State of the Rice Industry in Mindanao

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List of Acronyms and Abbreviations

ACPC	Agricultural Credit Policy Council
AEW	Agricultural extension workers
AFF	Agriculture, Fishery and Forestry
AFMA	Agriculture and Fisheries Modernization Act
ARMM	Autonomous Region in Muslim Mindanao
BAS	Bureau of Agricultural Statistics
BFAR	Bureau of Fisheries and Aquatic Resources
BINTIKU	Binhian sa Timog Kutabato
COAST	Corn-based Agribusiness Systems Technology
CSO	civil society organizations
DA	Department of Agriculture
DAMSEPCO	Davao Multi-Purpose Seed Producers Cooperative
DAR	Department of Agrarian Reform
DASUSEPCO	Davao Sur Seed Producers Cooperative
DOSEPCO	Davao Oriental Seed Producers Cooperative
DPRDI	Davao Provinces Rural Development, Inc.
FAIR	Farmers' Incentive Rice Purchase Program
FGEP	Farmer's Grains Exchange Program
FMDP	Medium-Term Fisheries Management and Development Program
FO	farmers' organization
FOBB	Farmers'/Cooperative's Option to Buy-Back Program
FSW - Mindanao	Food Sovereign Watch - Mindanao
GDP	Gross Domestic Product
GMA CARES -HCPP	Ginintuang Masaganang Ani-Countrywide Assistance for Rural Employment and Services for Hybrid Corn Production Program
GMA CARES -SRF	Ginintuang Masaganang Ani-Countrywide Assistance for Rural Employment and Services for Small Retail Fisherfolks or Sugarcane

GMA CARES -Unlad Ani HRCP	Ginintuang Masaganang Ani-Countrywide Assistance for Rural Employment and Services for Hybrid Rice
GMA CARES -Unlad Ani IRSP	Ginintuang Masaganang Ani-Countrywide Assistance for Rural Employment and Services for Hybrid Rice
GMA CARES-URP	Ginintuang Masaganang Ani-Countrywide Assistance for Rural Employment and Services for Urban and Rural Poor
GMA	Ginintuang Masaganang Ani
GMA	Gloria Macapagal-Arroyo
GPEP	Grains Production Enhancement Program
GVA	Gross Value Added
HRCP	Hybrid Rice Commercialization Program
HVCC	high-value commercial crop
KASAKALIKASAN	Kasaganaan, Sakahan at Kalikasan
KCCDP	Key Commercial Crops Development Program
KFI	Kaanib Foundation, Inc. - Northern Mindanao
KGA	Key Grain Areas
KPA	Key Production Area
LEAP	Livelihood Enhancement for Agriculture Program
LGU	local government unit
LPP	League of Provinces of the Philippines
MASIPAG - Mindanao	Magsasaka at Siyentipiko Para sa Pag-unlad ng Agrikultura-Mindanao
MASMIN	Magsasaka at Siyentipiko Para sa Pag-unlad ng Agrikultura-Mindanao
MAV	minimum access volume
MEDCo	Mindanao Economic Development Council
MFCD	Mindanao Farmers Development Center
MT	metric tons
MTADP	Medium-Term Agricultural Development Plan
MTLDP	Medium-Term Livestock Development Program
MTPDP	Medium-Term Philippine Development Plan
NFA	National Food Authority

NGO	nongovernment organization
NIA	National Irrigation Authority
NIFCO	New Ilocos Farmers Cooperative
PAGP	Philippine Agricultural Development Plan
PhilConGrains	Philippine Confederations of Grains Association
PhilPhos	Philippine Phosphate Fertilizer Corporation
PhilRice	Philippine Rice Research Institute
PNWR	Palay Negotiable Warehouse Receipt
PO	people's organization
PPRDI	People, Plants Research and Development, Inc.
PRRM	Philippine Rural Reconstruction Movement
QR	quantitative restriction
QTA	quick turnaround
RFU	regional field unit
SASEPCO	Southern Agusan Seed Producers Cooperative
SCMPC	Sta. Catalina Multi-Purpose Cooperative
SEACROP	SeaCrop Feeds and Fertilizers Technology
SEARICE-Mindanao	Southeast Asia Regional Initiatives for Community Empowerment
SKHYRISCA	Hybrid Rice Seed Grower Coop based in Region 12
SOCCSKSARGEN	South Cotabato, Sultan Kudarat, Sarangani Province, General Santos City
SONA	State of the Nation Address
Stanfilco	Standard Fruits Company
SUMIFRU	Sumitomo Fruits Corporation
TACDRUP	Technology Assistance Center for the Rural and Urban Poor
WTO	World Trade Organization

I.
Profile of the Agricultural Sector in Mindanao

Demography

Once regarded as the "Land of Promise," Mindanao is the largest island group located in the southernmost part of the Philippine archipelago. With a total land area of 10,199,886 hectares or about 34 percent of the country's total land area, it is comprised of 25 provinces, 27 cities, 408 municipalities and 10,042 barangays (MEDCo, 2004; BAS, 2005). The provinces are grouped administratively into six economic regions namely: Region IX (Zamboanga Peninsula); Region X (Northern Mindanao); Region XI (Davao Region); Region XII (SOCCSKSARGEN); Region XIII (Caraga Administrative Region); and, the Autonomous Region of Muslim Mindanao (ARMM).

Close to a third of Mindanao's land area is devoted to agriculture, with a total of 1,661,200 farms registered for agricultural use covering 4,122,600 hectares (MEDCo, 2004). The Zamboanga Peninsula has the biggest land area devoted to agriculture (19.04 percent) followed closely by SOCCSKSARGEN (18.6 percent). The region with the smallest agricultural area is Caraga, comprising about 12.7 percent of Mindanao's total agricultural land (BAS, 2005).

In the national census of 2000, Mindanao's population reached 18.1 million, or roughly 24 percent of the country's total population with an annual growth rate of 2.44 percent. Of this figure, 68 percent live in rural areas (NSO 2000 Census). Among the regions in the island, Northern Mindanao has the highest urban population (40.49 percent). Meanwhile, the ARMM has the highest rural population (78.75 percent). The population density in Mindanao is 30 percent less than the national average, but Marawi City is the most densely populated area at 22 times the national benchmark.

About 43 percent of Mindanao's estimated population in 2004 make up the island's labor force, comprising nearly a quarter of the country's total economically productive sector. Nearly half (48 percent) of Mindanao's labor force is employed in the agriculture sector in 2004, with ARMM having the highest concentration of the agricultural labor force at 70 percent and the Davao provinces with the lowest at 40 percent (MEDCo, 2004). But the trend shows that Mindanao's labor force in agriculture has been steadily decreasing over the last decade.

Agricultural Resources and Products

Endowed with relatively fair tropical climate evenly distributed throughout the year, with most of its provinces situated outside the typhoon belt, Mindanao is rich in agricultural resources and products. Aside from producing more than half of the national corn output, it is also the country's leading producer of pineapple (87.26 percent), coffee (71.64 percent), cacao (92.4 percent), banana (75.94 percent), coconut (56.85 percent) and rubber (100 percent). Northern Mindanao, SOCCSKSARGEN, and ARMM are the leading corn-producing regions while the Davao region provides the bulk of the country's banana, coconut, and coffee production. Pineapple, moreover, is mostly sourced from the plantation farms of SOCCSKSARGEN and Northern Mindanao (BAS, 2004). A large quantity of cacao production is also sourced from Northern Mindanao and the Davao regions. Mindanao is also the main source of the country's supply of exotic fruits like pomelo, mangosteen and durian.

In general, the island accounts for over 40 percent of the Philippines' food requirements and contributes more than 30 percent to the national food trade (MEDCo, 2004). These attributes have earned Mindanao the moniker "food basket of the Philippines."

Contribution of Agriculture in the Regional Economy

Agriculture is, without doubt, the principal driving force behind Mindanao's economy. In 2003, the biggest contributor to the island's economy is the Agriculture, Fishery and Forestry (AFF) sector, accounting for 37.4 percent of the total Gross Domestic Product (GDP) compared to the 27 and 35.6 percent contributions of the industry and services sectors, respectively (MEDCo, 2004).

Mindanao contributed more than 35 percent to the country's total Gross Value Added (GVA) in agriculture and fishery. Among the six regions, Northern Mindanao had the biggest share in the GVA to the total domestic production in Mindanao for the years 2002 and 2003, with SOCCSKSARGEN following closely and showing consistently high GVA in AFF for the same period. Export-driven, national and multinational agribusiness firms (such as Del Monte, Dole, Lapanday, etc.) in these two regions boosted the performance of the agricultural sector.

Coconut oil, banana, and fresh pineapples are among Mindanao's top five traditional export products along with tuna and iron ore agglomerates. In 2004, the total value of the island's exports amounted to more than US$1.529 billion (MEDCo, 2004). The top five export destinations of Mindanao products are Japan, USA, the Netherlands, South Korea and Taiwan. Meanwhile, Singapore is considered as the major export market for coconut oil and tuna products. The Islamic Republic of Iran, a new market for Mindanao's fresh bananas and pineapples, contributed more than US$32 million in export earnings during this period (MEDCo, 2004).

Mindanao also contributes 40 percent to the country's fishing industry. The province of Tawi-Tawi (ARMM) ranks first in seaweed production and is a major source of high-value fish products in the country. To enhance the potential of the fisheries sub-sector in Mindanao, the Department of Agriculture (DA) allocated P10 million for the construction of a multi-species hatchery in Tawi-Tawi and another P5 million for the shelter "payao" project in Sarangani province (SOCCKSARGEN). In Sarangani, the Bureau of Fisheries and Aquatic Resources (BFAR) constructed seaweed solar dryers, marine and freshwater cages, seaweed nurseries and seedling banks as part of the infrastructure support services. At present, there are 150 aquaculture firms in Sarangani province that have an aggregate investment of more than

P1 billion pesos. These firms are led by three private pioneering aquaculture companies, namely: the Alcantara Group of Companies; San Andres Aquaculture Corp.; and, RD Farms (Estabillo, 2004).

Private Sector Investments in Agriculture

Because of its vast agricultural resources and potentials, Mindanao attracted substantial investments from national and multinational agribusiness companies. Among the large investors are the following: Cargill Seeds; Del Monte-Philippines; Del Monte Fresh Produce Philippines, Inc.; Lapanday Food Corporation; Dole-Philippines; Standard Philippine Fruits Company (Stanfilco); Marsman Drysdale; Nestle Philippines; and, Pioneer Hi-Bred Seeds.

Cargill Seeds Company, which is based in General Santos City, is the region's largest supplier of hybrid corn followed closely by Pioneer Hi-Bred. Del Monte Philippines, the country's largest exporter of pineapple, has been operating in Mindanao since 1926. It has a 15,000-hectare pineapple plantation in Bukidnon and a cannery in Cagayan de Oro City. Its Del Monte Fresh Produce-Philippines is based in Davao City and exports fresh fruits and vegetables. The southern Mindanao-based, home-grown company Lapanday Food Corporation, reportedly produces about four percent of the world's bananas and is a contract grower of Del Monte and Chiquita Farms. It also grows pineapples, mangoes, asparagus and lettuce. Dole- Philippines, Del Monte's stiff competitor, has a 20,000-hectare pineapple plantation spread over South Cotabato and has recently expanded operations in Bukidnon. It also grows other crops like pineapple, mangoes and papaya and is considered the largest exporter of asparagus to Japan. Stanfilco, a subsidiary of Dole-Philippines also has large banana plantations distributed in the Davao region, ARMM, North Cotabato as well as pineapple plantations in South Cotabato and Saranggani. Meanwhile, Marsman-Drysdale is a subsidiary of Dole Philippines and operates in the Davao provinces, while Nestle-Philippines' main office is located in Cagayan de Oro City.

As the international market for plantation fruits expand, more private sector investments in agriculture are expected to pour in Mindanao (BAS, 2005). For instance, Sumitomo Fruits Corporation (SUMIFRU), a company engaged in banana production, plans to expand its operations in Davao and is expected to generate at least 6,000

jobs (MEDCo, 2005). Other medium and small-scale plantations and agri-business firms have established operations in the island and export agricultural produce to non-traditional markets such as the Middle East.

Government Programs in Agriculture

With agriculture as the most important sector in Mindanao's economy, government intervention plays a crucial role in developing the local economy.

The major government blueprints and programs for agriculture include the following: Philippine Agricultural Development Plan; Medium-Term Agricultural Development Plan (MTADP); *Gintong Ani* Program (1996-1998); *Agrikulturang Makamasa;* and, the *Ginintuang Masaganang Ani* (GMA) program. The last two programs operationalized Republic Act (RA) 8435, better known as the Agriculture and Fisheries Modernization Act (AFMA) of 1997. As has been the practice with most government programs, the incumbent administration would make use of their respective banner agricultural programs as vehicles to advance their political agenda or boost their popularity. For instance, former President Estrada's banner agricultural program, *Agrikulturang Makamasa*, reflected his administration's populist approach and stressed his supposedly pro-poor character. Meanwhile, President Gloria Macapagal-Arroyo's agricultural program carries her initials.

Agriculture in the National Development Agenda

Consistent with the centrally-orchestrated system of development planning, the government's development agenda for Mindanao is guided by the ***Medium-Term Philippine Development Plan (MTPDP)*** which is revised every five years. The current planning cycle is for the period 2005-2010 which basically covers the administration of President Arroyo. The MTPDP serves as the national blueprint for all government programs designed under a specific five-year period (such as the MTADP). The most recent MTADP ended in 1998 while the latest Philippine Agricultural Development Plan was completed in 1995.

In the absence of a sector-specific MTADP, the agriculture-related provisions of the MTPDP provide the general framework for the development of the agricultural sector. In the current MTPDP, Chap-

ter 2 is solely devoted for agribusiness with the goal of developing *"at least 2 million hectares of new land for agribusiness in order to contribute 2 million out of the 10 million jobs targeted as a legacy by 2010"* (MTPDP, 2005-2010). This goal was also echoed in President Arroyo's State of the Nation Address (SONA) in 2005 as well as in her other agriculture-related pronouncements.

To realize the goal of creating 2 million jobs and expanding agribusiness landholdings, the following objectives are being pursued: establishment of public-private mechanisms to transform farmlands into agribusiness enterprises; high-value crop and fishery production intensification and diversification; transformation of idle agricultural lands and marginal lands into productive agribusiness enterprises; and, promotion of off- and non-farm enterprises in agribusiness lands to increase and stabilize rural income.

The MTPDP gives special focus to the potentials of Mindanao as the country's main agro-fishery export zone. The other goals for agriculture are to increase food production and to make these available "at competitive prices where the cost of priority 'wage goods' such as rice, sugar, vegetables, poultry, pork and fish and other important non-wage goods like corn must be reduced. This also means that government will continue to fight for self-sufficiency in rice production by increasing price and production efficiency and competitiveness" (MTPDP). The strategies lined up for this particular goal include: 1. Raising the productivity of land, labor and capital at the regional level; 2. Increasing the effectiveness of the transport and logistical support system in agriculture; and, implementing critical reforms in the bureaucracy towards good governance that responds to the demands of the agricultural sector.

The Philippine Agricultural Development Plan (PADP) directs the DA in formulating policies, programs and projects that would address the problems constraining the full development of the agriculture sector. The policy reforms under the PDAP are the following: 1. Institutionalization of small-farmer participation in policy making, planning, implementation, monitoring and evaluation of government programs; 2. Increase in government investments in basic infrastructure and services in the rural areas; 3. Minimum tariff rates on agricultural inputs and a more balanced structure of protection between the agriculture sectors; 4. Reduction of government interventions in the production, marketing, and processing of agricultural inputs and outputs;

and, 5. Reforms in the shipping and port management policies as well as in the rural financial system (Lachica and Vivo, 2000).

The MTADP, on the other hand, envisioned the country's production of high-quality products for the world market that would be able to compete on an equal footing with imports in the domestic market. Drawing from the experiences of newly industrialized countries in Asia particularly Taiwan and South Korea, the Plan also adopted the Key Production Area (KPA) development approach where a modernized agricultural sector would provide the base for industrialization. The KPA approach identified and focused government support on certain priority areas whose agro-climatic conditions favor the production, processing and marketing of specific products. The KPA approach included these four main elements: the Grains Production Enhancement Program (GPEP); the Medium-Term Livestock Development program (MTLDP); the Key Commercial Crops Development Program (KCCDP); and, the Medium-Term Fisheries Management and Development Program (FMDP). The main feature of GPEP is the development of Key Grain Areas (KGA), and entailed the reduction of number of rice and corn areas and freed some 1.3 million hectares for crop diversification. The KGA identified 34 provinces for rice and 17 provinces for corn production.

In 1993, the government also adopted an ecological approach to crop cultivation through the introduction and implementation of the Integrated Pest Management (IPM) program, known as "*Kasaganaan, Sakahan at Kalikasan*" (KASAKALIKASAN), and the Soil Conversion and Management Program.

The main strategy of the G*intong Ani* program was to focus scarce public resources in areas where government had a comparative advantage and to encourage the participation of the private sector in the development of the agriculture sector. The program also initiated the removal of all subsidies on output and input prices coupled with partial compensation for the removed subsidies, and the removal of non-tariff barriers, tariffs and taxes on agricultural inputs, and facilitation of access to credit. The first three phases of GPEP under this program entailed the distribution of subsidized certified seeds and organic fertilizers, installation of shallow tube wells and the provision of various types of post harvest equipment and facilities.

Upon the enactment of AFMA in 1997, the government formulated a 10-point agenda under the *Agrikulturang Makamasa* program.

Among the components of the program were the following: massive seed production; fisheries conservation and management; livestock improvement and management; application of modern science; increase coverage and intensity of technology demonstration plots; construction of irrigation and farm-to-market roads; and, expansion of the previous G*intong An*i program to rainfed and marginal areas. The program also recognized the local government units (LGUs) as the "food security leaders," encouraged farmer-cooperatives to engage in post harvest processing and other high-value-adding enterprises, and intensively promoted the use of hybrid rice, corn and high-value crops.

As mentioned before, the G*inintuang Masaganang Ani* (GMA) commodity program is the Arroyo administration's banner program for agricultural development. Specific programs for rice, corn, high value commercial crops (HVCC), livestock and fisheries were also created to increase productivity and incomes, create employment opportunities, and attain global competitiveness (DA Rice Program 2005-2006).

The GMA rice program aims to progressively increase sufficiency in domestic production. Major strategies include massive promotion of certified seeds, shift in focus to the rehabilitation of existing irrigation systems particularly communal systems and promotion of small, farmer-controlled systems, nationwide expansion of Farmer's Field Schools using knowledge intensive modalities in technology promotion and extension, post harvest loss reduction and promotion of hybrid rice technology.

Likewise, the GMA corn program aims to transform the current farm clusters into modern agribusiness systems through the establishment of Corn-based Agribusiness Systems Technology (COAST) demonstration projects which hope to generate private sector investments through joint venture arrangements with farmer cooperatives in the farm clusters. COAST projects cover mechanized production and post harvest activities in irrigated, corn and corn-based farming systems.

Meanwhile, the GMA HVCC program aims to promote income, employment and livelihood diversification among existing farming systems within the context of Strategic Agriculture and Fisheries Development Zones (SAFDZs). The program's major strategies include the nationwide development and promotion of high quality planting materials, development of harmonized products standards, cold chain sys-

tems and other appropriate modern post harvest loss reduction systems. It encourages growing of profit-generating crops like cutflowers, ornamentals, fruits, vegetables, bulbs, legumes, nuts, herbs and spices, beverages, essential oils, fiber and industrial crops.

In the same manner, the GMA Livestock program aims to increase competitiveness and sufficiency in meat and meat products as a major component of the food security program. The major thrusts include improving and conserving the genetic pool, the control and eradication of all major livestock pests and diseases particularly foot and mouth disease, promotion of modern production and post-production technologies targeting both the domestic and international markets.

Finally, the GMA Fisheries program implements the mandate of the AFMA and the Fisheries Code. It seeks to intensify productivity in the aquaculture systems, rejuvenate municipal fisheries, expand marine fishing grounds in the adjacent high seas, promote captive marine fisheries systems and improve fisheries post infrastructure, post harvest and processing facilities to improve quality and food safety in fish and fisheries products (http://cebu.da.gov.ph/programs.html).

Agricultural Programs in Mindanao

The enormous potentials of Mindanao in agriculture and fisheries have long been recognized by the national government. The current MTPDP (2005-2010) chapter on agribusiness, for example, is definite in its aim to "make Mindanao as the country's main agro-fishery export zone" since its full potential "as an agribusiness hub has yet to be tapped" (MTPD, Ch. 2). The Plan recognizes the island's strategic location within the East Asian region, which makes it a potential major transshipment point and center of trade in the region. Mindanao's rich agricultural resources and generally fair tropical climate also makes it an ideal location for "a wide variety of economic activities and investment opportunities."

To realize the government's goals in tapping the full potentials of Mindanao in agriculture, numerous interventions have been adopted and implemented in the island to develop its agricultural sector. Most of these interventions, however, are not specific to Mindanao but are part of national programs in agriculture which are implemented across the country. There are no available data from relevant government agencies on the specific allocation for Mindanao in agricultural pro-

grams, which makes it difficult to determine how much resources from these national programs are actually spent in developing the island's agricultural sector. In view of this limitation, this section will only provide a descriptive presentation of key national agricultural programs being implemented in Mindanao.

The government established several financing windows as support mechanism in the implementation of various programs for agriculture in Mindanao. Most of these support mechanisms are neither specific nor tailored for Mindanao, but are implemented as part of national programs implemented across the country by various government agencies under the aegis of the DA. Among the support programs are the following: C*ooperative Lending Program; GMA CARES-Unlad Ani HRCP* (hybrid rice); *GMA CARES-Unlad Ani IRSP* (certified inbred rice); *GMA CARES-Unlad Ani HCPP* (hybrid corn); *GMA CARES-Dairy; GMA CARES-SRF* (sugarcane); *GMA CARES-URP* (urban and rural poor); and, *Livelihood Enhancement for Agriculture*.

The Caraga Integrated Development Plan (CIDP) is one of the few area-specific agricultural development programs currently being implemented in Mindanao. It supports the livelihood activities of farmers and fisherfolk in Region XIII and Maguindanao. The Cooperative Lending Program on the other hand, covers the six regions in Mindanao and facilitates all lending transactions through agricultural cooperatives composed mainly of small farmers and fisherfolks, and small hog, poultry and livestock raisers. However, the program is also open to cooperatives put up by market vendors, employees, teachers, and rural workers.

The GMA CARES-Unlad Ani HRCP is a nationwide program to encourage farmers to plant hybrid rice. This program is implemented in coordination with PhilRice, Quedancor-accredited input supplier, the DA, and the city, provincial and municipal agricultural offices. The farmers are required to form groups of three to 15 members before they are allowed to borrow. Payments are made after they harvest. The DA claims that farmers in the Davao area as well as those in North Cotabato benefited from this financing window.

Meanwhile, the GMA-CARES-IRSP program promotes the use of certified seeds and aims to wean farmers away from reusing their farm-saved seeds. It complements the GMA-CARES-HCPP which promotes the use hybrid corn varieties and the GMA-CARES-SRF which assists sugarcane farmers. All three programs operate in tan-

dem with the GMA CARES-Unlad Ani HRCP and were piloted in Davao and North Cotabato.

Support for livestock raising is through the GMA CARES-Dairy program which aims to augment milk production in the country and to provide deserving farmers with opportunities to increase their income. The National Dairy Authority (NDA) closely coordinates the program and provides farmers with technical and marketing assistance. However, only members of cooperatives with the capacity to purchase milk from dairy farmers can avail of this assistance. The program also requires farmers to form groups of three to 15 members before their loans can be processed and approved.

Other programs, like the GMA-CARES URP, extend support for livelihood activities related to agriculture, fishery, and the food sector. It provides urban and rural poor families with start-up or additional capital for livelihood undertakings. The program was initially implemented in the Davao region. The Livelihood Enhancement for Agriculture program, which covers the six regions in Mindanao, aims to empower marginal farmers and fisherfolks through support services for agriculture- and fishery-based undertakings. The program also aims to enhance the potentials of marginal farmers, fishers, rural women and farm youth to become successful entrepreneurs in agriculture and fishery

At the National Agri-Business Summit in May 2005, the DA forged an agreement with local government units (LGUs) and private businesses to develop new agribusiness lands in Mindanao. The League of Provinces of the Philippines (LPP), the DA, and the private sector committed to develop 371,327 hectares for agribusiness in 2006 with pledges reaching about P2 billion. The LPP pledged a total of P602 million while the DA and the private sector pledged P326 million and P1.1 billion respectively, as initial funds for the development of agribusiness lands (Camingue, 2005).

II.
Profile of the Rice Sector in Mindanao

Nearly a quarter, or 23.68 percent, of the country's total rice production in 2004 came from Mindanao. This rice production figure curiously corresponds with Mindanao's share in the country's total population, giving the impression that the island is self-sufficient in rice. A closer scrutiny of the rice production figures of the island, however, reveals a grimmer picture and prospects for the future of Mindanao's rice sector.

Rice Production and Yield

Mindanao's palay production showed an increasing trend over the past 10 years, from 2.79 million MT in 1995 to 3.43 million MT in 2004 (Table 1). The increase translates to an average of 2 percent annually over a decade. Government attributed this output gain to the increase in harvested areas and improvement in yields per hectare which is reportedly due to the use of improved rice varieties promoted by the Department of Agriculture. This increased output is also ostensibly due to the considerable expansion in rain-fed and irrigated harvest areas as the result of shifting of harvests due to plantings of early maturing varieties and good water supply from both irrigation systems and rainfall *(DA, 20005)*.

SOCCSKSARGEN (comprising the provinces of South Cotabato, Sultan Kudarat and Sarangani and the city of General Santos) leads the other Mindanao regions in terms of total palay production and area harvested, and even ranks among the top five rice-producing regions in the country. On the other hand, Caraga Region and Davao region exhibit the lowest volume of palay production and area harvested, respectively. However, it is the Davao region which has consistently ob-

tained the highest average yield per hectare among the six Mindanao regions (BAS, 2004). The DA claims that this trend in the Davao provinces is due to the high rate of adoption of modern rice varieties (especially hybrid in recent years) and to the availability of good water supply. But total production is going to be affected by the steady reduction of total rice areas in the region. The reduction in rice hectarage in Davao Region is generally attributed to the expansion of banana plantations, particularly in the provinces of Davao del Norte and Oriental.

The Zamboanga Peninsula showed the biggest leap in rice production, with a 37 percent increase from 1995 to 2004 followed closely by ARMM with a 2004 production increase corresponding to one-third of the 1995 level. The increases in rice production in these regions correspond with the increases in rice areas over the past decade. Conversely, the decline in annual rice production in Northern Mindanao and the Caraga regions can easily be attributed to the reduction in rice areas in these provinces which could be attributed to the conversion of rice areas to commodity crops and other uses.

In terms of rice yields, Northern Mindanao has the lowest, followed closely by ARMM. The low rice yield in ARMM is attributed by government agricultural extension technicians to the low level of adoption of certified inbred seeds, low application of chemical-based inputs and low number of irrigation facilities in its provinces. Despite the impressive increases in rice production and expansion of rice areas over the decade, ARMM provinces are considered as critical rice areas because they face man-made and natural calamities perennially (see Figure 1).

Rice Areas

In general, the rice areas in Mindanao have been steadily increasing at an average rate of one percent annually, with the current rice area about 10 percent more than what it was in 1995 (Table 1). Rice areas in Zamboanga Peninsula, SOCCSKSARGEN and ARMM in 2004 increased by 24 percent, 22 percent and 15 percent, respectively, compared to their level in 1995. These regions also comprise the biggest rice areas in Mindanao with surplus production, and contribute rice for the rice-deficit areas in the island and beyond (see Figure 1). The increase in rice areas in these regions is attributed to the conversion of coconut and corn areas, which were affected by market price fluctua-

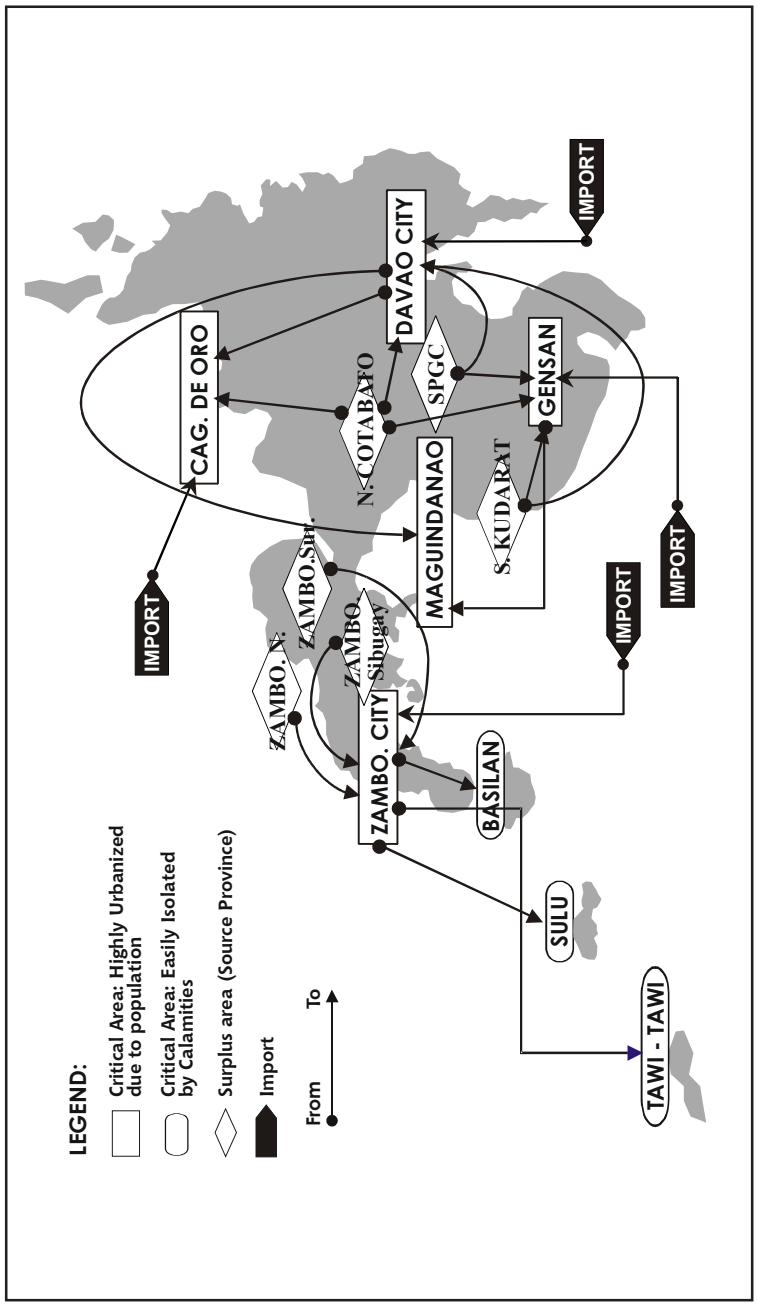


Figure 1. Rice distribution map of Mindanao
(Adopted from Rice Program Road Map: Southern Philippines, DA GMACARES.)

Table 1. Production, area, and yield per hectare of palay by region in Mindanao, 1995 2004
(Source of Raw Data: BAS as of September 2005)

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
PRODUCTION										
Philippines	10,540,649	11,283,568	11,268,963	8,554,824	11,786,625	12,389,412	12,954,870	13,270,653	13,499,884	14,496,784
Mindanao	2,794,759	2,888,042	2,619,868	2,206,457	2,757,691	3,031,795	3,209,441	3,288,343	3,242,112	3,432,836
Zamboanga Peninsula	342,836	377,331	355,316	261,285	322,164	443,598	431,080	505,117	524,077	546,925
Northern Mindanao	510,704	452,820	411,999	427,161	479,557	499,605	531,776	532,508	489,872	465,872
Davao Region	381,470	388,765	367,161	339,333	386,312	388,183	402,441	440,152	459,444	480,371
SOCCSKSARGEN	827,550	987,546	897,877	712,982	940,964	1,044,794	1,063,220	1,060,916	1,025,035	1,097,135
CARAGA	402,359	349,697	280,970	239,949	280,209	308,066	336,365	327,070	344,706	351,629
ARMM	329,840	331,883	306,545	225,747	348,485	347,549	444,559	422,580	398,978	490,904
AREA (ha)										
Philippines	3,758,691	3,951,136	3,842,270	3,170,042	3,999,839	4,038,085	4,065,441	4,046,318	4,006,421	4,126,645
Mindanao	929,828	1,011,942	933,571	776,586	973,168	988,861	1,001,037	1,015,271	996,059	1,023,678
Zamboanga Peninsula	119,621	132,472	129,136	98,777	127,111	151,574	148,446	151,866	155,120	156,402
Northern Mindanao	139,611	137,904	127,417	128,000	140,336	144,220	146,207	144,947	135,466	129,934
Davao Region	110,971	112,368	107,666	94,119	103,208	104,348	105,956	111,719	113,777	110,747
SOCCSKSARGEN	254,332	324,461	307,723	241,354	336,653	321,506	314,888	314,632	306,243	325,102
CARAGA	146,330	141,528	115,108	94,912	111,925	117,285	120,655	118,034	113,921	115,348
ARMM	158,963	163,209	146,521	119,424	153,935	149,928	164,885	174,073	171,532	186,145
YIELD PER HECTARE (mt)										
Philippines	2.80	2.86	2.93	2.70	2.95	3.07	3.19	3.28	3.37	3.51
Mindanao	3.01	3.02	2.81	2.83	2.88	3.05	3.20	3.25	3.29	3.25
Zamboanga Peninsula	2.87	2.85	2.75	2.64	2.53	2.93	2.90	3.33	3.38	3.50
Northern Mindanao	3.66	3.28	3.23	3.34	3.42	3.46	3.64	3.67	3.62	2.58
Davao Region	3.44	3.46	3.41	3.61	3.74	3.72	3.80	3.94	4.04	4.34
SOCCSKSARGEN	3.25	3.04	2.92	2.95	2.80	3.25	3.38	3.37	3.35	3.37
CARAGA	2.75	2.48	2.44	2.53	2.50	2.63	2.79	2.77	3.03	3.05
ARMM	2.07	3.03	2.09	1.89	2.26	2.32	2.70	2.43	2.33	2.64

tions, to rice cultivation. Moreover, the increase in rice land areas may also be due to the clearing of formerly uncultivated areas.

On the other hand, the biggest decline in rice areas was experienced in Caraga Region with a 21 percent decline in 2004 compared to the 1995 level. This decline may be attributed to the conversion of rice areas into plantations in the provinces of Agusan and Surigao, although no available data from relevant government offices could be used to support this claim. Northern Mindanao, a center for the production of pineapple for exports and livestock, suffered a 7 percent decrease in its rice areas from 1995 to 2004. Based on figures from the Department of Agrarian Reform (DAR), the combined average yearly conversion in Davao City, Davao del Sur and Davao del Norte for the period 1999-2003 was 178 hectares (DAR Region XI, 2006). This figure does not include the data from Davao Oriental, a major rice growing area in the region. Compared with the total rice area in the Davao Region in 2003, the official yearly average land conversion figure is actually less than one percent. Notably, the regions that have experienced a decline in rice areas are the same ones that perennially experience rice-deficits among the regions in the island. It is no accident that the most densely populated cities of Cagayan de Oro and Davao are all located in these rice-deficit and low-rice-hectarage regions (see Figure 1).

Domestic and International Trade in Rice

Rice Self-(In)sufficiency.

Despite posting trade surpluses in some agricultural products and having vast agricultural land resources, Mindanao's rice supply has not been sufficient to feed its people. The levels of sufficiency for rice in the region were only 75 and 85 percent in 2001 and 2002, respectively (DA data). These figures are higher than the 66 percent sufficiency level posted in 1998 but still lower compared to the 90 percent posted in 1995 (Canuday, 1998). It would be nice to examine rice self-sufficiency figures for later years but these are not available.

While half of Mindanao's regions produce rice surplus, the other half suffer from deficits. The most densely populated urban areas in the island also happen to be located in the rice-deficit regions with steadily decreasing rice areas due to urbanization and land conversion to commercial crops. The surplus produced by the rice abundant areas

cannot cope with the demand from the rice-deficit areas in the island. The dim demand-supply situation is aggravated because the rice-surplus provinces also export rice to areas outside of Mindanao. These exports are largely un-recorded.

Rice Importation.

In the first semester of 2004 alone, for example, Mindanao imported more than US$31 million worth of goods, particularly rice, from Thailand (MEDCo, 2004). This figure is lower than the value of imported rice (semi/wholly milled) in 2002 amounting to US$37.21 million (BAS, 2005). The volume of rice imported in 2004 is 866,157.65 MT, which is equivalent to about 28.43 percent of the country's total imported rice.

Zamboanga City is Mindanao's leading rice importer in 2004 with a total import of 59,200 MT. Ironically, NFA statistics show that the Zamboanga Peninsula is considered a major source of rice surplus for the whole island, next only to SOCCSKSARGEN. Cagayan de Oro City, however, has consistently led the list in terms rice importation from 1995 to 2003. The city imported about 52,400 MT in 2003, almost half of Mindanao's total rice import for that year (Table 2). Other top rice-importing cities in Mindanao are Davao City and General Santos City, which are the most densely populated areas in the island.

The total rice imports of Mindanao accounted for 28.4 percent of the total rice imported by the Philippines in 2004 when the region posted its highest level of rice importation since 1995 (Table 2). Table 3 shows Mindanao's rice imports in terms of volume from domestic and international sources. It should be noted that the rice import figures presented in Tables 2 and 3 only represent the legal imports every year. According to some rice industry sources, rice smuggling in Mindanao is a common phenomenon, which reaches a conservative estimate of at least 10 percent of the total rice imports of the country every year *(personal estimate from an NFA official in a public forum held in Quezon City in October 2004)*. Rice smuggled in Mindanao reportedly gets in through the backdoor entry points. The rice comes from Vietnam, China and Indonesia.

Ironically, Mindanao's increasing rice imports over the past 10 years coincided with the steady increases in rice production, yield and areas in most regions. This phenomenon could be partly explained by

Table 2. Volume of rice imports (in metric tons), 1994-1995

Province										
Manila	148,923.51	297,765.58	207,826.85	598,870.70	248,371.70	173,082.78	104,400.96	436,770.65	220,707.65	242,556.00
La Union	5,000.00	76,116.85	45,800.00	62,499.90	47,529.00	31,761.52	44,989.00	84,950.00	84,000.00	62,250.00
Subic	7,200.00	106,071.43	95,804.65	242,664.13	103,100.00	65,568.82	32,300.00	103,350.00	62,300.00	90,626.65
Batangas	12,000.00	84,291.43	61,844.00	117,278.50	79,600.00	87,834.87	162,381.00	67,930.00	11,600.00	22,650.00
Albay	11,755.85	54,325.00	50,400.00	204,693.67	170,477.00	44,334.38	94,360.00	75,050.00	55,289.00	54,975.00
Mariveles	-	-	-	-	-	-	80,927.40	-	-	-
Iloilo	10,500.00	83,311.63	32,590.95	84,420.40	26,900.00	11,275.00	5,000.00	59,495.55	12,950.00	37,250.00
Cebu	34,473.85	98,694.71	96,321.15	266,456.60	95,300.00	105,168.30	80,660.00	150,350.00	89,917.35	109,600.00
Zamboanga	5,000.00	26,759.76	47,250.00	113,150.00	55,287.50	17,375.00	42,300.00	76,350.00	30,000.00	59,200.00
Cagayan de Oro	5,000.00	43,147.10	55,917.00	116,862.55	67,953.00	35,461.45	60,800.00	77,520.00	52,400.00	52,850.00
Davao	-	17,540.00	20,000.00	113,515.45	48,520.00	31,681.08	16,600.00	56,600.00	12,100.00	108,200.00
GenSan	(combined)	-	9,500.00	16,956.00	92,200.00	48,575.00	12,975.00	-	-	15,600.00
Surigao Norte		-	-	-	-	-	-	-	-	-
Philippines	284,853.21	897,523.49	730,710.6	2,012,611.9	991,613.2	616,518.2	724,718.36	1,188,366.20	646,864.00	866,157.65
Mindanao (%)	3.51	10.80	19.18	21.65	22.22	15.81	16.52	17.71	17.02	28.43

Source of raw data: NFA as of September 2005

Table 3. NFA Distribution of Local and Imported Rice in Mindanao, 2000-2005 (in metric tons)

	2000		2001		2002		2003		2004		2005*	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
PHILIPPINES	**552,744**	**615,892**	**155,634**	**657,827**	**394,054**	**844,996**	**184,498**	**957,757**	**248,403**	**1,093,749**	**93,684**	**1,449,769**
WESTERN MINDANAO	***13,296***	***32,160***	***1,663***	***42,778***	***10,663***	***43,071***	***562***	***41,681***	***2,638***	***67,434***	***2***	***66,904***
Zamboanga City	581	14,293	20	18,811	4,377	16,489	94	23,500	1	39,142	0	38,721
Pagadian	7,006	3,197	1,112	4,498	2,593	3,019	231	7,388	1,482	10,251	0	10,395
Ipil/Sibugay	1,956	4,259	270	2,817	1,545	2,876	11	3,159	1,145	7,146	0	5,446
Dipolog	1,290	6,353	235	7,060	583	9,301	226	7,634	10	10,895	2	12,343
NORTHERN MINDANAO	***27,518***	***25,467***	***3,551***	***31,029***	***17,513***	***40,896***	***6,408***	***67,325***	***3,461***	***54,399***	***677***	***52,276***
Bukidnon	3,544	1,485		1,525	3,927		1,366	988	2,811	2,157	566	4,965
Camiguin	900	2,488	0	3,448	215		0	4,107	0	4,908	0	5,308
Lanao del Norte	4,612	3,564	65	3,389	1,873	4,709	31	6,164	398	9,432	55	9,949
Misamis Occidntal/Ozamis	1,924	1,781	26	3,579	763	5,929	2	7,450	244	9,799	0	8,953
Misamis Oriental	3,429	9,056	124	11,681	1,862		296	25,762	8	28,103	0	23,102
CARAGA REGION							***4,712***	***22,855***	***1,655***	***34,567***	***1,264***	***35,205***
Agusan del Norte	3,886	2,480	5	4,254	2,744	6,719	217	6,387	1,655	6,413	0	11,809
Agusan del Sur	3,335	1,421	76	2,644	3,420	2,119	838	2,804	0	8,864	14	7,892
Surigao del Norte	5,088	6,719	497	4,335	250	7,965	160	9,870	0	12,495	739	8,161
Surigao del Sur/Tandag	7,338	1,818	2,169	3,142	5,094	3,379	3,497	3,793	0	6,795	511	7,342
SOUTHERN MINDANAO	***29,194***	***21,562***	***8,469***	***32,279***	***24,474***	***20,657***	***3,352***	***35,968***	***7,404***	***117,043***	***132***	***87,844***
Gen. Santos/ Saranggani	6,531	4,518	1,235	3,973	7,620	2,094	842	4,331	1,286	30,829	40	24,567
Davao City	4,944	9,539	1,257	3,558	6,067	7,807	85	16,687	413	44,799	0	30,366
Digos/Davao del Sur	4,148	3,369	1,052	2,570	3,332	1,375	859	1,788	2,609	10,033	93	8,012
Tagum/Davao del Norte	5,262	2,133	2,110	4,212	2,990	3,315	69	6,339	1,078	13,357	0	11,887
Compostela Valley					0	2,764	165	3,131	237	7,707	0	5,607
Mati/Davao Oriental	3,043	2,004	773	3,755	3,016	3,302	1,331	3,692	1,781	10,318	0	7,404
CENTRAL MINDANAO	***26,916***	***7,641***	***6,109***	***3,755***	***24,788***	***4,709***	***11,381***	***428***	***16,258***	***5,332***	***2,875***	***20,011***
North Cotabato	10,740	3,669	3,171	366	8,060	0	5,980	0	5,845	103	626	5,667
South Cotabato	5,266	0	2,042	0	6,095	0	1,707	428	37,486	2,584	422	7,089
Sultan Kudarat	11,294	171	2,824	0	8,599	0	3,640	0	6,600	1,725	1,823	7,225
SPGC	270	238	49	0	161	0	55	0	65	20	4	31
ARMM	***13,633***	***32,941***	***3,927***	***8,591***	***14,749***	***9,826***	***2,572***	***13,696***	***6,539***	***21,469***	***1,797***	***20,336***
Maguindanao	13,214	20,041	3,881	4,548	14,623	3,029	2,572	6,179	6,539	8,834	1,698	11,262
Lanao del Sur	419	7,871	46	2,493	126	5,356	0	3,583	0	6,288	0	3,060
Sulu	0	3,612	0	737	0	1,151	0	113	0	45	0	909
Tawi-tawi	0	1,417	0	813	0	290	0	146	0	1,195	100	829
Basilan	539	2,277	0	6,014	802	5,457	0	3,675	0	5,108	0	4,276
TOTAL for MINDANAO -	**110,558**	**119,771**	**23,718**	**118,433**	**92,188**	**119,159**	**28,988**	**181,952**	**37,955**	**300,243**	**6,747**	**282,576**
% to Total Philippines:	***20***	***19***	***15***	***18***	***23***	***14***	***16***	***19***	***15***	***27***	***7***	***19***

** Preliminary data*

Source: National Food Authority (NFA), Business Development Department

the continued rise in the island's population due to steady birth rates and the influx of settlers. This population growth means increased rice consumption and demand which cannot be met by increases on the supply side. And since the rice-surplus areas of Mindanao, such as the Zamboanga Peninsula and SOCCSKSARGEN Regions, also supply rice to other provinces outside of Mindanao, especially Cebu in the Visayas, the demand-supply gap is aggravated. This has led to more rice imports over the past decade *(Interview with a major rice trader in South Cotabato, 24 February 2006)*.

The provinces of Sultan Kudarat, North Cotabato, Zamboanga del Norte, Zamboanga del Sur and Zamboanga Sibugay are considered rice-surplus areas in Mindanao. These areas regularly supply rice to the highly urbanized cities of Davao, Cagayan de Oro, General Santos and Zamboanga. In contrast, the provinces of Basilan, Tawi-tawi and Sulu are considered critical areas in terms of adequacy of rice supply since they are prone to natural and man-made calamities, such as armed conflict. Figure 1 presents the rice distribution map of Mindanao, as presented by the National Food Authority (NFA).

It is not clear from NFA data whether the domestically-sourced rice distributed by the NFA in Mindanao all come from the island's rice-surplus areas, as shown in Figure 1. NFA officials at the national office who were interviewed said that the rice that the NFA distributed in Mindanao "most probably" come from the rice-surplus areas within the island itself since the recorded/legal rice shipment that comes into the region are all from foreign sources *(Informal discussions with officials of the NFA's Business Development Department, 4 April 2006)*. The NFA does not keep a record of the actual sources of locally-procured rice that it distributes in rice-deficit areas. The amount of locally-sourced rice distributed by NFA Mindanao was generally less than the volume of imported rice from abroad, except in 2000 and 2002 (Table 3).

As mentioned earlier, the highest level of rice importation by Mindanao was recorded in 2004, with about 300,000 MT or 27 percent of the total rice imports. In the rice imports figure in 2005-when the Philippines posted its largest rice imports at more than 1.6 million MT-Mindanao's share of imports was only 19 percent. Nearly 40 percent of the total rice imports in 2004 went to Southern Mindanao, which includes the populous urban centers of General Santos City and Davao City (see Table 3).

Socio-Economic Profile of Mindanao Rice Farmers

In the midst of bountiful production, increasing yields and expanding rice land areas in most parts of the island, it is a sad irony that Mindanao rice farmers are considered a marginalized sector similar to their brethren in other rice areas across the Philippines. Unfortunately, a more accurate description of the socio-economic profile of the rice farmers in Mindanao is hampered by the absence of sector-specific data from available government statistics, a situation that can only be remedied by case studies that can best complement a macro-view of the situation of Mindanao's rice sector.

Agricultural Labor Force.

A clear majority of Mindanao's labor force is employed in the agriculture sector (see Table 4). Nearly half of the island's 8.5 million labor force is engaged in agricultural activities. As much as 70 percent of the total labor force of ARMM in 2004 was engaged in the agriculture sector. The lowest percentage of the labor force in agriculture was recorded in Region XI, at 40 percent of the total, which is still very substantial. But, there is a decline in the percentage of the labor force involved in the agriculture sector over the 10-year period (See Table 4). On average, across Mindanao, the agricultural labor force decreased by about 5 percent from 1995 to 2004. The biggest decline was experienced by Region XIII (Caraga Region) at 10 percent and Region XII (SOCCSKSARGEN) at 9 percent, which could be attributed to the growth of the industrial sectors (such as fish and export crop processing) and the service sector.

Unfortunately, there are no figures available that would show which portion of the agriculture labor force is engaged in rice production and related activities. But since rice is the most important and the most abundant crop produced across Mindanao every year, it is logical and safe to assume that a great majority of Mindanao's total labor force involved in the agriculture sector are engaged in rice production, processing and/or marketing. Palay production accounted for some 13 percent of Mindanao's total agricultural production in 2004, with a growth rate of 5.9 percent from 2003 (MEDCo, 2005). This is closely followed by corn at 12 percent of the total, with a growth rate of 11.51 percent from the previous year.

Table 4. Total Labor Force in Mindanao and Percentage Employed in Agriculture Mindanao, 1995-2004 (in thousands)

Total Labor Force and Numb Mindanao, 1995-2004 (in tho	
REGION	1995
X	11,234
XI	11,465
XII	11,716
XIII	12,320
ARMM	-
	-
NET RETURNS	
PHILIPPINES	
Total Labor Force	28,040
Agriculture Labor Force	11,323
% of Agriculture to Total	0.40
	2,732
MINDANAO	
Total Labor Force	6,676
Agriculture Labor Force	3,539
% of Agriculture to Total	0.53
Region IX	
Total Labor Force	1,105
Agriculture Labor Force	562
% of Agriculture to Total	0.51
Region X	
Total Labor Force	1,789
Agriculture Labor Force	894
% of Agriculture to Total	0.50
Region XI	
Total Labor Force	2,151
Agriculture Labor Force	1,008
% of Agriculture to	

Table 4. (continuation)

REGION	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Region XIII										
Total Labor Force	-	941	926	958	994	917	999	975	1,026	1,030
Agriculture Labor Force	-	494	451	442	490	453	475	460	437	433
% of Agriculture to Total	-	0.52	0.49	0.46	0.49	0.49	0.48	0.47	0.43	0.42
ARMM										
Total Labor Force	670	691	684	712	723	754	786	879	1,002	938
Agriculture Labor Force	508	480	472	479	480	510	528	565	722	655
% of Agriculture to Total	0.76	0.69	0.69	0.67	0.66	0.68	0.67	0.64	0.72	0.70

Note:
** 1995 data for Caraga Region were integrated in Regions XI and X*

Source of Raw Data: National Statistics Office
Processed by: MEDCo Secretariat

Family Income.

Data on the income of rice farmers in particular and farmers in general are even harder to come by since the income data generated by government surveys and statistics are not segregated by sector. Also, in general, most rice farmers derive their total income from a combination of sources from within the farm from other crops, poultry and livestock raising and even fish-farming, as well as from off-farm sources. Proxy data, however, could be used to provide a picture of the income and socio-economic profile of rice farmers in Mindanao.

Using the average income profile of Mindanao vis-à-vis the national average (Table 5), which shows that the average family income in Mindanao is only two-thirds of the national average, one could assume that the income of the segment of the population that depends on agriculture would be lower than the average for each region. The regions with the highest percentage of the labor force employed in the agriculture sector, namely ARMM and Region IX (Zamboanga Peninsula), have the lowest family average income. Conversely, the regions with the lowest percentage of the labor force in the agriculture sector, namely Northern Mindanao and the Davao Region, have average family incomes exceeding the overall average for Mindanao, although the figure is still lower than the national average and that of Luzon's. Thus, based on these trends, it may be assumed that the proportion of the labor force that derives their income from agriculture has a significant correlation with the income of families.

Table 5. Average Annual Income, By Major Island Group, Mindanao, By Region

REGION	1988	1991	1994	1997	2000
Philippines	40,408	59,073	83,160	123,881	145,121
Luzon	47,432	69,863	102,026	154,620	146,117
Visayas	28,593	44,555	58,316	81,695	101,578
Mindanao	35,201	46,471	60,301	87,440	96,997
Region IX	31,984	42,622	50,784	87,294	88,214
Region X	35,801	45,179	63,470	99,486	108,480
Region XI	37,132	51,722	71,177	94,408	107,976
Region XII	35,090	44,398	61,282	81,093	102,707
Caraga	-	-	52,982	71,726	81,519
ARMM	-	43,677	51,304	74,885	79,110

Source of Basic Data: Family Income and Expenditure Survey, NSO
Processed by: MEDCo Secretariat

Since the agriculture sector is highly dependent on the utilization of the natural resource base and strongly affected by the behavior of the market, it may be assumed that the sectors dependent on agriculture have lower incomes compared to those in the industrial and service sectors. The income situation could be worse for the labor force involved in the rice sector. As per NFA data, the farmgate price of palay in Mindanao over the period 1995 to 2005 increased only by an average of 4 percent per year, computed based on the nominal value of palay farmgate price per kilo, as shown by the statistics from Western and Northern Mindanao (see Table 6).

Using the average yearly nominal price of palay as basis to approximate the typical income of rice farmers, it may be assumed that the annual income of a typical rice farmer over the 1995 to 2005 period grew only by an average of 4 percent, not taking into account the years when the farmgate price of palay actually declined, as it did in 1996-1997 and 1998-1999 (see Table 6). Even taking into account the average increase in rice production across Mindanao at 2 percent, as discussed in a previous section, the assumed income of rice farmers is still very low, especially when viewed vis-à-vis the rate of inflation and the steady depreciation of the Philippine peso.

Based on official computations of the costs of and net returns from rice production, it is no surprise to see that rice farmers in almost

Table 6. Palay Farmgate Price per Kilo, Yearly Average Mindanao, 1995-2005**

	1988	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005*
Western Mindanao	6.50	7.54	7.54	7.93	7.48	8.40	8.09	8.74	9.27	9.10	10.99
Northern Mindanao	6.87	7.74	7.65	7.94	7.74	8.29	7.89	8.29	8.92	10.28	11.33
Davao Region								8.21	8.56	9.22	11.15
SOCCSKSAR-GEN								8.79	9.07	10.04	11.11
ARMM			8.43	7.45	7.92	7.91	7.57	8.90	8.09	10.16	10.16
Caraga			7.20	7.53	7.15	8.15	7.58	8.24	8.56	9.08	10.37
Southern Mindanao	7.15	8.03	8.07	8.02	7.99	8.35	7.95				
Central Mindanao	7.15	8.14	8.11	8.07	8.01	8.44	8.77				

** Average price for 2005 is only from January to September only.*
*** The regional delineations in Mindanao have changed a few times between 1995 and 2005. The table reflects the regional delineations as they were in the specific years that they existed.*

Source: National Food Authority

all regions of Mindanao actually suffer losses in this particular economic activity (see Table 7). In 2002, only the rice farmers in the Zamboanga Peninsula earned profits from rice farming at levels higher than the national average, in both irrigated and non-irrigated areas.

The earnings of rice farmers from across Mindanao from each hectare of irrigated land that they till is way below the national average of P5,763 in 2002. Farmers from SOCCSKSARGEN and Caraga, areas that have been producing rice surplus in recent years, even suffered losses in irrigated areas. The situation is even graver for those farmers in non-irrigated areas where all regions, except Western Mindanao and ARMM, experienced net losses in rice production. The net earnings of farmers in non-irrigated areas in ARMM in 2002 were barely 12 percent of the national average earnings.

Considering that rice is generally grown only for two seasons annually, it is not hard to imagine that even the most productive and profitable rice farmers in the Zamboanga Peninsula, who earn some P7,192 from irrigated areas and P8,426 from non-irrigated areas, would find it hard to make both ends meet (Table 7). At twice-a-year harvests in irrigated areas, this income would translate to P1,198.67 per hectare per month. A rice farmer who owns or rents non-irrigated land would be lucky to plant and harvest rice twice a year. In short, rice

farmers in the rice-surplus areas of Mindanao who own or rent a hectare would have to make do with this monthly income which translates to less than $1 a day to support himself and his family. The economic situation of those in rice-deficit areas is undoubtedly worse.

Tenurial Status and Land Distribution.

The socio-economic situation of rice farmers in Mindanao can more clearly be gleaned from the general profile of their land tenure status. A typical rice farmer in Mindanao can be classified either as owner, tenant or leaseholder with an average landholding ranging from 0.75-3.0 hectares. Based on available government data, a large number of rice farmers in the provinces of Zamboanga del Sur, Bukidnon, Misamis Oriental, Davao del Norte, North and South Cotabato, Sultan Kudarat, Agusan del Sur, Basilan, Lanao del Sur and Maguindanao own the land that they cultivate (Table 7). These areas roughly correspond to the areas targeted by government in its series of land reform programs since the 70s. The predominantly-Muslim provinces of ARMM notably have bigger land areas owned by individual rice farmers. On the other hand, provinces like Zamboanga del Norte, Misamis Occidental, Sarangani, Surigao del Norte and the city of Zamboanga have rice farmers who are mostly tenants. In Davao City, Davao del Sur, Agusan del Sur and Agusan del Norte, the majority of rice farmers are leaseholders.

Table 7. Average palay production costs and returns (in pesos per hectare) in Mindanao by region, 1991-2002

REGION	1991		1995		1999		2000		2001		2002	
COST	**I**	**NI**	**I**	**NI**	**I**	**NI**	**I**	**NI**	**I**	**NI**	**I**	**NI**
Philippines	11,029	5,269	19,138	10,772	23,369	13,839	24,617	14,382	25,342	14,892	26,659	15,832
IX	11,234	7,195	18,753	12,446	23,031	15,896	24,369	16,619	25,012	17,189	26,318	18,131
X	11,465	8,639	19,813	17,495	25,516	22,194	26,161	22,652	26,515	23,122	27,494	24,424
XI	11,716	6,923	20,230	12,813	23,200	16,145	24,557	16,854	25,127	17,171	27,422	18,683
XII	12,320	7,800	25,645	17,761	31,098	22,536	32,941	24,122	33,505	24,673	36,630	26,741
XIII	-	-	-	-	20,550	16,138	22790	17,918	23739	18,607	24379	19,145
ARMM	-	-	-	-	23,435	15,283	23,608	15,273	24,594	15,690	25,514	16,153
NET RETURNS												
Philippines	2,464	3,777	4,464	4,215	2,972	3,066	4,701	4,395	3,988	4,422	5,763	6,033
IX	2,955	1,308	3,672	1,009	(1,085)	(966)	3,737	2,600	1,216	2,219	7,192	8,426
X	1,369	2,216	4,507	(114)	2,271	(7,666)	3,476	(7,780)	1,998	(9,394)	2,949	(6,603)
XI	3,134	1,901	5,224	2,560	3,399	2,336	5,904	2,451	4,303	(192)	4,355	(707)
XII	2,732	1,572	(620)	(1,816)	(5,955)	(4,177)	(3,654)	(1,705)	(3,984)	(1,417)	(3,399)	(1,994)
XIII	-	-	-	-	(1,002)	(1,480)	446	(94)	(533)	(280)	(38)	(56)
ARMM	-	-	-	-	(934)	834	423	800	1,546	2,576	1,558	852

Note: I- irrigated; NI- non-irrigated

Source: Philippine Rice Statistics 1970-2002

Table 8. Total number of rice farmers, average landholdings and tenurial status of the majority of rice farmers in Mindanao (by province)

	Total No. of Rice Farmers	Average Landholding (ha.)	Tenurial Status of the Majority
Region IX			
Zamboanga City	4,690	1.30	Tenant
Zamboanga del Norte	-	0.75	Tenant
Zamboanga del Sur	22,500	2.0	Owner
Zamboabga Sibugay	-	-	-
Region X			
Bukidnon	-	1.3	Owner
Lanao del Norte	-	-	-
Misamis Occidental	-	1.0	Tenant
Misamis Oriental	-	-	Owner
Region XI			
Compostela Valley	-	-	-
Davao City	4,297	0.8	Leaseholder
Davao del Sur	8,257	1.0	Leaseholder
Davao Province	15,000	1.8	Owner
Region XII			
North Cotabato	67,315	1.02	Owner
Sarangani	6,040	1.5	Tenant
South Cotabato	94,768	1.44	Owner
Sultan Kudarat	58,270	1.5	Owner
Caraga			
Agusan del Norte	7,000	3.0	Leaseholder
Agusan del Sur	29,319	0.84	Owner
Surigao del Norte	47,265	1.0	Tenant
Surigao del Sur	30,339	1.5	Leaseholder
ARMM			
Basilan	154	2.0	Owner
Lanao del Sur	19,400	3.0	Owner
Maguindanao	4,202	.6	Owner
Sulu	1,088	-	-
Tawi-Tawi	2	-	-

Note: - no data

Source: http://webmail.philrice.gov.ph/prorice/prd_reg10.htm

Taken together with the statistics on the total number and area of farms in 1991 and 2000 (Table 9), Mindanao gives the impression that Mindanao farmers in general cultivate relatively big land areas compared to their counterparts in Luzon and the Visayas. But while the proportion of the number of farms in Mindanao with the total farm area is around a factor of 2.48, this does not mean that the average landholding of rice farmers in the island is about that size. As shown in Table 8, rice farmers in some regions such as Western Mindanao and Davao Region own less than a hectare. Moreover, the biggest commercial crop plantations in the Philippines are located in Mindanao, which includes the vast coconut plantations in the Zamboanga Peninsula and

Table 9. Number and area of farms, Philippines, 1991 and 2000

Region	Number ('000)		Area ('000)	
	1991	2000	1991	2000
PHILIPPINES	**4,610.0**	**4,822.7**	**9,974.9**	**9,670.8**
LUZON	**1978.6**	**1971.1**	**3905.6**	**3635.7**
NCR	15.1	22.8	53.6	71.6
CAR	108.3	120.1	155.6	177.8
I	311.8	276.8	324.5	270.7
II	285.7	321.8	530.1	540.8
III	350.8	341.5	632.5	552.1
IV-A	319.9	282.7	703.3	588.5
IV-B	209.2	221.0	569.8	542.2
V	377.8	384.4	936.2	892.0
VISAYAS	**1157.9**	**1190.3**	**2000.0**	**1912.3**
VI	411.6	429.5	754.4	666.9
VII	424.8	430.0	549.9	522.4
VIII	321.5	330.8	695.7	723.0
MINDANAO	**1473.7**	**1661.2**	**4069.2**	**4122.6**
IX	235.7	252.7	675.7	785.3
X	289.5	319.2	768.3	746.9
XI	267.2	300.0	795.9	758.3
XII	264.1	330.6	746.7	775.3
XIII	189.6	210.2	517.4	523.4
ARMM	227.6	248.5	565.2	533.4

Adapted from 2005 Selected Statistics on Agriculture

banana plantations in Davao provinces. The concentration of land for agro-industrial uses gravely affects the overall picture of land distribution as depicted in official statistics. What is also not included in the picture is that many small landholders in some parts of Mindanao where commercial crop cultivation has become prevalent have either leased out their lands to agricultural companies or have entered into contract farming arrangements to grow commercial crops.

Combining the data on the average landholdings of rice farmers, the average farmgate price of palay and the sad picture of losses incurred by farmers in rice cultivation produces a dim picture of the socio-economic situation of the sector in Mindanao. With only a small land, which they either own or rent, and with rice production that increases at merely 2 percent a year, plus farmgate prices that grows at only 4 percent at best, typical rice farmers in Mindanao inevitably incur net losses (Please see table 7) every year and obviously face numerous challenges in feeding their families, more so in providing for a secured future for their children.

Government Programs and Public Investments in the Rice Sector

National Program for the Rice Sector. Government currently intervenes in the rice industry through the implementation of the Ginintuang Masaganang Ani (GMA) commodity programs. During the first phase of the GMA rice program (2001-2004), the government was able to achieve 94 percent sufficiency, which is close to the envisioned 97 percent sufficiency level in rice. It was also during the last two years (2003 and 2004) that the government intensified the promotion and use of certified inbred and hybrid rice seeds. For 2005-2006, the GMA rice program aimed to achieve 15.12 million MT or 100 percent self-sufficiency level in rice production. But government was unable to attain this target.

The DA in Mindanao aimed to contribute at least 11 percent of the total rice production target. The attainment of this goal would be made carried out through the following strategies: 1. Expansion of hybrid rice areas; 2. Provision of location-specific intervention; 3. Seed subsidy; 4. Capability enhancement of agricultural extension workers (AEWs) through refresher courses on rice technology particularly hybrid rice; 5. Research and development; 6. Assistance for irrigation

system maintenance and rehabilitation; 7. Recognition of norms and practices of local communities; 8. Provision of performance-based incentives to AEWs; 9. Rehabilitation and repair of irrigation systems; and, 10. Continuous supply of free 2-kg registered seeds for the rice program in ARMM. About P329.5 million was proposed to be allocated for Mindanao for the Dry Season 2006 with the following break down: Production support (P180.85 million); Extension Support (P9.1 million); Regulatory Services (P30.7 million); Research and development Support Services (P6.2 million); Information Support Services (P8.5 million); Incentive Program (P12.5 million); and, Irrigation Development and Other Infra and Post-harvest Services (P81.5 million) [Southern Philippines Cluster Accomplishment Report as of 24 August 2005].

The GMA Rice Program for 2005-2006 has the following program components:

1. *Hybrid Rice Commercialization Program* (HRCP). Through the expansion of hybrid rice cultivation, the government is hoping to increase the current yield of palay by at least five percent annually. The program has provided the farmers with a P1,300 seed subsidy per 20 kg bag of hybrid rice seeds. At present, there are six hybrid rice varieties that are already commercialized in the market, namely: PSB Rc72H (Mestizo 1), NSIC Rc114H (Mestizo 2), NSIC Rc116H (Mestizo 3), NSIC Rc124H (Bigante), NSIC Rc132H (SL-8) and Rizalina 28.

In Mindanao, some of the strategies to expand the existing hybrid rice areas include: 1. A series of technical briefings on hybrid rice cultivation; 2. Massive campaign on HRCP through radio, TV, and print; 3. Involvement of National Irrigation Association (NIA) technicians and Irrigator's Association (IR) presidents; 4. Establishment of more technology demonstration and conduct of field days and harvest festivals; 5. Soil sampling free-of -charge for hybrid rice areas; and, 6. Close coordination with LGUs, implementers and other stakeholders.

As of 24 August 2005, the area planted to hybrid rice in Mindanao expanded to 35,154 hectares, about 58 percent of the targeted area for hybrid rice cultivation and comprises about 26.22 percent of the country's total area planted to hybrid rice. The largest area planted to hybrid rice is in Region XI (Davao Region), at about 8,040 hectares

and is expected to produce around 52,265 MT. While the extent of hybrid rice cultivation in most of the regions is way below the target set by the government, it is however notable that the area planted to hybrid rice in Region XIII (Caraga) exceeded the target by 13 percent (Table 10).

Table 10. Hybrid rice cultivation in Mindanao as of 24 August 2005

Region	Target (ha)	Area planted (ha)	% accomplished	Expected production (MT)
IX	10,000	6,565	66%	42,673
X	7,931	4,991	63%	32,442
XI	14,000	8,040	57%	52,265
XII	14,500	6,859	47%	44,584
XIII	6,700	7,592	113%	49,348
ARMM	7,500	1,107	15%	7,196
Mindanao	**60,631**	**35,154**	**58%**	**228,501**
Philippines	**214,000**	**134,066**	**62.65%**	**871,429**

Source: Southern Philippines Cluster Wet Season (May-October 2005) Accomplishment Report (as of August 24, 2005)

2. *Enhancing Productivity in Low-Yielding Provinces and in Newly Rehabilitated/Generated Irrigated Provinces.* Provinces which have very low average yield as well as those with newly generated and rehabilitated irrigated areas, were identified and were given technology interventions. The low-yielding provinces in Mindanao include Surigao del Norte, Surigao del Sur, Zamboanga del Norte, Maguindanao, Saranggani and Davao Oriental.

3. *Fertilizer Assistance for Hybrid Rice Farmers.* The government has collaborated with the Philippine Phosphate Fertilizer Corporation in providing the farmers participating in the HRCP with urea fertilizers at subsidized prices. Farmers are entitled to a discount per bag of urea for every bag of hybrid rice seeds procured.

4. *Location-Specific Intervention.* Other interventions in rice production will be implemented depending upon the specific needs of the locality. The different Regional Field Units (RFU) are responsible for determining these interventions.

5 *El Niño Mitigation.* The program has implemented the Quick-turnaround (QTA) planting as a strategy to minimize the impact of El

Niño. This strategy involves the use of early maturing varieties and direct seeding culture to shorten the maturity period of the rice crop. A bag of certified seed will also be given to farmers through a 50:50 scheme. About P50 million has been allocated for the QTA program for rice.

To enhance the implementation of these activities, the government has provided other services like the construction of additional post harvest facilities. An additional 100 dryers were installed in the provinces that were included as priority areas of the program.

Irrigation.

Rice is one crop that best thrives with plentiful water, especially the modern varieties that were bred to thrive in irrigated ecosystems. Often considered as the single most important agricultural infrastructure that determines the current situation and future of the rice sector, the status of irrigation services is a critical factor where government intervention is considered indispensable in view of the investments involved in development, construction and maintenance of irrigation systems. The sincerity of government in developing the rice sector and uplifting the condition of rice farmers in Mindanao can best be gauged by the amount of public investment in irrigation.

A close analysis of government data would reveal that the rhetoric on the development of Mindanao's rice sector is not matched by corresponding investments in irrigation. Mindanao severely lags behind Luzon and the Visayas in terms of the level of irrigation development, and even falls below the national average level of irrigation development. As of the end of 2004, not even 30 percent of Mindanao's potential irrigable area actually receives irrigation services or roughly one-third only of the national average at 44.84 percent (Table 11). The

Table 11. Status of Irrigation Development by Island Group, Philippines (as of 31 December 2004)

Area	Potential Irrigable Area (in '000 ha)	Service Area (in '000 ha)	Level of Irrigation Development (%)
PHILIPPINES	3,126,340	1,401,744	44.84
Luzon	1,834,950	962,153	52.43
Visayas	332,370	155,145	46.68
Mindanao	959,020	284,446	29.66

total irrigation service area in Mindanao is only about 20 percent of the country's total irrigated lands, which are predominantly found in Luzon. And yet, 28 percent of the country's rice supply comes from Mindanao. Despite the low level of irrigation services, Mindanao produces 28 percent of the country's total rice supply every year and still manages to achieve an average increase of 2 percent in rice production annually.

The Zamboanga Peninsula has the highest level of irrigation development at 47 percent, which partly explains its robust rice production every year (Table 12). ARMM, where the most critical areas in terms of rice deficit are located, has the lowest level of irrigation development at 14.33 percent. Around 42 percent of Northern Mindanao's potential irrigable area is considered as service areas, but the region lags behind the others in terms of rice production, as discussed in earlier sections. On the other hand, Region XII (SOCCSKSARGEN) which consistently topped rice production in the island over the years, only has about 26 percent of its irrigable areas developed for irrigation. Even the Davao Region, where the highest rice yields are recorded, only has some 36 percent level of irrigation development. These trends point out that while irrigation facilities may be critical in determining rice yield and production, especially with modern rice breeds, it is not the single most important factor in rice production. The availability of other water sources, use of appropriate seeds, level of soil fertility and predominant farming practices in specific areas are equally important factors that determine rice productivity.

Table 12. Status of Irrigation Development in Mindanao By Region, as of 31 December 2004

Area	Estim. Total Irrigable Area (ha)	Service Area (in '000 ha)				Irrigation Developm-ent (%)	Remaining Potential Area to be Developed (in hectare)
		National Irrigation System Area	Communal Irrigation System Area	Private Irrigation System Area	Total Area		
MINDANAO	959,020	162,627	101,460	20,359	284,446	29.66	674,574
Region IX	76,080	15,162	18,759	1,972	35,893	47.18	40,187
Region X	120,700	25,623	22,240	3,982	51,845	42.95	68,855
Region XI	149,610	32,391	14,104	7,943	54,438	36.39	95,172
Region XII	293,610	54,974	21,003	2,921	78,898	26.87	214,712
Caraga	156,720	18,412	18,384	3,316	40,112	25.59	116,608
ARMM	162,300	16,065	6,970	225	23,260	14.33	139,040

Source of Raw Data: National Irrigation Administration (NIA)
Processed by: MEDCo Secretariat

More than half of the irrigated areas in Mindanao are serviced by national irrigation systems, while about one-third benefit from communal systems. National systems are large infrastructure that are built and maintained by the National Irrigation Administration (NIA) while communal systems are smaller ones that are managed by local governments and irrigation associations. About 7 percent of the total irrigated areas are served by private irrigation systems, which are mainly owned by companies that operate commercial crop plantations, the biggest of which are located in Davao Region.

The statistics do not indicate when the irrigation systems were actually constructed, and what their current state is. Knowledge about the actual condition of irrigation systems is critical in ensuring their efficient operation in providing water for rice farms at the right time and in adequate volumes. The funds allocated by the government in maintaining existing irrigation systems and building new ones, particularly communal systems that could be maintained by the farmers themselves, would provide good indicators on the level of public investments in this critical infrastructure.

Post-Harvest Facilities.

Other critical support services in the development of the rice sector are post-harvest facilities, which include rice mills, threshers, drying facilities, warehouses and transportation services. These support infrastructures are crucial in ensuring the efficient processing, handling, transport and marketing of rice from the farms to the domestic markets. The efficient operation of post-harvest facilities contributes to the reduction of post-harvest losses in rice and would translate to higher income for rice farmers. At present, the rice milling recovery rate in the Philippines stands at 65 percent, which is largely attributed to outmoded processing technology and equipment in rice processing. (Obanil and Daño, in *State Intervention in the Rice Sector in Selected Countries*, 2005)

The NFA owns 19 rice mills in Mindanao which are distributed across the regions, mostly in Western and Northern Mindanao. It owns and operates a total of 88 warehouses across Mindanao, with 25 located in Northern Mindanao which a top producer of corn rather than rice. These warehouses are used to store rice and corn, and are sometimes leased out by the NFA to private traders to earn income for the government. Another post-harvest facility of the NFA that rice

shares with corn is the mechanical dryer, of which the agency currently owns 105, with 44 located in Northern Mindanao. None of the more advanced rice processing equipment that the NFA owns, such as graders, de-hullers, polishers and bag closers form part of its operation in Mindanao. The agency actually owns post-harvest infrastructures much more than what is reflected in Table 13, but most of which either are located in Luzon and the Visayas, or are already non-operational due to age and lack of maintenance. (Obanil and Daño, in State Intervention in the Rice Sector in Selected Countries, 2005)

As part of its intervention in the post-harvest stage, the NFA's Palay Negotiable Warehouse Receipt (PNWR) and the Farmer's Grains Exchange Program (FGEP) are also implemented nationwide. The PNWR program provides farmers free storage of their palay for six months in any designated NFA warehouse. The free storage includes the costs for warehouse rental, insurance premium, stock maintenance, re-bagging and handling-in to the warehouse. However, the cost of handling-out of the warehouse and cost of the sack, if NFA sacks were used, would be charged to the farmer and the weight loss due to natural causes would be deducted from the original weight of the deposited stock upon withdrawal. In addition, the PNWR also offers a commodity loan. Using the PNWR as pledge or collateral, farmers could also avail of loans from individual financiers and participating government and private financing institutions. A One-Stop-Shop Processing Center, established in designated NFA warehouses/ offices, allows processing of required documents. This program is implemented nationwide, and there is no data available on the status of its actual implementation in Mindanao.

The other program, FGEP, is intended to provide farmers with the opportunity to engage in marketing their produce in different consumption points throughout the country at optimum levels of marketing costs through the utilization of NFA's existing processing, transport and manpower resources. It also aims to assist farmers to become competitive with established rice traders in marketing their produce. Under this scheme, an FO duly accredited by the Agency can deposit stocks in paddy form at NFA designated deposit areas (production area) and withdraw the same in rice form in another area (withdrawal area). An Exchange Service Fee (ESF) would be charged to the FO to defray the actual expenses incurred by NFA in the exchange process.

The role of the NFA in providing post-harvest infrastructure support to rice farmers used to be critical, especially when government investments in this area were still quite substantial. Over the years, public investments in post-harvest facilities, especially through the NFA, have dwindled, and the role shifted to the private sector. The bulk of government funds in NFA are spent in maintaining its minimal level of support price for palay purchases and for the retail price of rice in deficit areas, rather than in upgrading its facilities and equipment. A closer scrutiny of the government allocation to the NFA over the years, to find out how much of these were allocated to the upgrading of post-harvest infrastructures and the specific funds that actually went to Mindanao, would provide a better appreciation of the public investments in post-harvest facilities in Mindanao's rice sector.

Training and Extension.

One of the major roles of the government in the implementation of the rice program is to provide training and extension services. Under the GMA Rice Program, the DA's Regional Field Units (RFU) conducts technical briefings for farmers. In particular, prospective hybrid rice farmers are briefed on the hybrid rice technology and the mechanics of the implementation of the HRCP. The RFUs also conducts technology demonstration farms as well as field days as a promotional activity that showcase the result of the technology demonstrations. In addition, the *Farmer-led Extension Program* of the government is designed to combine farmers' field experience with the technical knowledge of agricultural extension workers in order to hasten the technology transfer.

Other trainings provided by the DA include the following: *Inbred Seed Growers' Training Course; Hybrid Rice Training Courses for Seed Growers, Seed Inspectors, and Agricultural Technologists; Farmers' Field School (FFS)* in every rice-growing municipality; season-long courses such as *Rice Specialists Training* (RST) and *Training of Trainers;* and, refresher courses on rice production.

Credit and Support Price for Rice.

As mentioned in an earlier section, the GMA rice program also provides credit support to farmers through the Hybrid Rice Credit Assistance Program (HyCAP). This is in collaboration with other public and private agencies such as the ACPC, LBP, NFA, QUEDANCOR,

Table 13. National Food Authority Post-Harvest Facilities and Warehouse Inventors As of September 2004

	NFA-Owned Warehouses				Mechanical Dryers		Rice Mills		De-hullers		Graders		Polisher		Packaging Machines		Bag Closers
	Const.	Effective Capacity (Cavans)	Acqr'd	Effective Capacity (Cavans)	No. of Units	Effective Capacity (TPH)	No. of Units	Effective Capacity (TPH)	No. of Units	Effective Capacity (TPH)	No. of Units	Effective Capacity (TPH)	No. of Units	Effective Capacity (TPH)	No. of Units	Effective Capacity (TPH)	
Region IX	15	870,000	4	348,000	23	17.69	6	8.63	-	-	-	-	-	-	2	1.20	5
Region X	25	2,463,060	-	-	44	20	6	7.30	-	-	-	-	-	-	3	1.80	4
Region XI	13	963,000	6	265,000	13	85	2	15.50	-	-	-	-	-	-	3	1.80	3
Region XII	14	1,528,250	6	193,000	21	12	3	23.50	-	-	-	-	-	-	2	1.20	3
ARMM	5	190,000	-	-	4	25	2	1.00	-	-	-	-	-	-	-	-	2
MINDANAO	**72**	**6,014,310**	**16**	**806,500**	**105**	**2.40**	**19**		**-**	**-**	**-**	**-**	**-**	**-**	**10**		

Notes:
TPH: tons per hectare

Source: National Food Authority

PhilConGrains and Rural Banks. In the marketing aspect, the NFA procures at least 10 percent of the entire palay production particularly from surplus and focus provinces.

In addition, the NFA also implements the Farmers'/ Cooperative's Option to Buy-Back (FOBB) program and the Farmers' Incentive Rice (FAIR) purchase programs as support mechanisms for the GMA-CARES program.

The FOBB program was launched in recognition of the inherent constraints in improving the farmers' income such as the lack or limited marketing and entrepreneurial skills, limited access to credit from established financing institutions, lack of post-harvest facilities and urgent need for cash which force farmers to sell their produce right after harvest to traders or millers even at relatively low prices. This scheme allows farmers and farmers' organization (FOs) selling palay to NFA to buy back almost the same volume of stock they sold to the agency within six months or one cropping cycle. The agency would charge the farmers a fee equivalent to at least the NFA's cost of borrowing and overhead expenses for the actual length of storage based on the volume to be bought back by the farmer or cooperative. Aside from providing warehouse space for proper storage of the farmers' produce, the FOBB provides farmers the opportunity to maximize their earnings through proper timing in the sale of their stocks.

Meanwhile, the FAIR program of the NFA is a procurement incentive designed to encourage farmers to sell their harvest to the agency. In return, the farmer-sellers are entitled to buy up to 25 percent of the rice recovery from the palay stocks sold to the from NFA during the previous year. FAIR addresses the traditional problem in the farm where farmers, selling their palay right after harvest, either as payment for advanced production loans or to generate immediate cash for the family's basic expenses, find themselves in tight supply of rice during the lean months where prices of rice are high. Hence, the rice allocation provided by NFA would allow farmers to have a supply of rice during these lean months.

Role of Research Institutions

Leading the government's research and development activities for rice research is the Philippine Rice Research Institute (PhilRice). The agency maintains several research stations across Mindanao, mainly

located in the major rice-producing areas such as in North Cotabato, Zamboanga and Bukidnon. PhilRice generally conducts its research and development activities in collaboration with major agricultural state colleges and universities in the region such as the University of Southern Mindanao (USM) in Kabacan, North Cotabato and the Central Mindanao University (CMU) in Valencia, Bukidnon.

Under the GMA Rice program, PhilRICE is mandated to package location-specific, cost-reducing, and environment-friendly technologies for the farmers in the region. The research and activities include the following (DA Rice Program 2005-2006):

1. *Regional adaptability trials on inbred and hybrid rice*. This aims to identify at least five elite varieties per region for use of seed growers (cooperatives) and individual farmers.
2. *Biotechnology Research*. This will focus on the use of marker-aided selection and testing of transgenic rice for use of breeding institutions. Biotechnology techniques will also be used to fast-track hybrid rice breeding and expedite hybrid varietal improvement.
3. *Production of Breeder Seed of Inbreds and Nucleus/Breeder Seed of Hybrid Parentals*
4. *Conduct of technology demonstration for both inbred and hybrid, organic rice/ system for rice intensification, balanced fertilization strategy including the use of Leaf Color Chart (LCC) and Minus-One Element Technique (MOET)*
5. *Establishment of organic rice farming*. Dubbed as "Agri-Kalikasan", this aims to develop the production of community-based organic fertilizers like rice straws and roots and chicken dung and minimize the use of oil-based fertilizer.
6. *Promotion of Tipid Abono Fertilization Scheme*. This encourages rice farmers to employ a 50:50 scheme of fertilizer application, that is, 50 percent organic and 50 percent inorganic fertilizer to reduce production cost.
7. *Pilot Demonstration of Rice Combine Harvester*. Rice combine harvesters, a machine that performs all the reaping, threshing, gathering, cleaning and bagging and is capable of harvesting one hectare/day requiring only two persons, will be pilot tested in identified areas.
8. *Upgrading of Research Facilities and Laboratories*.

Civil Society /NGO Interventions in the Rice Sector

As rich as its natural resources is the presence of several civil society organizations and non-government organizations (NGOs) that implement different programs and strategies in an effort to develop the rice industry in Mindanao. Some of the more prominent NGOs with large areas of operations and influence in the rice sector in different parts of Mindanao include the following with their general areas of operation:

Across Mindanao
- Balay Mindanao Foundation, Inc.
- Magsasaka at Siyentipiko Para sa Pag-unlad ng Agrikultura-Mindanao (MASIPAG-Mindanao or MASMIN)
- SIMCARD
- Southeast Asia Regional Initiatives for Community Empowerment (SEARICE-Mindanao)

Zamboanga Peninsula
- Kasanyangan Foundation, Inc.

Davao Region
- Davao Provinces Rural Development, Inc. (DPRDI)
- Kaanib Foundation Incorporated (KFI) - Northern Mindanao
- METSA Foundation
- Mindanao Farmers Development Center (MFDC)
- Technology Assistance Center for the Rural and Urban Poor (TACDRUP)

Southern Mindanao
- Don Bosco Diocesan Youth Foundation
- PAKISAMA
- People, Plants Research and Development, Inc. (PPRDI)
- Philippine Rural Reconstruction Movement (PRRM)

Central Mindanao
- Kadtuntaya Foundation

Caraga Region
- PAKISAMA
- AlterDev

Add to this growing list the local churches and dioceses of the Catholic Church and even the Protestant Church in different parts of Mindanao that have initiated projects and interventions specific to working with rice farmers. Notable among these Church-initiated interventions with rice farmers are the efforts of the Social Action Centers (SAC) of the Diocese of Marbel, Malaybalay, Digos and Ipil, as well as the projects of the Columban Fathers in the Zamboanga Peninsula. Most of these church initiatives are actually done in collaboration with NGOs working with rice farmers such as MASIPAG.

Training and Capacity Building.

NGOs working in the rice sector in Mindanao are generally involved in mobilizing small-scale rice farmers into local peoples' organizations with the aim of political empowerment, on top of the socio-economic and technological interventions. Most adopt strategies that include regular training of farmers on particular rice technologies to improve yield and production. In general, the technologies promoted by these organizations among rice farmers are geared toward the promotion of sustainable or organic agriculture, based on available resources in the farm and anchored on local farming practices.

MASIPAG, for example, is a farmer-led network of people's organization, non-government organizations and scientists working towards the sustainable use and management of biodiversity through farmers' control of genetic and biological resources, agricultural production and associated knowledge. It conducts trainings (particularly in rice and corn breeding and organic farming), on-farm trials and researches, extension, and advocacy campaigns. MASIPAG's secretariat merely facilitates these interventions which are directly done by its partner peoples' organizations themselves.

Rice Production Technology Models.

Notably, every organization working in the rice sector in Mindanao is known to espouse and promote specific rice farming technology among their partners. MASIPAG, for one, is known for its own MASIPAG rice farming technology which has become a by-word not only in Mindanao but across the country. A number of groups across Mindanao have adopted the MASIPAG rice farming system as their technology model. Don Bosco is known for its strict adherence to bio-dynamic rice farming, while PRRM currently promotes the system of rice in-

tensification (SRI). Some adopt the low-input ecological sustainable agriculture (LIESA) model, while there are groups such as SEARICE and PPRDI that focus their interventions on farmer-based conservation and development of seeds through participatory plant breeding. While all these rice technologies, models and farming systems are called by different names and assigned with different labels, all fall under the sustainable agriculture banner that promotes ecological protection, genetic resources conservation, water use efficiency, integrated soil fertility and pest management, synthetic chemical-free farming and farmer-centered approaches.

Production Support.
Some NGOs, such as DPRDI, TACDRUP and Balay Mindanao, extend minimal production loans and credit to farmers who meet specific criteria to help them meet the capital requirements of rice production. Such loan programs are usually tied up with the specific requirement for farmers to shift to sustainable rice farming systems. Other NGOs provide support in the procurement of organic fertilizers from other areas, while others link up farmers with groups involved in the production of organic fertilizers.

Post-Harvest Facilities.
Very few NGOs extend support to rice farmers in the form of post-harvest facilities largely because of the capital costs involved. Among these few is TACDRUP which owns and runs its own rice mill, mechanical dryer and warehouse in Matanao, Davao del Sur, although with limited milling capacity (*Interview with Alex Rendon*, 28 February 2006). The facility has been suffering losses due to under-utilization and the high costs of maintenance involved in its operations. The milling equipment and facilities also need to be upgraded to make it function more efficiently.

Marketing Support.
Many of the NGOs working in the rice sector in Mindanao are currently involved in the marketing of rice produced by their partner-farmers, especially organically-grown rice which enjoy high demand among consumers especially in the urban centers. Groups like Don Bosco and TACDRUP are actively involved in facilitating the marketing and distribution of organic rice produced by their partners to consumer channels across Mindanao. Don Bosco, for example, even runs

its own organic shop in Kidapawan City, with affiliated stores in Davao City, to sell the organic produce of its partners in North Cotabato, Davao del Sur and Sultan Kudarat.

Advocacy Support.

In the past decade, more and more NGOs and civil society organizations have been involved in policy advocacy and advocacy campaigns in support of and to complement their work at the local level with rice farming communities. The advocacy activities of many NGOs involved in rice issues revolve around the issues of food security, trade, prices of agricultural produce and agriculture support systems and infrastructures. NGOs have also been vocally campaigning on environmental issues involved in rice farming such as the use of agricultural chemicals, soil degradation, deforestation, conversion of rice lands to commercial crop cultivation, and even mining. The environmental advocacy of groups working in the rice sector, such as MASIPAG, Don Bosco and others, is generally an integral component of their overall focus in sustainable agriculture.

It is worthy to note that the advocacy activities on agriculture/rice-related issues are not only limited to organizations that work with rice farmers on rice issues but are actually spearheaded by groups working on the environment, health and even labor. IDIS, an environmental NGO, based in Davao City, for example, is heavily involved in campaigning against aerial spraying in banana plantations in the city but works closely with groups involved in the rice sector primarily because of the relevance of their campaign to rice farmers involved in sustainable and organic rice production. The campaign also involves several health groups promoting sustainable nutrition. The convergence of their advocacies is not surprising since the issues that the campaigns are focusing on are similarly premised on the principles of sustainable development and agriculture.

Networking.

NGOs, civil society organizations and even church-based institutions in Mindanao have been forming networks and alliances in the past years in support of strategic campaigns for particular issues and demands. Such networks and alliances are generally formed to serve as broader platforms for policy advocacy, awareness-raising and lobbying on issues that affect rice farmers.

Among these existing networks in Mindanao which are specifically geared towards pushing for issues affecting rice farmers are Food Sovereign Watch-Mindanao (FSW) and Panaghoy sa Kinaiyahan. FSW-Mindanao is comprised of NGOs working in the rice sector, together with health, research and consumer organizations. Panaghoy, on the other hand, is a network of local organizations in agriculture, environment and health working together to advocate for common environmental concerns. These platforms generally serve as channels for rice farmers to ventilate their interests in advocacy forums and help raise public awareness about the sector's concerns.

Cooperatives in the Rice Sector

The picture of the rice sector in Mindanao would not be complete without a discussion of the role of cooperatives. While some of the biggest rice farmers' cooperatives in the Philippines that thrived during the hey-day of the Green Revolution were based in Mindanao, very few of them managed to survive to this day. Many cooperatives in the rice sector have been artificially buoyed up by the government funds that were pumped into the cooperative movement in the 70s up to the 80s through such agricultural credit mobilization programs as the *Samahang Nayon*. When left to fend for themselves after the government stopped extending the funding lifeline to the cooperative movement, due to pressures from multilateral lending institutions and the later restrictions in the international regime, many cooperatives in Mindanao folded up. Sadly, this also eroded the farmers' faith and trust in the cooperative system.

One of the few remaining cooperatives in Mindanao working primarily with rice farmers and which initially thrived through its involvement in the rice industry is the Sta. Catalina Multi-Purpose Cooperation (SCMPC) based in President Roxas, North Cotabato. The cooperative was established in 1983 and used to derive its income mainly from the operation of its rice mill, rice trading and selling of agricultural inputs. Its main clientele are its members who are mostly rice farmers from the municipality and surrounding areas, and who also benefit from the earnings of the cooperative's operations.

While it was not losing money like many cooperatives in North Cotabato, SCMPC's earnings from its rice milling and trading operations was not modest and began to slow down in 1998 due to "over-

crowding" in North Cotabato and Davao markets. This prompted the cooperative's management to shift its focus to savings and credit services (*Interview with Edgar Amoronio,* 22 February 2006). From only P23 million in 1998, SCMPC now have more than P100 million which it is using to expand its operations vertically by setting up savings and credit service offices in other towns and provinces, and horizontally by operating a gas station, softdrinks distribution and consumer store in President Roxas.

With its thriving business of extending credit to its members, SCMPC lessened its involvement in rice trading as a principal pillar of its business. With the proliferation of small capitalists who penetrate the most remote communities to buy rice directly from farmers, thanks to the improvement of roads which made most farms accessible to vehicles, the rice business is already well-saturated, according to the Cooperative's manager. Hence, it is no longer lucrative to engage in rice trading. He said that the only reason why SCMPC continues to engage in rice trading is for "sentimental value" and to pay respect to its members who are mostly rice farmers (*Interview with Edgar Amoronio,* 22 February 2006).

Seed Producers' Cooperatives.

Aside from multi-purpose cooperatives, like SCMPC, seed producers' cooperatives operating as seed enterprises also thrive in Mindanao. Seed producers' cooperatives are involved in the propagation of certified seeds of inbred rice varieties which are usually sold to the Department of Agriculture and local government units for their agricultural programs and seed dispersal projects. The seed business in Mindanao, like in the rest of the country, is not a thriving industry with the government as the principal client. Farmers, especially rice farmers, generally do not buy seed every season and depend mainly on the traditional practice of seed saving, sharing and exchange. The government has been aggressively promoting the use of certified inbred varieties since the Green Revolution, and more recently hybrid rice seeds, in an effort to boost the domestic seed industry. Despite these efforts, DA figures show that only around 20 percent of farmers actually buy certified seeds every season. Except in the vegetable industry where most commercial farmers depend on hybrid varieties, the rice seed industry in the Philippines remains marginal.

Ironically, it was the government's hybrid rice program, which is heavily criticized by civil society and farmers' organizations, that has

breathed life into the domestic rice seed industry. Seed cooperatives are currently making good business in propagating hybrid rice seeds that are supplied to government agencies and local government units for dissemination to farmers under the DA's hybrid rice program. To date, there are eight hybrid rice seed growers cooperatives in Mindanao, four of these are in Region XI (DAMSEPCO, DASUSEPCO, NIFCO, and DOSEPCO), two are in Region XII (BINTIKU and SKHYRISCA), while the remaining two are in Region XIII (SASEPCO and Butuan Seed Producer Cooperative). The Davao Region is considered as one the major areas in the country where hybrid rice seeds are grown commercially.

The Davao Oriental Seed Producers Cooperative (DOSEPCO), for example, is considered as the most established and most lucrative seed producers' cooperatives in Mindanao. With an asset of P14 million, it is a very small cooperative with only 18 active members involved in the propagation of inbred and hybrid rice seeds mainly in Lupon and Banay-banay, Davao Oriental. DOSEPCO officers admit that their members are big landowners who can afford to specifically allocate portions of their landholdings for rice seed production and even rent lands from other farmers for this purpose. The biggest member of the cooperative is said to earn as much as P5 million per cropping from growing hybrid and inbred rice seeds (*Interview with Mrs. Nimia Yee, DOSEPCO Manager,* 30 March 2006). DOSEPCO members currently grow hybrid rice seeds mostly because of the strong demand from local government units which are its principal clients. The cooperative supplies hybrid seeds to other regions, especially in the Visayas.

From the interviews with DOSEPCO officers and members, it is undeniable that government's hybrid rice program has revived the flagging rice seed industry in Mindanao. The Cooperative was able to reverse its income losses from the production of inbred rice seeds and shifted to hybrid rice seeds cultivation in 2002. DOSEPCO officers admit that the government subsidy, particularly in the form of support for the purchase of expensive gibberelic acid (GA3), which is necessary in hybrid seeds production, initially helped the Cooperative jumpstart their business. Yet it did not affect their business when the subsidy was later removed, although they initially had difficulty in finding suppliers that would provide cheaper prices. DOSEPCO's chairperson projected that the removal of government subsidy for hybrid

rice production will likely affect their profit margin since the local government units and regional offices of the DA have less money to pay for hybrid seeds that they will procure from seed cooperatives (*Interview with Mr. Henry Lim, DOSEP*CO *Chairperson,* 30 March 2006). He lamented that seed producers and cooperatives have to "play politics" with government officials to sell their seeds, or even to facilitate the payment of seeds that they have procured. He said that the hybrid rice program has become a tool for politics at the local level since it was devolved from PhilRice's control in 2004. He intimated that the only way for seed producers' cooperative to survive in the very weak domestic seed industry in the country is to "play politics" in the midst of rampant corruption in the government which is their principal client.

Private Sector Investment in the Rice Sector

The private sector plays a pivotal role in the Mindanao rice industry, from production and distribution of agricultural inputs to rice production, from post-harvest processing to marketing and trading. The GMA Rice program has explicitly recognized the very active involvements of the private sector in the marketing aspect of the product. Traders, millers, seed growers, and input suppliers are referred to as "rice movers" in the program because of the active function they perform especially in the marketing flow. While seed companies supply the hybrid seeds, the "rice movers" distribute the seeds and other production inputs to farmers through farmers' cooperatives or association or through the local government units (LGUs), and buy the products after harvest. The "rice movers" are also acknowledged as responsible for the regular supply of milled rice to institutional buyers like hotels, food chains, corporations, and supermarkets, as well as in rice importation which the government regulates and oversees.

The emergence and growth of the role of private sector investment in rice, particularly in the area of production, supply and distribution of farm inputs, is a direct consequence of the Green Revolution era. The technology package that includes chemical-based inputs, modern seeds and irrigation that was aggressively promoted by the government provided the impetus and incentives for the private sector to invest in this lucrative component of the rice production process. As can be gleaned from the situation in Mindanao, the strongest presence

of the private sector, especially the agrichemical corporations, is felt in the area of agricultural input production. They are represented by their domestic counterparts responsible for distribution and marketing of their products which are also sold across the world. Local private players, on the other hand, are mainly involved in post-harvest processing of rice harvests and in the trading and marking of rice in the local markets.

The local distribution and retailing of agricultural inputs in many rice areas in Mindanao are generally tied to informal credit support, marketing and trading. It is a common set up in many farming communities that the local source or retailer of inputs is the same source of informal credit for farmers usually in the form of agricultural chemicals used in production. The loan is generally paid either in cash during harvest season, or more often, in its equivalent amount of palay which are then processed and traded by the input retailer-cum-creditor-cum-trader. In many areas, the multi-functional businessman also owns the rice mill and other post-harvest facilities, completely locking farmers within their control and clout.

Production and Supply of Farm Inputs.

The private sector virtually has full control over the production, supply and distribution of agricultural inputs in the rice sector. Private companies, ranging from giant transnational corporations to smaller domestic players, are the source of chemical-based inputs such as fertilizers, pesticides, herbicides, insecticides, molluscsicides, and certified seeds. Corporations such as Monsanto, Pioneer HiBred and Syngenta are popular among rural households since their products are prominently advertised everywhere and widely used by farmers. In Mindanao, these companies produce top-selling farm chemicals and more recently, hybrid rice seeds (i.e., *Bigante* for Monsanto) which are widely distributed by their local marketing arms through a vast network of wholesalers and retailers found in the biggest urban areas as well as in the smallest towns. The three largest agrichemical transnational corporations mentioned above all have substantial presence in Mindanao, maintaining offices and experimental seed stations which currently serve mainly their much bigger corn business. Local companies play a minor role in input supply in Mindanao, acting mainly as distributors and retailers of pesticides and other chemicals produced by transnational corporations.

The production of petro-based fertilizers widely used in rice production, such as urea and NPK, in Mindanao (as in the rest of the Philippines) is effectively controlled by the Philippine Phosphate Fertilizer Corporation (PhilPhos) and Atlas Fertilizers which provide the fertilizer inputs for hybrid rice sold to farmers at discounted price under the government's hybrid rice program. In Mindanao, the PhilPhos warehouses for urea fertilizer discount are located in the cities of Dipolog and Pagadian for Region IX, Cagayan de Oro, Ozamis and Valencia (Bukidnon) for Region X, Davao City and Mati (Davao Oriental) for Region XI, General Santos for Region XII, Cagayan de Oro, Davao City and Tandag (Surigao del Sur) for Region XIII, and General Santos, Ozamis and Cagayan de Oro for ARMM. PhilPhos produces the fertilizers that it sells at its plant in Isabel, Leyte. Atlas, on the other hand, produces its products in Toledo City, Cebu. Both companies import the bulk of the fertilizers that they sell in the domestic market.

Smaller companies, on the other hand, dominate the production and distribution of organic fertilizers in Mindanao, but mostly catering to fruit and vegetable producers than organic rice farmers who mainly rely on chicken manure and compost as fertilizers. Companies such as SEACROP have emerged as prominent names in organic fertilizer production and distribution in the past decade.

Private Sector Investments in Seed Production.

While rice has been traditionally under the domain of farmers, private companies have started to engage in the rice seeds business in the 90s with the government's rabid promotion of hybrid rice cultivation among farmers. Arguably, the biggest company in the hybrid rice business in Mindanao is SL Agritech, a company specifically established to engage in hybrid rice production, marketing and distribution. The venture is owned by Sterling Company, said to be in partnership with Chinese investors. The center of SL Agritech's hybrid rice seed business in Mindanao is located in Banay-banay, Davao Oriental-a town widely known as producer of premium rice varieties.

SL Agritech technically does not own land for growing hybrid rice seeds but rent land from farmers in Banay-banay and the neighboring town of Lupon. It pays a yearly rent of P25,000 per hectare to farmers under a so-called Farm Management Agreement. A copy of the standard agreement entered into by SL Agritech with farmers who

lease out their land for hybrid rice seeds production was secured in the course of the research. A cursory scrutiny would reveal the questionable nature of the agreement which does not even bear the signature of the company representative and is not even notarized for legal purposes. The agreement virtually provides that the farmer who owns the land will surrender his rights to the land during the term of the contract, which is normally from three to five years. While not indicated in the agreement, the farmers who rent out their land are usually hired by the company as care-takers or workers in their own land.

Post-Harvest Facilities.

The number of post-harvest facilities owned by the private sector in each region across Mindanao dwarfs the number of facilities owned and operated by the government, mainly through the NFA. Compared to the facilities owned by private entities, the NFA's post-harvest infrastructures are actually negligible in size and capacity (Tables 13 and 14). For example, there are 387 rice mills owned by the private sector while the NFA only operates 6 rice mills in the entire region. The NFA, however, still operates the biggest rice mills in Mindanao, although not all of them are operating within optimum levels due to stiff competition from numerous smaller and more accessible rice mills owned by private individuals.

As shown in Tables 13 and 14, the number of units and capacity of all post-harvest facilities across Mindanao have been experiencing a steady and steep decline since 1995. In 2004, the number of units of rice mills in Davao Regions was actually less than one-third of what it was in 1995. With the exception of the Caraga Region, the number and capacity of existing rice mills have steadily declined over the decade.

This is a clear indication of the continuously declining private sector investments in post-harvest facilities in rice. The year 1995 may also be considered a highly significant year in the country's trade history, when it joined the World Trade Organization (WTO) thus opening up its doors to imported goods and commodities, including rice. While the Philippines is one of the two countries allowed by the WTO to extend its policy in using quantitative restrictions (QR) as a defensive tool to protect the domestic rice industry, it has committed to significantly increase its rice imports under the system of minimum access volume (MAV) annually.

Table 14. Private Post-Harvest Facilities
Number of Units and Capacity (in bags at 50 kgs.) Mindanao, 1995-2004

Post-Harvest Facilities	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Rice Mill										
Region IX	578 6,023	582 6,099	637 6,509	630 6,535	555 6,695	574 5,691	499 6,518	395 14,676	396 4,381	3 4,3
Region X	758 10,646	771 10,956	724 10,339	717 10,098	768 11,127	665 9,433	787 10,209	442 6,575	427 6,550	4 6,3
Region XI	720 10,466	727 10,235	709 10,022	635 9,342	602 9,022	602 8,889	430 7,431	279 4,988	280 5,063	2 4,8
Region XII	438 5,868	443 5,805	430 5,522	371 7,948	341 4,689	344 5,024	349 4,927	395 5,977	384 5,462	3 5,3
Region XIII								520 6,072	507 5,878	5 6,3
ARMM	56 592	51 490	54 631	48 1,675	47 1,721	16 774	32 229	28 1,402	43 292	2,1
Thresher										
Region IX	65 679	80 859	64 577	41 449	45 536	36 277	25 220	8 82	6 75	
Region X	212 4,797	284 2,736	260 2,142	196 1,343	173 1,191	122 802	122 780	28 357	34 336	6
Region XI	252 3,848	175 3,402	174 3,248	131 2,615	124 2,404	131 2,551	104 1,977	44 1,397	35 675	7
Region XII	438 5,868	443 5,805	430 5,562	371 7,948	341 4,689	344 5,024	349 4,927	395 5,977	384 5,462	3 5,3
Region XIII							**57**	520 6,072	507 5,878	5 6,3
ARMM	56 592	51 490	54 631	48 1,675	47 1,721	16 774	32 22	28 1,402	43 292	2,1

Table 14. (continuation)

Post-Harvest Facilities	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Mechanical Dryer										
Region IX	8 1,490	1,8 2,835	29 3,034	48 4,355	36 1,910	34 3,445	37 2,416	30 2,608	33 2,658	31 2,310
Region X	40 7,243	48 7,551	58 7,572	80 11,990	77 12,612	83 26,257	70 9,571	58 26,040	59 9,174	56 27,426
Region XI	16 1,065	38 4,015	49 14,805	46 5,495	82 415,400	46 30,501	47 12,995	37 3,614	37 3,674	35 4,028
Region XII	18 1,057	32 2,895	44 3,895	34 2,620	64 6,615	69 7,002	51 5,520	49 3,864	37 3,292	53 8,340
Region XIII								38 6,747	45 5,748	48 6,635
ARMM	2 20	3 30	1 5	3 30	3 50	- -	1 5	2 150	1 50	1 50
Warehouse										
Region IX	354 1,393,151	361 ***2,031,328***	378 ***1,168,213***	394 ***3,356,715***	411 ***1,420,645***	365 ***1,559,952***	341 ***941,490***	278 ***705,052***	303 ***764,674***	285 ***933,347***
Region X	1,092 13,439,407	1,168 8,289,894	1,330 5,770,970	1,323 10,065,554	1,323 6,659,630	1,205 6,408,685	1,110 5,553,420	953 4,975,009	924 5,246,518	878 4,581,545
Region XI	1,470 9,946,059	1,504 10,562,684	1,471 10,608,120	1,476 10,076,119	1,782 8,274,424	1,618 8,762,278	1,338 8,303,944	964 7,848,220	925 4,760,269	901 4,763,773
Region XII	868 5,233,519	887 4,111,290	819 4,327,095	796 4,365,777	707 3,568,236	729 3,854,191	730 3,196,716	996 3,209,103	1,023 2,916,857	1,021 5,595,868
Region XIII								381 66,820	73,990 329	362 62,291
ARMM	367 1,840,733	251 1,751,870	243 1,954,428	245 3,201,832	223 786,390	114 1,686,042	131 1,459,585	389 50,828,550	911 1,210,025	399 847,570

Source: National Food Authority

The country's rice imports leaped since 1995, especially over the last three years due to the inability of the domestic supply to meet current demands. In 2005, the country imported a record high of 1.6 million MT of rice to meet the demands of the market. With imported rice, both official imports and smuggled rice, flooding the local markets, rice production has become sluggish hence the decreasing post-harvest facilities. Add to that the lack of incentives for the private sector to invest in rice post-harvest facilities, thus resulting in the current grim picture.

The grim situation of rice mills in Mindanao is echoed in the current status of threshers, although for a different reason. The current number of units in the Zamboanga Peninsula, for example, is merely 10 percent of the number in 1995. The decline in the number of threshers, however, may not be directly explained by trade factors, but mainly due to the prevalence of hand threshers which made the big mechanical threshers virtually obsolete. Most of the surviving mechanical threshers in Mindanao are found in the SOCCSKSARGEN and Caraga regions, the top rice-producing areas in the island.

The situation is different for mechanical dryers which actually increased across all regions. The number of units in the Zamboanga Peninsula quadrupled from the 1995 level and tripled in SOCCKSARGEN. Notably, these two regions consistently topped rice production and rice areas in Mindanao in the past decade. The role of mechanical dryers in improving the post-harvest efficiency and rice milling recovery cannot be underestimated. Mechanical dryers are crucial in reducing the percentage of broken grains in milled rice, thus increasing milling recovery. The traditional way of rice drying, involving the spreading out of palay on cemented roads and pavements, is largely inefficient, time-consuming, labor-intensive and results to high post-harvest losses.

In terms of warehouses for the storage of palay and rice for the domestic market, the situation is discouraging. The number and capacity of privately-owned warehouses where palay and rice stocks are stored have sharply declined over the decade in most of Mindanao. The 2004 level of warehouses in the Davao Region is equivalent only to 40 percent of what it was in 1995. Meanwhile, Region XII, consistently the top rice producer in the island, has posted an increase in the number of warehouses by 15 percent.

The transportation facilities necessary to bring harvested palay from the farms to the post-harvest facilities and on to the market, as well as transport rice stocks from the surplus production areas to the rice-deficit areas, have fallen steadily over the 1995-2004 period. The decline in the number of transportation units in the Davao Region is about 47 percent from 1995 to 2004, followed by ARMM at 46 percent and Northern Mindanao at 44 percent.

Overall, as affirmed by the private sector players interviewed for the study, post-harvest facilities across Mindanao are generally out-of-date and needs upgrading, except for a few big ones owned and operated by Filipino-Chinese rice millers/traders in key rice-growing provinces as North and South Cotabato and Sultan Kudarat. The sophisticated computerized rice mills found in the rice granary areas of Luzon are rarely found in Mindanao, despite the fact that the island contributes nearly a quarter of the national rice production annually. This bleak status and trend in post-harvest facilities in Mindanao, which is a manifestation of declining public and private investments, is a serious cause for alarm in view of the steadily increasing production and rice yield and generally increasing rice areas in the island. If not properly addressed, a future with fewer, inefficient and outmoded post-harvest facilities is expected to lead to higher processing costs for farmers and higher post-harvest losses.

Rice Marketing and Trading.

The most established and conventional role of the private sector in Mindanao is in rice marketing and trading. Mindanao rice farmers, in general, depend on private traders or middlemen to bring their palay harvests to the market, often without even having these processed into rice. The practice saves farmers from the costs of transporting the harvested palay to the rice mill and to the local market, and from the post-harvest processing costs. It actually makes sense in terms of cost efficiency in handling bulk goods rather than have individual farmers bring their harvests directly to the market. In reality, however, the business sense behind this practice is largely overshadowed by the low price that farmers often get for their products and the wide profit margin that accrue to the middlemen and the traders.

The marketing and trading of rice in Mindanao is tightly integrated with the supply of production inputs and the extension of credit, as discussed earlier. The rice trader is usually the same source of farm

inputs, the source of credit in the form of cash and farm inputs, and often the same operator of the local rice mill. An interview with one big land owner-cum-rice mill owner-cum-creditor-cum trader in Banaybanay, Davao Oriental affirms a system that typically characterizes the rice commodity chain in Mindanao. As the all-in-one rice entrepreneur, the trader provides the farm inputs required by farmers in rice production (including hybrid rice seeds and agrichemicals), provides cash loans during emergencies and buys the palay harvest of farmers indebted to him-effectively giving him control over the farmers' inputs and outputs. Rice farmers are effectively trapped in this close circuit of backward and forward linkages, sadly as "willing victims" as they often do not have any option.

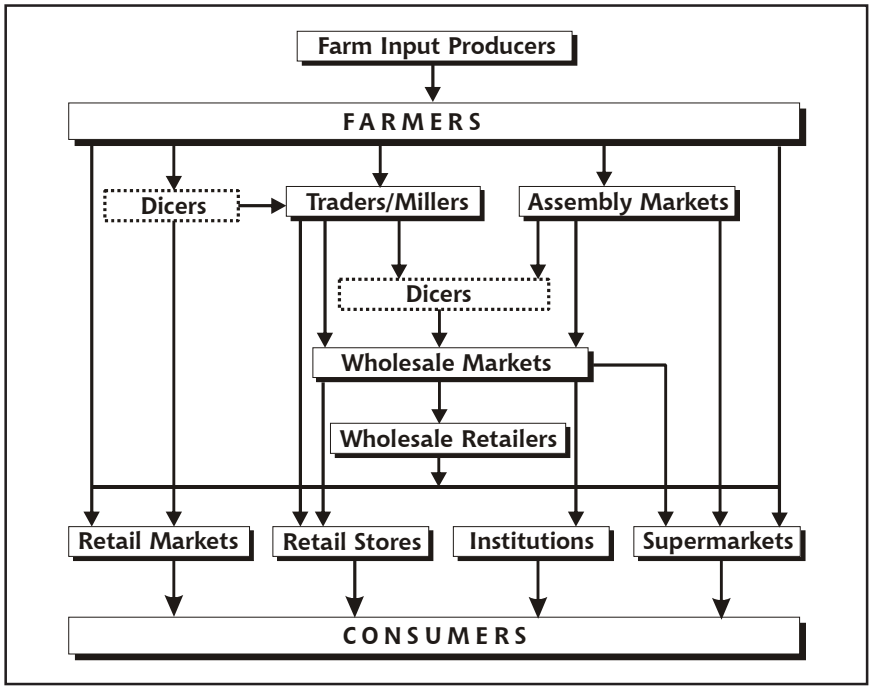
A rapid marketing appraisal conducted by Roger Teves for the Davao Provinces Rural Development, Inc. (DPRDI) some years ago yielded a diagram of rice trading in the commodity chain, as generally practiced in Davao del Norte and Davao City, from farmers to traders and other players until the product reaches the consumers (please see Diagram 1 below. The elements in blue font were added based on the findings of this study). The diagram does not depict the relationship among the players as well as the other roles played by the actors in the marketing chain, but provides a general picture of how rice flows from the farmers to the consumers and the key players in the process.

Network of Traders.

It should also be noted that the local traders who control rice marketing and trading in most rice-growing areas in Mindanao do not only operate within a limited locale. Usually, local traders are part of a vast network of rice traders that extend beyond municipal, provincial and even regional boundaries. Traders in small locales would have links with their counterparts in the big towns that require rice. Big town traders would have links with their counterparts in the key cities catering to an even bigger market. These series of links create a vast network of traders responsible for bringing the harvested palay to the consumers' plates.

One local rice trader in South Cotabato who also owns one of the biggest rice mill in the province, who obliged to be interviewed for this study on condition of anonymity, divulged that he caters primarily to the urban markets in Cebu and marginally only to the local market. He has established direct links with a big Filipino-Chinese rice trader in

Diagram 1



Adopted from: Roger Teves, "Rapid Market Appraisal (RMA) for MASIPAG Rice Marketing in Davao del Note and Davao City", n.d.

Cebu who provides the financial capital that he uses to buy palay from local farmers every harvest season (Interview with a local rice trader/miller in Surallah, South Cotabato, 24 February 2006). He then relies on a dependable network of local middlemen (known locally as "dicers") who buy palay directly from farmers using the capital provided by the Cebu trader and the transportation and milling facilities owned by the rice trader at the municipal level. The trader said that he considers himself more of a middleman/businessman rather than a real trader since he does not really engage in trading and marketing but primarily buys local rice on behalf of a big trader elsewhere.

There are local traders/millers, on the other hand, who opt to go directly to the rice retailers/wholesalers, like the landowner/miller/trader interviewed for this study in Banay-banay who also spoke on condition of anonymity. He said that he enjoys a wider profit margin by bringing his products directly to the shopping malls and big supermarkets in key cities in the region such as Davao City. By doing so, he

managed to cut off the "big middleman/traders" in Davao involved in wholesale marketing as well as the "dicers" who worked with them. The scheme involves higher investment on his part such as maintaining a little warehouse in Davao City where he keeps limited stocks of rice and a small office in the city so that he could deal directly with the buyers. It also means that he absorbs most of the risks in direct marketing, but he claims that the effort was all worth it because of the higher net income that he earns in the end.

There are also local rice traders who go directly to farmers to buy their harvested palay, negotiate the price which is usually paid in cash, and transport the palay from the farmers' fields to the miller or a big trader. In general, this type of traders operate in small-scale and in essence acts like a "dicer" for bigger traders. Their direct-from-farmer scheme has been made possible by the improvement of the road system in the past decade and the affordability and proliferation of second-hand, medium-load vehicles.

Rice traders traditionally follow an informal "code of conduct" among themselves, mainly by designating specific areas where a particular trader procures harvested palay from farmers in the area. With the advent of "mobile traders" who go from farm to farm in wide areas to look for harvested palay to buy, this "code of conduct" has become less evident. In some major rice-growing areas, such as Banay-banay in Davao Oriental which is traditionally known for its production of premium-quality rice, big rice traders work with the local government units to enforce this "code of conduct" by prohibiting "strikers" or traders from other municipalities who come to Banay-banay to buy palay (*Interview with anonymous rice trader in Banay-banay,* 30 March 2006). When caught, "strikers" are fined P1.00 for every sack of palay that they bring out of the town. The local government reportedly adopted the measure to protect Banay-banay's image as producer of premium rice which is often misappropriated by unscrupulous traders from other areas who buy rice from the town, mix it with similar varieties grown in other places and label the product as "Banay-banay" rice. Regular consumers of premium rice are familiar with the distinct quality of the local rice and are willing to pay for its premium price, a niche that local traders and government officials in Banay-banay want to protect.

"Monteverde Rice Cartel".

The interviews with the private sector respondents pointed to the existence of the so-called "Monteverde rice cartel" which monopolizes rice stocks and is run by Filipino-Chinese traders in Davao City's Chinatown district of Sta. Ana. Most of the warehouses and offices of these big rice traders and wholesalers are located in Monteverde Street, a bustling center of commerce built and dominated by Filipino-Chinese traders. In Teves' rapid marketing appraisal, he found out that most of these traders are members of the Confederation of Grains Businessmen in Davao City, a formally registered entity with unclear functions and role.

The "Monteverde rice cartel" controls the bulk of rice stocks coming from different provinces and entering Davao City, one of the biggest rice markets in Mindanao. One observer of the rice industry in Mindanao noted, however, that the so-called cartel is not big nor powerful enough to control or dictate the buying and selling price of rice in Davao City, much more in Mindanao, in the same way that the infamous "Binondo Rice Cartel" manipulates the supply and price of rice in the whole of Metro Manila (*Interview with Alex Rendon,* 28 February 2006). He noted that the "Monteverde rice cartel" may be considered a "minor cartel" that operates in close relationship with similar groupings of big rice traders in other key cities in Mindanao such as Cagayan de Oro which in turn has close links with those operating in the Visayas, especially in Cebu and Iloilo. According to the source, one insider in the "Monteverde rice cartel" once told him that these "minor cartels" operate only as one real cartel when they work as one, as they do at times in manipulating the supply and prices of rice in Mindanao. The presence of the "Monteverde rice cartel" is more evident to the traders who bring their rice stocks to Davao City for the wholesale market than to the consumers. There is clearly a need to study and understand the dynamics and operations of the rice cartel further to better understands its role in the rice sector of Mindanao as well as its actual and potential impact.

The "Monteverde rice cartel" operates with a host of other players in rice trading, the most unpopular of which are the so-called "dicers" or "fixers." (Note that "dicers" are present too in other contexts as the local "point persons" of traders who identify farms where palay can be procured and who negotiates with the farmers about the price, terms

of payment and arrangements in bringing the palay to the traders' rice mill.) As described by the traders who were interviewed for the study, "dicers" rarely operate independently but in cahoots with the big rice traders or wholesalers of Monteverde. "Dicers" usually intercept rice trucks coming from different provinces going into Davao City and arrange to negotiate for "good prices" with the Filipino-Chinese traders. When the transaction has been "successfully completed," with the rice seller and the trader usually agreeing on a compromise price, the "dicers" then gets a commission from the seller at a previously-agreed rate per sack. The "dicers" also gets some commission from the wholesaler for bringing the rice trader.

"Dicers" especially play a significant role in wholesale rice trading especially during the harvest season when rice supply peaks and the buying prices may slump, necessitating some kind of a "mediator" for the rice supplier to negotiate for a higher price with the wholesalers or to sell his stocks to the "highest bidder." The "dicers" are generally regarded as "inside traders" who are linked with a network of wholesalers and the ones who can get the "best deal" for the traders. The system is not unique to Davao City, but is practiced in major rice markets across Mindanao such as Cagayan de Oro City, General Santos City and Cotabato City. These areas are perennially experiencing rice deficits due to their growing population.

Only big traders with direct connections to the wholesalers in these key cities or who have access to a reasonable network of retailers have the capacity to go around this tight informal system of rice trading. In both cases, the traders absorb most of the risks, although with a promise of better returns if the odds favor him, as was affirmed by the big trader from Banay-banay who supplies his rice directly to malls and supermarkets in Davao City

Smuggling.

Respondents for the study agree about the existence and proliferation of rice smuggling in Mindanao, an information that cannot be established by statistics or official documents. Some respondents even claimed that the "Monteverde rice cartel" is involved in rice smuggling, although this would be hard to prove. They say that only big rice traders and wholesalers, dominated by Filipino-Chinese businessmen, would have the capacity to transport large shipments of smuggled rice from ports into warehouses that can accommodate bulk stocks. In

Mindanao, only a few groups of influential rice traders and wholesalers are suspected of smuggling.

A quick tour of major wet markets in Davao City, for example, would reveal tell-tale signs of smuggling, with imported rice from Indonesia and Thailand being sold by some retailers openly when official documents show that the Philippines does not import rice from Indonesia and that imported Thai rice was not brought to Mindanao. Veteran players in the rice industry attest that they "feel" rampant smuggling by merely observing the behavior of the rice market, such as when the price of rice suddenly decreases during the lean season.

Unconfirmed information provided by respondents alleged that smuggled rice usually enter Mindanao through the notorious ports such as Polioc near Cotabato City. Most of the smuggled rice come from Vietnam, China, and more recently, from nearby Indonesia which had been experiencing surplus rice production in the past few years. Smuggling is reportedly done in connivance with local and police authorities responsible for these ports. The unregistered imported rice is unloaded from ships and barges and brought to warehouses in key market centers such as Cotabato City, General Santos City, Koronadal City and Davao City. Military personnel manning checkpoints between the port and the location of the warehouses are reportedly bribed or pressured by politically influential groups or individuals behind the illegal operation.

Smuggling in Mindanao is not only limited to rice brought in illegally from other countries, but also involve farm inputs such as fertilizers and pesticides. With the high demand for these inputs, which cannot be met by domestic production (in the case of fertilizers) and authorized importation (in the case of pesticides, fungicides, insecticides and mulloscicides), there is a big market in Mindanao for smuggled products that run around tariff rates and bureaucratic requirements.

The owner of one of the biggest fertilizer trader in Davao City disclosed that it is a common among fertilizer manufacturer and distributors to smuggle fertilizers from such cheap sources as China and even Russia. The illegally-traded goods are then re-bagged or re-packaged and sold locally as "locally-manufactured products" to evade detection and earn wider profit margins from the sale of cheaply acquired fertilizers at higher prices. He said that the practice is so widespread and has been going on for years that traders like him sneer at claims of

production accomplishments of local fertilizer manufacturers such as PhilPhos and Atlas.

Smuggling of pesticides often involve products that are banned and regulated in the Philippines. These chemicals are generally sourced from Indonesia (being very near to Mindanao) and China where pesticide regulations are less stringent than the Philippines. Smuggled pesticides are usually sold in local markets without labels or with spurious labels. Local distributors sell the products to farmers in confidence, generally at prices lower than the legal brands. Despite the clamp down on banned and highly regulated pesticides by national government agencies and local governments, the proliferation of these chemicals remain widespread in many rice-farming areas in Mindanao.

Problems and Issues in Mindanao's Rice Industry

Most of the issues confronting Mindanao's rice industry, across the economic, political and social spheres, are closely interconnected parts that complete the grim situation faced by rice farmers in Mindanao today.

Economic Issues

Low Returns/Income.

It is evident from available secondary data and interviews with various actors in the Mindanao rice industry that rice production is not a lucrative enterprise. Statistics show that net returns are very low, with farmers in the top-rice producing regions such as SOCCSKSARGEN and Caraga even suffering from negative returns. Even with the highest net return of P8,426.00 per hectare enjoyed by farmers in non-irrigated areas in Northern Mindanao is insufficient to cover a farmer's household expenses during the four to five months gap before the next harvest season occurs and meet the capital requirements for the next planting season. Ironically, farmers in prime irrigated areas, on average, have less net returns compared to those without access to irrigation, largely due to the higher costs of inputs required in cultivating rice varieties that are more conditioned for irrigated environments such as in the case of hybrid rice and the so-called high-yielding conventional breeds. While rice yield and production in irrigated areas may be higher, the cost of inputs, in the end, outweigh this advantage which actually declines overtime due to soil depletion and degradation resulting from sustained used of chemical fertilizers.

The low price that farmers get for their produce is at the core of the issue of low net returns and income. With increasing costs of inputs, including labor costs, and the rising inflation rate, farmers are left with very little income in the end.

High Cost of Inputs.

The farmers' dependence on external input makes them highly vulnerable to the effects of the steadily increasing prices of agricultural inputs which are mostly chemical or petroleum-based. The recent historic rise in petroleum prices, for example, has caused steep increases in the price of farm inputs, thus hurting the farmers even more. Despite the costs involved in rice cultivation and the accompanying health and environmental risks associated with chemical inputs, the rice farmers in Mindanao have yet to be weaned from dependence on external inputs introduced and aggressively promoted during the Green Revolution era.

The considerable distance of Mindanao from Metro Manila where farm inputs produced by transnational corporations are centrally distributed also contribute to the high costs of these products. With the increasing costs involved in transporting these chemicals from Manila to Mindanao, and from the key market centers to the small towns, the price of farm inputs are substantially increased, thus further burdening farmers dependent on these inputs and burying them deeper into indebtedness.

Low Price of Palay.

Palay prices in Mindanao have been steadily increasing over the past decade, but only in current terms *(please refer to Appendix Table 3 for details on the Farmgate, Wholesale and Retail Prices of Palay and Rice in Mindanao from 1994-2004)*. In real terms, factoring the high inflation rate and the declining value of the peso in that period, however, the actual price of palay has been hardly constant at 1994 level. This means that the price for the farmers' harvested palay is at the same level as it was a decade ago when the prices of goods and labor were much cheaper.

The low price for their harvest leaves the farmers with very little income after deducting the high costs of agricultural inputs in rice production. The low returns from rice production condemn small-scale farmers to a life of poverty and hunger, especially if it is the principal source of income to support the needs of the family.

The study of rice-farming villages in Mindanao shows that the farmers are trapped under the control of local traders who supply the farm inputs on credit, provide the cash loans during lean seasons, buy the palay harvest, and processes the palay into rice in his ricemill. This arrangement breeds a cycle of dependence, debt and poverty that characterize the life of most small-scale rice farmers across Mindanao. With the trader dictating the prices of farm inputs and the buying price of palay, the heavily indebted farmers are left without options and become eternally locked into the cycle of dependence, debt and poverty.

Dependence on Traders.

The farmers' dependence on external inputs coupled with their lack of resources and capacity to directly market their palay compel them to depend on traders who typically play a multi-functional role in many rice-producing areas. In essence, the traders have replaced the traditional role of landlords in a feudal system. As a frontier region largely untouched by Spanish colonizers, Mindanao generally has few big landlords of the type found in Luzon and the Visayas where the hacienda system practically dominate land tenancy relations even up to this day after decades of implementation of agrarian reform programs. In lieu of landlords as the patron that provides for the production and emergency needs of their poor tenants, the traders basically play the same role in the context of Mindanao where most rice farmers have legal rights over the land they till.

Dependence on traders under the system described earlier, has virtually condemned small-scale farmers in Mindanao to a vicious cycle of debt and poverty.

Poor Support and Infrastuctures.

While the road network in Mindanao has improved considerably in the past decade, rice farmers continue to face the challenges of poor government support and poor public infrastructures. Farm-to-market roads linking remote rice-producing communities to the market centers in municipalities remain limited, despite the improvement of major road systems that facilitated the entry of mobile traders who directly procure palay from farmers at harvest time. The improvement of major roads in rice-farming areas have also brought the unintended benefit of extended facilities for drying palay during harvest season since the cemented roads provide conducive space for farmers to spread out

their palay for traditional solar drying. Poor farmers continue to depend on traders for trends in palay prices without the benefit of independent information that is supposed to be provided by the government's agricultural information arm.

Irrigation infrastructures, including communal irrigation systems, have very limited reach in Mindanao, much less than the national average as discussed in an earlier section. With very little financial resources of its own and scarce source of foreign funds for irrigation systems, Mindanao's vision of wider coverage for irrigation does not look promising.

Declining Investments in the Rice Sector.

Official statistics depict a very grim picture for public and private investments in the rice sector, especially in the areas of strategic importance to rice farmers such as post-harvest facilities and support infrastructures. In the absence of official figures on actual public and private investments in the rice sector, the status and trends in post-harvest facilities provide an excellent proxy indicator about the status of investments in Mindanao. The dismal post-harvest facilities are both a consequence of and reason for the decline of the rice industry in Mindanao. Few would continue investing in a sector that is becoming unprofitable. The lack of investment would, in turn, result to high production costs, inefficient processing and high post-harvest losses.

Declining investment in the rice sector is also a direct consequence of government neglect, not only in terms of lack of incentives for the private sector to invest in the sector but the poor priority given to government programs and agencies responsible for the development of the rice sector. Current government investments in the rice sector are mainly devoted to its hybrid rice program which does not at all benefit poor farmers in non-irrigated areas who cannot afford the high production costs or do not have access to the inputs required by the technology.

Shift to High-Value Commercial Crops.

One major problem besetting the Mindanao rice industry is the gradual shift to cash crops as a consequence of the decreasing profitability of rice production. This is evident in the contraction of harvested rice area in Northern Mindanao by 4.1 percent during the period 2003-2004 (MEDCO, 2005). While official figures put the average rate of

land conversion (largely from rice production to high-value commercial crop cultivation) at less than one person per year in the case of Davao Region, the long-term impact of this continuing trend cannot be underestimated both at the local and national levels, with rice being the country's staple crop. The situation becomes even more serious for regions such as Mindanao which as a whole is a net importer of rice.

International Trade Regimes.

Among the larger issues faced by the rice industry in Mindanao is the impact of the continuing pressures from the WTO for the country to further liberalize all areas of its markets, including the rice industry. Despite the special privilege given to the Philippines to continue using Quantitative Restriction (QR) under Annex 5 of the WTO's Agreement on Agriculture, which was recently extended for another five years, the country is still committed to free up a significant portion of its rice market to imported rice under the Minimum Access Volume (MAV) rules. Beyond the MAV, Philippine rice imports have been increasing significantly to meet local demand, hence in 2005, the country imported a historic high of 1.6 million MT. Undoubtedly, rice importation adversely affect local rice producers especially since the cost of rice production in the Philippines is significantly higher than in countries that export rice such as Vietnam, China and Thailand.

Rice farmers in Mindanao are likewise directly affected by the flooding of the local markets by cheaper imported rice, including those which are brought in through smuggling. The multilateral pressure to liberalize the domestic rice market aggravate the situation of rice farmers as described in earlier sections, thus pushing them to shift to the more lucrative production of commercial crops. This shift has adverse consequences for the local and national food security status-creating a cycle of closely interlinked problems and issues facing the rice sector.

Political Issues

Weak Bargaining Power of Rice Farmers.

As a consequence of their dependence on traders, lack of resources, poor capacity and lack of government support, rice farmers in Mindanao have very weak bargaining power as a major actor in the rice commodity chain. Farmers, even organized ones, do not have a role in setting

the price of their palay and in defining the terms in marketing their harvest. Farmers' organizations and cooperatives are formed more as economic players and less as political players, and are weak in linking these twin roles. The few successful cooperatives of small-scale farmers in Mindanao have not transformed themselves into dominant political players even at the local level, hence these are not really instrumental in increasing the bargaining power of farmers vis-à-vis the traders. The few politically influential cooperatives of rice farmers are mostly dominated by big landlords. Farmers' organizations formed as vehicles for advocacy on farmers' issues, on the other hand, are rarely successful in engaging in economic enterprises that would boost the bargaining power of rice farmers in relation to other actors in the commodity chain.

Dominance of Traders' Interests.

The dominance of traders' interests in the rice sector of Mindanao is the other side of the coin involving the weak bargaining power of poor rice farmers. Traders who have the financial muscle virtually control the rice sector and the lives of poor farmers in many areas across Mindanao. The existence of rice cartels or network of traders that monopolize the rice supply is a glaring example of the influence and dominance of rice traders in Mindanao.

Low Priority in Resource Allocation.

The low priority and resource allocation given by the government to the rice industry in general and to the Mindanao rice sector in particular, is primarily a political issue. Despite the projection of Mindanao as the country's "food basket," the budget of government rice programs for the island remains very low. For instance, the budget of the GMA Rice Program in Northern Mindanao in 2002 accounted for only one percent of the total program budget (http://agri10.norminet.org.ph/About%20Us/About %20Us_main.htm).

Additionally, organic farming and other sustainable farming practices widely promoted by civil society organizations across Mindanao virtually receives neither budget allocation nor priority interventions from the government's program for rice. Existing government credit, research and extension programs do not directly cater to organic rice production, leaving farmers engaged in organic rice production to fend for their own or depend on the limited support of civil society organizations.

Social Issues

Access to Land.

Tenurial arrangements and access to land remains as the most fundamental problem of rice farmers in Mindanao. While the agrarian situation in the island is not as highly eschewed and concentrated in a few hands as the situation in Luzon and the Visayas, a significant percentage of rice farmers in Mindanao are tenant farmers who are renting the land they till from other people who are either big landlords or individuals working off-farm. Their lack of basic productive resources in the form of land makes their situation highly insecure and severely limits their prospects of advancing their bargaining power vis-à-vis traders. Tenant-farmers in Mindanao generally pay their land rents in the form of harvested palay based on pre-agreed terms, regardless of their yield and production performance which may vary widely every year. The rent payment further reduces the income of tenant-farmers after deducting the high production costs.

Farmer Indebtedness.

The continued dependence of farmers on external inputs that drive them to borrow money or inputs from local lenders, who are usually the traders, is a primary factor in pushing farmers into the debt-poverty trap. Without other sources of income that can help support household expenses during the lean months between harvest seasons, rice farmers are forced to run to local lenders to support their emergency and even daily needs since their income from the previous harvest is not sufficient to support their needs until the next harvest. With credit programs extended by both government and private banks out of their reach due to high interest rates and lack of collateral as assurance for loan payment, farmers are often left with no other option but to depend on local lenders or traders to meet their needs, thus locking them in a debt-poverty cycle.

Food Insecurity.

Ironic as it is, many rice farming families suffer from food insecurity and malnutrition which cannot be easily gleaned from official statistics that are generally not segregated. The debt-poverty trap that characterizes the life of many poor rice farmers in Mindanao often compromise their food security and the nutrition of their families, especially women and children. Small-scale rice farmers often sell the bulk of

their palay harvest to pay off their debts and pay for the land rent in the case of tenant-farmers, often leaving them with insufficient amounts for household needs that barely last until the next harvest season.

With very limited land, farmers often devote their small landholding to rice production to get the most from the land in terms of palay production to be sold at the end of the season. This leaves little land, if any, for production of vegetables and other food crops that can support the family's needs throughout the year, resulting to a very narrow food base. With very little money available to buy nutritious food, many rice farming families are faced with the irony of malnutrition especially among children.

Peace and Order Situation.

An important issue facing the rice sector in Mindanao is the peace and order situation in some parts of the island. In 2000, losses in agriculture due to armed hostilities between government and rebel troops were estimated at P150 million where about P5.1 million accounts for damages in rice and corn areas. About 50,000 hectares of rice lands were also damaged during that period apart from the delays suffered by the ongoing construction of farm-to-market roads, water supply and irrigation systems. Programs like research and development, extension work, and training of farmers were also suspended, particularly in affected provinces in the ARMM, namely Maguindanao, Lanao del Sur and Sulu *(Garcia, 2000)*.

The problem of peace and order may especially be unique for Mindanao, but is a real and current issue that concerns rice farmers in many areas, especially with the current setbacks in the ongoing peace negotiations between the government and the Moro Islamic Liberation Front (MILF) over the issue of territory.

Environmental Issues

Soil Degradation.

The impact of the long years of dependence of rice farmers on inorganic fertilizers is already becoming evident in major rice areas in Mindanao, although not as serious as in other rice-growing regions in other parts of the country such as those in Luzon where rice production is much more intensive. Farmers observe that they have to use more and more sacks of inorganic fertilizers every season for them to

maintain their current yield level, which translates into higher production costs in practical terms. The impact of the continuous use of inorganic fertilizers is also felt in the contamination of ground water, like in some areas in North Cotabato.

Pest and Disease Outbreaks.

Pest and disease outbreak is one of the major problems of rice farmers in Mindanao. The damages brought by the widespread infestation of pests and diseases like the rice tungro virus (RTV), rice black bug and yellow stem borer most often result to crop failure. The recent outbreak of pests and diseases in Mindanao is due to the development of resistance among the pests and disease-causing organisms that were subjected to massive doses of chemical pesticides. Without viable alternatives, farmers further increase their use of chemicals to counter pest and disease infestations, exposing them and their families to health risks and causing damages to the environment.

Genetic Erosion.

As a frontier area where most present-day lowland rice farmers are second or third generation migrants from Luzon and the Visayas, the rice genetic diversity in Mindanao is largely developed from the combination of farmers' ingenuity in on-farm breeding and the traditional rice genetic pool maintained by the Lumads and Moro communities. The remote distance of the island from the main centers of rice research and the widespread poverty in rural Mindanao relatively shield it from the introduction and promotion of uniform rice varieties which are claimed to be high-yielding.

The high-yielding varieties massively introduced by the government in the Green Revolution era are mainly limited to the primer irrigated areas where well-off farmers have better access to extension services and have more capacity to purchase certified seeds and inputs. Small-scale farmers who cannot afford to buy seeds every season generally breed their own varieties, usually by breeding traditional varieties with improved breeds, that better respond to the specific conditions in their farms and to their actual needs. As a result, Mindanao has a vast pool of rice genetic diversity that provides the base for the growth and development of its rice sector. This genetic pool, which keeps growing through the farmers' continuous exchanges and sharing of seeds and ingenuity in breeding, constitutes an invaluable asset for the rice sector of Mindanao.

Deforestation.

Closely linked with the problems in the rice sector is the current state of the forests in Mindanao which used to be considered as the region's key resource. With the government's lack of political will and resolve to enforce forestry regulations, illegal logging proliferates in many parts of Mindanao to this day, alongside deforestation activities hidden behind legitimate programs and projects. As a result, only a small fraction of Mindanao's vast forest resources remain, mostly limited in Agusan and Zamboanga Peninsula. Forests in the Davao Region were denuded during the first wave of migration from the 50s up to the late 60s.

Deforestation in many parts of Mindanao has severe impact on the rice sector. Without trees that control soil erosion from hills and mountains, landslides and flash floods that incur serious damage on rice areas in the lowlands have become frequent occurrences across the island during heavy rains, especially in the Davao Region and Compostela Valley. Water, which mostly comes from sources in mountains in most parts of Mindanao, has become less abundant resulting to more competition for water supply in many rice-growing communities. Indigenous farmers in the uplands are equally affected by the deprivation of resources from which they derive their livelihood, food and medicines.

Mining.

Deforestation in many parts of Mindanao is often associated with the exploration and exploitation of mineral resources. Mining companies, with consent from local government and national agencies, clear forest areas to bring in equipment for mining activities and to facilitate the transport of minerals to processing areas or to the ports. In many cases, mining activities are used as a cover for illegal logging activities at the expense of damages to the environment and encroachment into the ancestral domain of indigenous farmers.

Chemicals used in the extraction and processing of minerals are released to rivers and streams that flow to the lowland areas where rice lands are found. Many small-scale mining and gold-panning efforts involve the use of mercury to separate the ore, resulting to contamination of rivers, streams and other water sources that flow in lowland rice areas, as well as exposing miners, their families and communities to the risks of poisoning.

Prospects for the Mindanao Rice Sector

Based on the above summary of issues and problems confronting the rice sector of Mindanao, and based on the discussion of current trends and state of the sector and the players especially the rice farmers, the prospects for the future of the rice industry are largely grim in many aspects.

Mindanao is indeed a land of irony. In the midst of its vast natural and biological resources, the vast majority of its people suffer from poverty, malnutrition and hunger. As a frontier land where migrants were supposed to have started as equals, a very wide gap exists between the richest and poorest segments of its population. It is nothing less than ironic that while Mindanao has been experiencing increasing rice yields over the past decade, its rice imports have also leaped. While rice production has been steadily rising, the rice farmers' income has been dwindling leaving them barely able to cope with the rising cost of living and indebtedness.

Nevertheless, these ironies should not paralyze the key players in Mindanao's rice sector, especially the farmers and the civil society movement that supports them. While the future looks grim, there is much reason for Mindanao's rice sector to hope for a better future. The island's rice gene pool and the ingenuity and innovativeness of rice farmers in breeding new varieties that respond to specific needs and conditions hold the key for the future farmer-based and farmer-centered development of the sector. Mindanao has largely untapped resources from its population that depend on rice as their staple food. It is the key consumers, many of whom have rice-farming roots, that have strategic stake and have the potential to provide strategic investments for the development of the rice sector. The power and inherent resources of consumers as pivotal actors in the rice commodity chain remain largely unrecognized due to the dominance of profit-oriented traders in the current system behind the rice commodity chain in Mindanao. The bright prospects for the future of Mindanao's rice sector rest in the hands of and solidarity between rice farmers and consumers, with the other actors playing supporting and complementary roles.

Specifically, the prospects for the future of Mindanao's rice sector involve the adoption of the following actions and fundamental changes in the current system that dominates the sector. The adop-

tion of these prospective actions would involve a fundamental overhaul in the current paradigm underlying the current system that characterize the rice commodity chain in Mindanao, especially putting farmers' central role and importance in that system with strategic support from consumers while the other actors, namely the traders, will only provide a supporting role.

Strategic Road Map for the Rice Sector Mindanao

The low priority given by the government to the rice sector in Mindanao is best exemplified by the absence of a strategic plan for its development. Government rice programs and interventions are patchy and are mainly reactive, and at most geared towards transforming the sector into a profitable industry for business people rather than improving the condition of rice farmers to make the sector productive and sustainable. The formulation of a strategic plan or road map for the island's rice sector is therefore imperative.

Integrating the concerns and plans for the rice sector of Mindanao into a national rice industry plan would not be adequate, in view of the unique situation of its sector where commercial high-value crops sit side by side with rice areas, and where there are specific problems and issues. A strategic road map for the improvement of the rice sector should be centered on and oriented towards the role and importance of small-scale rice farmers that comprise the vast majority and who are the backbone of the sector. The role of consumers in supporting the efforts of farmers in rice production, processing and marketing should be recognized and strengthened, while other actors in the commodity chain play supportive roles in the partnership of rice farmers and consumers. The formulation of the strategic plan for the rice sector of Mindanao should have the indispensable involvement of rice farmer and consumers.

Mainstreaming of Farmer-Based and Centered Initiatives

Farmer-based and centered initiatives of civil society organizations in sustainable and organic agriculture should be mainstreamed to replicate the pocket successes attained in various parts of Mindanao. A conducive policy environment that support and promote these initiatives should be created, such as by providing incentives to small-scale rice farmers to shift to sustainable or organic agriculture through

physical infrastructures, offering fair prices for their produce and by-products, improving their skills in farming and capacity to improve their bargaining power, among others.

The empowerment of poor farmers should be the ultimate objective of civil society initiatives, aiming for the gradual and systematic phasing of the role of support organizations and developing the capacity of farmers themselves to implement programs and projects aimed at improving the sector.

Forging Linkages Between Rice Farmers and Consumers

Civil society organizations play an important role in forging direct linkages and relationships between small-scale farmers and consumers, beyond rice marketing. Consumers should understand the production and processing systems that go with the rice that they consume, and should recognize their potential role in facilitating and supporting farmers' efforts in the rice commodity chain. Strong and dynamic farmer-consumer relationships would bridge the gap in the interests of these two sectors, especially in terms of the price and quality of the products that they produce and consume, respectively. Mechanisms should be adopted to ensure regular dialogue and foster solidarity between producers and consumers, especially by exposing each sector to the realities, needs and situation of the other towards building cooperation.

Already, there are a number of models for consumer-producer linkages initiated by NGOs in Mindanao, such as those espoused by Don Bosco, TACDRUP and PDAP partners. While these models are currently based on direct producer-consumer marketing linkages and none has been mainstreamed, these are potential starting points in building solidarity between farmers and consumers throughout the different aspects of the rice commodity chain.

Providing Consumer-Assisted Support Mechanisms to Small-Scale Rice Farmers

As a practical expression of the solidarity between rice farmers and consumers, mechanisms should be put in place for consumers to pool together their resources to support poor farmers' efforts in production, processing and marketing of their products. Such mechanisms are aimed at stressing the central role that consumers should play in

the rice commodity chain, as the key source of support for rice farmers. It also aims to reduce the principal role that middlemen and traders play in the current system, and eliminate the current system that traps poor rice farmers in the debt-poverty cycle.

There are existing models in other countries that could inspire the creation these mechanisms. The Seikatsu Club Consumers' Movement of Japan, which dates back to the 60s, is a concrete example of a successful farmer-consumer solidarity in the production, processing and marketing processes. This model shows that both consumers and farmers gain strategic benefits from their cooperation and solidarity by providing quality and safe food to consumers at affordable prices, and by providing fair prices and terms for farmers selling their products.

Promoting Farmer-Based Agricultural Research, Development and Extension

Part of the role of civil society organizations is to promote and support farmer-based agricultural research, development and extension in support of the production process. The direct involvement of farmers in research and development will ensure the development of agricultural technologies responsive to the actual needs and situation of farmers, utilizing available resources including traditional and local varieties, with least impacts on the environment. Local research, development and extension efforts of farmers should be linked with supportive formal research institutions in building the scientific and technical capacities of farmers and support organizations.

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2. Mr. Eulogio Sasi, rice farmer/tenant, President Roxas, North Cotabato, 28 December 2005.
3. Mr. Edgar Amoronio, General Manager, Sta. Catalina Multi-Purpose Cooperative (SCMPC), Inc. President Roxas, North Cotabato, 22 February 2006.
4. Big Rice Miller-Trader (name withheld upon request) in Surallah, South Cotabato. 24 February 2006.
5. Mr. Alex Rendon, (former) Field Program Coordinator, Technical Assistance Center for the Development of Rural and Urban Poor (TACDRUP). Davao City, 28 February 2006.
6. Mr. Roger Teves, Independent Agricultural Researcher. Davao City, 6 March 2006,.
7. Mr. Marcelino and Mrs. Mercy Bugtak, Rice Farmers. Banay-banay, Davao Oriental, 30 March 2006.
8. Mrs. Leticia Nemenzo, Agriculturist I, Municipal Agriculturist Office (MAO). Banay-banay, Davao Oriental, 30 March 2006.
9. Mrs. Josefina Gonzaga, Organic Rice Farmer. Banay-banay, Davao Oriental, 30 March 2006.
10. Mrs. Nimia Yee, Manager, Davao Oriental Seed Producers Cooperative (DOSEPCO). Banay-banay, Davao Oriental, 30 March 2006.
11. Mr. Felix Mejos, Rice Miller/Trader and Vice-Chairperson, DOSEPCO. Banay-banay, Davao Oriental, 30 March 2006.
12. Mr. Henry Lim, Chairperson, DOSEPCO. Banay-banay, Davao Oriental, 30 March 2006.

Focus Group Discussion (FGD) conducted on 18 October 2005, with Rice Farmers from:

1. Lambayong, Sultan Kudarat
2. Dumingag, Zamboanga del Sur
3. B.E Dujali, Davao del Norte
4. Midsayap, North Cotabato
5. Matan-ao, Davao del Sur