

Section 3.9 Final Payment. Final payment shall be made within fourteen (14) working days after all-out and submission of the required performance records.

Section 3.10 Negative Balance. In the event that the total of cash advances exceeds the GROWER's fee, the GROWER shall pay the XYZ the account of the negative balance within thirty (30) days from all-out. In which case, all piglet deliveries shall be withheld.

Section 3.11 Payment Scheme Effectivity. Upon agreement by both parties, the payment scheme from Section 3.1 to 3.6 may be temporarily superseded by another payment scheme should a special program be implemented on the farm (i.e. All program, gilt-grow-out-program, etc.) The special payment scheme shall continue to be in effect until such time that the special program is terminated. Once the program has ended, then the original payment scheme shall take effect.

ARTICLE 1V

COVENANTS

Section 4.1 All pigs, feeds, veterinary medicines, slats, semi-automatic feeders, facilities, equipment and other items furnished in trust to the GROWER by XYZ shall be

Property of XYZ. All balance of feeds, veterinary medicines and other items supplied by XYZ remaining with the GROWER after the completion of a growth cycle remains the exclusive property of XYZ in consonance with Article I, Section 1.6 of this Agreement.

Section 4.2 GROWER shall be fully accountable to XYZ for the total number of pigs, feeds, veterinary medicines and other items delivered and received by him/her/it in in trust from XYZ.

Section 4.3 GROWER agrees not to raise any other livestock, pet or fowl on the premises and surroundings described herein during the term of this Agreement.

Section 4.4 Weighing of the pigs at the time of delivery to the GROWER shall be done at the source farm/s. The initial weight shall be source farm weight less 8 %.

Section 4.5 Final weight at harvest shall be that obtained at XYZ's Meat Plant. Pigs delivered at XYZ's Meat Plant shall no longer require fasting for purposes of determining final weight. However, for purposes of animal health, the pigs due for harvest should be loaded at least four (4) hours after the last feeding time.

Section 4.6 Final weight of harvested pigs sold at the GROWER's farms shall be that obtained at the GROWER's farm provided, however, that prior to final weighing, a twelve (12) hours fasting period is observed for all the pigs scheduled for harvest.

Section 4.7 GROWER shall not directly or indirectly assign or transfer this Agreement to any third party without the written consent of XYZ.

Section 4.8 The GROWER during the lifetime of this Agreement shall not directly or indirectly be involved or in any way participate in the management of piggery farms belonging to third persons whether natural or juridicial or piggery farms under HOG GROWING AGREEMENT with XYZ.

Section 4.9 The GROWER shall during the lifetime of his/her/its Agreement with XYZ treat all technical know-how and information obtained from XYZ in strict confidence and shall not divulge to any third party any technical information acquired by virtue of this Agreement for a period of one (1) year after the termination of this Agreement.

Section 4.10 Neither GROWER nor his/her/its employees, workers, or agents shall be deemed or construed as employees, agents or partners of XYZ or shall be entitled to any benefits appertaining to employees agents or partners of XYZ.

Section 4.11 This Agreement shall not be construed as giving rise to partnership, joint venture, employer-employee relationship or association between the parties hereto.

Section 4.12 GROWER shall secure in favor of XYZ a performance bond or surety bond in the amount of P400.00 per pig from the surety company(s) acceptable to XYZ, and/or provide a sufficient and acceptable collateral by way of Mortgage, to jointly and severally guarantee the true and faithful performance of and compliance with his/her/its undertakings and obligations under this Agreement.

Section 4.13 XYZ shall be liable for damages or losses sustained by GROWER due to any delay or failure to deliver pigs, feeds, veterinary medicines or any delay or any failure to haul the finished pigs on the time and date scheduled, when such delay or failure is due to fire, flood, typhoon, disease epidemic, strikes, work stoppage, governmental action or other fortuitous events beyond the control of XYZ.

Section 4.14 The provision regarding the harvesting of feeds notwithstanding, XYZ may accelerate or delay the harvesting, of pigs if in its sole evaluation of market forces to do so would be the best economic interest of both GROWER and XYZ.

Section 4.15 XYZ and its duly authorized representative(s) shall have the right to enter and inspect the premises and facilities of the GROWER at any time during the term of this agreement. In a situation where the GROWER's employees are enganged in strikes, work stoppages or similar concerted actions, XYZ, order to protect its interests, shall have the right to assign, for the duration of strike, etc., XYZ's staff/ personnel to look into XYZ's pigs at the GROWER's farm.

Section 4.16 The term of this Agreement shall be a period of one (1) year from and after the date of its execution and may be renewed for another similar period, subject to the same or modified terms and conditions, upon the written mutual consent of both parties. However, XYZ, at its discretion upon notice to the GROWER, shall have the sole right and option to terminate this Agreement due to the following causes:

4.16.1 Disease problem or outbreak of epidemic;

4.16.2 Environmental problems in the place of GROWER's piggery operation;

4.16.3 Breach or violation of the terms, conditions, warranties and undertakings by the GROWER as stipulated under this Agreement;

4.16.4 The operation and management of the GROWER's farm shall prove to be unsatisfactory to XYZ and its continued operation shall result in greater losses both for XYZ and the GROWER;

4.16.5 The welfare or safety of XYZ personnel is put to risk.

Section 4.17 Whereas XYZ believes that the conditions set forth in 4.16.1 to 4.16.5 are not so serious to warrant the extreme move of terminating this Agreement, XYZ shall have the right and option to allow the GROWER a limited period of time to correct and/or adopt measures

to fulfill his/her/its obligations under this Agreement. If the GROWER fails to do so after such period, XYZ shall proceed to exercise its right and option to terminate this Agreement.

Section 4.18 In the event that the operation and management of the GROWER's farm shall proved to be unsatisfactory and detrimental to XYZ's interest and/or the causes mentioned in 4.16.1 to 4.16.5 are present, XYZ and its option may take over the management and operation of the GROWER's farm for the unexpired portion of the cycle or the term of this Agreement. For this purpose, XYZ or its duly authorized representative(s) is empowered by the GROWER to take over and assume direct operation and management of his/her/its piggery farm without the necessity of any judicial action for the unexpired period of the growth cycle and/or for liquidation purposes only, after which the Agreement shall be deemed terminated.

Section 4.19 Should XYZ exercise its right to terminate this Agreement due to the causes mentioned in 4.16.1 to 4.16.5, XYZ shall automatically cancel or withhold all further deliveries of pigs, feeds, and veterinary medicines to the GROWER and XYZ shall not be liable to the GROWER for whatever losses and damages he/she/it may sustain by reason of such termination.

Section 4.20 If for business reasons, the GROWER decides to terminate or discontinue this Agreement after the completion of the growth cycle, the GROWER may do so provided he/she/it gives notice in writing to XYZ of such decision 120 days prior to the completion of the said growth cycle. In the event, however, that the GROWER decides to discontinue his/her/its involvement in the piggery operations in middle of a growth cycle, XYZ to protect its interests, is empowered by the GROWER to assume and take over the management and operations of the GROWER's piggery farm without the necessity of any judicial action but only for the unexpired portion of the growth cycle and/or for purposes of liquidation only and without prejudice to XYZ's claiming of damages from the GROWER.

Section 4.21 All growing pigs, feeds and veterinary medicines in the possession and custody of the GROWER upon the expiration of this Agreement shall be subjected to the terms and conditions hereof until the pigs mature and accounts are fully liquidated.

Section 4.22 All standard operational procedures and protocols promulgated by XYZ in connection with this Agreement shall be observed faithfully by the GROWER and shall form part of this Agreement.

Section 4.23 In the event of judicial action to enforce any of the provisions of this Agreement, the parties hereto have agreed that the venue thereof shall be in the proper courts of _____.

Section 4.24 In cases of breach of the GROWER's obligations under this Agreement, same shall pay unto XYZ the amount of twenty-five percent (25%) of the total amount due as liquidated damages and for attorney's fees and judicial costs.

Section 4.25 In the event that the contract expires and no termination letter or new contract has been issued by XYZ, the previous contract shall be honored by both XYZ and the GROWER. The previous contract shall be in effect until such time that a new contract or a letter of termination has been issued.

Section 4.26 The Agreement shall be binding and effective against the GROWER's heirs, successors-interest assigns, executors and administrators.

IN WITNESS WHEREOF, the parties have signed this Agreement this _____ at _____.

_____

NAME OF CORPORATION

By:

_____ _____

Contract Grower President and Chief Operating Officer

Witness

_____ _____

APPENDIX F
SAMPLE CREDIT LINE AGREEMENT FOR INPUTS

KNOW ALL MEN BY THESE PRESENTS:

This CREDIT LINE AGREEMENT, made and executed by and between:

_____, a corporation duly organized and existing under and by virtue of the laws of the Republic of the Philippines, with principal offices at _____, represented herein by its duly authorized _____ (position) _____ (name), hereinafter referred to as the "CREDITOR",

-and-

_____, Filipino, of legal age, married, doing business under the name and style of "_____" with business address and location at _____, hereinafter referred to as the " DEBTOR",

WITNESSETH: That – -

WHEREAS, the DEBTOR has applied for a secured credit line which the CREDITOR has granted and approved under designated Credit Account No. _____ in the amount of _____ (P___) Philippine Currency, to be available to the DEBTOR by way of credit purchases of _____ of the CREDITOR, subject to the terms and conditions agreed between the parties, herein indicated as applicable as [X].

[ ] 1. That the credit line should be on a clean basis.

[X] That the credit line shall be fully secured by BANK GUARANTEES issued by Metrobank-Cabanatuan Branch in the total amount of P_____, which Instruments are made integral parts hereof.

[ ] That the credit line should be partially secured by a _____.

[ ] That improvement made on the property(ies) mortgaged, shall be recovered by insurance policy(ies) whenever applicable, and ASSIGNED in favor of the CREDITOR; said insurance policy(ies) shall remain in full force and effect for as long as any obligation arising from the use of the credit line exists.

[X] 2. That all products purchased on credit shall be payable within thirty (30) days, from date of invoice without need of demand. Any amount remaining unpaid after the expiration of said period shall earn interest at the rate of two percent (2%) per month computed from date of default until the amount is fully paid.

[X] 3. At any given time, the credit line shall have been exceeded, sales on credit shall automatically be suspended. The credit line maybe re-activated in the sole discretion of the CREDITOR only upon full payment of the amount in excess over the credit line.

[X] 4. This AGREEMENT shall expire on _____ and may be automatically renewed thereafter at the discretion of the CREDITOR provided that the DEBTOR is not in default nor has exceeded his credit line; the CREDITOR shall have the absolute right to AMEND, SUSPEND or CANCEL, the credit line without prior notice at any time within the original period or renewed period.

[X] 5. That the CREDITOR shall have the right any time, and for any reason to refuse to advance any amount by way of credit purchase to the DEBTOR under the line herein established through the maximum amount of line herein provided has not been fully availed by the DEBTOR.

[X] 6. That the DEBTOR authorizes and empowers the CREDITOR to set-off without notice what is due it from whatever funds said DEBTOR may have with the

CREDITOR, regardless of whether any obligation arising from the use of the credit line is due or not.

[X] 7. That in the event of default on the part of the DEBTOR to pay any amount due hereunder or to comply with any of its obligations to the CREDITOR, the latter shall TERMINATE and CANCEL this AGREEMENT, and all sums owed by the DEBTOR to the CREDITOR under this AGREEMENT or under any previous or subsequent agreement, whether due or not due, shall become immediately due and payable and the CREDITOR may immediately without notice to the DEBTOR, apply towards the partial or full liquidation of such amount or amounts any and all securities, guarantees, or other collateral of the DEBTOR held by the CREDITOR in deposit or otherwise.

[X] 8. That in the event of default, viz, the failure in whole or in part, by the DEBTOR, to perform any of their terms or provisions hereof or the death, insolvency, or failure in business of the DEBTOR or the commencement of any proceedings or commission of any act under any of the provisions of the Bankruptcy Law or against the DEBTOR, this AGREEMENT is deemed terminated, and all sums owed by the DEBTOR to the CREDITOR shall become immediately due and payable without demand or notice.

[X] 9. That the terms and conditions of the Sales Invoice of the CREDITOR shall form part of this AGREEMENT. In case of conflict, the provisions of this AGREEMENT shall prevail.

[X] 10. That the books of the CREDITOR shall be deemed final and conclusive evidence concerning the amount due it, if no objection is made within twenty days (20) from the receipt of the CREDITOR’s Statement of Account.

[X] 11. Should the CREDITOR allow the DEBTOR notwithstanding the expiry of this AGREEMENT, to continue availing of the line granted, such availments shall continue to be governed by terms and conditions of this AGREEMENT, until fully and completely paid.

[X] 12. If necessary for the CREDITOR to refer this AGREEMENT for the enforcement of its terms and conditions to the Attorney, the DEBTOR agrees to compensate the CREDITOR a fee equivalent to ten percent (10%) of the amount involved but in no case less than TEN THOUSAND PESOS (P10,000). The CREDITOR has also the right to resort to the Courts for the recovery of any indebtedness owing to it by the DEBTOR because of default in the payment thereof or violation of the terms and conditions herein, in which case, the venue of action shall be in the Courts of Pasig, and said DEBTOR hereby agree to pay to said CREDITOR for compensation as Attorney's fees and cost of collection , in addition to the cost allowed by the Rules of Court, an additional amount not to exceed twenty per centum (20%) of the total amount of principal and interest due at the time of such default but in no case less than TEN THOUSAND PESOS (P10,000).

[X] 13. Every order shall be recovered by a thirty (30) day postdated check of the DEBTOR which shall be delivered to the CREDITOR upon delivery of such order.

[X] 14. The rights of the CREDITOR herein are cumulative and non-exclusive and failure of the CREDITOR to enforce any of its rights as herein provided shall not be construed as a waiver of such rights.

[X] Any payments made by the DEBTOR to the CREDITOR's salesmen shall not operate to extinguish the obligations herein of the DEBTOR unless an, Official Receipt is issued by the CREDITOR's authorized representative (other that the salesman).

[X] 15. Other Conditions

a. The credit line shall be effective only upon submission of the security(ies) indicated herein and its approval by the CREDITOR.

b. The CREDITOR has the absolute right to suspend the credit line pending the submission of the renewal of the securities indicated herein.

IN WITNESS WHEREOF, the parties have hereunto affixed their signatures this _____ day of _____ (year) in _____, Philippines.