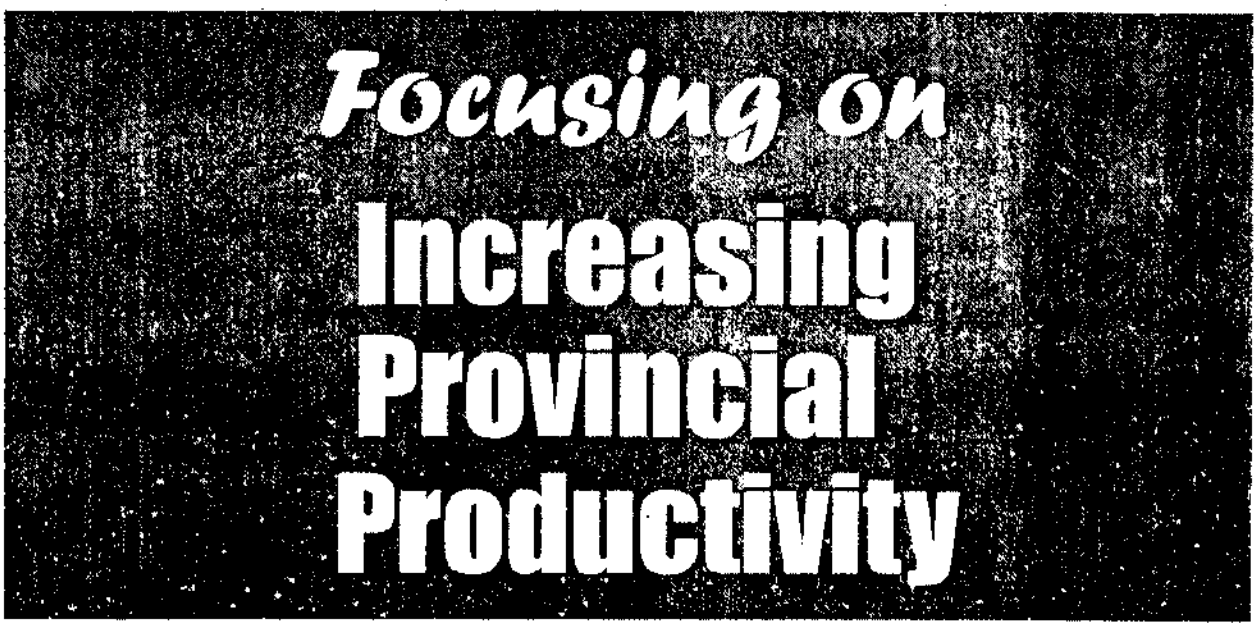

Rice Self-Sufficiency Plan 2009-2010

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FOREWORD

For 90 million Filipinos, self sufficiency in rice is not a choice, but an imperative. In today's world of decreased inventories and hiking prices, there is not only a glimmer, but a bright ray of hope that we have enough resources, technologies, and the will to produce the rice we need for today and for tomorrow. Hence, this "Rice Self-Sufficiency Plan for 2009-2010".

The Plan is a product of the country's best minds in rice agriculture. It is highly doable, because the planners themselves are teaming up to implement it. It puts to work Pres. Arroyo's P43.7 billion FIELDS (Fertilizers, Irrigation and other rural infrastructure, Education and training of farmers, Loans, Dryers and other postharvest facilities, and Seeds of high-yielding varieties) thrust. It likewise harnesses the hands-on leadership of our provincial governors whom the Plan involves as rice champions. They will help mitigate the impact of the global food crisis on our farmers and consumers.

Self-sufficiency in rice, after all, is not a puzzle to us Filipinos. Not so long ago, we had produced more than enough rice for ourselves; we even shared a part of our produce to the world. Fortunately, many of the bright minds who had made this feat happen are still around. They sincerely want to help the Philippines become food-secure by first becoming rice self-sufficient, again.

Thank you so much to all of you who had worked together to craft this rice self-sufficiency plan – specifically, I would like to thank former Agriculture Secretaries and officials, Filipino rice experts, and advisers from IRRI (International Rice Research Institute). Filipinos, particularly the low-income earners who do not deserve to be lining up for rice nor must they fear a day when store shelves and farm granaries will be empty. This plan will reassure Filipino families that their government can provide them enough rice, no matter how politicized the commodity could be.

This work, though completed under the term of President Gloria Macapagal-Arroyo, draws from lessons learned from decades past under various presidencies. We believe that the Plan's thrusts and initiatives are good not only for today but for years to come as well. May it be utilized not just for rice production but as a firm foundation for the growth and sustainability of Philippine agriculture.

Let me finally enjoin all stakeholders of the local rice industry, especially the local government units, to support this plan. Together let us prove to ourselves that we Filipinos can continue to eat as much rice as we please, that there will be enough to share with the world, and that we would have done our share in keeping our people and mankind safe from the deprivation of hunger.

ARTHUR C. YAP
Secretary of Agriculture

ACKNOWLEDGMENT

Rice is crucial to the Philippine political and national security. It concerns every Filipino, of whatever faith, creed or political stripe.

Hence, when concerns on rice are high, many great minds pitch in to help the country chart its direction toward becoming rice self-sufficient, ensuring that Filipinos have enough and affordable rice to eat. Various consultation meetings with eminent people have made this Rice Self-Sufficiency Plan into a reality, to which the Department of Agriculture is very grateful for. We sincerely thank the following:

Former Agriculture Secretaries -- Carlos Dominguez, Senen Bacani, Roberto Sebastian, Salvador Escudero, William Dar, Edgardo Angara, Leonardo Montemayor and Domingo Panganiban for their valuable inputs;

Former DA USec Apolonio Bautista and former NFA Administrators Jess Tanchanco and Gregorio Tan Jr. for their suggestions;

the International Rice Research Institute (IRRI) led by Director-General Robert Zeigler, Dr. William Padolina, Dr. Achim Doberman, Dr. Bas Bouman, Dr. Roland Buresh, Mr. Julian Lapitan and other senior scientists for agreeing to help the Philippines in its quest for rice self-sufficiency;

Governor Joey Salcedo for his critical comments;

NAST President Emil Javier, UPLB Chancellor Luis Rey Velasco, Presidential Adviser Edmund Sana, Mr. Jess Binamira, Sikap-Strive Foundation Director Leo Gonzales, former PhilRice Executive Director Santiago Obien, and PhilRice Consultants – Drs. Cesar Mamaril, Silvestre Andales, Tomas Masajo;

The DA undersecretaries–Jesus Emmanuel Paras, Segfredo Serrano, ASec Josyline Javelosa, GMA Rice Program Coordinator Frisco Malabanan, NIA Adminstrator Marcelino Tugaoen and Assistant Administrator Bong Salazar, Alan Javellana, BPI Director Joel Rudinas, BPRE Executive Director Ricardo Cahuela, BAS Director Romeo Recide, BSWM Director Vince Tejada, ACPC Director Jovy Corpuz, FPA Norlito Gicana, NFA Administrator Jessup Navarro and all the DA management and staff, who in their own ways have contributed in crafting this plan.

The DA deeply appreciates the effort of the Philippine Rice Research Institute (PhilRice) for unwaveringly pursuing this plan even before we are plagued with concerns on increasing rice price in the world market. Thanks to the PhilRice Team led by Executive Director Leocadio Sebastian, Dr. Madonna Casimero, Atty. Ronilo Beronio, Dr. Sergio Francisco, Engr. Leo Javier, Mr. Marc Jim Mariano, Ms. Aileen Castañeda, Mr. Constante Briones and Ms. Jennifer Jara-Rabara for their immense contribution in integrating and finalizing this plan.

At this juncture, we sincerely thank the local government officials for taking up the challenge to implement their own rice self-sufficiency plan at the provincial level.

Most of all, we thank God Almighty for blessing great minds and hardworking hands that pitched and worked together to ensure that this plan is completed for food security of this, and future generations of Filipinos.

ARTHUR C. YAP
Secretary of Agriculture

EXECUTIVE SUMMARY

Rice self-sufficiency is not a choice but a path that we must take to ensure availability of enough affordable rice for all Filipinos. From 2002 to 2007, an annual growth of 3.68% was attained, with an all-time high of 7% in 2004. In 2007, the country had a production performance of 5.96% growth. These achievements are attributed to continuing government interventions and investments through the GMA Rice Program and the Hybrid Rice Commercialization Program (2002-2005). However, such increases can hardly match our rice demand, owing to our stubbornly high annual population rate increase pegged at 2.3%. Given the budgetary and technical interventions of the current rice program, the expected growth in production (3.68%) will lead us to only 94% self-sufficiency by 2010. Clearly, investments in the rice program by the government are not enough to achieve self-sufficiency sooner.

Enough rice for Filipinos. The Rice Self-Sufficiency Program Plan envisions a 100% self-sufficient rice economy by 2010 through improved rice productivity, and increased income of rice farmers. Specifically, it aims to increase total palay production from 16.2 million tons in 2007 to 17.3M t in 2008; 18.5M t in 2009; and 19.8M t in 2010. It also intends to raise rice farming income through increased yields from 2008 to 2010, and to reduce, if not eliminate rice importation.

Interventions to close gaps. Currently, the national average yield (3.8 tons/ha) is way below the potential yields achieved in on-farm experiments (7-9 tons/ha). Climatic differences (wet and dry), biological (poor or low quality seeds, weeds, pests), physical (soil nutrients and water availability), and socioeconomic constraints contribute to the yield gap. Closing in the gap requires addressing constraints affecting yield, such as crop management.

Thus, this program plan pursues location-specific interventions that can help farmers achieve higher yield. It focuses on how interventions can help increase production toward sufficient yield levels. Interventions include: improvement of irrigation systems' effectiveness and efficiency through rehabilitation; use of high-quality hybrid and inbred seeds; integrated crop management; provision of soft loans for the establishment of shallow tube wells (STWs) and surface water pumps (SWPs); and delivery of extension support services.

Focusing on provinces. A total of 49 focus provinces are covered by this plan; 25 have both irrigated and rainfed conditions, 19 irrigated areas, and 5 under rainfed conditions. Further, when grouped based on available irrigation systems, provincial average growth rate, area harvested, production and average yield, this plan targets 44 irrigated and 30 rainfed areas.

The 44 irrigated areas (with available national or communal irrigation systems) were grouped based on provincial average growth rate (AGR) in the last seven years. Irrigated Group 1 has harvested irrigated area of more than 20,000 ha or more than 80,000 ton production in the irrigated ecosystem, and AGR of less than 3.68%. Irrigated Group 2 has higher figures than those in Irrigated Group 1. With this approach, the program will be able to evaluate the productivity of these systems.

For rainfed areas, Group 1 will include areas with average yields of 2.5 t/ha or less and a harvested area of more than 15,000 ha; Rainfed Group 2 has higher figures than those in Group 1.

Governors as champs. Operational interventions should be employed to ensure efficient implementation of these technology-based interventions. An archipelago with relatively limited land and no river delta to feed its irrigation system, the Philippines' rice self-sufficiency plan should be deeply rooted in its provinces. Thus, this program plan advocates local government-centered (LGU) planning intervention and implementation. Technology interventions could be best delivered if the provincial governors will take "center-stage" in increasing the rice productivity of their respective provinces. Governors, as "provincial champions", are called forth to lead their mayors into ensuring that their respective municipalities and cities produce enough rice for their constituents throughout the year. Also, they are expected to assist rice-deficit provinces, and increase local rice stocks through bumper harvests at the provincial levels.

Clustering approach. Further, the LGUs of the 49 focus provinces will implement the clustering approach in their localities as a main strategy to help infuse technological interventions to increase farmers' rice productivity. As currently implemented by the GMA Rice Program, the approach organizes individual farmers into groups for manageability and efficiency in delivering technical assistance and services, executing intense technology diffusion, mobilizing learning opportunities, and for easier impact analysis.

The LGUs in each of the focus provinces will form clusters in areas where no cluster exists. Irrigators' associations, agrarian reform communities, and farmer-cooperatives within a 1-km radius of the "puroks" or farms of a community can serve as nuclei of clusters. Each cluster should cover at least 40 ha in 2009 and at least 80 ha in 2010. The clusters will be the convergence points of program interventions. The current productivity situation and resources profile in their areas will be the basis in identifying the needed interventions.

Localized rice plans. Provincial governors in the focus provinces shall spearhead the development and implementation of their own rice self-sufficiency plans in conjunction with small-scale rice master plans designed by clustered farmers, irrigators' associations, rice industry stakeholders, city/municipal governments, including state colleges and universities, local offices of the Departments of Agriculture (DA) and Agrarian Reform (DAR), among others. Such plan will provide focus and direction to the rice sector toward sustained productivity and profitability to attain rice self-sufficiency targets at the provincial and national levels.

Resources and incentives. Corresponding support from the national government will be provided, but this will be matched with counterpart resources to enhance sense of responsibility and ownership of the respective provinces' rice self-sufficiency plans.

The small-scale plan will also include monitoring of the production performance in the area, where attainment of production targets per province will be rewarded through an incentive system. Focus provinces which achieve their yearly production targets shall be provided with PhP1M each. Additional incentives shall be provided to focus provinces that exceed their targets significantly, while non-focus provinces that significantly increase their production shall likewise receive incentives. Information and communications technologies (ICT) will be used in program planning and monitoring. The national level interventions will focus on research and development, trainings, regulatory services, policy analysis, and advocacy.

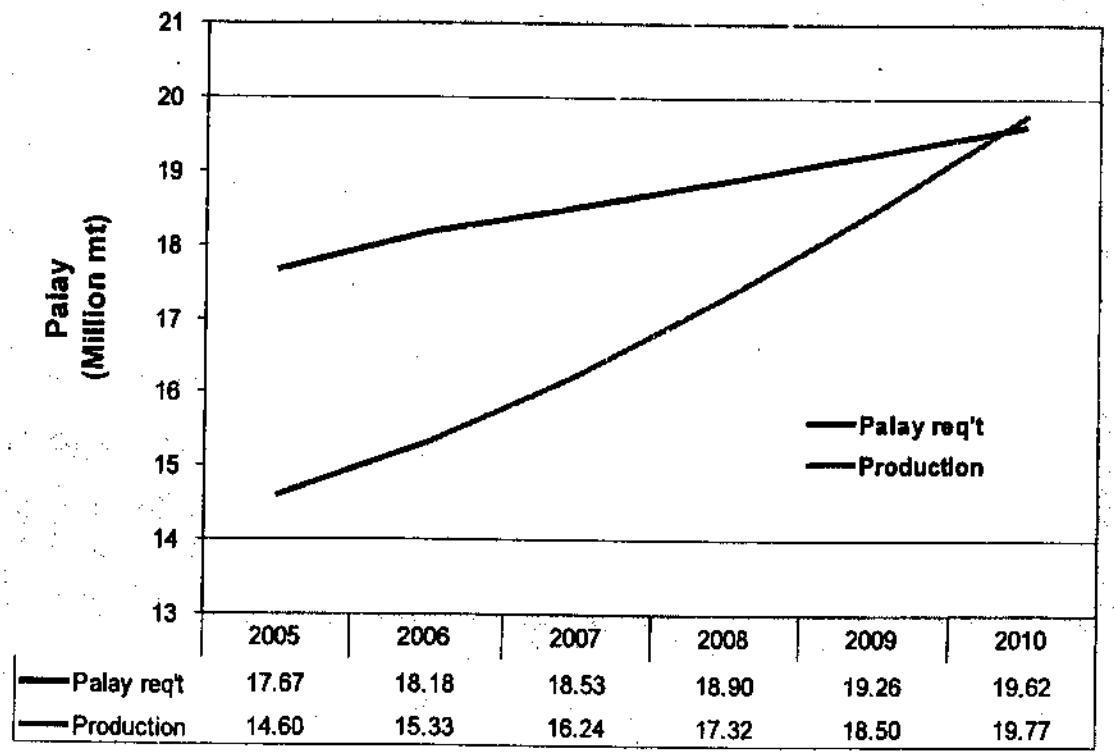
Returns on investments. The expected grand output from this Rice Self-Sufficiency Program Plan is an incremental palay production of 2.5M tons from 2009 to 2010, which is equivalent to around 1.6M tons of milled rice at 65% milling recovery. Computations show that a peso invested in the program would yield a return of PhP1.27 in 2009 and PhP1.35 in 2010, if the price of palay is P16/kg. At least $300M could be saved from reduced rice importation per year. Moreover, farmers in Irrigated Group 1 areas could generate an additional income of as much as PhP17,000 yearly by planting hybrid rice and PhP 8,800 by planting certified inbred seeds. Farmers in Rainfed Group 1 areas could have an additional income of PhP15,220 by using certified seeds and STWs and SWPs to properly irrigate their rice paddies.

The implementation of this program requires around PhP30 billion for two years including budget for the rehabilitation of irrigation systems and continuing rice R&D. Investments are needed in R&D to generate technologies that will further sustain increases in rice productivity, and help expand the current production frontier, for instance in other rainfed and marshy areas.

Based on historical data, production growth of 3.68% and current investments and interventions could result in 100% rice self- sufficiency in 2016, negating the effects of environmental factors to rice production. Hence, if rice self-sufficiency is to be attained earlier, say 2010, present government investments should be augmented.

Is self-sufficiency in rice attainable?

Projecting self-sufficient production levels based on the country's rice requirements (for food, seeds and other uses with 10% margin for postharvest losses) and population growth rate of 2.3%, the country needed to produce 18.5 M tons in 2007 (Figure 1). However, total production in 2007 was only 16.2 M tons, 1.8 M tons short from the projection. Figure 1 also shows that at least 19.8 M tons should be produced to achieve self-sufficiency by 2010.



	2005	2006	2007	2008	2009	2010
Palay req't	17.67	18.18	18.53	18.90	19.26	19.62
Production	14.60	15.33	16.24	17.32	18.50	19.77

Figure 1. Palay requirement and production (M ton), 2005-2010.

What must be done to achieve 100% rice self-sufficiency? Is it realistically achievable in 2010?

The country's rice production could be further increased by closing the yield gap between actual farm yields and attainable or best practice yields (Table 1). Current national average yield for all ecosystems is about 3.8 ton/ha; for irrigated areas is 4.21 ton/ha. By making appropriate packages of yield-enhancing technologies available and supporting irrigation development as well as technology development and knowledge management, substantially improving rice yield at the farm level to close the yield gaps is within reach (Balisacan, Sebastian, & Associates 2006).

Each rice-growing province has different productivity levels as a result of different agro-climatic conditions. Climate types in the different islands, provinces, and regions of the country bring about local constraints to bumper rice production. To improve yields, location-specific interventions (LSI) are required to address production problems.

"Yield gaps require location-specific analysis true enough for current situations, for instance constraints brought about by different agroclimatic conditions."

Thus, this rice program focuses on how interventions, such as infrastructure development, research and development (R&D), extension and environmental factors could be used to serve as powerhouses for attaining rice self-sufficiency. Estimated contributions of different factors that affect growth in rice production are as follows: infrastructure, 40%; R&D, 25%; extension, 15%; and environment, 20% (Table 2). Irrigation accounts 25% to infrastructure, while seeds and integrated crop management (ICM) accounts 20% to R&D (Table 2). This implies that focusing on irrigation, seeds, ICM, and extension services (15%) would assure at most 60% of the expected increase in rice production.

Table 1. Sources of yield increases.

Maximum attainable yield *(limited only by climate and variety)*	9.20	8.00	7.20	11.50	10.00	9.00
Yield with best nutrient and cultural practices *(limited by lodging)*	7.36	6.40	5.76	9.20	8.00	7.20
Yield when macronutrient *(NPK)* and water problems exist	5.52	4.80	4.32	6.90	6.00	5.40
Yield when micronutrient *(Zinc, Sulfur, etc.)*, pests, and management problems *(crop establishment, land preparation)* exist	3.68	3.20	2.88	4.60	4.00	3.60

Note: Maximum attainable yield is based on inherent weather, hydrological *(i.e. flooding)*, and soil *(texture)* conditions in the area. It fluctuates from year to year by 10 %. There is 15% increase in using hybrid seeds compared to inbred certified seeds. There is 10% decrease in using good seeds compared to inbred certified seeds.
Source: Sebastian, LS, FH Bordey, and VLEB Alpuerto. 2006. Research and Development. In Securing Rice, Reducing Poverty. Philippines: SEARCA, PhilRice & BAR. p 54.

Table 2. Estimated contributions of the different factors to growth in rice production

	Contribution (%)
1. R&D	**25**
• Seeds (biotechnology, hybrid rice, certified seeds, nutrition)	10
• Integrated crop management	10
• Mechanization	5
2. Infrastructure	**40**
• Irrigation	25
• Farm-to-market roads	5
• Transportation	5
• Postharvest	5
3. Extension	**15**
4. Environmental factors	**20**

Source: Balisacan, AM and LS Sebastian. 2006. Challenges and Policy Directions: Overview. In Securing Rice, Reducing Poverty. Philippines: SEARCA, PhilRice & BAR. p 14.

Moreover, a favorable interaction among the different factors of production (Figure 2) would lead to an optimal increase in production. For instance, research has shown that the use of high quality seeds can increase yield by 1 ton/ha if it is complemented by appropriate crop management techniques, efficient irrigation system, and good extension support services. It is, therefore, necessary that investments should be appropriated to each contributory factor. Otherwise, the expected target outputs derived from production interventions will not be fully realized.

Figure 2 also illustrates that the proposed program's strategies will not only enhance farmers' profitability, but also improve household food security and consumption. Low income simply reflects low levels of productivity. Hence, increasing the yield of farmers accompanied by higher level of prices translates to higher farm income.

Likewise, policy and institutional reforms are crucial to the significant growth of the rice sector. Narrowing yield gaps will require integrated and holistic approaches including appropriate concept and policy interventions that will address different constraints affecting yield. Domestic policy reforms should raise investment on productivity-enhancing support services and infrastructure to increase rice production.

Accordingly, investment, policy, and institutional reforms that will enhance the efficiency of rice markets and provide improved access to rice technologies, infrastructure and education, are vital in addressing today's critical issues on poverty, malnutrition, and food insecurity of the rural poor.

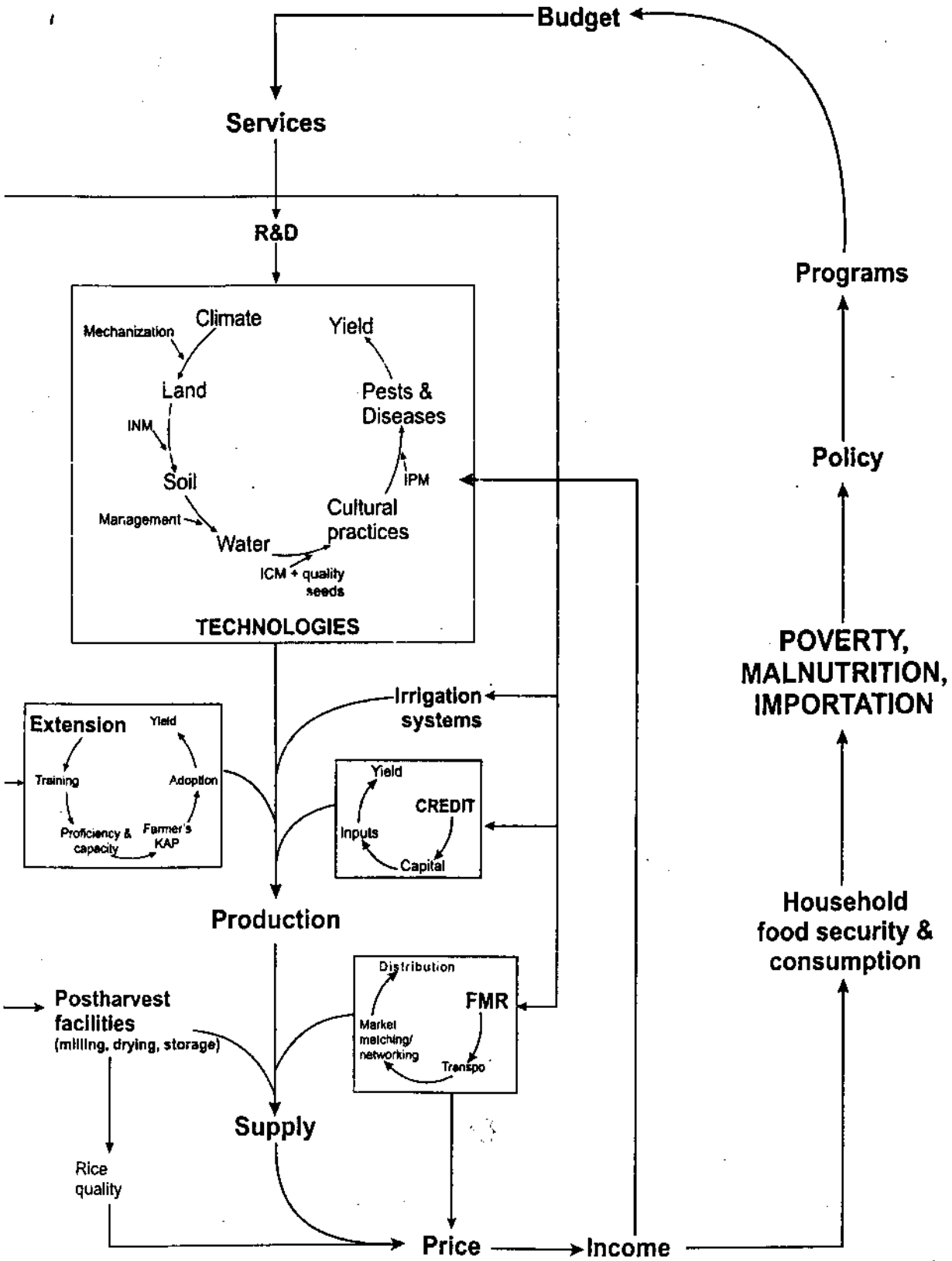
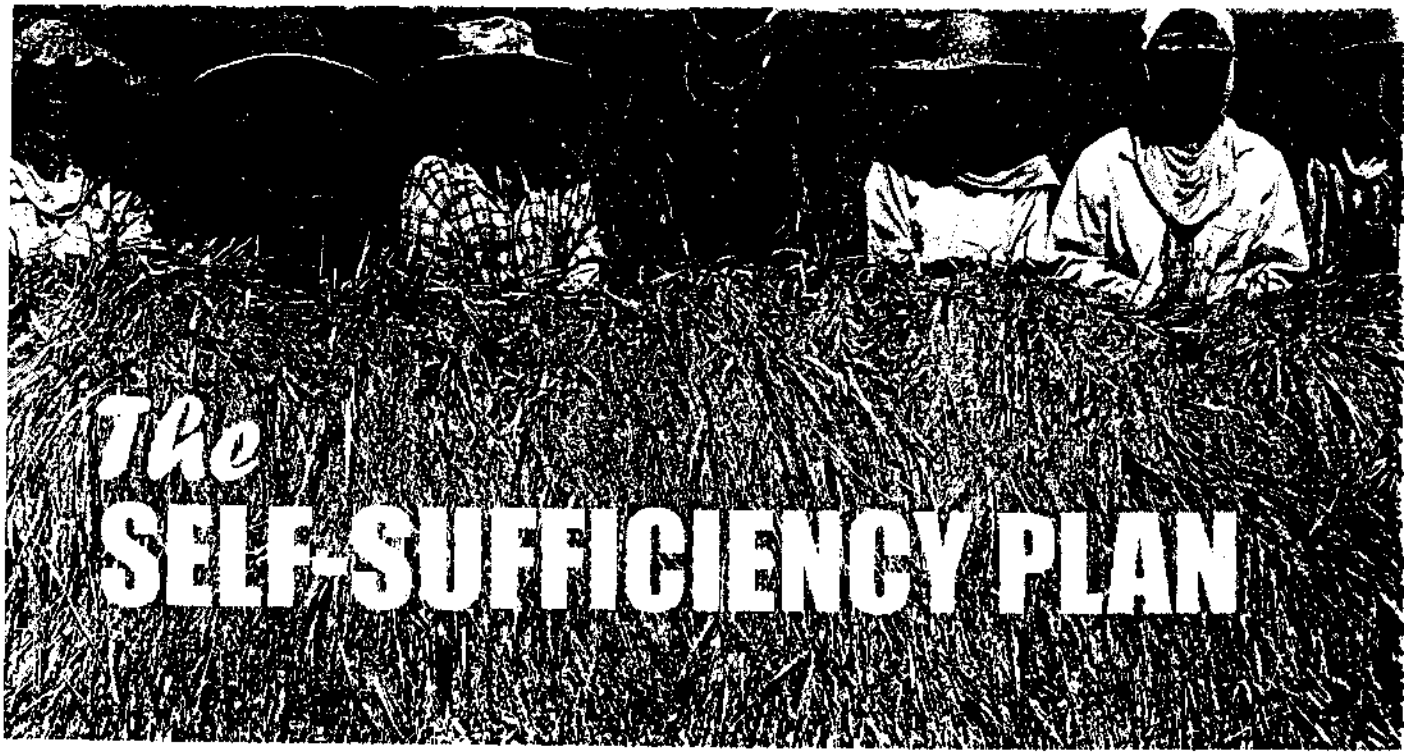


Figure 2. Strengthening the rice sector through investment, policy, and institutional reforms.



The SELF-SUFFICIENCY PLAN

Self-sufficiency in rice, after all was achieved by the Philippines not so long ago. A 100% self-sufficiency is achievable in 2010 by increasing current production to 20 M ton through integrated and holistic approaches to narrow the yield gaps. Investments, policy, and institutional reforms that could push forward rice productivity are likewise needed. These are further spelled out by the goals, objectives, and expected outputs of this plan.

Goals

The Rice Program Plan for 2009 to 2010 is geared toward the:

1) achievement of 100% rice self-sufficiency by 2010; and
2) improvement of rice productivity and income of rice farmers.

Objectives

This Program aims to:

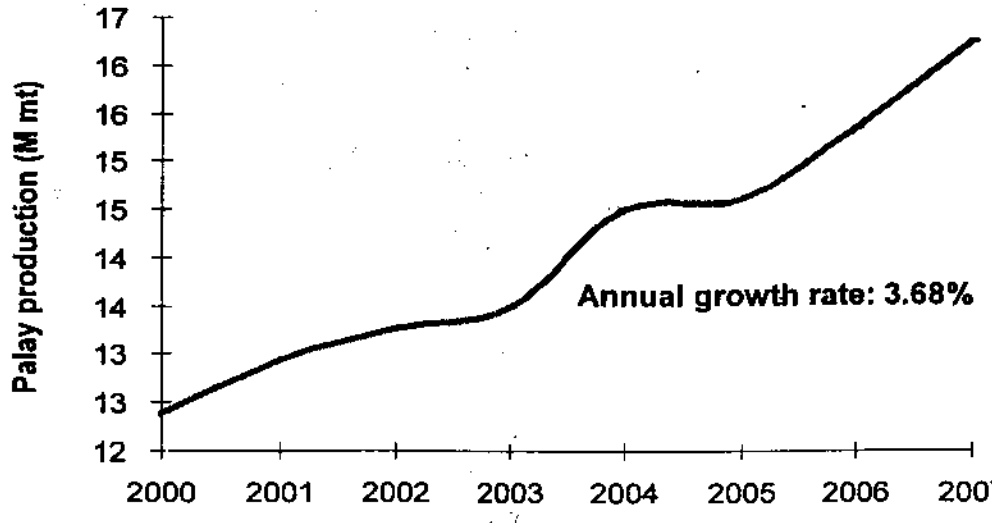
1) increase *palay* production from 16.24 M tons in 2007 to 17.3M tons in 2008; 18.5M tons in 2009; and 19.8M tons in 2010;
2) augment rice farming income through increases in yield from 2008 to 2010; and
3) reduce rice importation significantly in 2010.

Expected Outputs

The expected outputs of the program are:

1) an incremental *palay* production of 2.5 M tons from 2008 to 2010 or around 1.6 M tons of rice at 65% milling recovery due to the program's interventions;
2) savings of at least $300M from reduced rice importation every year; and
3) increased income of marginalized farmers and landless farm workers

Rice production grew at an average rate of 3.68% per year within the period 2000-2007 (Figure 3). This growth is mainly attributed to the changes in yield levels and harvested areas of the country, which, in turn, were influenced by government interventions and investments through the GMA Rice Program.



Sources of prod'n growth	2000	2001	2002	2003	2004	2005	2006	2007
Yield	78.31	84.58	119.86	158.65	57.63	289.90	51.98	54.71
Area	18.70	14.84	-19.30	-57.08	40.64	-185.95	44.37	45.56

Figure 3. Palay production and its sources of growth, 2000-2007.

The existing interventions of the program, however, will only lead to 94% self-sufficiency by 2010. Thus, new approaches and additional investments are needed to raise sufficiency level to 100% by 2010.

As the DA GMA Rice Program and implementing partners have been successful in increasing farm productivity and production growth on a national scale, the performance within provinces was sub-optimal because key rice stakeholders, especially local agriculturist, are often dependent on the national rice program for the development of the rice sector in their respective areas. Yield advantage as well as factors constraining productivity are not consistent in every area of the country: they vary from farmer to farmer, and province to province. Hence, if national productivity increases are to be sustained over the medium and long terms, it is vital to develop a specific rice production program at the provincial level and/or at a smaller scale level like in clustered areas covered by irrigators' associations and farmers' groups. With this framework, location-specific constraints in production could be easily identified, and come up with corresponding strategies that will consequently increase the productivity of each clustered area, irrigation system and provinces which will redound to higher national production levels. The development of local or small-scale (provincial level, cluster level, irrigation systems level) rice master plans aims to give clearer focus and direction to the rice sector for sustained higher productivity, profitability and competitiveness, and contribute in the attainment of rice self-sufficiency targets at the provincial and national levels.

"Location-specific interventions can help farmers achieve higher yield thus this plan focuses on how interventions can increase production toward sufficient yield levels through an LGU-led planning intervention and implementation"

This is where a local government-centered (LGU) planning intervention and implementation must come in. Rice-self-sufficiency must emanate from the provinces. The LGUs must form clusters that will serve as the convergence points of program interventions.

The Governors, as "provincial champions", should enjoin their mayors and constituents to develop and implement their own rice self-sufficiency plans. Such plan will provide focus and direction for the province to produce enough rice for their constituents throughout the year and help sustain productivity toward attaining rice self-sufficiency targets at the provincial and national levels.

The program's strategies are summarized as follows:

1) Provision of productivity level-based interventions in 49 focus provinces (Fig.4) in irrigated and rainfed areas. Of these provinces, 25 will receive intensive support for their irrigated and rainfed areas. Interventions in the remaining 24 provinces will be introduced in either irrigated (19 provinces) or rainfed (5 provinces) areas only.

Table 3 presents the contributions of focus and non-focus provinces to the total production of the country in 2007. Irrigated areas contributed the highest production (76% of total production), where a large volume was from Group 1 provinces contributing 48% of total production. Irrigated Group 2 provinces accounted for 21% of the production while non-focus provinces contributed 7%. Production in the rainfed areas, mainly came from Group 2 provinces, which accounted for 17% of total production.

Irrigated Areas

Group 1: 32 provinces with average yield growth of 3.68% or less, irrigated harvested area of more than 20,000 ha, or a production of more than 80,000 mt in the irrigated ecosystem

Group 2: 12 provinces with average yield growth greater than 3.68% and irrigated harvested area of more than 20,000 ha or a production of more than 80,000 mt in irrigated ecosystem

Rainfed Areas

Group 1: 7 provinces with average yield of not more than 2.50 mt/ha and rainfed harvested area of more than 15,000 ha

Group 2: 23 provinces with average yield of not more than 2.50 mt/ha and rainfed harvested area of more than 15,000 ha

Table 3. Contributions of focus and non-focus provinces to total production, 2007.

Focus Areas	Production (mt)	% to Total Prod'n
Irrigated Areas		
Group 1 provinces	7,730,071	48%
Group 2 provinces	3,422,431	21%
Non-focus provinces	1,116,888	7%
Rainfed Areas		
Group 1 provinces	559,770	3%
Group 2 provinces	2,745,063	17%
Non-focus provinces	665,971	4%
Philippines (Total)	16,240,194	100%

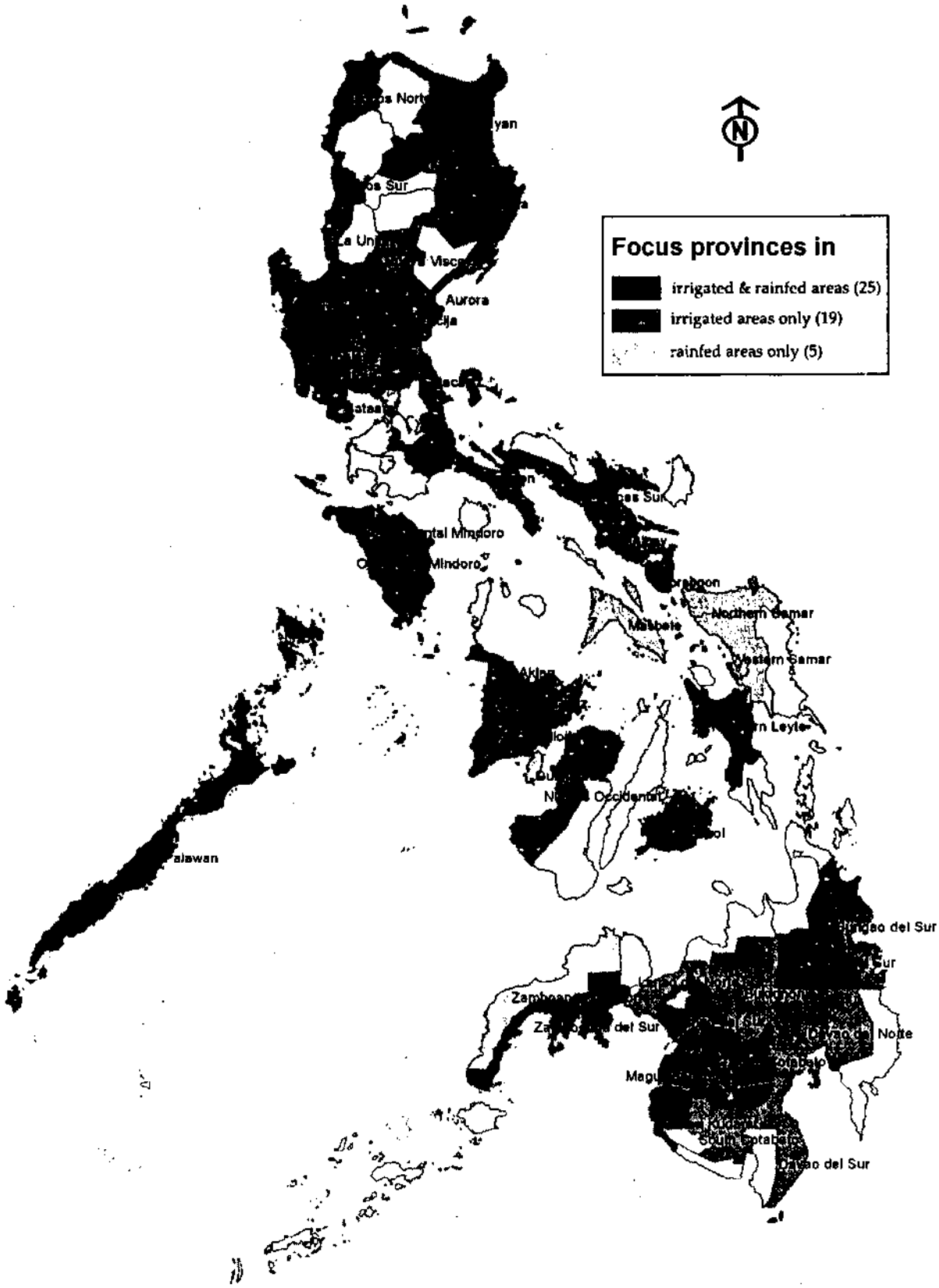


Figure 4. Focus provinces in irrigated and rainfed areas.

2) Clustering of farm lands for easier provision of different support services;
3) Provision of soft loans for the establishment of STWs and SWPs;
4) Improvement of irrigation systems' effectiveness and efficiency through rehabilitation;
5) Increase utilization rate of high-quality hybrid and inbred seeds;
6) Capability enhancement of program implementers and farmers;
7) Procurement of farmers' fresh harvests by the National Food Authority (NFA);
8) Provision for production and post harvest facilities; and
9) Market and credit assistance

The clustering approach shall be the main strategy in implementing the program. This will facilitate the delivery of support services such as seeds, irrigation, postharvest, trainings, procurement of harvests by NFA, and market and credit assistance. This approach will also help the program to address location-specific needs of the industry.

"The clustering approach shall be pursued to organize farmers into groups for manageability and efficiency in technical assistance provision and services delivery, and for easier impact analysis.

Interventions for these cluster units will focus on important material and management inputs. Seed subsidies for certified hybrid and inbred varieties will be channeled through the clusters to entice farmer-members to adopt high-quality seeds. For better water supply in the fields, the program will also provide assistance for irrigation rehabilitation and establishment of STWs and water pumps. Postharvest facilities will also be provided to reduce postproduction losses.

A more intensive information campaign and trainings on rice technologies will also be conducted to improve the farm management performance of farmers.

In irrigated areas, clusters can be organized among Irrigators' Associations, agrarian reform communities (ARCs), cooperatives, and farmer groups within a 1-km radius of "puroks" or farms in a community. The current productivity situation and resources profile in areas covered by irrigators' associations and farmer groups within provinces will be the basis in identifying the specific interventions needed. Soil classification, pests and diseases occurrence profile, fertility and productivity maps in clustered irrigated areas shall be evaluated to identify crop and soil management interventions appropriate in each cluster area. The climatic characteristics and available farm resources in the areas should also be determined. Data on the current performance of irrigation facilities shall be assessed to identify the irrigation systems and quantify the areas to be restored, repaired, and maintained throughout the year. For initial interventions, areas serviced by National (NIS) and Communal (CIS) Irrigation Systems shall be given priority.

With this approach, the program will be able to evaluate the productivity of irrigation systems currently operating in focus provinces.

Finally, to assure that the interventions identified will be implemented properly in the clusters, the operational performance of irrigators' associations, ARCS, and farmer groups will be evaluated. Assessing issues concerning resources, operational procedures and programs will resolve weaknesses and build up opportunities for a better organization. Interventions identified in clustered areas will be lifted to the provincial level.

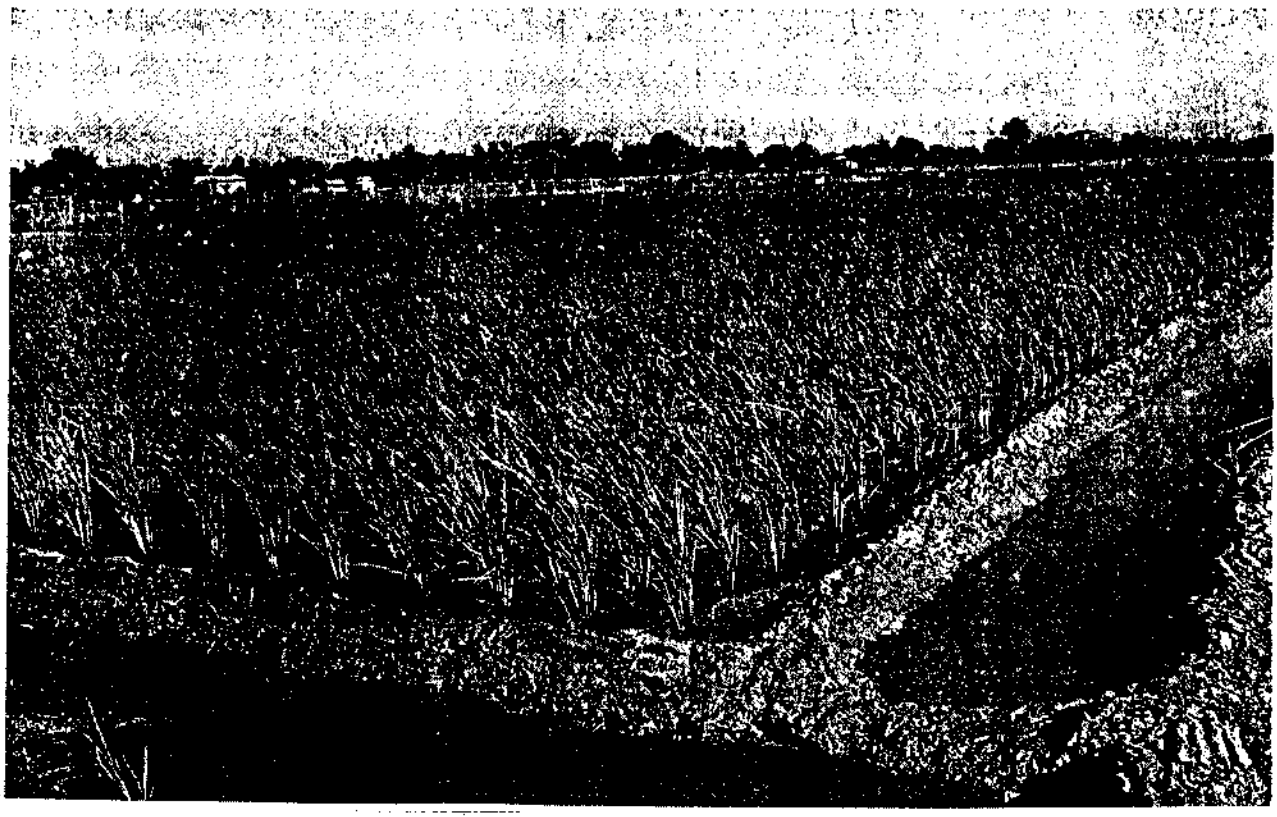
The main interventions for the irrigated ecosystem are rehabilitation and restoration of irrigation systems and use of controlled irrigation techniques and other water-saving crop management practices to improve rice productivity; improve the irrigation water distribution and utilization;

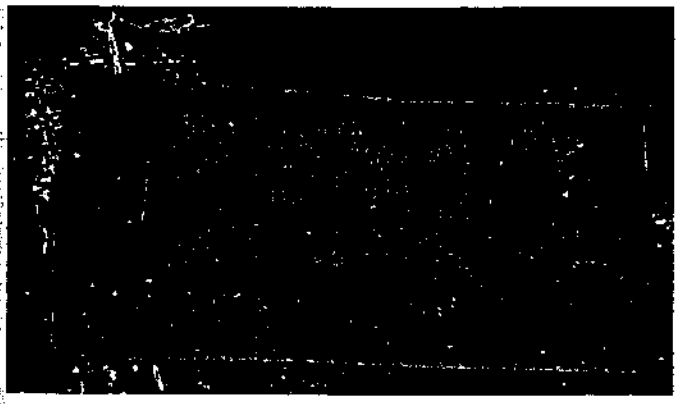
provide subsidies on hybrid seeds ; provide LSI and technical assistance through onfarm research, participatory training, technology demonstrations; and provide information materials through ICT tools.

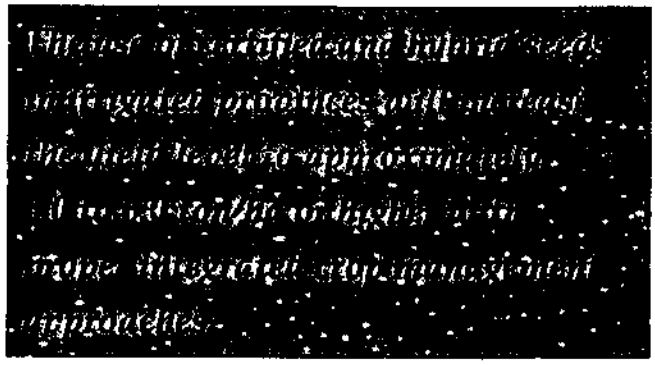
The irrigated rice-growing focus provinces are grouped into two areas based on the average yield growth rate (AGR) in 2000-2007 and total area harvested in 2007 (Table 4). Irrigated Group 1 provinces will cover provinces with 3.68% AGR or less and irrigated harvested area of more than 20,000 ha, or an irrigated production of more than 80,000 ton. Irrigated Group 2 areas are provinces with more than 3.68% AGR and irrigated harvested area of more than 20,000 ha ,or an irrigated production of more than 80,000 ton.. The 3.68% AGR is the national average of 2000-2007 data on yield of irrigated areas in the country.

More resources will be channeled to the 32 irrigated Group 1 provinces because they have higher potential incremental yield levels than Group 2 areas. These areas have slightly damaged irrigation systems, slightly limited resources, and with soil, climatic, and biotic problems in the farms that hinder the achievement of potential yield levels. The interventions envisioned for this group are technical assistance, LSI, rehabilitation of irrigation systems, and use of hybrid rice seeds. These provinces are expected to provide substantial incremental production if best practices are employed in the farms.

The higher yield in the 12 Irrigated Group 2 provinces indicates that irrigation systems are more efficient and better utilized; resources are readily available; farmers have better access to information and are willing to try new technologies (e.g. hybrid rice seeds); and the soil and







climatic conditions are close to ideal for rice production. However, these provinces still have areas (i.e. municipalities and barangays) having lower yields than the average. Assistance, therefore, shall also be provided to boost their yield levels.

Intervention will include hybrid and certified seeds subsidies and technical assistance. A more widespread use of hybrid seeds in these provinces will increase the yield level to approximately 6.0 ton/ha. Technical assistance in the form of R&D, trainings, and technology demonstrations will equip farmers with the efficient use of their resources. Intervention cost for Group 2, however, will be less than the spendings for Group 1 because areas for intensive support in Group 2 provinces are relatively smaller compared with Group 1 areas.

The non-focus provinces shall continue to have technical assistance, through the efforts of LGU-based Agricultural Extension Workers (LGU-AEWs), and rehabilitation of irrigation systems in the provinces identified by NIA. A non-focus province that desires a greater budgetary support will have to submit a comprehensive provincial rice program plan to the DA, which will be reviewed and evaluated for additional assistance.

Submission of a work and financial plan that includes sharing of resources between the DA and the priority provinces shall be required before the resources are released to all of the provinces.

The concentration of interventions shall be in the 44 focus provinces in irrigated areas; 32 in Group 1 and 12 in group 2.

Table 4. Production, yield, and area harvested of focus and non-focus irrigated areas, CY 2007.

Region	Group 1	2.09%	7,730,071	3,349,053	4,381,018	4.13	4.03	4.28	1,873,191	830,194	1,042,997
I	Ilocos Norte	3.54%	234,185	46,118	188,067	4.60	4.07	4.74	50,963	11,321	39,642
	Pangasinan	2.89%	637,489	192,858	444,631	4.53	4.01	4.80	140,695	48,050	92,645
	Ilocos Sur	1.85%	108,872	16,250	92,622	4.38	3.93	4.47	24,872	4,138	20,734
	La Union	3.22%	97,483	29,020	68,463	4.57	4.05	4.84	21,309	7,161	14,148
II	Cagayan	2.54%	560,153	350,961	209,192	4.22	4.40	3.96	132,627	79,816	52,811
	Nueva Vizcaya	2.05%	217,892	103,536	114,356	4.18	4.08	4.27	52,182	25,400	26,782
	Isabela	0.49%	995,836	547,122	448,714	4.33	4.44	4.20	230,018	123,178	106,840
III	Aurora	1.98%	80,879	44,867	36,012	3.84	3.87	3.81	21,062	11,600	9,462
	Tarlac	1.69%	523,418	182,928	340,490	4.50	4.71	4.40	116,306	38,860	77,446
	Pampanga	2.29%	376,722	222,266	154,456	4.61	4.82	4.34	81,654	46,093	35,561
	Bulacan	2.78%	225,499	110,797	114,702	4.25	4.31	4.20	53,021	25,736	27,285
	Zambales	3.54%	81,876	36,374	45,502	4.30	4.42	4.20	19,050	8,228	10,822
IV-A	Laguna	1.25%	122,809	63,864	58,945	4.47	4.45	4.48	27,500	14,340	13,160
	Quezon	3.44%	94,932	57,227	37,705	3.90	3.93	3.85	24,334	14,549	9,785
IV-B	Mindoro Occ.	0.61%	166,450	70,355	96,095	4.00	4.07	3.96	41,582	17,293	24,289
	Palawan	2.52%	111,174	37,602	73,572	3.44	3.11	3.64	32,314	12,100	20,214
VI	Iloilo	1.95%	462,976	145,915	317,063	3.76	3.17	4.11	123,197	46,091	77,106
	Negros Occ.	1.74%	318,210	92,481	225,729	3.84	3.40	4.06	82,830	27,170	55,660
	Antique	1.35%	169,609	68,181	101,428	3.67	3.53	3.78	46,172	19,318	26,854
	Capiz	3.19%	116,346	49,926	66,420	3.65	3.59	3.70	31,836	13,894	17,942
	Aklan	1.05%	79,056	36,668	42,388	3.82	3.51	4.14	20,687	10,442	10,245
VII	Bohol	0.90%	87,648	36,030	51,618	3.05	2.55	3.54	28,732	14,147	14,585
X	Bukidnon	0.98%	253,230	106,266	146,964	4.01	3.72	4.25	63,167	28,600	34,567
	Lanao Norte	0.20%	125,176	64,779	60,397	3.81	3.74	3.86	32,869	17,300	15,569
XI	Comp. Valley	-0.78%	82,480	42,651	39,829	4.19	4.28	4.09	19,703	9,958	9,745
	Davao Norte	2.33%	109,675	56,570	53,105	4.17	4.31	4.03	26,308	13,139	13,169
	Davao Sur	2.59%	132,193	66,385	65,808	5.26	5.14	5.38	25,135	12,910	12,225
XII	Sultan Kudarat	1.70%	351,443	116,338	235,105	3.68	3.45	3.81	95,412	33,761	61,651
	North Cot.	0.84%	353,100	160,049	193,051	4.02	3.94	4.10	87,772	40,645	47,127
	South Cot.	2.56%	255,700	107,043	148,657	3.81	3.53	4.04	67,151	30,362	36,789
XIII	Agusan Sur	3.17%	124,126	59,506	64,620	3.83	3.78	3.87	32,449	15,754	16,695
	Lanao Sur	1.87%	73,432	28,120	45,312	3.62	3.18	3.96	20,282	8,840	11,442
Reg.	**Group 2**	**5.48%**	**3,422,431**	**1,697,367**	**1,725,064**	**4.56**	**4.63**	**4.50**	**749,982**	**366,831**	**383,151**
CAR	Kalinga	4.74%	153,889	85,253	68,636	4.79	5.05	4.50	32,138	16,880	15,258
III	Bataan	3.76%	129,059	67,583	61,476	4.43	4.66	4.20	29,142	14,497	14,645
	Nueva Ecija	4.42%	1,211,036	571,566	639,470	5.13	5.35	4.95	236,150	106,900	129,250
IV-B	Mindoro Orie.	4.71%	245,362	120,738	124,624	4.28	4.34	4.24	57,265	27,841	29,424
V	Camarines Sur	5.94%	459,755	255,665	204,090	3.99	4.11	3.85	115,117	62,135	52,982
	Albay	5.39%	126,365	60,066	66,299	3.73	3.92	3.57	33,921	15,342	18,579
	Sorsogon	5.26%	90,720	48,042	42,678	3.98	4.06	3.90	22,770	11,828	10,942
VIII	Leyte	6.48%	413,039	235,619	177,420	5.00	4.95	5.08	82,579	47,620	34,959
IX	Zamboanga Sur	4.49%	210,230	78,190	132,040	4.36	4.25	4.43	48,185	18,411	29,774
	Zamboanga Sib.	4.71%	86,169	40,522	45,647	4.13	3.97	4.28	20,865	10,200	10,665
XIII	Surigao Sur	4.51%	75,844	39,932	35,912	3.57	3.62	3.53	21,225	11,040	10,185
ARMM	Maguindanao	5.59%	220,963	94,191	126,772	4.36	3.90	4.79	50,625	24,137	26,488

Table 4. Production, yield, and area harvested of focus and non-focus irrigated areas, CY 2007. (Cont'd)

Region	Other areas	3.29%	1,116,885	532,324	584,564	3.80	3.83	3.78	293,839	139,020	154,819
CAR	Abra	2.61%	47,105	13,507	33,598	3.43	3.48	3.42	13,720	3,884	9,836
	Apayao	2.89%	69,688	42,665	27,023	4.28	4.65	3.80	16,276	9,173	7,103
	Benguet	3.96%	14,711	5,796	8,915	2.75	2.68	2.80	5,340	2,160	3,180
	Ifugao	0.82%	58,593	26,362	32,231	3.66	3.87	3.51	15,994	6,819	9,175
	Mt. Province	2.75%	19,262	4,713	14,549	2.62	2.31	2.74	7,349	2,036	5,313
II	Quirino	1.95%	52,573	30,170	22,403	3.81	3.99	3.60	13,790	7,570	6,220
IV-A	Batangas	4.52%	36,607	13,288	23,319	4.54	4.09	4.85	8,060	3,250	4,810
	Cavite	2.32%	34,746	18,291	16,455	3.89	4.02	3.76	8,930	4,550	4,380
	Rizal	3.09%	25,641	14,089	11,552	3.83	3.88	3.78	6,687	3,630	3,057
IV-B	Marinduque	0.81%	11,437	5,500	5,937	3.42	3.41	3.43	3,344	1,614	1,730
	Romblon	3.84%	17,619	6,086	11,533	3.54	3.25	3.72	4,972	1,874	3,098
V	Camarines Norte	5.30%	48,993	24,321	24,672	3.78	3.60	3.98	12,945	6,750	6,195
	Catanduanes	2.65%	15,969	8,004	7,965	2.79	3.35	2.39	5,720	2,392	3,328
	Masbate	1.87%	18,071	10,530	7,541	3.06	3.01	3.14	5,900	3,500	2,400
VI	Guimaras	2.28%	11,697	2,877	8,820	3.17	3.00	3.23	3,687	960	2,727
VII	Cebu	0.97%	14,181	5,101	9,080	3.08	2.63	3.41	4,602	1,938	2,664
	Negros Or.	2.42%	63,136	25,601	37,535	3.58	3.44	3.68	17,640	7,440	10,200
	Siquijor	4.71%	2,203	1,240	963	3.42	3.44	3.39	644	360	284
VIII	East Samar	6.54%	9,316	4,670	4,646	3.84	3.81	3.87	2,425	1,225	1,200
	North Samar	4.10%	11,643	6,438	5,205	3.00	2.65	3.59	3,882	2,427	1,455
	West Samar	5.26%	13,731	5,515	8,216	3.21	3.06	3.32	4,271	1,800	2,471
	Biliran	4.62%	70,223	34,290	35,933	4.76	4.87	4.66	14,750	7,045	7,705
	South. Leyte	6.49%	75,266	39,773	35,493	5.10	5.06	5.14	14,770	7,860	6,910
IX	Zamboanga Norte	1.18%	43,480	21,530	21,950	3.30	3.29	3.32	13,168	6,550	6,618
	Zamboanga City	1.59%	20,367	9,787	10,580	4.33	4.40	4.27	4,702	2,225	2,477
X	Camiguin	1.94%	2,066	1,071	995	3.74	3.80	3.69	552	282	270
	Misamis Occ.	2.90%	60,625	33,402	27,223	4.03	3.88	4.22	15,044	8,598	6,446
	Misamis Or.	3.55%	24,925	10,513	14,412	4.09	3.92	4.23	6,088	2,679	3,409
XI	Davao Oriental	0.88%	54,160	23,451	30,709	5.06	5.02	5.09	10,706	4,667	6,039
	Davao City	2.76%	8,632	4,334	4,298	4.38	4.31	4.46	1,970	1,006	964
XII	Saranggani	-0.41%	32,143	9,858	22,285	3.50	3.22	3.65	9,173	3,061	6,112
XIII	Agusan Norte	2.99%	68,532	34,893	33,639	3.78	3.86	3.70	18,150	9,050	9,100
	Surigao Norte	3.46%	57,899	33,857	24,042	3.21	3.26	3.13	18,052	10,380	7,672
ARMM	Basilan	1.15%	1,648	801	847	3.07	3.02	3.13	536	265	271
	Philippines		12,269,390	5,578,744	6,690,646	4.21	4.18	4.23	2,917,012	1,336,045	1,580,967

Focus provinces: RAINFED AREAS

The rainfed areas are likewise be divided into two groups. Rainfed Group 1 will include provinces with average yields of less than 2.5 ton/ha and rainfed harvested area of more than 15,000 ha while, Rainfed Group 2 provinces will cover provinces with average yields of more than 2.5 ton/ha and rainfed harvested area of more than 15,000 ha (Table 5).

Farmers in Group 1 have limited capital resources, and lands with soil and biotic problems. The interventions in these provinces will include the massive utilization of certified seeds, provision of STWs and SWPs, extension services, technical assistance and other LSIs, including water-harvesting and -saving technologies, among others. The provision of STWs and SWPs is expected to increase output in rainfed areas during the wet season. A substantial part of these areas can also be irrigated during the dry season for rice and other high-value crops.

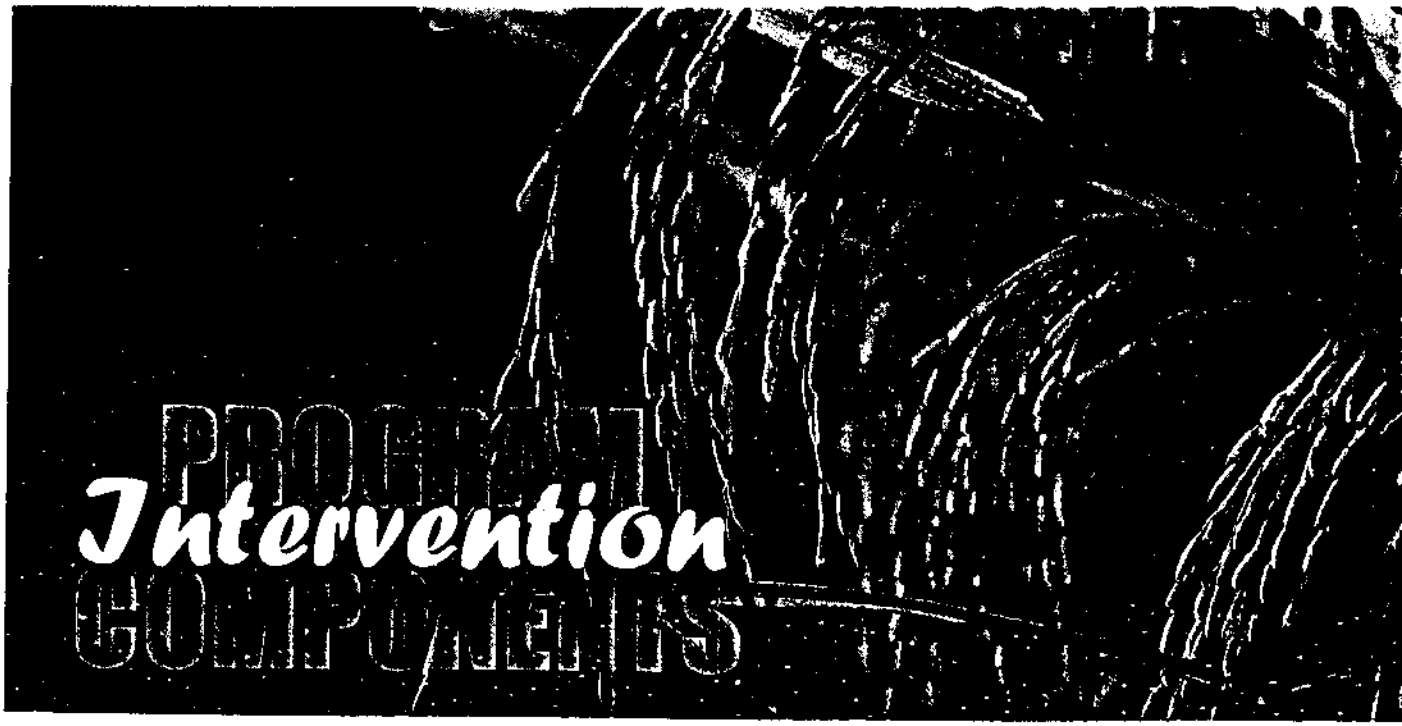
On the other hand, average yields in Group 2 are already quite high in contrast to Group 1. It is assumed, therefore, that farmers in the former areas have enough capital resources for inputs, labor, and equipment. Hence, only the promotion of certified seed use and implementation of Integrated Crop Management (ICM) practices, as well as the provision of technical assistance by the LGU-AEWs, will be implemented to sustain high yield in these rainfed areas.

Table 5. Production, yield, and area harvested of focus and non-focus rainfed areas, CY 2007.

Region	Group 1	0.43%	559,770	272,576	287,194	2.10	1.87	2.37	267,063	145,870	121,193
V	Masbate	2.21%	57,447	23,265	34,182	1.93	1.87	1.98	29,750	12,450	17,300
VI	Guimaras	0.62%	32,057	3,451	28,606	2.00	1.20	2.18	16,998	2,876	13,122
VII	Bohol	2.26%	75,793	25,023	50,770	1.81	1.27	2.30	41,809	19,702	22,107
VIII	West Samar	4.48%	73,037	27,895	45,142	1.86	1.66	2.01	39,217	16,782	22,435
	North Samar	6.56%	65,123	48,649	16,474	1.91	1.79	2.34	34,157	27,107	7,050
IX	Zamboanga Norte	4.14%	43,510	12,621	30,889	2.28	1.96	2.44	19,085	6,427	12,658
ARMM	Maguindanao	-0.55%	212,803	131,672	81,131	2.44	2.18	3.06	87,047	60,526	26,521
Region	Group 2	3.12%	2,746,063	677,183	2,067,880	3.18	2.71	3.36	864,393	249,468	614,928
I	Pangasinan	5.67%	373,626	532	373,094	4.07	3.13	4.07	91,690	170	91,720
	Ilocos Sur	3.76%	88,622	0	88,622	4.10	0.00	4.10	21,601	0	21,601
II	Cagayan	3.58%	142,406	105,835	36,573	2.71	2.80	2.49	52,539	37,838	14,701
	Isabela	-0.11%	41,081	22,487	18,594	2.70	2.84	2.55	15,192	7,908	7,284
III	Nueva Ecija	3.59%	145,125	0	145,125	3.75	0.00	3.75	38,700	0	38,700
	Bulacan	3.21%	79,350	0	79,350	3.84	0.00	3.84	20,664	0	20,664
IV-A	Quezon	4.45%	54,480	21,495	32,985	2.54	2.10	2.95	21,411	10,225	11,186
IV-B	Palawan	2.78%	132,709	46,324	86,385	2.76	2.67	2.81	48,103	17,356	30,745
	Mindoro Occ.	0.78%	91,390	1,596	89,794	3.55	3.80	3.54	25,775	420	25,355
	Mindoro Or.	1.66%	73,496	40,662	32,834	3.17	3.16	3.18	23,197	12,872	10,325
V	Camarines Sur	5.56%	101,054	34,492	66,562	3.14	3.16	3.14	32,145	10,926	21,219
VI	Negros Occ.	1.75%	106,902	16,200	90,702	3.43	2.75	3.59	31,140	5,900	25,240
	Iloilo	2.90%	360,398	77,139	283,259	2.98	2.61	3.10	120,918	29,596	91,322
	Capiz	3.48%	199,087	85,951	113,136	2.62	2.44	2.77	76,035	35,216	40,819
	Aklan	3.14%	62,518	22,511	40,007	2.79	2.35	3.13	22,395	9,596	12,799
	Antique	4.37%	73,568	8,611	64,957	2.76	2.27	2.84	26,700	3,788	22,912
VIII	Leyte	8.71%	169,801	78,712	91,089	3.68	3.52	3.83	46,147	22,345	23,802
IX	Zamboanga Sur	6.49%	75,493	7,600	67,893	4.13	4.01	4.14	18,285	1,894	16,391
	Zamboanga Sib.	0.70%	68,973	13,296	55,677	3.09	2.90	3.14	22,318	4,584	17,734
XII	North Cotabato	-0.70%	86,102	19,385	76,717	2.74	2.44	2.83	35,085	7,939	27,146
	Sultan Kudarat	-2.26%	48,941	8,334	40,607	2.83	1.97	3.10	17,312	4,227	13,085
XIII	Agusan Sur	2.71%	58,689	30,981	27,708	2.89	2.90	2.89	20,278	10,683	9,595
ARMM	Lanao Sur	-0.10%	101,250	35,040	66,210	2.77	2.19	3.22	36,563	15,980	20,583

Table 5. Production, yield, and area harvested of focus and non-focus rainfed areas, CY 2007. (Cont'd)

Region	Other areas	4.32%	665,971	199,377	466,594	2.97	2.75	3.07	224,421	72,600	151,821
CAR	Abra	3.47%	25,896	0	25,896	2.62	0.00	2.62	9,895	0	9,895
CAR	Apayao	2.63%	35,013	3,961	31,052	2.76	3.04	2.73	12,668	1,303	11,365
	Kalinga	3.84%	5,226	1,980	3,246	3.26	3.30	3.23	1,605	600	1,005
	Benguet	1.81%	2,091	0	2,091	2.07	0.00	2.07	1,010	0	1,010
	Ifugao	6.77%	2,454	0	2,454	2.36	0.00	2.36	1,040	0	1,040
	Mt. Province	1.17%	2,383	0	2,383	2.17	0.00	2.17	1,100	0	1,100
I	La Union	2.35%	53,377	0	53,377	3.85	0.00	3.85	13,867	0	13,867
	Ilocos Norte	4.32%	48,647	704	47,943	4.00	3.52	4.01	12,164	200	11,964
II	Nueva Vizcaya	4.15%	10,230	4,620	5,610	2.88	2.75	3.00	3,550	1,680	1,870
	Quirino	1.86%	5,072	4,193	879	2.48	2.60	2.02	2,045	1,610	435
III	Tarlac	1.37%	34,525	0	34,525	3.53	0.00	3.53	9,782	0	9,782
	Zambales	5.19%	30,834	0	30,834	3.46	0.00	3.46	8,900	0	8,900
	Pampanga	5.32%	13,568	147	13,421	3.87	3.00	3.88	3,504	49	3,455
	Aurora	-0.14%	7,438	4,345	3,093	3.41	3.48	3.33	2,180	1,250	930
	Bataan	4.49%	2,784	0	2,784	3.49	0.00	3.49	798	0	798
IV-A	Batangas	10.46%	13,283	0	13,283	3.01	0.00	3.01	4,410	0	4,410
	Cavite	-7.12%	3,939	0	3,939	2.08	0.00	2.08	1,890	0	1,890
	Rizal	7.27%	3,141	168	2,973	3.44	2.80	3.49	912	60	852
	Laguna	2.39%	1,840	860	980	3.17	3.07	3.27	580	280	300
IV-B	Marinduque	1.15%	17,976	9,102	8,874	2.49	2.40	2.60	7,211	3,795	3,415
	Romblon	6.71%	9,567	2,388	7,179	2.37	1.93	2.62	4,040	1,305	2,735
V	Albay	2.56%	21,671	10,956	10,715	2.67	2.81	2.55	8,106	3,900	4,206
	Catanduanes	5.15%	17,641	12,047	5,594	2.78	2.96	2.45	6,344	4,064	2,280
	Cam. Norte	6.24%	15,089	9,136	5,953	2.31	2.25	2.42	6,525	4,060	2,465
	Sorsogon	6.56%	18,655	12,722	5,933	2.62	2.52	2.84	7,131	5,040	2,091
VII	Cebu	2.03%	588	32	556	1.66	1.07	1.71	355	30	325
	Negros Or.	0.88%	8,132	846	7,286	2.21	1.88	2.26	3,675	450	3,225
	Siquijor	5.75%	121	98	23	2.42	2.39	2.56	50	41	9
VIII	East. Samar	4.70%	34,418	19,817	14,601	2.41	2.35	2.50	14,290	8,445	5,845
	South Leyte	3.17%	11,636	5,940	5,696	3.47	3.45	3.48	3,355	1,720	1,635
	Biliran	3.24%	1,594	925	669	2.94	2.86	3.04	543	323	220
IX	Zamboanga City	-0.47%	5,537	1,502	4,035	3.32	3.20	3.36	1,670	470	1,200
X	Bukidnon	2.88%	13,388	1,585	11,803	3.16	2.07	3.40	4,231	755	3,476
	Camiguin	4.47%	7	3	4	1.40	1.50	1.33	5	2	3
	Lanao Norte	-1.78%	18,729	2,319	16,410	3.02	3.24	3.00	6,194	715	5,479
	Misamis Occ.	10.73%	2,799	299	2,500	3.75	2.60	3.98	747	115	632
	Misamis Or.	6.36%	967	299	668	2.75	2.14	3.15	352	140	212
XI	Davao Or.	1.12%	9,663	6,499	3,164	2.28	2.09	2.80	4,238	3,108	1,130
	Davao Sur	1.93%	2,700	0	2,700	2.75	0.00	2.75	982	0	982
	Davao City	-0.93%	8,594	5,238	3,356	2.55	2.40	2.60	3,375	2,178	1,197
	Compostela Val.	0.15%	12,943	5,874	7,069	3.76	3.61	3.89	3,446	1,628	1,818
	Davao Norte	2.57%	6,144	1,999	4,145	3.78	3.88	3.74	1,624	515	1,109
XII	Saranggani	11.81%	13,696	2,136	11,558	2.86	2.45	2.96	4,783	873	3,910
	South Cotabato	-1.18%	35,563	8,292	27,271	3.05	2.53	3.26	11,653	3,282	8,371
XIII	Agusan Norte	2.87%	27,853	18,355	9,498	3.08	3.38	2.62	9,057	5,432	3,625
	Surigao Sur	8.09%	18,853	17,068	1,785	3.12	3.22	2.42	6,038	5,300	738
	Surigao Norte	7.17%	24,042	22,312	1,730	2.93	2.95	2.79	8,195	7,575	620
ARMM	Basilan	-2.19%	1,328	628	700	1.81	2.05	1.64	734	306	428
	Sulu	-2.00%	3,400	0	3,400	1.14	0.00	1.14	2,970	0	2,970
	Tawi-tawi	0.21%	956	0	956	1.59	0.00	1.59	602	0	602
	Philippines		3,970,804	1,149,136	2,821,668	2.93	2.46	3.18	1,355,877	467,935	887,942



Masterlisting and Profiling of Rice Farmers

All rice farmers in the barangays shall be masterlisted by Agricultural Technicians (ATs) assigned in the clusters. The completed masterlists in the municipalities shall be submitted by the Municipal Agricultural Office (MAO) to the Office of the Provincial Agriculture (OPA) that will serve as basis for all rice project interventions and for other purposes as may be requested by the Department of Agriculture, i.e. Regional Field Unit (DA-RFU), GMA Rice Program, and other stakeholders. Moreover, the masterlist and profiles of rice farmers will be used as databases showcasing information on the total number of rice farmers, total rice area planted per season, types of ecosystems, and irrigation types/sources.

Operational Interventions

The Philippines' rice self-sufficiency plan should be deeply rooted in its provinces. It is an archipelago with relatively limited land and no river delta to feed its irrigation systems. Thus, this program plan advocates LGU-centered planning intervention and implementation. A province should have an efficient rice production system, ensuring an adequate supply of rice, if not higher than the local consumption level. Moreover the provision of technological services becomes easier if farmers are grouped; for instance into clusters.

A. Governors as Champions

Available technology interventions could be best delivered if the provincial governors will take "center-stage" in increasing the rice productivity of their respective provinces. Governors, as "provincial champions", should enjoin their mayors to ensure that their respective municipalities and cities produce enough rice for their constituents throughout the year. Also, they are expected to assist rice-deficit provinces and increase local rice stocks through bumper harvests at the provincial levels.

Hence, provincial governors in the focus provinces shall spearhead the development and implementation of their own rice self-sufficiency plans in conjunction with small-scale rice master plans designed by clustered farmers, irrigators' associations, rice industry stakeholders, and city/municipal governments. Such plan will provide focus and direction to the rice sector toward sustained productivity and profitability to attain rice self-sufficiency targets at the provincial and national levels.

Further, the LGUs of focus provinces will implement the clustering approach in their localities as a main strategy to help infuse technological interventions to increase farmers' rice productivity.

B. Clustering Approach – Organizing Rice Farmers

The clusters will be the convergence points of program interventions. The LGUs are to form clusters in areas where no cluster exists. Irrigators' associations, agrarian reform communities, and farmer-cooperatives within a 1-km radius of the "puroks" or farms of a community can serve as nuclei of clusters. Each cluster should cover at least 40 ha in 2009 and at least 80 ha in 2010.

Within cluster, each farmer group will be represented by the group leader and secretary/ treasure in production cluster meetings as may be called upon by the production technician and/or other program stakeholders.

The current productivity situation and resources profile of the cluster areas will be the basis in identifying the needed interventions. Program interventions in focus provinces will be introduced through the developed clusters (Figure 5).

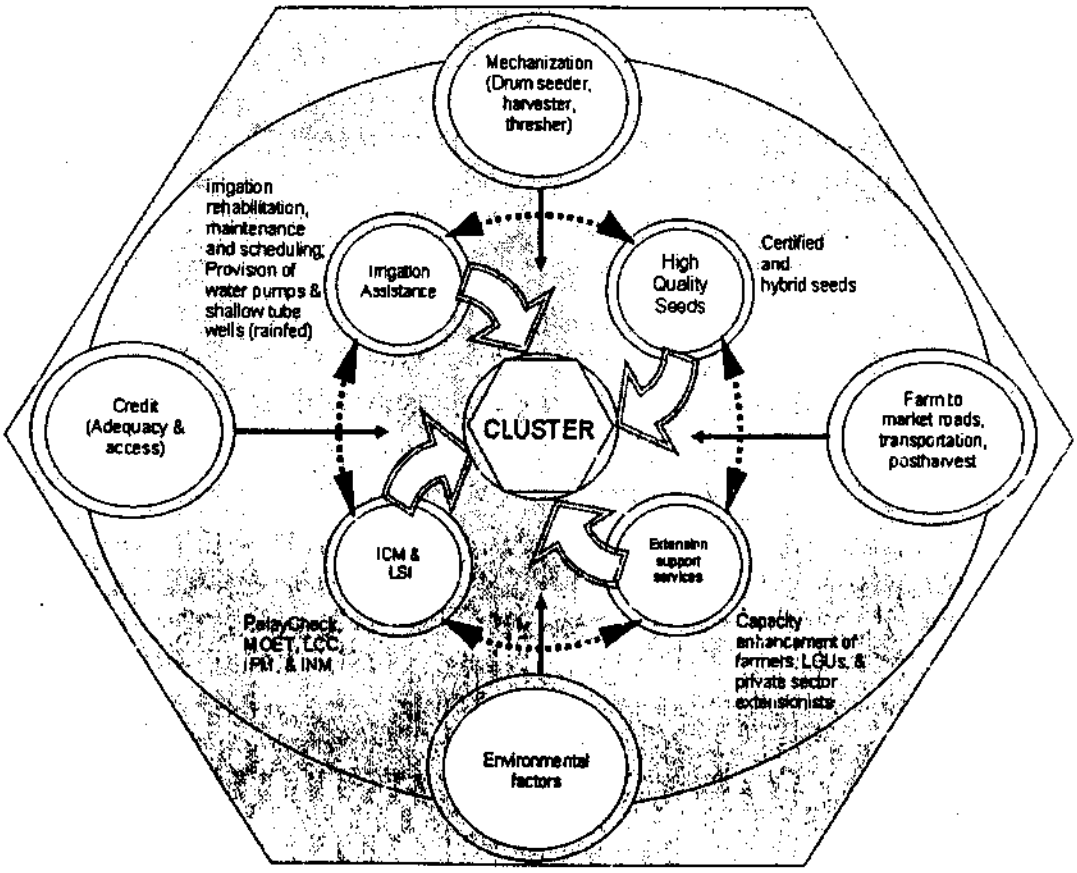


Figure 5. Program interventions in cluster areas.

Table 6 shows the number of clusters in irrigated and rainfed areas. Only 20% of the harvested areas devoted to certified hybrid and inbred seeds planting shall be clustered in both years. Moreover, the number of hectares covered per cluster will vary per year, that is, 40 ha per cluster in 2009 and 80 ha per cluster in 2010. Therefore, there will be 18,773 and 9,387 clusters in 2009 and 2010, respectively.

Table 6. Number of clusters per year, 2009-2010.

CLUSTERS	2009	2010
Irrigated area	13,116	6,558
Group 1 clusters	9,366	4,683
Group 2 clusters	3,750	1,875
Rainfed area	5,657	2,829
Group 1 clusters	1,335	668
Group 2 clusters	4,322	2,161
TOTAL clusters	**18,773**	9,387

Package of Interventions for focus provinces

Interventions shall be classified into four major components, namely:
A. Production, technology development, information, and extension support;
B. Infrastructure development and maintenance;
C. Market and credit assistance; and
D. Regulatory and program management

These four components are further comprised by 14 interventions that could be employed to address location-specific concerns of irrigated and rainfed target areas in the 49 focus provinces. These interventions may also be adopted by non-focus provinces to increase their productivity levels.

Table 7 summarizes these interventions that could help increase productivity from rice farming, thereby contribute to attaining rice self-sufficiency in the focus provinces.

Table 7. Package of interventions for focus provinces.

- Integrated Crop Management (ICM) - Location-specific interventions - High-quality seeds - Irrigation systems repair, restoration, and rehabilitation	- ICM - Location-specific interventions - High-quality seeds - Irrigation systems repair, restoration, and rehabilitation	- ICM - Location-specific interventions - High-quality seeds - Shallow tube wells (STWs) and surface water pumps (SWPs)	- ICM - Location-specific interventions - High-quality seeds

Other interventions:

- Postharvest & mechanization assistance
- Market and credit assistance
- Research & development
- Capacity enhancement for extension workers, municipal program implementers, and farmers
- Farm-to-market roads
- Credit and input assistance
- Program monitoring and evaluation
- Policy analysis and advocacy
- Regulatory services
- Database management

A. Production, technology development, information, and extension support

This component includes four interventions, which specifically address the local production problems that when adopted and practiced by farmers will help increase rice yield and productivity.

Intervention 1: Integrated Crop Management (ICM)

The Integrated Crop Management (ICM) system is an approach that addresses the overall health of crops by using all available methods (regulatory, physical, cultural, chemical and biological) collectively. It recognizes that rice growing is a production system consisting of a range of factors that are interdependent and interrelated in their impact on the growth, yield, and rice grain quality, and on the sustainability of the environment. It dictates that technology recommendations for yield improvement be developed and transferred to farmers as a holistic and integrated package, and not by components, such as integrated nutrient management (INM) or integrated pest management (IPM).

The ICM is a platform that can be used to integrate different rice technologies in the Philippines. Its development and use has been recognized as a key approach for attaining higher productivity and income in several rice growing countries. Important crop management practices includes good variety, healthy seeds and seedlings, land preparation, correct spacing, nutrient management, pest management, and water management. ICM is expected to contribute 10% to production growth.

Implementation strategy:

An ICM system that is location-specific will be promoted using the PalayCheck approach. This includes seeds, soil and water technologies, and climatic and biotic problem mitigation. In particular, this will involve delivery of proven crop management technologies such as Site-Specific Nutrient Management (SSNM), Integrated Pest Management (IPM), Controlled Irrigation (CI), and postharvest technologies.

A participatory rural appraisal will be conducted to ensure that the ICM developed with the farming communities will truly address their specific rice production constraints. Focus group discussions and questionnaires shall be used to determine the needs of the target areas.

Technologies related to soil and climate will be determined using available databases Bureau of Soils and Water Management (BSWM), Bureau of Agricultural Research (BAR), International Rice Research Institute (IRRI), State Colleges and Universities (SCUs), Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) and other data collectors and depositories. The information will be validated through consultations with municipal agriculture officers (MAOs), AEWs, and farmer-leaders in identified sample provinces. If the needs can be addressed by available knowledge, technology, and resources under the DA and LGU, then the program will readily provide these to the farmers. Otherwise, the program will (1) research and validate interventions needed, (2) link farmer groups to those providing resource assistance, and (3) mobilize other sources either from the country or abroad.

Location-specific interventions on nutrient management will be based on the results of the Minus-One Element Technique (MOET) and other soil analysis methods used in determining the limiting macro and micronutrients in focus areas. Subsidy for micronutrients will be offered through private companies willing to provide support on fertilizer inputs to specific clusters that need such resource assistance.

The delivery of water-saving technologies such as CI will be integrated with the upgrading and expanding the irrigated infrastructure (component 2) through collaboration with irrigation and water management agencies (NIA and BSWM) and Irrigators' Associations.

Intervention 2: High-quality rice seeds

The use of quality rice seeds (i.e. certified inbred and hybrid seeds) is the most fundamental cultural practice in which other technologies are based. Certified seeds (CS) are pure, clean, full and uniform in size, and have a minimum germination rate of 85% that can contribute to as much as 10% increase in grain yield especially when properly managed. Adopting all the recommended cultural practices in rice production would be meaningless if it is not complemented with the use of appropriate and high quality seeds.

The use of certified seeds leads to healthy seedlings that grow fast and uniformly. Shifting from certified to hybrid seeds results in 1 ton/ha yield increase while a shift from farmer's seeds to certified seeds results in about 0.50 ton/ha yield increase. Target areas for certified hybrid and inbred rice are summarized in Annexes 4 and 5.

Implementation strategies:

Favorable areas with high adoption of certified inbred seeds will be tapped for hybrid rice adoption. Farmers can avail of subsidized hybrid seeds and can plant their choice among the following hybrid varieties: PSB Rc72H (Mestizo 1), NSIC Rc116H (Mestizo 3), NSIC Rc124H (Bigante), NSIC Rc132H (SL-8), NSIC Rc136H (Mestizo 7), NSIC Rc164H (Rizalina28), and NSIC Rc162H (Bioseed 401). Moreover, farmers planting farmer's seeds will be encouraged to shift from farmer's seeds to certified seeds of the top five preferred varieties in their province.

In terms of seed production, IRRI, PhilRice, BPI, the Rice Seed Network, and private seed companies will collaborate to fast-track the following activities:

a. Facilitate a more speedy and efficient seed production and supply systems for making the different classes of seeds more readily available to farmers at the right time in all the focus provinces, and through information and awareness campaigns including the use of participatory varietal selection and onfarm demonstration trials;

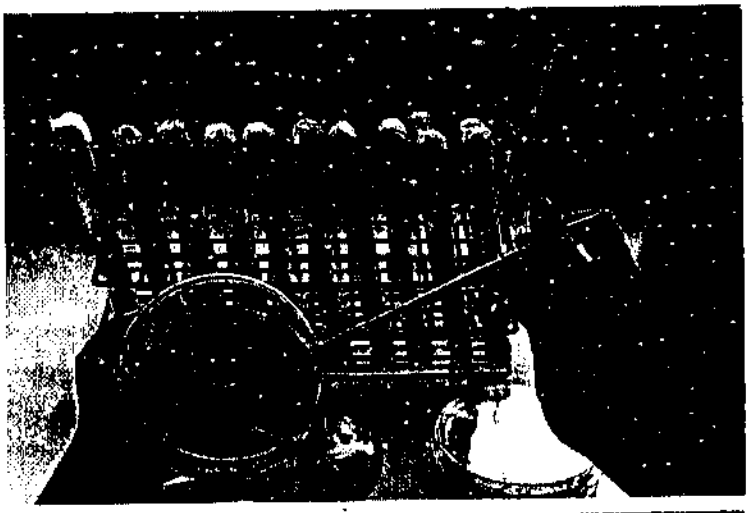
b. Strengthen the multi-location testing of promising breeding lines through better characterization and increased number of testing sites, inclusion of more entries in the NCT and MAT, and quality data generation through the integration of ICM in the national varietal testing procedures;

c. Improve the efficiency and shorten the duration of variety development, registration, and release processes and provide high quality information on the performance and local adaptation of new varieties in the key regions of the Philippines, including Participatory Variety Selection (PVS) approaches.

Intervention 3: Research and Development (R&D)

R&D on new rice technologies that could help expand the current production frontier will be continued. This is important in attaining a 100% rice self-sufficiency by 2010 and in providing affordable rice for all Filipinos. R&D breakthroughs that address key production constraints in the farm are still among the most effective and cost-efficient means of improving productivity and competitiveness of the country's rice industry, thereby ensuring rice security for Filipinos.

In crafting a more focused and relevant R&D, PhilRice will constantly align and shape its R&D program thrusts according to the present and anticipated needs of the Philippine rice industry, given the current and emerging economic and technological trends and challenges, at the global and local level.



IRRI and other national and local government agencies will conduct strategic nationwide assessment of the rice production potential of both current rice-growing areas as well as of new areas that could be developed for rice growing. Important technologies for such an assessment are GIS, remote sensing, crop and climate modeling, and overall assessment and synthesis techniques. In addition, IRRI will collaborate with PhilRice in developing the next generation of water-saving technologies for water-constrained environments, improving integrated strategies for pest (weeds, insects, and rodents) and disease management, and in designing sustainable management of emerging and future food and feed production (e.g. rice-corn or rice-rice-corn systems).

In terms of rice breeding, IRRI and PhilRice will develop the next generation of high-yielding rice varieties and hybrids. Specific emphasis will be on (i) increasing the yield potential of rice by breeding for new plant types; (ii) utilizing marker-assisted selection techniques for pyramiding sets of disease and insect resistant genes into elite lines and varieties; and (iii) targeted breeding for agronomic traits to develop varieties that are better suited for direct dry or wet seeding, controlled irrigation, and aerobic rice.

> *"Science-based technologies that address key production constraints in the farm are still among the most effective and cost-efficient means of improving productivity."*

While it is important that production and productivity of farmers are increased, sustainability of the rice farm should also be addressed to sustain the gains in increasing investments in the rice areas. Technologies that lead to enhanced rice farm sustainability like bio-fertilizer and organic fertilizer application, water-saving techniques, enhanced biological control through natural enemy conservation to manage insect pests and farm diversification must be built in integrated crop management. These cost-reducing practices will complement yield-boosting component technologies like high-yielding varieties and inorganic fertilizer application. Crop diversification needs to be integrated into the cropping system of farmers, particularly in the rainfed areas for food security and increased productivity. PhilRice and IRRI will collaborate in designing sustainable management of emerging and future food and feed production systems.

Integrated and farmer-engaging systems are the cornerstone for technology promotion, instead of single technologies as was usually done in the past. Component technologies need to be linked into these integrated systems in order to further improve their effectiveness and efficiency. Two integrated systems-based approaches for promoting rice and rice-based farming technology packages are the PalayCheck® and Palayamanan®. Under both systems, key individual technologies are assembled into functional systems and are honed and fine-tuned at the village-level, utilizing farmer-participatory approaches thus, resulting in adapted technologies that respond to location-specific production problems. Both systems have resulted in increases in rice production and profitability at levels beyond those achievable using only single-technology interventions. Single technology components operated through R&D will be adopted and fine-tuned in the farming communities following the PalayCheck and Palayamanan approaches before these will be scaled out in the DA National Rice Program Plan in all focus provinces.

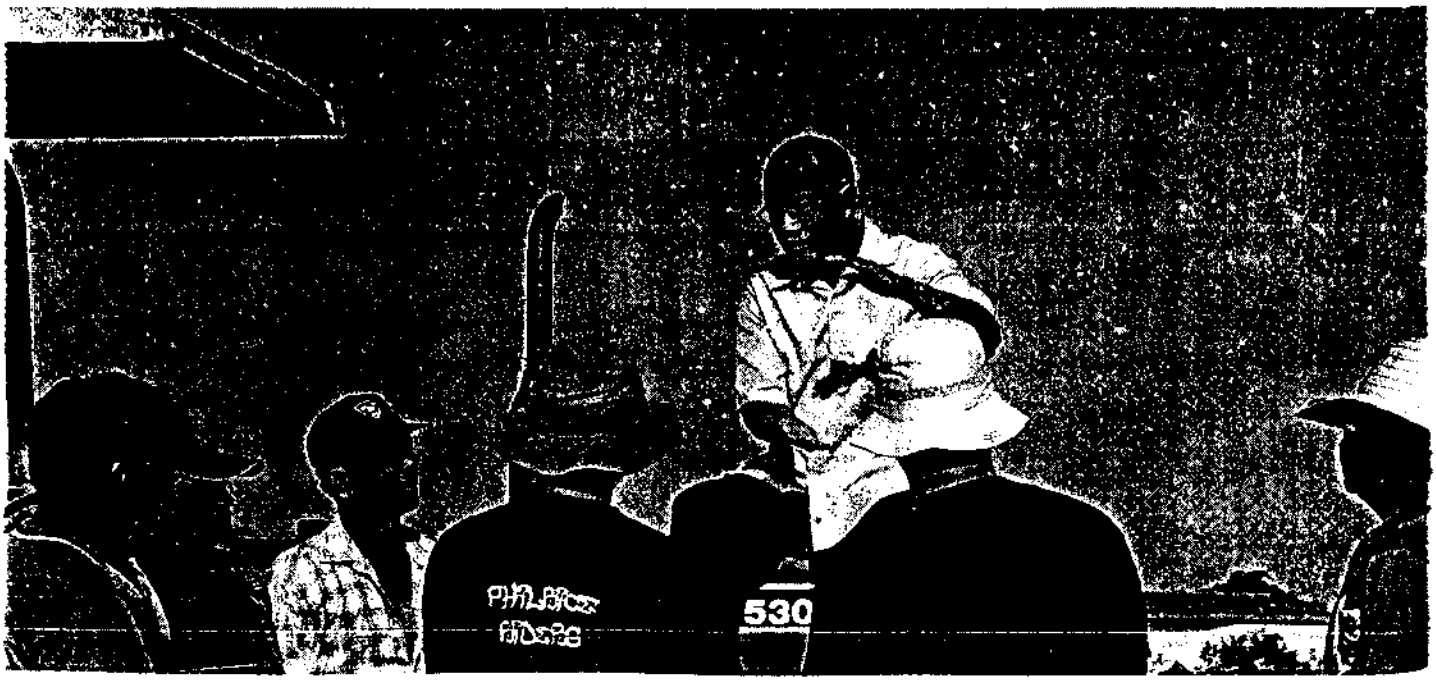
Implementation strategy:

The conduct of location-specific researches will be encouraged through the leadership and coordination of the SCU and DA-Regional Integrated Area Research Centers (RIARCs). Soil classification, fertility, and productivity maps and climatic characteristics of the focus provinces will be worked on. These outputs will help identify the appropriate crop and soil management needs of focus areas and ensure the use of appropriate location-specific technologies developed by public and private research institutions.

Intervention 4: Capacity Enhancement

Weak research-extension linkages, top-down approach to extension delivery, and weak capabilities of extensionists have been major impediments to the provision of a client-responsive rice extension. A good rice extension system should have an approach that is LGU-led, linked to the research systems, and focused on developing the technical and managerial capabilities of rice farmers to enable them to make informed production and market decisions. Extension workers and program implementers should be retooled to keep them knowledgeable of the latest technologies available. They should also be trained on the use of ICTs to increase their access to updated information. It should be noted that increased farmer's knowledge on advance production techniques and technologies is a vital source of sustainable productivity growth and this could be possible only if there is an effective extension service.

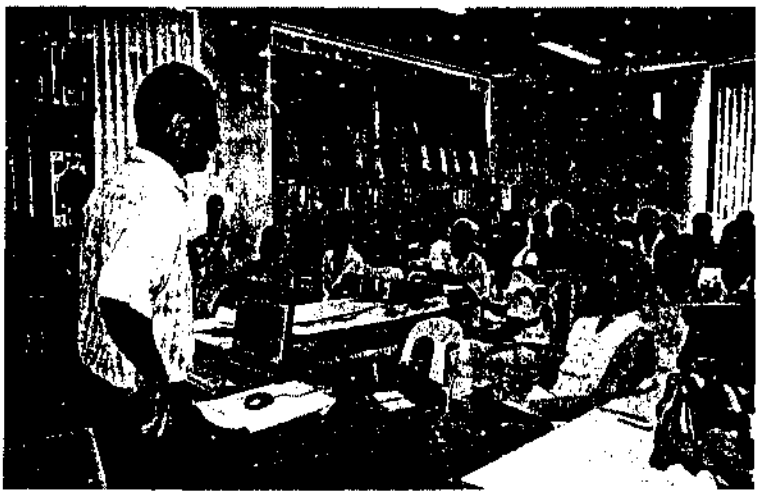
To address the need for a good extension system, PhilRice and IRRI will work together to promote the use of ICT in improving capacity building, conduct "training of trainers" programs, and tailor extension materials and approaches to fit the local needs of the



industry. PhilRice and IRRI will spearhead in developing a professional certification scheme for public and private sector extension personnel and agronomists to sustain the competency. The collaborative work will also bridge the research-extension divide by developing mechanisms to build new rice technologies into the basic curricula of agricultural colleges and state universities.

PhilRice, moreover, will conduct several promotion strategies and models suited in the various ecosystems, culture, farming systems and conditions of farming communities to effectively bring rice technologies to farmers. Some of the promotion models developed by the PhilRice branch stations had been found to be effective vehicles of rice production technologies specific to their regions and these must be sustained. Through the years, PhilRice had continuously pursued this endeavor and will continue to do so to keep pace with the changing technologies being developed and the changing needs of the farmers and the farming communities.

Implementation strategies:



Effective extension systems must focus on educating the extension workers and farmers to apply and adopt technologies following an integrated crop management approach to maximize the potential benefits from single component technologies. A strong education approach that enables farmer-participants to better learn, understand, apply, and adopt the technologies embedded in the system is therefore necessary so that the increased yields and productivity achieved in the short term are sustained in the long term.

1. *Training of extension workers and municipal program implementers*

   - Creation of a provincial training team for extensive conduct of training of ATs per cluster or municipality/city. The team will be represented by the OPA rice specialists to be complemented by technical persons from PhilRice Stations, ATI, SCUs and other members of the Technical Working Group (TWG). A two to three day training course for ATs on rice S&T updates and project management shall be conducted by the provincial training team.

- Season-long trainings on PalayCheck and Palayamanan for farming systems experts from the Agricultural Training Institute (ATI), DA-RFU, provincial agricultural offices, and LGU-AEWs

- Increase ATs access to popularized module packages for location-specific technologies through information technology

- Institutionalize the interaction system between ATs and research agencies through S&T updates, technical briefing and fora

2. *Farmers' training, technical assistance, and technology demonstration*

- Creation of a municipal training team who will train farmers in rice S&T and conduct project briefing on local rice master plan

- Farmer-participants will be closely monitored by the team with the help of the production cluster leader and the farmers group through farm visits and focus group discussions. Appropriate knowledge products promoted and disseminated by the ATs in the municipality will be provided to farmers. The team can be supported by the provincial training team

- Season-long trainings of farmer leaders as trainers and technology demonstration and season-long training on PalayCheck and Palayamanan for farmers

- Encourage farmers to form/join organizations

3. *PalayCheck/Palayamanan field schools*

- Farmer-achievers in the clusters will be tapped and their rice field will serve as a demonstration area, showcasing their best practices and new technological developments in rice production specifically in PalayCheck and Palayamanan. Through this, technology transfer will be hastened and extension workers will receive feedback from farmers. Thus, more appropriate technologies will be adopted.

• Major activities to be implemented for the Palayamanan include:
(1) benchmarking and participatory problem analysis and finding solutions through focus group discussions and participatory resource appraisal; (2) capacity enhancement through the farmers' field school; (3) establishment of Palayamanan model farms and provision of production support for rice-based farming systems; (4) communication support through information materials such as newsletters, posters, and other suitable knowledge products; and (5) technology synthesis where the new and traditional knowledge of farmers blend together to form an adapted rice-based farming systems technology.

Table 8. Training schedules.

Training for farming system experts	9	25 per batch 225 pax	5 PhilRice-CES 4 PhilRice-Midsayap
Training for municipal AT's and farmer leaders	75	25 per batch 1875 pax	ATI regional Centers
5-day training of IPM's TOT graduates	25	25 per batch 625 pax	ATI Regional Centers
Season-long training of farmers on PalayCheck and Palayamanan	8,400	210,000 pax	Farmers fields

Table 9. Schedule of demonstration farms.

PalayCheck and Palayamanan	8,400
Varietal Demonstration	205

B. Infrastructure development and maintenance

Intervention 5: Irrigation system repair, restoration, and rehabilitation

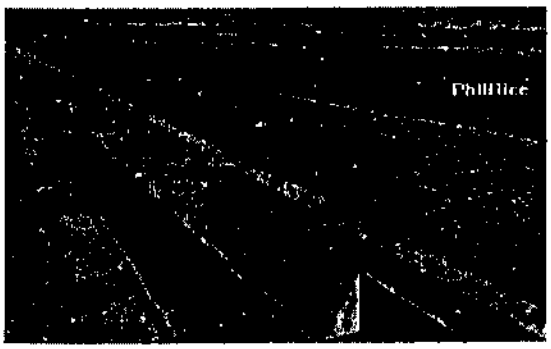
Water transports nutrients from the soil to the plant. An adequate water supply ensures good crop establishment, seedling vigor, and normal crop growth, development, and yield. Hence, a regular supply of irrigation water is essential to prevent tremendous losses of farmers due to water stresses that affect yield potential. Many of the irrigation facilities, especially the national systems, are already deteriorating caused by siltation and poor maintenance. On the other hand, private-owned systems are faced with a problem on scarce and deep ground water.

The repair, restoration, and rehabilitation of irrigation systems will also enable the irrigation water to reach even the farms at the tail end while better canals will enable farmers to have better water management practices.

"A regular supply of irrigation water is essential to prevent tremendous losses of farmers due to water stresses that affect yield potential."

Problems of irrigation facilities:

1. Canal sides damaged by farm animals
2. Heavily vegetated canal
3. Scoured canal side slope and eroded embankments
4. Poor condition of steel gates
5. Water does not reach downstream area



Implementation strategies:

1. Consulting services
   - detailed engineering
   - construction supervision
2. Institutional development (NIA and private irrigation providers)
   - staff training/workshop
   - strengthen linkage with other agencies, LGUs, and NGOs
3. Strengthen Irrigators' Association (IA)
   - updating of IA masterlist
   - trainings/workshops/conferences/study tours

4. Systems repair, restoration, and rehabilitation
   - To achieve high irrigation efficiency (at least 90%), existing irrigation systems will be rehabilitated every year from 2009-2010 which can contibute to 25% growth in production. Irrigation systems destroyed by natural and human processes will be restored. NIA shall identify the irrigation systems to be restored, repaired, and maintained throughout the year. Whenever possible, the LGU shall share in the funding for rehabilitation. Also, cluster farmer-members will help restore, repair and maintain the irrigation systems in their areas by providing labor, and status reporting to proper authorities.

5. Provision of small-scale irrigation systems (STWs & SWPs)
   - Rainfed areas are more physically challenged in terms of producing rice. Its primary constraint is water availability. Hence, one way to increase yield in rainfed areas is to provide sources of irrigation water. The program will provide STWs and water pumps through a soft loan program to farmer-partners. Intervention on STWs and surface water pumps complemented with the use of quality seeds and ICM practices will contribute to 1.20 ton/ha increase in yield during WS and 1.75 ton/ha during DS.

6. Water management
   - establish management research (5 IAs as pilot)
   - upgrading of water control structures such as proportional weirs
   - adopt water-saving technologies
   - validate location and design of turn-outs

Intervention 6: Postharvest and mechanization assistance

The lack of postproduction facilities has been one of the most serious problems plaguing rice production. High postharvest losses and poor quality of palay affects farmers' yield and income, respectively. Moreover, factors such as low level of technical efficiency and high labor costs also influence the competitiveness of Filipino farmers. Mechanization saves labor that can make rice production more competitive, and lower costs of production per ton result in higher profits for farmers.

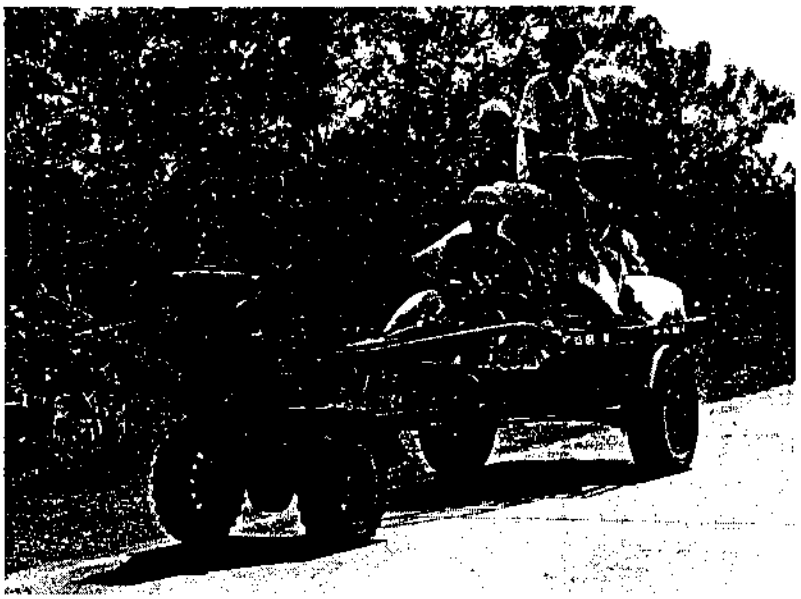
Implementation strategies:

To help minimize labor costs and increase technical efficiency of farm operations, private individuals or entities (cooperatives) will be encouraged to provide custom services. The cluster members can also pool their available farm equipment to provide custom services and procure needed machinery to improve farm operations in the cluster.

Mechanization in the cluster can also be improved through farm-equipment loan, which will include drumseeders, tractors, threshers, harvesters, mechanical dryers, and engines.

Intervention 7: Farm-to-market roads (FMR)

In the Philippines, less than 25% of the roads have asphalt while the remaining 75% remained unpaved. This makes it difficult for farmers to transport their produce to the market. The poor condition of existing road networks especially the barangay road networks and outside the vicinity of the province poses threat to the rice industry. It increases transportation cost leading to lower competitiveness of rice produced.



Farm-to-market roads would help the farmers increase their income as they will be able to sell directly to wholesalers without passing to ambulant buyers and commission agents who exploit them by buying low.

Implementation strategy:

Identification of locations (barangay per municipality/city) where the construction and rehabilitation of farm-to-market road is much needed. Specifications of the proposed road network, nature of assistance needed, including benefits and required budget must be stated in details. The MAO shall consolidate the requested intervention for submission to the OPA for fund sourcing. Possible fund sources are the provincial government, LGU, DA, and DPWH.

C. Market and Credit Assistance

Intervention 8: Marketing Assistance

The weak and almost non-existent marketing support from the government perpetuates poverty of small Filipino farmers. In view of this, efficient marketing strategies should be devised in every locality that individual farmers or farmer groups will approximately benefit from.

Marketing refers to the process of creating a distributive system that can facilitate the flow of goods and services from the producers to the consumers. The farmers, the millers and traders, and the consumers are the main players in the rice marketing system. Support services such as market promotion, development, price monitoring, and extension services (that can advise farmers on marketing) can aid in the implementation of the marketing system.

Implementation strategies:

Farmers shall be linked to traders and millers. The Office of Provincial Agriculturist (OPA) and Municipal Agriculturist Office (MOA) shall take the lead in masterlisting accredited traders and millers in the locality for possible market matching. It can also be arranged with the traders and millers for a production support fund and a guaranteed marketing agreement with the farmers' organizations. Farmers can also be link to organized consumers like urban-based consumer cooperatives, homeowners associations, employees association and other organized groups of consumers.

Farmers shall be provided with market information, especially on the price of rice. Farmers use these information to decide on how much to grow or where to send the harvest, for instance.

NFA shall procure preferred rice varieties with reasonable prices for farmers. These preferred varieties can be separately stocked by NFA for milling and sell it as branded quality milled rice.

Government shall maintain price support and provide adequate incentive to ensure profitability of farmers with similar scheme to what is currently provided.

Intervention 9: Credit & Input Assistance

The availability of capital is an important factor that influences the production operations of farmers. It is, therefore, necessary that farmers have access to credit and low-cost production inputs whenever they lack finances to operate their farms. Policies should address the lack of investment credit and sustainable financing for small rice farm holders.

Implementation strategies:

- Low interest credit support. The OPA, MAO and the Rice program shall tap QUEDAN Corporation, Land Bank of the Philippines, and other government and private lending institutions for low-cost credit support to farmers.
- Low cost production inputs. The OPA and MAO with TWG support shall collaborate with fertilizer and pesticide companies, dealers, and distributors to offer price discounts for the procurement of inputs or allow farmers to procure inputs payable after harvest.
- Optimizing and pooling farmers' resources. Optimize and pool farmers' resources and start to share what is available to them.

D. Regulatory and Program Management

Intervention 10: Program monitoring and evaluation

The accomplishments of focus provinces will be strictly monitored, validated, and consolidated by the Planning and Monitoring Division of DA in collaboration with the BAS head office. They will provide the details and summary data of accomplishments/program indicators in all clusters, municipal, provincial, and national levels. Likewise, stakeholders shall be consulted to obtain feedbacks about the program. These data will be useful in planning and further improving the implementation of the program.

Intervention 11: Incentive system

The incentive scheme shall be based on the attainment of production target per province. Provinces which can achieve the yearly production target shall be provided with PhP1M, distribution of which shall be determined by the Office of the Provincial Agriculturist and

the Municipal/City Agriculture Offices in coordination with the DA-RFUs concerned. The production will be based on the combined target in both irrigated and rainfed areas per province.

"Focus provinces that exceeded their yearly production targets will receive incentives."

Additional incentive shall be provided to provinces that exceeded their production targets significantly. These provinces shall be ranked based on the percent excess production level with the top three provinces getting an additional P1M, P0.75M, and P0.25M, respectively. A special incentive shall be provided to the non-framed (other areas) but have increased their production by at least 15% in irrigated areas (based on the estimated contribution of extension as a factor of growth in production).To maintain unbiased reporting of data, the Bureau of Agricultural Statistics (BAS) shall spearhead the collection and estimation of provincial harvest data. The DA-RFU, PhilRice, and the Provincial Agriculture Office (PAO) shall assist BAS in this undertaking.

Intervention 12: Policy analysis and advocacy

Policy research on issues affecting the rice industry shall be conducted to outline better program intervention strategies. Findings of the research shall provide information on how these policies will affect the rice industry, its pros and cons, and its strengths and weaknesses. Results of these studies, therefore, will be used as a reference in crafting suitable interventions that will enhance the impact of the program.

The results of such studies will be forwarded to the DA Secretary, through the Undersecretary for Policy and Planning, and advocated to concerned policymakers. Research results that are relevant to program planning and implementation shall be disseminated to program implementers.

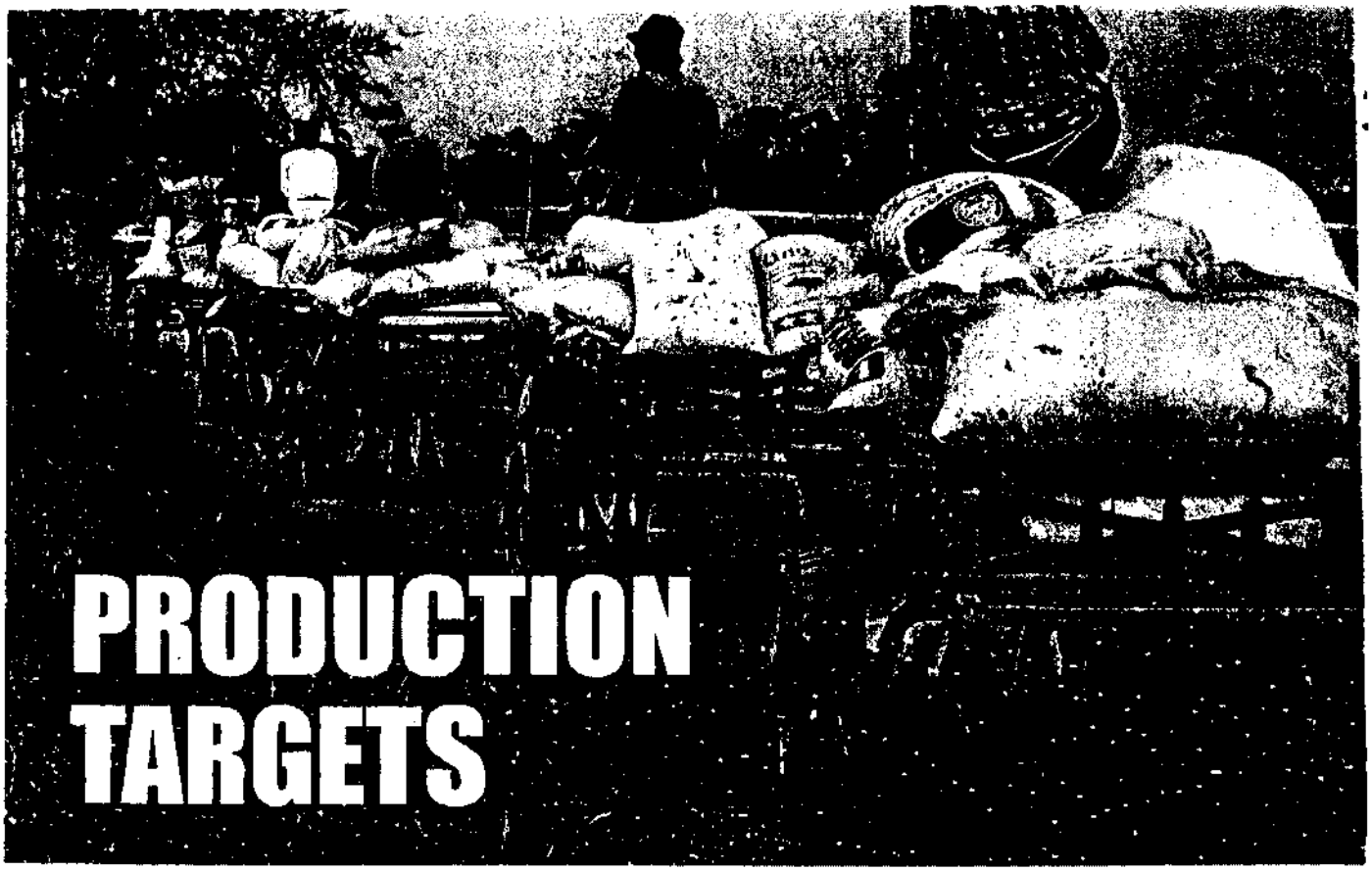
Intervention 13: Regulatory services

Seed laboratories shall be rehabilitated to improve their facilities. Likewise, seed testing and certification procedures shall be upgraded to generate a more accurate outcome and timely release of results of seed quality analysis. With this, seed technologists shall also be trained on the new procedures so that they may correctly implement the improved method.

Intervention 14: Database management

In order to have a detailed program plan it is very important that good information database is available as this will serve as benchmark for projections and estimates. The collection and consolidation of data such as soil profile, productivity levels, and area covered by irrigators' associations and serviced by irrigation systems should be a regular activity of concerned agencies (BAS, BSWM, NIA).

The development of a comprehensive rice, soil, and water database is vital for the improvement of future interventions in the program.



PRODUCTION TARGETS

Historical data show that rice production grows at an average rate of 3.68% per year. Assuming that this rate will hold until 2010, then self-sufficiency level in this year would only be 94%. This program, thus, intervenes to help attain a better production level. In particular, the program aims to achieve a 100% self-sufficient rice industry by 2010. This is equivalent to a total production of about 19.8 M tons, which is 6.53% higher than the projected production in 2009 (18.5M tons). Table 10 shows the target production and yield for 2009 and 2010.

A large amount of the expected increase in production will come from Irrigated Group 1 areas, and from Rainfed Group 2 areas. Results could be partly attributed to larger area coverage in irrigated Group 1 and Rainfed Group 2 areas than in the Irrigated Group 2 and Rainfed Group 1 provinces, respectively. Non-focus provinces, on the other hand, will produce higher output in the irrigated than in the rainfed areas, which can be attributed to larger areas and higher productivity of irrigated lands.

In terms of yield, those in Groups 2 in both irrigated and rainfed conditions will have higher targets than those in Groups 1 and the non-focus provinces. Thus, those in Groups 2 are expected to be more productive than the rest of the provinces.

Table 10. Production (M ton) and yield (ton/ha) targets of focus and non-focus provinces, 2009-2010*.

	2009	2010
FOCUS PROVINCES		
I. Irrigated areas		
Group 1 provinces	**9,116,284**	**9,914,917**
yield (ton/ha)	*4.40*	*4.56*
Group 2 provinces	**3,835,433**	**4,117,543**
yield (ton/ha)	*4.63*	*4.78*
II. Rainfed areas		
Group 1 provinces	**695,972**	**733,526**
yield (ton/ha)	*2.61*	*2.75*
Group 2 provinces	**2,922,983**	**2,995,128**
yield (ton/ha)	*3.46*	*3.63*
NON-FOCUS PROVINCES		
I. Irrigated areas	**1,234,713**	**1,306,459**
yield (ton/ha)	*3.87*	*4.15*
II. Rainfed areas	**698,822**	**702,431**
yield (ton/ha)	*3.18*	*3.27*
Total PRODUCTION (M ton)	**18,504,207**	**19,770,004**
Growth Rate (%)	**6.82**	**6.84**
Total Palay Requirement (M ton)	**19,260,741**	**19,624,857**
Sufficiency Level (%)	**96.07**	**100.74**

* production for 2007 is 16.24M mt which is 5.96% higher than the level in 2006. This production level is expected to increase by 6.76% or approximately 1.08M mt in 2008. Comparing these local production with demand for palay (which is equivalent to 18.2M mt in 2007 & 18.6M mt in 2008), sufficiency levels are 89.10% and 93.25% in 2007 and 2008, respectively.

**computed as: (total production/palay requirement)*100

Table 11 shows how much of the total production is accounted for by focus and non-focus provinces. Irrigated and rainfed Group 1 provinces are assumed to grow at a higher rate than the other focus areas. Historically, these provinces are those that have low production growth, hence, these are potential areas where production can be pushed further toward very significant growth rates. Our assumption intends to enhance the productivity of Group 1 areas so that these provinces can at least produce comparable amounts to the output of Group 2 areas. This partly explains the higher expected production for those in irrigated Group 1. On the contrary, those in the rainfed Group 1 are expected to produce lower output than those in Group 2, despite the assumed relatively higher growth rate in Group 1 areas. Differences in the production level of the rainfed areas, therefore, is mainly influenced by their area harvested.

In Table 11, the annual percent contribution of Groups 1 and 2 irrigated provinces to total production is 49% and 21%, respectively. On the other hand, non-focus provinces have only 7% contribution per year to total production. For rainfed areas, Group 1 accounts 4% of total production, while Group 2 contributes 16%. The share of non-focus rainfed provinces to total production is 4%.

These projected increases in production will result in a 6.82% average growth rate, where majority of the increases in growth comes from Irrigated Group 1 (8.79%) and Group 2 (7.39%) areas. Substantial growth for irrigated non-focus provinces (5.84%) and Rainfed Group 1(5.47%) also contributes to increments. Non-focus provinces have smaller percentage increase in production as compared to focus provinces. This trend in production growth is the same for 2010 with focus provinces having larger percentage increase in their production than non-focus provinces.

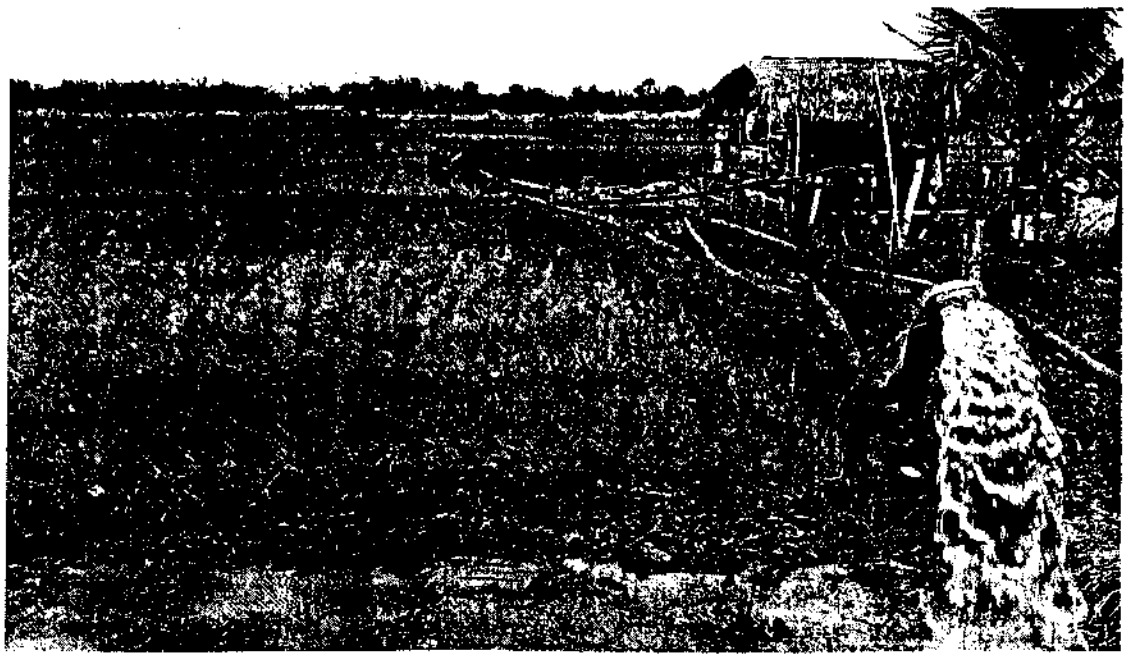


Table 11. Production contribution of focus and non-focus provinces to total production and production increments, 2009-2010.

Irrigated Areas								
Group 1	9,116,284	49%	9,914,917	49%	736,360	8.79	798,633	8.76
Group 2	3,835,433	21%	4,117,543	21%	263,810	7.39	282,110	7.36
Non-focus	1,234,713	7%	1,306,459	7%	68,125	5.84	71,745	5.81
Rainfed Areas								
Group 1	695,972	4%	733,526	4%	36,092	5.47	37,554	5.40
Group 2	2,922,983	16%	2,995,128	16%	72,397	2.54	72,145	2.47
Non-focus	698,822	4%	702,431	4%	4,075	0.59	3,609	0.52
PHILIPPINES	**18,504,207**	**100%**	**19,770,004**	**100%**	**1,180,859**	**6.82**	**1,265,796**	**6.84**

Table 12 presents the contribution of seed- and irrigation-related interventions to the projected total palay production in 2009 and 2010.

The provision of seed subsidies is expected to improve the adoption level of high-quality seeds in irrigated and rainfed areas. Certified seed subsidy shall be provided to both irrigated and rainfed farmers, while hybrid seed subsidy shall be provided only to irrigated farmers.

The shifts in the production from certified to hybrid seeds and from farmers' to certified seeds are estimated to result in 1.0 ton/ha and 0.50 ton/ha yield advantages, respectively. Thus, the seed intervention shall contribute about 18M ton and 19M ton of palay production in 2009 and 2010, respectively. In particular, target areas for hybrid production are expected to produce about 2.7M ton (in 2009) and 3.4M ton (in 2010) of palay in irrigated areas. For certified inbred production, irrigated and rainfed areas are expected to produce 11M ton and 4M ton of palay, respectively.

In addition to seeds, the program shall also realize increases in palay production due to irrigation rehabilitation and establishment of STWs and SWPs. In irrigated areas, the improvements in the existing and the establishment of new irrigation facilities will result in an additional production of approximately 400,000 ton of palay per year. Rainfed areas, on the other hand, will produce additional 78,784 ton and 118,175 ton in 2009 and 2010, respectively, as a result of establishment of water pumps and STWs (Incremental yields of 1.20 ton/ha for the wet season and 1.75 ton/ha for the dry season were assumed to be the effect SWPs and STWs).

Table 12. Production (ton) targets by intervention, 2009-2010.

[illegible]	TARGET PRODUCTION (ton)	
	2009	2010
HYBRID SEEDS		
I. Irrigated areas		
Group 1	1,580,963	1,980,703
Group 2	965,757	1,191,315
Other Areas	200,505	246,131
TOTAL	**2,747,224**	**3,418,149**
CERTIFIED SEEDS		
I. Irrigated areas		
Group 1	7,292,030	7,671,460
Group 2	2,790,757	2,842,179
Other Areas	970,324	993,248
SUBTOTAL	11,053,110	11,506,887
II. Rainfed areas		
Group 1	617,189	615,351
Group 2	2,922,983	2,995,128
Other Areas	698,822	702,431
SUBTOTAL	4,238,994	4,312,910
TOTAL	**15,292,103**	**15,819,796**
IRRIGATION REHABILITATION**		
Irrigated Areas		
Group 1	243,291	262,754
Group 2	78,920	84,049
Other Areas	63,885	67,079
TOTAL	**386,096**	**413,883**
WATER PUMPS & STWs TARGET AREAS**		
Rainfed Areas		
Group 1	78,784	118,175
Group 2		
Other Areas		
TOTAL	**78,784**	**118,175**
GRAND TOTAL	**18,504,207**	**19,770,004**

* For irrigation rehabilitation and water pumps, recorded yields are incremental production contribution.
** Areas for irrigation rehabilitation and water pumps are assumed to be CS area.

Sources of production growth

The sources of production growth in irrigated ecosystems are increases in area harvested and yield in 2009 and 2010 (Table 13). Physical area is expected to expand by 30,000 hectares annually. Furthermore, irrigation rehabilitation and Quick Turn-Around (QTA) interventions are expecetd to increase cropping intensity up to 2.0 in 2010, thereby, increasing the area harvested. Moreover, the expected improvements in yield will also contribute to production growth.

Rainfed ecosystem, on the other hand, is expected to reduce its area because of irrigation rehabilitation in some of these areas. Therefore, growth in the production is mainly attributed to increases in yield.

Table 13. Sources of growth by ecosystem.

2009	1,325,877	3.26	4,317,777	1.93	1,671,609	3,226,205	4.40	14,186,430	18,504,207
2010	1,295,877	3.42	4,431,085	2.00	1,701,609	3,403,218	4.51	15,338,919	19,770,004

Table 14 shows that yield and area harvested are the main drivers of production growth. Yield has been a more influential factor in increasing rice production than area harvested. From 2000 to 2007, annual percent contribution of yield growth to production growth ranged from about 50% to more than 200%, while growth in area harvested recorded a maximum contribution of approximately 50% only. Negative contributions of area harvested were even noted in Table 14 as a result of decreases in the area harvested.

For 2009-2010, the estimated yield growth contributions are slightly greater than that of the area harvested. Only six and four percentage-point differences are expected between yield and area contributions in 2009 and 2010, respectively.

Table 14. Percent contribution of area harvested and yield to growth in production.

YEAR								
2000	12,389,412	5.11	4,038,085	0.96	18.70	3.07	4.12	80.53
2001	12,954,870	4.56	4,065,441	0.68	14.84	3.19	3.86	84.58
2002	13,270,653	2.44	4,046,318	-0.47	-19.30	3.28	2.92	119.86
2003	13,499,884	1.73	4,006,421	-0.99	-57.08	3.37	2.74	158.65
2004	14,496,784	7.38	4,126,645	3.00	40.64	3.51	4.26	57.63
2005	14,603,005	0.73	4,070,421	-1.36	-185.95	3.59	2.12	289.90
2006	15,326,706	4.96	4,159,930	2.20	44.37	3.68	2.70	54.43
2007	16,240,194	5.96	4,272,889	2.72	45.56	3.80	3.16	53.00
2008	17,323,348	6.67	4,413,717	3.30	49.42	3.92	3.27	48.97
2009	18,504,207	6.82	4,552,082	3.13	45.99	4.06	3.57	52.37
2010	19,770,004	6.84	4,699,095	3.23	47.21	4.21	3.50	51.14

Clearly, production growth has been dependent more on yield levels in both ecosystems. The program interventions, thus, are expected to contribute in improving yield levels or the productivity of lands.

Table 15 shows the potential sources of production growth and their percent contribution. Highest expected contribution to production is attributed by irrigation (25%), followed by extension (15%), seeds (10%), and ICM (10%) intervention. However, in farmer's field only 70% of the value of the potential sources of growth is assumed to be achievable.

Production using high-quality seeds in irrigated areas is expected to result in additional yield of 210 kg in 2009. Moreover, interventions on irrigation, extension, and ICM will produce estimated yield increments of 525 kg, 315 kg, and 210 kg, respectively. These yield increments will improve by 2010: 542 kg shall be attributed to irrigation; 325 kg to extension; 217 kg to seeds; and 217 kg to ICM.

Based on the estimations, the base yield can be improved through the implementation of the interventions. These support services will then lead to yield increments of 1.39 ton/ha (from 3.0mt/ha to 4.39mt/ha) in 2009 and 1.43 ton/ha (from 3.10mt/ha to 4.52mt/ha) in 2010. It is interesting to note that 4.52 ton/ha is the required yield level to attain 100% self-sufficiency.

Table 15. Overall average yield contribution of program interventions in irrigated areas, 2009-2010.

Seeds	10%	210	0.210	4.20	217	0.217	4.33
ICM	10%	210	0.210	4.20	217	0.217	4.33
Extension	15%	315	0.315	6.30	325	0.325	6.50
FMR	1%	21	0.021	0.42	22	0.022	0.43
Transpo	1%	21	0.021	0.42	22	0.022	0.43
Postharvest	3%	63	0.063	1.26	65	0.065	1.30
Mechanization	1%	21	0.021	0.42	22	0.022	0.43
Irrigation	25%	525	0.525	10.50	542	0.542	10.83
TOTAL		1,386	1.39	28	1,430	1.43	29
Base yield (ton/ha)		3.00			3.10		
Yield level		4.39			4.52		

*only 70% of the value of the potential sources of growth is assumed to be achievable in farmer's field

Production targets by province

Presented in Table 16 are the production targets (irrigated & rainfed production) in the provinces. The 49 focus provinces of the program are expected to contribute 92% of the total production, which is equivalent to 17.05M ton in 2009 and 18.25M ton in 2010. The remaining 8% will be attributed to non-focus provinces. It has been reiterated in previous discussion that focus provinces are the main sources of production growth. The top ten producing provinces for 2009 and 2010 include Nueva Ecija, Isabela, Pangasinan, Iloilo, Cagayan, Tarlac, Leyte, Camarines Sur, North Cotabato and Maguindanao. These provinces contribute around 45% to the total production each year.

Table 16. Production targets by focus and non-focus provinces, 2009-2010.

Reg.	Focus provinces	17,052,643	7,103,797	9,948,846	18,251,301	7,690,366	10,560,995
CAR	Kalinga	178,371	98,573	79,798	191,290	106,507	84,783
I	Ilocos Norte	314,764	53,428	261,336	337,062	58,561	278,501
	Ilocos Sur	217,335	18,641	198,695	229,835	20,455	209,379
	La Union	165,995	33,213	132,782	175,680	36,446	139,235
	Pangasinan	1,120,872	221,892	898,979	1,192,380	243,451	948,929
II	Cagayan	825,566	537,580	287,986	890,579	581,711	308,868
	Isabela	1,236,014	683,896	552,118	1,343,915	748,725	595,190
	Nueva Viz.	270,469	129,346	141,123	293,468	141,493	151,975
III	Aurora	99,487	55,794	43,693	107,756	60,809	46,947
	Bataan	154,490	80,009	74,481	165,726	86,578	79,148
	Bulacan	353,992	133,488	220,504	379,947	146,482	233,465
	Nueva Ecija	1,509,008	644,380	864,627	1,611,840	697,285	914,555
	Pampanga	463,798	267,242	196,555	504,474	293,243	211,231
	Tarlac	659,088	220,098	438,990	712,932	241,523	471,410
	Zambales	125,150	41,688	83,462	133,478	45,747	87,731
IV-A	Laguna	149,815	78,421	71,394	163,000	85,971	77,029
	Quezon	165,831	88,313	77,519	177,023	95,246	81,777
IV-B	Mindoro Occ.	296,389	86,666	209,722	316,192	94,979	221,212
	Mindoro Orie.	353,120	179,686	173,434	375,257	191,957	183,300
	Palawan	272,678	94,246	178,431	287,474	99,845	187,629
V	Albay	164,326	79,381	84,945	174,818	85,020	89,798
	Cam. Sur	620,916	324,319	296,597	661,863	348,841	313,022
	Sorsogon	120,696	67,297	53,399	128,303	71,803	56,500
	Masbate	92,082	40,936	51,146	97,170	43,297	53,873
VI	Aklan	160,500	67,936	92,564	170,425	72,809	97,616
	Antique	279,136	90,717	188,419	298,552	98,882	199,670
	Capiz	349,988	151,302	198,685	367,324	159,394	207,930
	Iloilo	932,440	257,076	675,364	988,860	276,137	712,723
	Negros Occ.	490,716	128,080	362,636	525,598	139,294	386,304
	Guimaras	52,890	7,514	45,376	55,747	7,961	47,786
VII	Bohol	201,019	75,299	125,720	215,361	81,255	134,106
VIII	Leyte	642,903	349,327	293,577	681,955	373,201	308,754
	North. Samar	94,790	68,351	26,438	99,975	72,133	27,842
	West. Samar	107,317	41,349	65,968	113,151	43,660	69,492
	Zamb. Sib.	170,082	59,950	110,132	178,951	64,057	114,894

Table 16. Production targets by focus and non-focus provinces, 2009-2010 (Cont'd)

IX	Zamb. Sur	315,322	96,338	218,985	334,079	103,781	230,298
	Zamb. Norte	102,059	39,699	62,360	107,781	42,152	65,629
X	Bukidnon	315,944	129,586	186,358	342,394	142,050	200,344
	Lanao Norte	168,802	80,295	88,507	182,197	87,888	94,309
XI	Comp. Valley	111,890	57,414	54,476	120,721	62,438	58,282
	Davao Norte	138,146	70,581	67,565	149,905	77,259	72,646
	Davao Sur	161,226	80,212	81,014	175,305	88,020	87,285
XII	North Cot.	522,621	212,911	309,709	562,111	232,138	329,973
	South Cot.	326,484	130,949	195,535	351,939	142,897	209,043
	Sultan Kudarat	470,104	148,767	321,338	507,249	162,602	344,647
XIII	Agusan Sur	203,650	101,244	102,406	217,672	108,704	108,967
	Surigao Sur	105,246	63,221	42,025	111,686	67,041	44,645
ARMM	Lanao Sur	191,927	69,837	122,090	201,857	73,914	127,943
	Maguindanao	507,193	267,310	239,883	539,104	284,724	254,380
Reg.	Other provinces	1,451,565	674,870	776,695	1,518,643	711,745	806,898
CAR	Abra	78,637	14,989	63,648	81,612	15,991	65,621
	Apayao	113,775	51,730	62,045	118,629	54,934	63,695
	Benguet	18,456	6,476	11,978	19,391	6,912	12,479
	Ifugao	67,213	29,357	37,857	70,954	31,319	39,635
	Mt. Province	23,776	5,276	18,500	24,942	5,629	19,314
II	Quirino	64,155	38,393	25,763	67,700	40,690	27,010
IV-A	Batangas	54,129	14,778	39,351	56,464	15,766	40,698
	Cavite	43,088	20,684	22,404	45,407	22,067	23,340
	Rizal	31,506	15,805	15,702	33,198	16,850	16,348
IV-B	Marinduque	31,352	15,606	15,746	32,183	16,064	16,119
	Romblon	29,362	9,261	20,101	30,497	9,726	20,771
V	Cam. Norte	69,755	36,568	33,187	72,994	38,425	34,569
	Catanduanes	36,035	21,474	14,562	37,163	22,135	15,028
VII	Cebu	16,405	5,774	10,631	17,294	6,158	11,136
	Negros Orie.	77,885	29,301	48,584	81,878	31,206	50,672
	Siquijor	2,557	1,480	1,077	2,702	1,573	1,129
VIII	Biliran	78,802	38,952	39,849	83,308	41,497	41,810
	East. Samar	50,573	28,385	22,188	51,391	28,857	22,534
	South. Leyte	95,056	50,357	44,699	100,010	53,342	46,668
IX	Zamb. City	28,286	12,476	15,810	29,625	13,213	16,411
X	Camiguin	2,391	1,248	1,142	2,531	1,332	1,199
	Misamis Occ.	69,734	37,400	32,335	73,716	39,881	33,835
	Misamis Orie.	28,797	12,146	16,652	30,392	12,939	17,453
XI	Davao City	18,584	10,332	8,251	19,194	10,686	8,507
	Davao Oriental	69,888	32,919	36,969	73,371	34,702	38,670
XII	Saranggani	49,941	13,293	36,648	51,985	14,045	37,940
XIII	Agusan Norte	104,696	57,970	46,726	109,284	60,666	48,618
	Surigao Norte	88,979	60,888	28,091	92,940	63,525	29,415
ARMM	Basilan	3,212	1,551	1,661	3,326	1,614	1,712
	Sulu	3,544	-	3,544	3,562	-	3,562
	Tawi-tawi	996	-	996	1,001	-	1,001
	Philippines	**18,504,207**	**7,778,667**	**10,725,540**	**19,770,004**	**8,402,111**	**11,367,893**

Achieving our target levels of production is impossible without sufficient funds. The program plans to allot an estimated budget of PhP30 billion to support its intervention activities for 2009-2010. Specifically, the program will spend approximately PhP14.89B and PhP14.97B in 2009 and 2010, respectively (Table 17). The budget for each year will cover costs for: production support services; irrigation support services; extension, capacity enhancement, and farmer education; research and development (R&D); marketing support services; regulatory services; planning, policy, program coordination, and monitoring and evaluation; and postharvest and other infrastructure. Summarized below is the budget breakdown per program intervention component. A large portion of the total budget will be allotted for irrigation (40.19%), followed by production support services (34.83%).

Table 17. Proposed budget by component, 2009-2010

TOTAL PROGRAM COST	**14,890,457,092**	**14,967,132,960**	**29,857,590,052**	**100.00**
Production support services	5,088,168,963	5,311,594,998	10,399,763,961	34.83
Irrigation support services	6,000,037,918	6,000,037,918	12,000,075,836	40.19
Extension, Capacity Enhancement & Farmer Education	1,528,465,211	1,381,715,044	2,910,180,255	9.75
Research and development	580,440,000	580,440,000	1,160,880,000	3.89
Marketing support services	100,345,000	100,345,000	200,690,000	0.67
Regulatory services	60,000,000	60,000,000	120,000,000	0.40
Planning, Policy, Program coordination, M&E	533,000,000	533,000,000	1,066,000,000	3.57
Postharvest & other infrastructure	1,000,000,000	1,000,000,000	2,000,000,000	6.70

The budget is subdivided into these program components such as production support services; extension, capacity enhancement and farmers' education; and cross-cutting expenses.

A. Production support services

Table 18 presents the budget breakdown for the production support services. Expenditures under this component include subsidies for hybrid and certified seeds and location-specific interventions.

In two years, the combined Group 1 irrigated and rainfed areas will receive approximately PhP5.5B; PhP3.8B for the combined Group 2 provinces; and PhP1.0B for the combined non-focus provinces.

Seed subsidies, which occupy the largest portion in the budget, are spent mostly on certified seeds (PhP800/bag) than hybrid seeds (PhP3,000/bag). Meanwhile, hybrid seed subsidy covers more than 310,000 and 370,000 ha in 2009 and 2010, respectively in irrigated Group 1. For irrigated Group 2, the area covered for hybrid seed subsidy is around 160,000 ha in 2009 and 200,000 ha in 2010, and about 40,000 ha in 2009 and 50,000 ha in 2010 will be covered by the hybrid subsidy in non-focus areas. On the other hand, subsidies for certified seeds will be granted annually to about PhP1.8M ha in Group 1 provinces; 1.4M ha in Group 2 provinces; and 450,000 to 470,000 ha in non-focus areas (Table 18). A more detailed information on the distribution of these target areas per province may be viewed in Annexes 4 and 5. Also, Annexes 11 to 16 detail the budget allocation of the 49 focus provinces.

Location-specific interventions (LSI) will include provision of Site-specific NPK nutrient management (Minus-One-Element-Technique (MOET) and Leaf Color Chart (LCC)), micronutrient (e.g. Zinc sulphate and 14-14-14-14S) and bio fertilizer support, and rice information kits for farmers. The total LSI budget was estimated to be P1.0B in two years (PhP600M in Group 1 areas and P400M in Group 2 areas). The largest portion of the LSI budget will be used for the micronutrient support, which amounts to approximately PhP200M and PhP160M per year in Groups 1 & 2 areas, respectively.

The area covered and the cost assumptions used in the computations of the LSI budget were also summarized in Table 18. The recipients of the LSI budget will be farmers in focus provinces who are members of the clusters. Clusters are assumed to comprise 20% of the total rice areas (i.e. combined irrigated and rainfed hectarage) in the focus provinces. As each cluster is composed of 40 ha of land, about 10,701 (428,051 ha) and 8,072 (332,875 ha) clusters in Groups 1 and 2 areas, respectively will be formed (refer to Table 6).

Table 18. Budget requirements for production support services, 2009-2010.

PRODUCTION SUPPORT SERVICES budget				*5,088,168,963*	*5,311,594,998*	*10,399,763,961*
I. FOCUS PROVINCES (irrigated & rainfed)				4,584,718,903	4,792,044,418	9,376,763,320
Group 1 areas				2,698,956,283	2,830,328,225	5,529,284,508
Hybrid (F1) Seed Subsidy	P3000/bag	310,867 ha	370,581 ha	932,600,648	1,111,744,206	2,044,344,854
Certified Inbred Seed Subsidy	P800/bag	1,829,387 ha	1,788,873 ha	1,463,509,694	1,415,738,078	2,879,247,772
Site specific NPK Nutrient Mgt .						
MOET (minus one element technique)	P30/ha (4MOET/ cluster)	10,701 clusters (428,051 ha)		*51,366,096*	*51,366,096*	*102,732,192*
Leaf color chart (LCC)	P50/ha	10,701 clusters (428,051 ha)		*21,402,540*	*21,402,540*	*42,805,080*
Micro-nutrient /Bio fertilizers support (e.g. Zinc sulfate)	P500/ha	10,701 clusters (428,051 ha)		*214,025,400*	*214,025,400*	*428,050,800*
Rice information Kits for farmers	P1,500/cluster	10,701 clusters (428,051 ha)		*16,051,905*	*16,051,905*	*32,103,810*
Group 2 areas				1,885,762,620	1,961,716,192	3,847,478,812
Hybrid (F1) Seed Subsidy	P3000/bag	166,000 ha	200,529 ha	498,001,442	601,574,495	1,099,575,937
Certified Inbred Seed Subsidy	P800/bag	1,448,375 ha	1,413,850 ha	1,158,699,615	1,131,080,135	2,289,779,750
Production of breeder seeds				20,000,000	20,000,000	40,000,000
Site specific NPK Nutrient Mgt .						
MOET (minus one element technique)	P30/ha (2MOET/ cluster)	8,072 clusters (332,875 ha)		*19,372,500*	*19,372,500*	*38,745,000*
Leaf color chart (LCC)	P50/ha	8,072 clusters (332,875 ha)		*16,143,750*	*16,143,750*	*32,287,500*
Micro-nutrient /Bio fertilizers support (e.g. Zinc sulfate)	P500/ha	8,072 clusters (332,875 ha)		*161,437,500*	*161,437,500*	*322,875,000*
Rice information Kits for farmers	P1,500/cluster	8,072 clusters (332,875 ha)		*12,107,813*	*12,107,813*	*24,215,625*
II. NON-FOCUS PROVINCES				503,450,060	519,550,580	1,023,000,640
Hybrid (F1) Seed Subsidy	P3000/bag	40,383 ha	47,701 ha	121,148,264	143,103,518	264,251,782
Certified Inbred Seed Subsidy	P800/bag	447,877 ha	470,559 ha	382,301,796	376,447,062	758,748,858

Moreover, four MOET sets will be provided per cluster in Group 1 provinces; two sets per cluster in Group 2 provinces. Also, each cluster farmer will be given an LCC, which costs PhP 50 per unit. The program will also allocate P500 worth of micronutrients per hectare. Rice information kits will also be distributed per cluster, which is priced at P1,500 each. The kit includes field guide on pest, training manuals on hybrid and inbred rice commercial production, the latest issue of PhilRice Newsletter (a magazine published quarterly by the Philippine Rice Research Institute that contains information about new technologies, current situation of the rice industry, and farmers' success stories), and technology bulletins of MOET, controlled irrigation, and Palayamanan.

B. Extension, capacity enhancement, and farmers' education

The program apportions approximately PhP2.9B for its 2009-2010 extension activities (Table 19). This will cover the expenses for the preparatory activities of the program (PhP150M in 2009 only; detailed budget in Annex 1), capacity enhancement, cluster mobilization, and information services.

For 2009-2010, approximately PhP1.5B will be given to the combined Group 1 provinces of irrigated and rainfed areas; PhP1.0B for combined Group 2 provinces; and PhP178M for combined non-focus provinces.

Cluster mobilization accounts for the largest portion of the extension budget in each focus area. The budget for cluster mobilization will cover expenses for Farmers' Field Schools (FFS), field days, and technicians' incentives. Among these three items, FFS will require the highest budget as projected in Table 19. FFS has an estimated cost of P25,000 per cluster resulting in approximately P535M and P403M for Group 1 and Group 2 provinces, respectively.

Moreover, a Palayamanan FFS shall be established in the clustered rainfed areas and a PalayCheck FFS in the clustered irrigated areas. On the other hand, field days that will be conducted annually in 70% of the cluster areas were assumed to spend PhP 2,000 per cluster. In addition, budget for technicians' incentives will cover 40% of hybrid and of inbred target areas. This means that the technicians who will handle the selected 40% of the target areas would receive an incentive of PhP200 per ha for hybrid and PhP120 per ha for inbred areas, if production targets are met.

The program also plans to allocate around PhP23.6M and PhP7.7M annually for the training of trainers (PalayCheck System) and professional certification of technicians in Group 1 and Group 2 areas, respectively. The training cost is computed at P638,300 per province. Moreover, there will also be an annual budget on the program management of provinces amounting to around PhP214M in Group 1 provinces, PhP161M in Group 2 provinces and PhP52M in non-focus provinces. The fund for program management in the provinces is computed at PhP100 per hectare of rice land.

Information services in the focus provinces include provision of a PalayCheck guide manual, information and data dissemination, communication network, and management of ICT facilities and development of ICT components. Highest budget will be allotted for the PalayCheck manual (P100 per unit) in both groups of focus provinces. Thirty percent of the areas in the focus provinces (around 1M farmers) will receive a manual. Therefore, more than P100M (for 2009-2010) will be allotted for each group of focus provinces.

Table 19. Budget component of extension, capacity enhancement, and farmers' education.

Extension, Capacity Enhancement & Farmer Education budget				**1,828,488,211**	**1,381,715,044**	**2,910,180,255**
Preparatory activities of the rice program				**150,000,000**		
I. FOCUS PROVINCES				**742,122,791**	**744,033,655**	**1,486,156,446**
Group 1 provinces						
Capacity enhancement						
Training of trainers (PalayCheck System)/ Professional Certification of Technicians	P638,300/ province	2,140,254ha		23,616,071	23,616,071	47,232,142
Program management at Provincial level (P100/ha)	P100/ha	2,140,254 ha		214,025,400	214,025,400	428,050,800
Cluster Mobilization						
Farmers' Field School (Palayamanan for rainfed & PalayCheck for irrigated)	P25,000/cluster	10,701 clusters (428,051 ha)		267,531,750	267,531,750	535,063,500
Field day (70% of cluster areas)	P2,000/cluster	7,491 clusters (299,836 ha)		14,981,778	14,981,778	29,963,556
Technicians' Incentives (40% of hybrid and CS area)	P200/ha for hybrid; P120/ha for inbred	124,347ha for HR & 731,755ha for CS	146,238ha for HR & 707,988ha for CS	112,679,932	114,590,797	227,270,729
Information services						
PalayCheck guide manual (30% of area)	P100/manual	642,076 farmers		64,207,620	64,207,620	128,415,240
Information dissemination campaigns				25,044,578	25,044,578	50,089,155
Communication network and data dissemination				5,008,916	5,008,916	10,017,831
Mgt. of ICT facilities and dev't of ICT component				15,026,747	15,026,747	30,053,493
Group 2 provinces				**547,431,555**	**548,538,344**	**1,095,967,908**
Capacity enhancement						
Training of trainers (PalayCheck System)/ Professional Certification of Technicians	P638,300/ province	1,614,375 ha		7,659,666	7,659,666	15,319,332
Program management at Provincial level (P100/ha)	P100/ha	1,614,375 ha		161,437,500	161,437,500	322,875,000
Cluster Mobilization						
Farmers' Field school (Palayamanan for rainfed & PalayCheck for irrigated)	P25,000/cluster	8,072 clusters (322,875 ha)		201,796,875	201,796,875	403,593,750
Field day (70% of cluster areas)	P2,000/cluster	5,650 clusters (226,013 ha)		11,300,625	11,300,625	22,601,250
Technicians' incentives (40% of hybrid and CS area)	P200/ha for hybrid; P120/ha for inbred	88,400has. for HR & 570,350has. for CS	80,210ha for HR & 565,540ha for CS	82,802,015	83,906,795	166,708,810
Information services						
PalayCheck guide manual (30% of area)	P100/manual	484,313 farmers		48,431,250	48,431,250	96,862,500
Information dissemination campaigns				18,890,907	18,890,907	37,781,815
Communication network and data dissemination				3,778,181	3,778,181	7,556,363
Mgt. of ICT facilities & dev't of ICT component				11,334,544	11,334,544	22,669,089
II. NON-FOCUS PROVINCES				**88,910,855**	**89,145,045**	**178,055,900**
Program management at Provincial level (P100/ha)	P100/ha	518,260 ha		51,826,000	51,826,000	103,652,000
Technicians' Incentives (40% of the hybrid and CS area)	P200/ha for hybrid; P120/ha for inbred	16,153 ha for HR & 191,151 ha for CS	19,080 ha for HR & 188,224 ha for CS	26,188,728	26,402,918	52,571,646
Information dissemination campaigns				6,064,515	6,064,515	12,129,030
Communication network and data dissemination				1,212,903	1,212,903	2,425,806
Management of ICT facilities & dev't of ICT component				3,638,709	3,638,709	7,277,418

Non-focus provinces, on the other hand, will incur program management costs (at the provincial level), technicians' incentives, information and data information, communication network, the management of ICT facilities, and the development of ICT components. The total budget for extension support services in non-focus provinces is around PhP178M for two years and this budget will largely comprise the program management expenses (around PhP103M in two years).

C. Cross-Cutting Expenses

Support services for the cross-cutting component are: irrigation; research and development (R&D); marketing support services; regulatory services; planning, policy, program coordination, monitoring and evaluation (M&E); and postharvest and other infrastructure. Each year, the program shall release an estimated PhP8.27B budget for cross-cutting items or approximately P16.5B in two years (Table 20).

Highest allocation shall be given to irrigation support services—about P12B in 2009 and 2010. Interventions shall include rehabilitation and restoration of irrigation facilities in irrigated areas and provision of water technologies (e.g. water pumps and STWs) in rainfed areas. Irrigation rehabilitation was valued at P60,000 per hectare and water technologies cost P80,000 per unit. It was assumed that a water pump can serve two hectares.

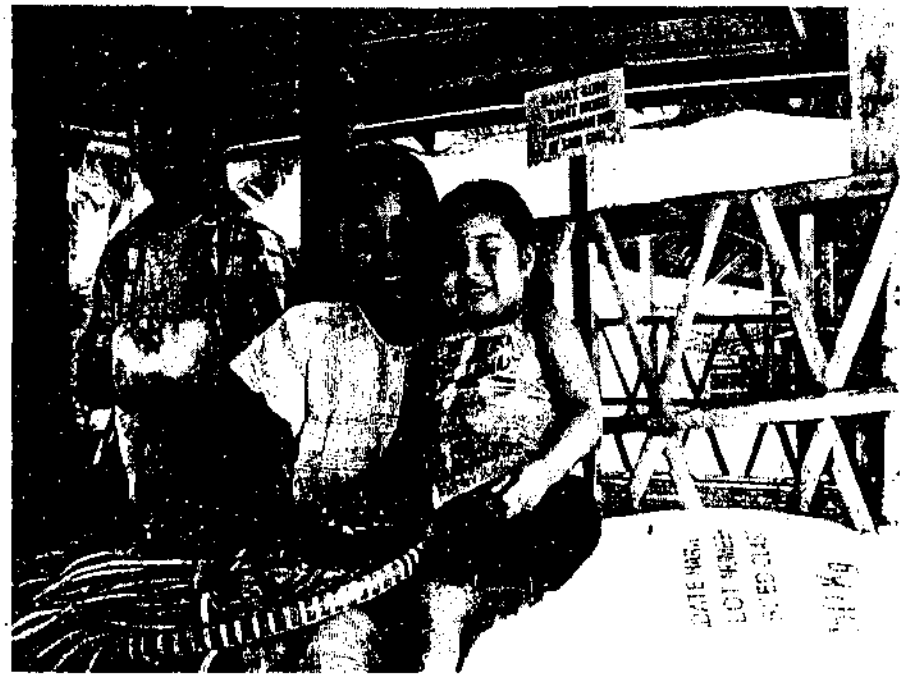
The program shall also allocate about PhP580M each year or PhP1.16B within the two-year period for activities in rice R&D. Main activities are the development of location-specific technologies on varieties and nutrient and pest management; improvement of system-wide water management; development of provincial PalayCheck recommendations; sustainable integrated farming systems; climate change research; policy research; rice biotechnology; application of GIS and remote sensing for rice production estimates; and support for state colleges and universities (SCU), RIARC, and RDE.

This program highly recognizes the importance of location-specific recommendations on rice production, thus supports activities that were outlined in the preceding paragraphs. Each year, the program will release P200M for the development of location-specific technologies. This is the largest amount in the R&D budget. Along with this, the program will also support the improvement of the PalayCheck recommendations, which are not only location-specific but are also integrated. This means that the recommendations consider the interplay among crop management practices. Continuous monitoring, evaluation, and modification may still be needed to further improve them, thus, will receive a budget of PhP25.4M yearly.

Table 20. Cross-cutting expenses, 2009-2010.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CROSS CUTTING EXPENSES budget		**8,273,822,918**	**8,273,822,918**	**16,547,645,836**
I. Irrigation support services		**6,000,037,918**	**6,000,037,918**	**12,000,075,836**
Irrigation rehabilitation and restoration		4,874,625,918	5,437,331,918	10,311,957,836
Water technologies (pumps & STWs) for rainfed		1,125,412,000	562,706,000	1,688,118,000
II. Research and development		**580,440,000**	**580,440,000**	**1,160,880,000**
Development of location-specific technologies on varieties, nutrient and pest management*	P2.5M/prov	200,000,000	200,000,000	400,000,000
Improvement of sytem-wide water management*		50,000,000	50,000,000	100,000,000
Development of provincial PalayCheck recommendations*	P120,000/district	25,440,000	25,440,000	50,880,000
Sustainable integrated farming systems		60,000,000	60,000,000	120,000,000
Climate change research*		20,000,000	20,000,000	40,000,000
Policy research		50,000,000	50,000,000	100,000,000
Rice biotechnology		30,000,000	30,000,000	60,000,000
Application of GIS & RS for rice prod'n estimates*		50,000,000	50,000,000	100,000,000
Support for SCU, RIARC R,D, Extension*		95,000,000	95,000,000	190,000,000
III. Marketing support services		**100,345,000**	**100,345,000**	**200,690,000**
Market promotion and development				
Price monitoring and information				
IV. Regulatory services		**60,000,000**	**60,000,000**	**120,000,000**
Conduct of seed certification for inbred and hybrid seeds				
Upgrading/rehabilitation of seed laboratories				
V. Planning, Policy, Program Coordination, M&E		**533,000,000**	**533,000,000**	**1,066,000,000**
Program Monitoring & evaluation at the national, regional & provincial levels	P15,000/cluster	375,000,000	375,000,000	750,000,000
Program management (planning workshops/seminars)	P200,000/province	15,600,000	15,600,000	31,200,000
Generation of rice statistics, survey activities	P300,000/province	23,400,000	23,400,000	46,800,000
Public consultation of stakeholders	P500,000/province	39,000,000	39,000,000	78,000,000
Incentives for provinces		80,000,000	80,000,000	160,000,000
VI. Postharvest & other infrastructure		**1,000,000,000**	**1,000,000,000**	**2,000,000,000**

* with IRRI and SCU involvement



R&D for Palayamanan will receive an annual budget of PhP60M annually. This component will focus on the development of effective biofertilizer for rice, development of protocol for sustainable organic rice farming, and location-specific integrated rice-based farming modules.

The improvement of system-wide water management (PhP50M), climate change research (PhP20M), and the application of GIS and remote sensing for rice production estimates (PhP50M) will collectively receive an annual budget of PhP120M. The first investment is expected to result in better water allocation and conservation. The second intervention will be useful on how R&D respond to the environmental issues, specifically on climate which affects rice production. GIS, on the other hand, will aid researchers, program implementers and policymakers in selecting or locating areas (through maps) where rice production interventions on soil, water, pests and nutrients may be implemented. GIS and remote sensing are also useful tools for precision farming.

The program also considers the roles of SCU and RIARC in Research, Development & Extension (R,D&E) and the importance of policy research and rice biotechnology. A total of PhP95M budget per year is alloted for these interventions (Table 20). SCU and RIARC will be assigned to conduct extension activities and location-specific R&D, and serve as a venue for training with LGU extension workers. Policy research is helpful in identifying the issues that may greatly affect the rice industry. Results of these researches may be used as a reference in crafting suitable interventions that will enhance the impact of the program.

On the other hand, marketing support services will cost around PhP100M annually. It includes market promotion and development activities (such as market matching, trade fairs, assistance to cooperatives, and market cluster organization) and price monitoring.

Moreover, the program allots a total of PhP60M yearly for regulatory services. It includes the conduct of seed certification for inbred and hybrid seeds and upgrading/rehabilitation of seed laboratories. These activities will lead to more efficient seed testing.

Planning, policy, program coordination, and M&E will receive an estimated amount of PhP533M per year. This component includes program monitoring and evaluation at the national, regional, and provincial levels; program management (planning workshops/seminars); generation of rice statistics and conduct of survey activities; public consultation with stakeholders; and incentives for provinces that will achieve their production targets. A cost assumption of PhP15,000 per cluster was used for M&E; PhP200,000 per province for program management; P300,000 per province for generation of rice statistics; PhP500,000 per province for consultation with stakeholders; and P0.8M per province for incentives.

Lastly, postharvest and other infrasctructure have an estimated budget of PhP1B per year.

Program Budget Allocation per Province

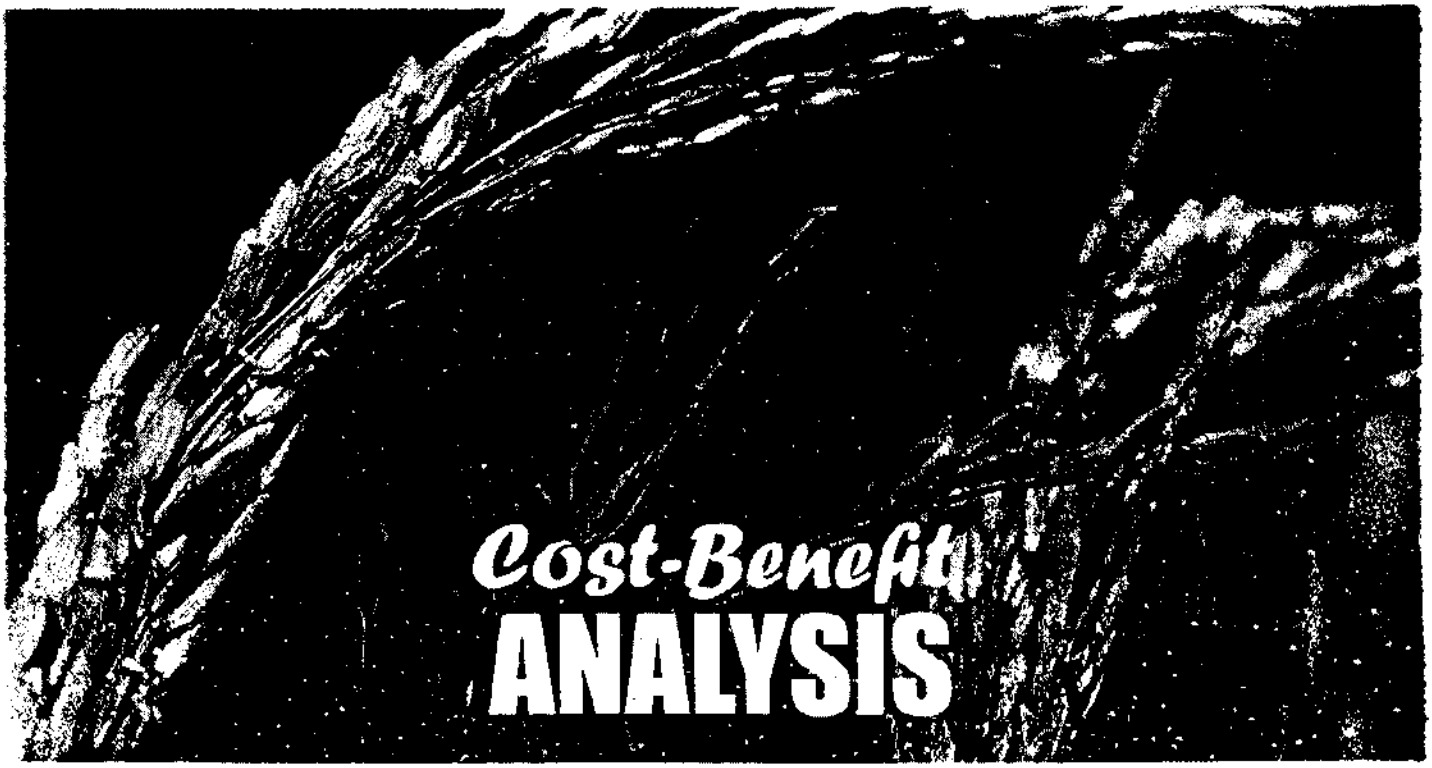
Rice self-sufficiency must emanate from the provinces. The Philippines, being archipelagic in nature, food self-sufficiency in the provinces is necessary to prevent local rice shortage in times of calamities and when there is thin rice supply in the country. The rice program aims to address the specific needs and key constraints of the provinces to boost increases in rice production. Hence, the provincial governments in the focus areas shall spearhead the development and implementation of the provincial rice program in conjunction with the small-scale plan of the clusters and municipal local government units. Corresponding support from the national government and shall be provided but these will be matched with counterpart resources and responsibilities to enhance sense of ownership in spearheading the attainment of increased productivity and profitability of the local rice farmers as well as in contributing to the success in achieving rice self-sufficiency in the province and ultimately, in the country.

> ***"As rice self-sufficiency must emanate from the provinces, the provincial government must lead the development and implementation of their own provincial rice self-sufficiency plan"***

The budget per province includes production support services (seed subsidies, MOET, LCC, Micro-nutrient & bio fertilizer support, extesion kits for farmers); extension services (capacity enhancement- training of trainors, program management at the provincial level; cluster mobilization- farmers' field school, field day, technicians' incentives; information services- PalayCheck guide manual, information dissemination campaigns, communication network, management of ICT facilities, development of ICT component); R&D (location-specific technologies and provincial PalayCheck recommendations).

It is expected that the proposed program budget allocation will be augmented by the different provinces to cover additional program management cost, other LSIs, and travel expense of technicians including provisions of transport vehicles, and their maintenance and operation expenses.

Moreover, summarized in Annex Tables 9 and 10 are the total budget allocations by focus and non-focus provinces in irrigated and rainfed ecosystems, respectively. For 2009, the total budget in irrigated provinces is PhP5B in 2009 and PhP5.2B in 2010, or PhP10.2B in two years. Bulk of the budget is alloted in irrigated Group 1 provinces accounting for 60% (PhP3B) of total budget per year in irrigated areas. Group 2 provinces have a budget of approximately PhP1.4B per year, while non-focus provinces have an annual budget allotment of around P500M. On the other hand, the total budget for rainfed areas is PhP1.65B per year or P3.30B in two years. Allocation of this budget is: PhP343M per year for rainfed Group 1 provinces; PhP1.0B for Group 2 provinces; and PhP217M per year for non-focus provinces.



The interventions aim to achieve an incremental *palay* production of 2.5 M tons from 2009 to 2010, or around 1.6 M tons of milled rice at 65% milling recovery. Table 21 shows a sensitivity analysis of the Benefit-Cost Ratio (BCR) at different price levels. The BCR differs for each of the price levels used. For example, using the NFA support price of PhP 12/kg of palay, the BCR is almost at the break-even point. This means that the return on investment is almost equal to the investment cost in the program. On the other hand, the BCR becomes 1.15 (2009 and 2010 average) if the price of palay is at PhP 15/kg. This result shows that a peso invested in the program would yield a return of PhP 1.14. And assuming that the price of palay reach PhP 16/kg, the return for every peso invested in the program will increase to PhP 1.31 on the average. In addition, around $350M to $500M (using PhP 12/kg to PhP 16/kg palay prices) could be saved from rice importation. Lastly, around 15,351 and 16,455 cavans of milled rice could be saved from importation in 2009 and 2010, respectively if the productions will be achieved.

Table 22 presents the estimated benefit cost analysis of subsidized hybrid program. Without the subsidized hybrid program, the government could have imported rice equivalent to the added hybrid production of around 470,000 ton in 2009 and 625,000 ton in 2010, hence, a reduction in our food insecurity. The government saving that could be derived from the subsidized hybrid intervention is approximately PhP6.5B and PhP8.8B in 2009 and 2010, respectively. The BCR implies that for every peso invested in the hybrid subsidy, there is a return of 4.2 pesos in 2009 and 4.5 pesos in 2010.

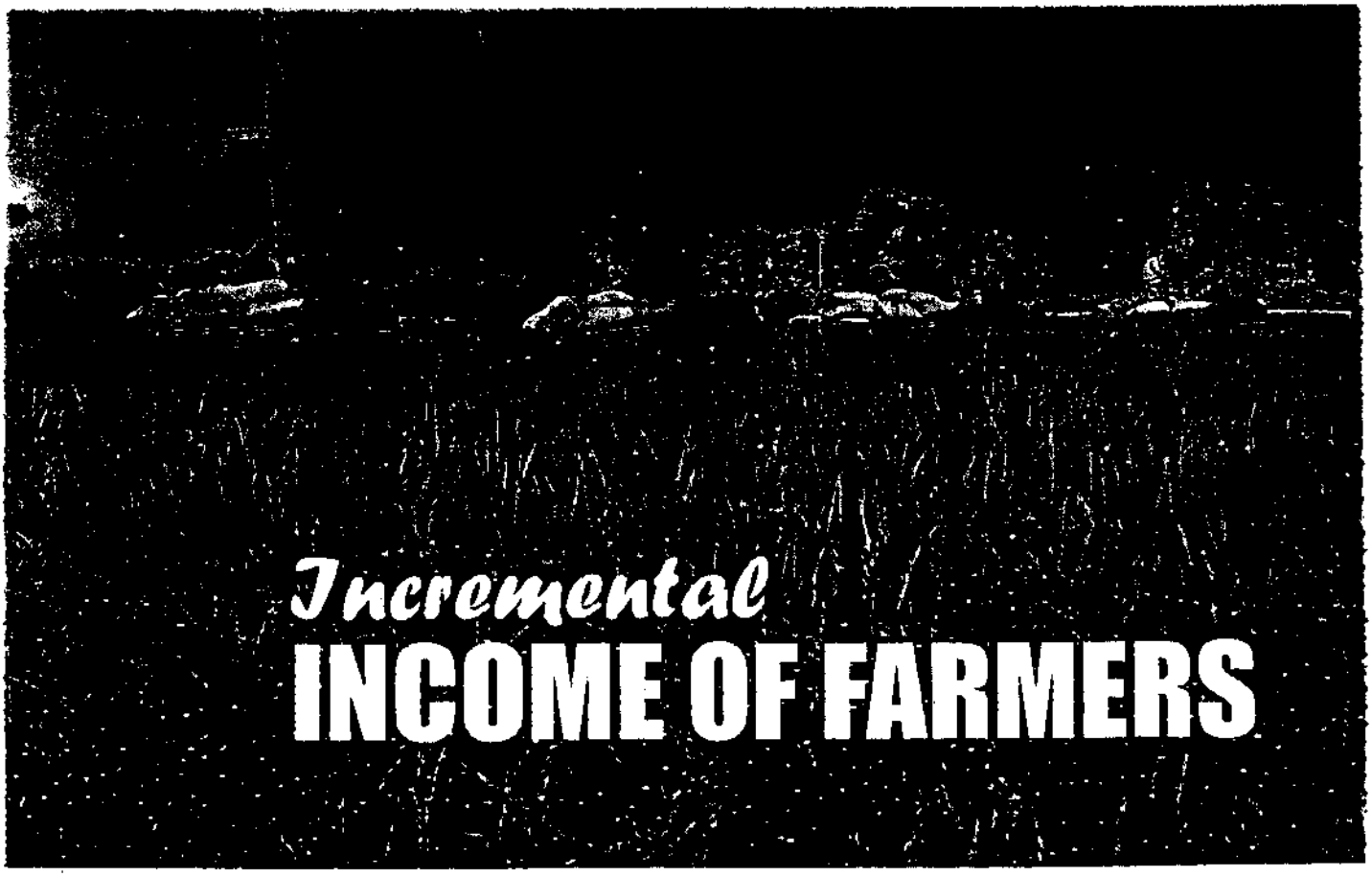
Table 21. Cost-benefit analysis of the program, 2009-2010.

A. At P16/kg of palay			
Volume of incremental palay production	1,180,859	1,265,796	2,446,656
Value of incremental palay production	18,893,751,089	20,252,742,828	39,146,493,918
Program costs	14,890,457,092	14,967,132,960	29,857,590,052
Benefit-Cost Ratio	**1.27**	**1.35**	**1.31**
Volume of milled rice saved from importation (cavans @ 50kg/cav)	15,351	16,455	31,807
Total dollar savings from importation at P40:$1	472,343,777	506,318,571	978,662,348
B. At P14/kg of palay			
Volume of incremental production	1,180,859	1,265,796	2,446,656
Value of incremental production	16,532,032,203	17,721,149,975	34,253,182,178
Program costs	14,890,457,092	14,967,132,960	29,857,590,052
Benefit-Cost Ratio	**1.11**	**1.18**	**1.15**
Volume of milled rice saved from importation (cavans @ 50kg/cav)	15,351	16,455	31,807
Total dollar savings from importation at P40:$1	413,300,805	443,028,749	856,329,554
C. At P12/kg of palay (NFA support price)			
Volume of incremental production	1,180,859	1,265,796	2,446,656
Value of incremental production	14,170,313,317	15,189,557,121	29,359,870,438
Program costs	14,890,457,092	14,967,132,960	29,857,590,052
Benefit-Cost Ratio	**0.95**	**1.01**	**0.98**
Volume of milled rice saved from importation (cavans @ 50kg/cav)	15,351	16,455	31,807
Total dollar savings from importation at P40:$1	354,257,833	379,738,928	733,996,761

Table 22. Projected Benefit Cost Analysis of Subsidized Hybrid Program.

Area (has)	517,250	618,807
Target yield (ton per ha)	5.31	5.52
Inbred yield target (ton per ha)	4.40	4.51
Incremental yield (ton per ha)	0.91	1.01
Added output (tons)	470,698	624,995
Value of additional output (PhP)	7,060,462,500	9,374,926,050
Cost of the program (seed subsidy)	1,551,750,000	1,856,421,000
Add: Other cost	517,250,000	618,807,000
Total cost of program (PhP)	2,069,000,000	2,475,228,000
Savings (PhP)	6,543,212,500	8,756,119,050
ROI	316%	354%
BCR	4.2:1	4.5 : 1

Note: other cost is assumed to be PhP 1000.00 per hectare price of palay is assumed to be PhP15,000 per ton



Incremental INCOME OF FARMERS

The program also expects an additional income for farmers aside from additional palay production. The program interventions are expected to improve the income of farmers. Tables 23, 24, and 25 show that farmers would obtain a positive net incremental benefit as a result of the program interventions.

The use of certified seeds, STWs and SWPs in rainfed Group area 1 may lead to an estimated net incremental benefit of at least PhP 9,320/ha/season (Table 23). Aside from the increased revenue from improved yield, the interventions will also lead to a reduction in seed cost spent by farmers because of the seed subsidy (P800/bag). Additional cost, however, on fuel and pump will be incurred. Nevertheless, farmers would still receive a positive net incremental benefit because of the interventions.

"Adoption of proposed interventions will result in increase in yield."

Table 23. Net incremental benefit due to water pumps and seeds, rainfed Group area 1.

[illegible]	[illegible]	[illegible]	[illegible]
Incremental Benefits			
Increased revenue due to yield	17,700	20,650	23,600
reduced seed cost due to subsidy	800	800	800
Total incremental benefits	**18,500**	**21,450**	**24,400**
Incremental Costs			
Pump*	4,000	4,000	4,000
Fuel	5,180	5,180	5,180
Total incremental cost	**9,180**	**9,180**	**9,180**
Net incremental benefits (PhP/ha/season)	***9,320***	***12,270***	***15,220***
Assumptions:			
Increase in yield due to intervention	1.48		
Price of certified seeds per bag	800		
Seed subsidy for CS	800		
Pump cost per unit	P80,000 with a lifespan of 10 years		
Fuel consumption per season (Li)	140		
Price of fuel per liter (with subsidy)	37		
*Computed as: (P80,000/10 years)/2 seasons			

Farmers in irrigated areas, where the main intervention involves shifting of production from certified to hybrid, would gain at least PhP 13,000/ha/season estimated additional profit (Table 24). The adoption of hybrid shall be complemented with ICM. Therefore, the assumed incremental yield of 1.0 t/ha/season is attributed to the shift from certified seed to hybrid adoption and the introduction of good management practices.

Lastly, the shift of production from farmers' to certified seeds by farmers in irrigated and rainfed Group area 2 is estimated to result in a net incremental benefit of at least P6,800/ha/season (Table 25). This is mainly attributed to the increase in yield due to adoption of certified seeds and the savings from reduced cost due to the seed subsidy.

Table 24. Net incremental benefit due to a shift from certified to hybrid commercial production, irrigated Group areas 1 & 2.

Incremental Benefits			
Increased revenue due to yield	12,000	14,000	16,000
Reduced seed cost due to subsidy	3,000	3,000	3,000
Total incremental benefits	**15,000**	**17,000**	**19,000**
Incremental Costs			
ICM	2,000	2,000	2,000
Total incremental cost	**2,000**	**2,000**	**2,000**
Net incremental benefits (PhP/ha/year)	***13,000***	***15,000***	***17,000***
Assumptions			
Increase in yield from CS to Hybrid (ton/ha)	1.00		
Price of hybrid seeds per bag	3,000		
Seed subsidy for Hybrid	3,000		
ICM additional cost per ha	2,000		

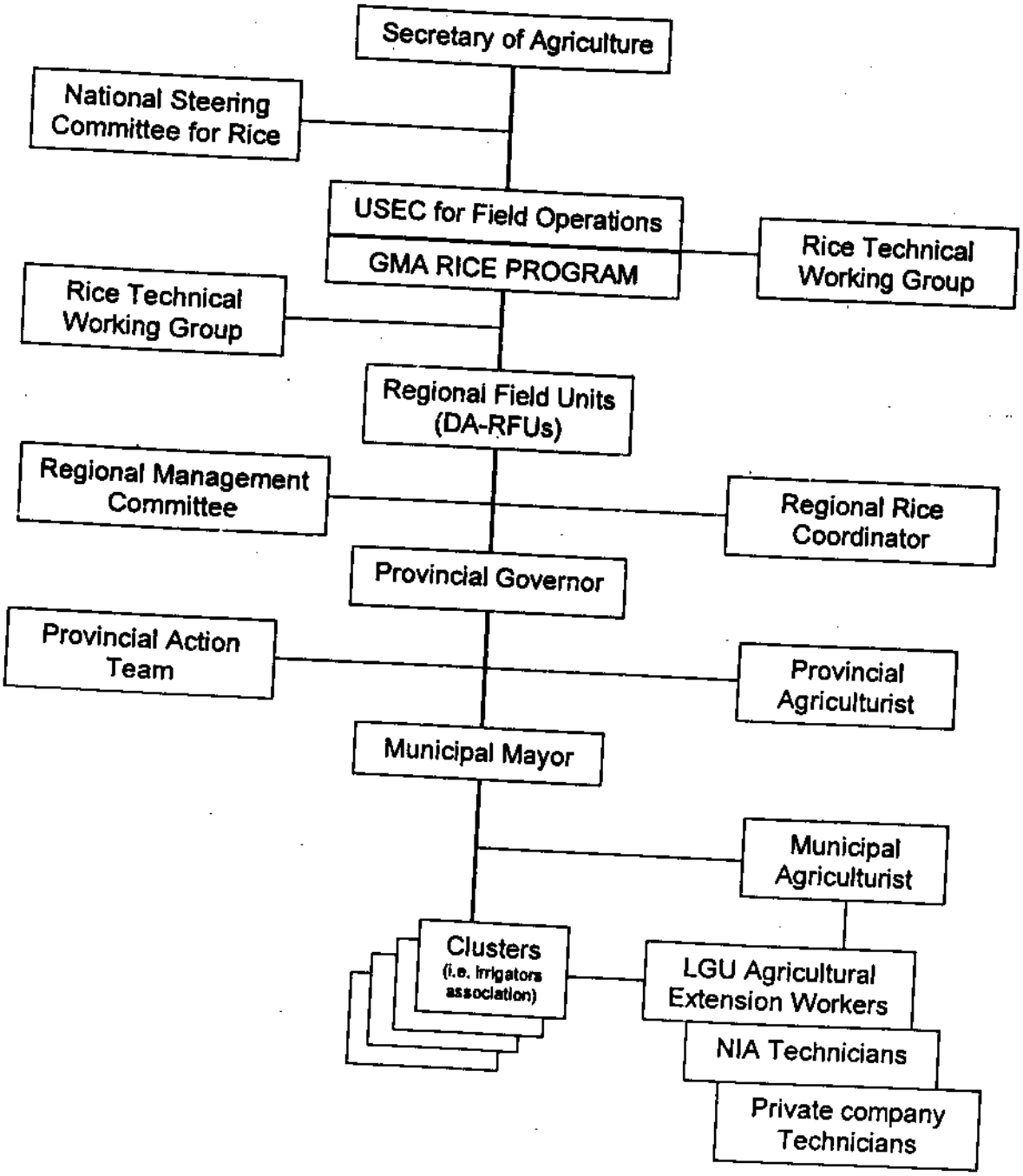
Table 25. Net incremental benefit due to a shift from farmers' to certified commercial production, irrigated Group areas 1 & 2 and rainfed Group area 2.

Incremental Benefits			
Increased revenue due to yield	6,000	7,000	8,000
reduced seed cost due to subsidy	800	800	800
Total incremental benefits	**6,800**	**7,800**	**8,800**
Incremental Costs			
ICM	-	-	-
Total incremental cost	**-**	**-**	**-**
Net incremental benefits (PhP/ha/year)	***6,800***	***7,800***	***8,800***
Assumptions			
Increase in yield from FS to CS (ton/ha)	0.50		
Price of CS per bag	800		
Seed subsidy for CS	800		

PROGRAM MANAGEMENT

The success of the GMA-Rice Program requires the collective effort of the different key players in the organizational management structure (Figure 6). To ensure smooth and timely implementation of the program key implementers, institutions, and committees should perform important roles.

Figure 6. Organizational structure diagram



ROLES OF KEY IMPLEMENTERS

1. *Secretary of Agriculture*
   - Provides overall leadership to the implementation of the rice program;
   - Provides policy directions of the rice program;
   - Ensures the availability of the required budgets for the implementation of the rice program;
   - Serves as chairperson of the National Steering Committee for GMA Rice Program; and
   - Appproves the detailed implementation plan of the rice program

2. *Provincial Governors*
   - Provide overall leadership in the development and implementation of provincial rice programs using the rice program framework of DA;
   - Ensure that the provincial production targets are met;
   - Ensure provision of provincial counterpart resources;
   - Mobilize support from national government and constituent municipality units;
   - Serve as chairperson of the Provincial Action Team (PAT) that will steer the implementation of the program plan in the province

3. *Undersecretary for Field Operations*
   - Provides operational and administrative leadership in the implementation of the rice program;
   - Ensures that the required budgets for the implementation of the plan are released on time;
   - Ensures that national production targets are met;
   - Mobilizes the DA bureaus and attached agencies to support the rice program;
   - Conducts periodic assessment on the progress of the implementation of the program;
   - Serves as co-chairperson of the National Steering Committee for GMA Rice Program; and
   - Provides the necessary manpower for program coordination

4. *GMA Rice Program Coordinator*
   - Serves as the chairperson of the National Technical Working Group for Rice and heads the National Program Secretariat for Rice;
   - Prepares the detailed implementation plan of the rice program;
   - Prepares the timetable for rice program activities;
   - Provides overall coordination of program plan's activities nationwide; and
   - Coordinates the implementation of approved interventions for the different agencies

5. *Regional Executive Directors*

- Lead in the development of the regional rice program using the Rice Program framework of the DA;
- Provide leadership in the implementation of the plan in the region;
- Ensure that the regional production targets are met;
- Mobilize support from national and constituent provincial government units; and
- Serve as chairperson of the Regional Management Council (RMC) that will steer the implementation of the program plan in the region

6. *Regional Rice Coordinators*

- Work closely with the regional executive directors in the development and implementation of the regional rice program;
- Coordinate activities of the RMC; and
- Coordinate with provincial agriculturists

7. *Provincial Agriculturists*

- Provide technical and operational leadership in the development and implementation of the provincial rice program;
- Coordinate the activities of the PAT;
- Provide guidance and coordination with the municipal agriculturists toward the attainment of the provincial and municipal targets; and
- Supervise the implementation of the provincial rice program

8. *Municipal Mayors*

- Lead the development and implementation of the rice program in the municipality;
- Ensure that the municipal production targets are met;
- Mobilize counterpart resources in support to the program; and
- Lead in partnering with private sectors and NGOs in the community

9. *Municipal Agriculturists*

- Provide technical and operational supervision in implementing the rice program in the municipality;
- Identify locations within the municipality for clustering; and
- Supervise the ATs in the implementation of municipal rice program and the eventual attainment of the municipal and cluster targets

10. *LGU Agricultural Technologists*

- Do necessary groundwork for the establishment of clusters;
- Conduct social preparation activities for cluster members;
- Conduct consultation with cluster members and identify the necessary interventions for the cluster;

- Provide technical assistance to the cluster members;
- Orchestrate necessary interventions for the cluster to achieve its target yield;
- Link cluster members to the agribusiness sector in the locality; and
- Ensure the attainment of the yield and production targets in the cluster.

11. *Private Company Agricultural Technicians*
    - Assist ATs in providing technical assistance to cluster members and act as resource person whenever necessary; and
    - Link promotional activities (technical assistance, product discounts, freebies, etc) of the company to target cluster areas.

12. *NIA Technicians*
    - Assist the ATs in providing technical assistance to cluster members and act as resource person whenever necessary;
    - Regularly inspect and report the condition of lateral and turnout irrigation services leading to cluster areas;
    - Assist the ATs in organizing farmers into clusters by convincing the existing members of irrigators' associations to become cluster members;
    - Provide training to cluster-members on water management techniques, and proper irrigation usage; and
    - Communicate water schedules

13. *Farmer-Leader Extensionists*
    - Assist ATs in providing technical assistance to cluster members and act as resource person on best farm management practices;
    - Use their fields as technology demonstration farms and learning sites for the cluster members;
    - Help ATs in doing the necessary groundwork for the establishment of clusters online;
    - Lead the cluster members in attending farmer group discussions and meetings;
    - Provide information about the necessary social and cultural practices of farmers in target clusters to guide ATs in developing their social preparation activities.

14. *Irrigators' Associations*
    - Serve as initial nucleus in the clustering approach; and
    - Assist in the delivery of support services to farmer-members

15. *Agrarian Reform Communities*
    - Serve as alternative nucleus in the clustering approach;
    - Facilitate the delivery of support services to farmer-members; and
    - Encourage farmers to actively participate in meetings and other activities that will be conducted by the LGUs

16. *Cluster Members*

- Commit to follow technology recommendations;
- Attend group discussions and cluster meetings with ATs;
- Provide counterparts on production inputs necessary to achieve the target yields;
- Provide necessary management in their farms

ROLES OF KEY INSTITUTIONS

1. *DA- Regional Field Units (DA-RFUs)*

- Responsible in the overall planning, coordination, and monitoring of program implementation in the region;
- Coordinate, monitor, and implement (through stations) seed production activities;
- Coordinate, monitor, and provide technical assistance on small-scale irrigation projects, postharvest, marketing and credit;
- Ensure proper conduct and timely completion of farmers' masterlists in collaboration with LGUs;
- Assist in the evaluation of qualified farmers' organizations/beneficiaries;
- Deploy subject matter specialist(s);
- Provide accurate and timely reports; and
- Provide resource persons in training courses for ATs

2. *Philippine Rice Research Institute*

- Continually develop and update packages of technologies on rice production with emphasis on productivity and sustainability;
- Produce breeder, foundation, and registered seeds of inbreds and parentals of hybrid;
- Maintain seed buffer stocks of higher classes;
- Provide technical support to LGUs, RFUs, and ATI;
- Assist in the transfer of mature rice production technologies;
- Conduct policy research and advocacy in coordination with other government agencies

3. *International Rice Research Institute*

- Lead in the assessment and identification of potential rice-growing areas using GIS, remote sensing, crop and climate modeling, and overall assessment and synthesis techniques;
- Assist PhilRice, BPI, and other institutions in developing strategies that will fast-track national testing and release of new inbred and hybrid rice varieties and in developing seed production and supply systems to ensure adequate seed supply at the right time;
- Collaborate with PhilRice in the conduct of research on new cropping systems,

varietal improvement, and the development of capacity enhancement approaches for extension personnel and farmers; and

- Collaborate with national government agencies to accelerate the delivery of proven effective crop management technologies such as SSNM, CI, and post-harvest technologies

4. *Department of Agrarian Reform (DAR)*
   - Coordinate the implementation of the program in the Agrarian Reform Communities (ARCs) through the Provincial Agrarian Reform Office (PARO) and Municipal Agrarian Reform Office (MARO);
   - Assist in the establishment of links between farmers' organizations and agribusiness enterprises that will provide market opportunities to farmers and will facilitate access to production inputs, new technologies, and credit facilities;
   - Assist LGUs in selecting ARC sites;
   - Assist ATs in the implementation of the municipal rice program plan and in the conduct of trainings for farmers in the ARCs; and
   - Assist ATs in organizing farmer groups in non-ARC communities

5. *Bureau of Plant Industry*
   - Coordinate and monitor seed production;
   - Supervise seed testing laboratories;
   - Accelerate seed testing and certification; and
   - Provide technical assistance on crop protection

6. *National Irrigation Administration*
   - Maintain and rehabilitate existing irrigation systems;
   - Conduct training courses and institution-building activities for the irrigators' associations;
   - Provide technical assistance to LGUs on maintenance, management, and repair of irrigation systems;
   - Assist LGUs in selecting cluster sites;
   - Coordinate schedules of irrigation water releases and cut-offs with LGUs;
   - Mobilize its technicians to provide technical assistance to farmers

7. *Bureau of Soils and Water Management*
   - Provide technical assistance on the balanced fertilization strategy, small water impounding projects, shallow tube wells, and small farm reservoirs;
   - Characterize and map aquifers;
   - Conduct research and development on small-scale irrigation systems and soil management and fertilization; and
   - Lead in providing soil analysis services to farmers

8. *Agricultural Training Institute*
   - Administer training, extension, and social preparation programs;
   - Monitor and evaluate post-training

9. *Bureau of Postharvest Research and Extension*
   - Provide technical assistance on equipment testing and accreditation;
   - Conduct research and development on postharvest technologies;
   - Establish postharvest facilities

10. *DA Program Monitoring and Evaluation Division*
   - Establish a comprehensive program monitoring and evaluation system;
   - Consolidate provincial and national production performances;
   - Provide details and summary of program accomplishments from the clusters in the municipal, provincial, and national levels in coordination with BAS

11. *Bureau of Agricultural Statistics (BAS)*
   - Help monitor the yield, area, and production performance of each province and at the national levels;
   - Provide details and summary of program accomplishments from the clusters in the municipal, provincial, and national levels in coordination with the Program Planning and Monitoring Office of DA;
   - Manage micro- and macro-level rice production databases;
   - Monitor price behaviors and trends

12. *National Food Authority*
   - Implement the modernization of grain processing facilities at the countryside;
   - Manage the buffer stocks;
   - Implement grains supply and price stabilization policies;
   - Assist in market provision to farmers

13. *Land Bank of the Philippines*
   - Provide production, processing, and marketing loans.
   - Provide loans to millers and traders for the HYCap Credit Program

14. *Quedan Rural Credit and Guarantee Corporation*
   - Guarantee the loans extended through the HYCap Credit Program.
   - Provide production loans to eligible members of irrigators' association', and millers/traders for the procurement of production inputs and harvested palay

3. *National Program Secretariat for Rice*

- Prepare and consolidate the rice program's detailed work and financial plans;
- Conduct field monitoring to assess the status of program implementation;
- Consolidate, analyze, and prepare summary reports based on progress reports of DA-RFUs, BAS, and other agencies;
- Coordinate with DA-RFUs, the private sectors and other concerned agencies to facilitate the implementation of the rice program; and
- Provide technical and staff support to the GMA Rice Program Coordinator, and Regional Rice Program Coordinators

4. *Regional Management Council*

This is composed of representatives from different agencies working on agriculture within the region. It is responsible for the following:

- Coordination and harmonization of activities of different agricultural agencies within the region;
- Share experiences on different approaches in solving encountered problems; and
- Explore resource-sharing in the implementation of the Rice Program

5. *Provincial Action Team*

This shall be created through the issuance of an Executive Order by the Provincial Governor, who shall act as chairperson. The provincial action team shall be composed of the Provincial Agriculturist, Provincial Planning and Monitoring Officer, Rice Coordinator of the DA-Regional Field Unit, Provincial Manager of the National Food Authority, Provincial Manager and Superintendents of the National Irrigation Administration responsible for the operation and maintenance of national irrigation systems, the LGU-designated Provincial Seed Coordinator, the PhilRice Senior Staffer assigned in the area, the Quedancor district officer, the Superintendent of the Agricultural Training Institute, representative from BAS, the Chairperson of the Federated Irrigators' Associations, the Chairperson of the Association of Grains Millers/Traders and Retailers, the DAR Provincial Agrarian Reform Officer, the Municipal Mayor and Municipal Agriculturist of rice-growing towns, and the Chairperson of the Seed Growers' Associations.

Other stakeholders in the Rice Sector may be included like the Land Bank of the Philippines' Provincial/Field Manager(s), representatives of the Philippine Crop Insurance Corporation, and representatives from the agricultural college or university located in the province.

15. *National Crop Protection Center*
    - Monitor the incidence of pests and diseases by using surveillance and warning systems;
    - Conduct training on the control and proper management of pests and diseases

16. *Fertilizer and Pesticide Authority*
    - Ensure that available fertilizer grades and pesticides available in the market are effective and not hazardous to human health and the environment.

17. *State Colleges and Universities (SCU)*
    - Conduct extension activities within the province or region of their location
    - Conduct location-specific research and development
    - Serve as a venue for training of LGU technicians
    - Mobilize farm land for seed production use

ROLES OF KEY COMMITTEES

1. *National Steering Committee for GMA Rice Program*

This is composed of heads of DA bureaus and attached agencies working in the grain sector. It shall be created for the following purposes:
- Deliberate on policy issues besetting the rice industries;
- Finalize the rice program design, strategies, and interventions;
- Formulate guidelines for the implementation of the program;
- Review and set national targets and accomplishments; and
- Provide technical recommendations to its chairperson on the policy directions that should be followed by the rice program

2. *National Technical Working Group for Rice*

This is composed of representatives from different DA bureaus and attached agencies. It shall be created to perform the following:
- Finalize the rice program design, strategies, interventions, and budget for the Secretary's approval;
- Formulate guidelines for the implementation of the program;
- Review and set national targets and accomplishments;
- Prepare detailed operational plans, and budgets of the rice program;
- Design a monitoring and reporting system; and
- Periodically assess the roles and contributions of different DA bureaus and attached agencies to the program implementation

3. *National Program Secretariat for Rice*

- Prepare and consolidate the rice program's detailed work and financial plans;
- Conduct field monitoring to assess the status of program implementation;
- Consolidate, analyze, and prepare summary reports based on progress reports of DA-RFUs, BAS, and other agencies;
- Coordinate with DA-RFUs, the private sectors and other concerned agencies to facilitate the implementation of the rice program; and
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This shall be created through the issuance of an Executive Order by the Provincial Governor, who shall act as chairperson. The provincial action team shall be composed of the Provincial Agriculturist, Provincial Planning and Monitoring Officer, Rice Coordinator of the DA-Regional Field Unit, Provincial Manager of the National Food Authority, Provincial Manager and Superintendents of the National Irrigation Administration responsible for the operation and maintenance of national irrigation systems, the LGU-designated Provincial Seed Coordinator, the PhilRice Senior Staffer assigned in the area, the Quedancor district officer, the Superintendent of the Agricultural Training Institute, representative from BAS, the Chairperson of the Federated Irrigators' Associations, the Chairperson of the Association of Grains Millers/Traders and Retailers, the DAR Provincial Agrarian Reform Officer, the Municipal Mayor and Municipal Agriculturist of rice-growing towns, and the Chairperson of the Seed Growers' Associations.

Other stakeholders in the Rice Sector may be included like the Land Bank of the Philippines' Provincial/Field Manager(s), representatives of the Philippine Crop Insurance Corporation, and representatives from the agricultural college or university located in the province.

The Provincial Action Team shall perform the following specific tasks:

1. Prepare an operational plan containing details on the schedules, locations, institutional arrangements, accountable persons, implementing milestones, manning and logistics, including budgetary requirements and monitoring structures and mechanisms of the following:

   a. Mapping of program areas and identification of farm clusters and farmers
   b. Seed supply and distribution - requirements by location and time, and delivery and distribution schedule, mode of delivery, quality specifications of seeds, verification of actual planting
   c. Farmers' classes and technical briefings - identification of participants and resource persons, schedule of training batches, venues, and logistics
   d. Technology promotion - identify cooperators for techno-demo farms and determining the input requirements and their sources; establish benchmark and documentation requirements; developing, producing, and disseminating multi-media communication and information campaigns at the local level
   e. Marketing - develop a market promotions campaign targeted toward rice millers, traders, and consumers; coordinate with the NFA for priority procurement.

2. Execute the operational plan as approved by the Provincial Governor

3. Develop a pest profile and undertake pest surveillance and early warning systems by assigning agricultural extension personnel to closely monitor and record pest incidences and to activate control measures among the community; establish a pest clinic within the Office of the Provincial Agriculturist with the assistance of the Department of Agrarian Reform Field Units and the Regional Crop Protection Center.

4. Create market niche in cooperation with institutional buyers and consumers within the province or region through formal marketing agreements.

5. Provide a documentation of successful hybrid rice enterprises or farms which can serve as the standard of excellence and benchmark of good farm practices for the province. The SCU in the province or organizations of business practitioners can provide technical expertise in setting the economic and technical parameters.

6. Organize teams led by the provincial officer of BAS and the provincial PMO to validate the accomplishments of the different clusters and municipalities.

7. Monitor the progress of program implementation and provide feedbacks to the Governor of the province and the Regional Executive Director of DA RFU.

PREPARATORY ACTIVITIES for the Program

The following activities will be conducted to pave the way for the smooth implementation of the rice program plan briefings and orientations for involved agencies; organization/activation of provincial action teams; development of training modules; training of ATs and farmer-leader extensionists; joint planning and identification of clusters; organization of clusters; and planning for dry season 2009 planting. Annex 1 summarizes the budget requirements of the preparatory activities.

For the program to realize the production targets for 2009 and 2010, sufficient seed resource should be made available to farmers. Table 26 presents the seed production targets for DS 2009. In hybrid seed production, Group 1 provinces will have the highest F1, A-line, and R-line requirements. The same is true for certified seed production in irrigated areas. Group 1 provinces have relatively higher requirement than the Group 2 provinces. For the rainfed areas, on the other hand, relatively higher requirements are recorded under Group 2 provinces.