

An Assessment of the Hybrid Rice Program in the Philippines as Perceived by Farmers

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Abstract

Rice is the main staple food for about 75% of the population in the Philippines. Over the years, the Philippines has made tremendous growth in rice production and productivity through its Hybrid Rice Program. Despite these efforts, there is still a need to improve rice production to meet the demands of the growing population. By the year 2025, the country will need 40-50% more rice than what it needs today. The promotion of hybrid rice is a challenging and time consuming task. This study assessed the Hybrid Rice Program as perceived by farmers. The assessment included performance of: 1) local government units, 2) regional office of the DOA, and 3) the private sector. In addition, current promotional program efforts were also assessed. A random sample of 257 farmers in the province of Isabela responded to a five- section survey instrument. Data was collected by personal interview method. Findings indicated that farmers were positive about the performance of the Hybrid Rice Program. They rated local government units as best, followed by the regional office of the DOA, and the private sector. Current promotional efforts were also viewed as good by the farmers. Strategies for improving the Hybrid Rice Program included sustaining the existing sectors (LGUs, private sector, DOA), coordinating joint efforts between LGUS, DOA, and the private sectors, conducting research to develop pest and disease resistant varieties of rice, increasing financial assistance for farmers, and providing professional development opportunities for extension agents to carry out hybrid rice promotional activities.

Introduction

Rice is the world's single most important food crop and primary food for more than a third of the world's population (David, 1991, as cited in Khush & Toenniessen, 1991). In Philippines, rice accounts for 35 percent of the average calorie intake of the population (now about 77 million) to as high as 60-65 percent for households in the lowest income quartile. In recent years, irrigated rice cultivation has increased in intensity, with the extended use of short-maturing varieties allowing up to three crops per year in Central Luzon. Modern varieties and corresponding management practices have been adopted in most of the irrigated and favorable rainfed lowland areas (Matthews, et al, 1995, p. 237).

Despite the gains made in intensified rice production by increasing yield per unit area, there is still a need to improve the production of rice to meet the demand of the growing population. With this challenge, hybrid rice technology has been recognized as a new approach for increasing rice production and attaining rice self-sufficiency in the Philippines (Redona, et al, 2001). The alarming population growth of 2.3% per annum and the decreasing national rice hectareage by 10,000 hectares per year due to industrialization and urbanization (Redona, 1998) adds to the problem of attaining rice self-sufficiency. Obien (1998) found that urbanization, industrialization, and degradation of prime agricultural lands have reduced rice hectareage from 3.8 million hectares in 1975 to the present 3.2 million. Further, the yield level of high-yielding inbred varieties has not increased substantially since the early 1970s, and rice importation is not a sustainable strategy for food security since the world rice market is volatile, with only 4-5% of the total rice supply entering the international trade arena. Redona et al (2001) predicts that by 2025, the country will need 40-50% more rice than what it needs today. This increased production must come from less land using less water, labor, and pesticides. Increasing rice yield per unit area per unit time is, therefore, an important strategy to meet this enormous challenge.

The campaign to use modern and certified varieties has been proven effective in increasing rice yields. In recent years, the use of certified seeds propelled rice yield production in the Philippines. The development and cultivation of varieties specific to unfavorable environments like saline-prone rice fields and cool-elevated areas, and others, further led to the dramatic increase in yield particularly in these unfavorable areas for rice. However, with an increasing population, decreasing rice hectareage, scarcity of water, and other production related factors, the challenge to find avenues to increase rice yields is inevitable. Hence, the Philippine government pursued its Hybrid Rice Program to further improve rice production (R.E.Tabien, personal communication, March 2003 and Fernandez, 2002).

The Hybrid Rice Program in the Philippines was launched in 1998 during the term of then President Fidel V. Ramos. Selected provinces were chosen to participate in field trials of hybrid rice varieties including seed production. The program aimed to use hybrid rice technology as a new approach for increasing rice production, farmers' productivity, and competitiveness, mitigate the negative effects of the *El Nino* phenomenon over the short term and to attain national food security over the long term (Obien, 1998). It is believed that the Hybrid Rice Program is expected to contribute significantly to the national objective of attaining self-sufficiency and food security (Sebastian, 2000).

To ensure success of the Hybrid Rice Program which is one of the strategies under the Ginintuang Masaganang Ani (Primer-GMA, 2002) Rice Program of the government that aims to ensure food security, increase farm incomes, and empower farmers in the countryside, the following program components have been established: (1) production support to inbred and hybrid rice; (2) irrigation development; (3) agricultural mechanization and post harvest development; (4) training and extension; (5) research and development; (6) credit facilitation; (7) regulatory services; (8) information support; (9) policy formulation and advocacy analysis; and (10) program management (Primer, GMA Rice Program 2002).

As Lang (1996, p.135) puts it, to be self-sufficient in rice is a matter of state security. Hence, the pursuit to improve further the yield of rice is an important goal for the Philippine government. With 70% of Philippine population living in rural areas, and two-thirds of its 76.4 million people depending on agriculture and agriculture-related enterprise, agricultural development is a key factor for economic progress and food security for the country. Swanson (1997) stated that in order to effectively address food security issues and the need to achieve broad-based, sustainable agricultural development, the technology and educational needs of small farm households must be more adequately addressed. Crucial to this statement, is the need to assess if the technology has reached the target clientele, the farmers. Hence the need to assess how well the technology has been promoted is critical to improving the implementation of the Hybrid Rice Program and its acceptance by farmers.

The Hybrid Rice Program has been implemented since 1998, and yet no comprehensive assessment has been made relative to the promotion of the hybrid rice. The results of this study especially on the assessment of the performance of the local government units (LGUs), the regional office of the Department of Agriculture, and the private sector, will provide the basis as to which institutions or sectors are helpful in the promotion of the hybrid rice. The assessment of the current promotional program and activities of the hybrid rice is also significant because it will provide information as to which strategies and activities in promoting hybrid rice.

Purpose and Objectives

The primary purpose of this study was to assess the overall performance of the Hybrid Rice Program in the Philippines. Objectives of the study were to:

1. Determine socio-economic and demographic characteristics of hybrid rice farmers;
2. Assess the performance of the local government unit (LGUs), the regional office of the Department of Agriculture (DOA), the private sector, and the current promotional program and activities of the hybrid rice program as perceived by farmers; and
3. Determine relationships, if any, between the perceptions of the farmers on the performance of the LGUs, regional office of the DOA, the private sector, and socio-economic and select demographic characteristics, including classification of municipalities.

This study used a descriptive correlation design. Fraenkel & Wallen (2003) defines correlation research as descriptive research that involves collecting data in order to determine the degree to which relationships exists between two or more variables.

Population and Sample

The population of this study consisted of the hybrid rice farmers (N=865) who planted PSB Rc72H hybrid rice variety during the Dry Season 2003 planting (period covers November 2002 to April 2003) in the province of Isabela. Stratified proportional random sampling procedures were used to select farmers. In this study, the subgroups or strata of farmers represented the different classes or levels (6) of municipalities in the Philippines. Hence, the samples of the study were taken from first class municipalities, second class, third class, fourth class, and fifth class municipalities. Although the classification of municipalities is up to sixth class, there are no municipalities in the province of Isabela that belong to the sixth class. Based on Krejcie and Morgan (1970), the appropriate sample size for an 865 population was 265. The sample size was then obtained using a simple random sample based on the classification of the municipality.

Instrumentation

A four-section survey instrument was developed to collect data. The survey contained the following information: 1) 20 items relative to the performance of the LGUs, the regional office of the DOA, and the private sector in the promotion of hybrid rice program; 2) 17 items assessing the adequacy of the current promotional activities of the hybrid rice program, 3) demographic characteristics (age, gender, income, land ownership, education level, etc.), and 4) open-ended comments. Statements in sections one and two were measured on a four-point scale that ranged from 1=strongly disagree to 4=strongly agree.

The face and content validity of the instrument was established using a panel of experts which comprised of the Graduate Committee members, PhilRice scholars in Japan, Taiwan, and in the United States, and other PhilRice staff members based at the Central Experiment Station (CES) in Muñoz Science City, Nueva Ecija and at the PhilRice Hybrid Center in San Mateo, Isabela. The translated version of the interview schedule from English language to the Ilocano dialect was made possible by PhilRice staff members of the Development Communication Division, Technology Management and Services Division, PhilRice Hybrid Center in San Mateo, Isabela, and some extension agents from Abra and Nueva Ecija. Authorization for research for human subjects was obtained from the Office of the Research Protections (ORP) at the Pennsylvania State University.

Pilot Testing of the Instrument

The instrument thus developed was pilot tested in Nueva Ecija using 32 extension agents involved in the promotion of the Hybrid Rice Program. These 32 extension agents represented two municipalities (Talavera and Muñoz) not included in the sample. The instrument was tested for reliability by calculating the Cronbach's alpha using data obtained from the pilot test. The reliability coefficients for the four parts in two sections of the instrument ranged from 0.81

(private sector) to 0.93 DOA) for the pilot study and from 0.70 (private sector) to 0.91(DOA) for the final study.

Data Collection and Analysis

The survey administration was personally supervised by the researcher in the second week of June 2003 in the province of Isabela. Prior to data collection, the Human Resource Management Office of the PhilRice Central Experiment Station in Nueva Ecija facilitated the recruitment of survey enumerators and data encoder for the study. The Branch Manager and the Human Resource Section of the PhilRice Hybrid Center at San Mateo, Isabela supervised the selection of the qualified survey enumerators and data encoder. Survey enumerators and data encoder were hired for the data collection and data encoding, respectively based on their experience and qualifications as certified by the Head of the Human Resource Office.

A one-day orientation regarding the study was conducted for the survey enumerators and data encoder. The orientation included the discussion of all items on the survey instrument to ensure a clear and uniform understanding of all items on the survey instrument by the enumerators and the data encoder. Other topics discussed include the following: rights of the respondents to decline to answer specific questions, handling situations when the respondent is not available, forms to be filled-up and signed by the respondents, and some tips in interviewing farmers. The approved authorization for research with human subjects obtained from the Office of the Research Protections of the Pennsylvania State University was also discussed during the orientation including the approval of the Provincial Agriculturist to conduct research in the province. The researcher collected the completed survey instruments from the enumerators. The researcher reviewed each survey instrument for missing information (like name of municipality, etc), illegible writing, and incomplete sentences and responses. After receiving the completed surveys, they were handed to the data encoder. Encoding of completed surveys for each day was completed by next day.

Data for this study was analyzed using the Statistical Program for Social Sciences (SPSS). The statistical modes of analysis included measures of central tendency (version 10.5), significance testing, and T-Test for Independent Sample Means, and One-Way ANOVA.

Objective 1: Demographic Profile of Farmers

Majority of the hybrid rice farmers were male (87.2%), married (92.2%) and most of them were middle aged (below 51 years old - 63.1%). About 38.6% of the hybrid rice farmers completed college education (these include farmers who finished bachelor's degree, and some graduate studies), 12% reported completing some college, 16.3% had completed high school education, 6.6% diploma from a vocational school, while 11.7% had completed elementary education. Forty-percent of the farmers reported an income of more than P5001 but less than P15000 a month. More than one half (56%) of the farmers have been planting rice for more than 16 years.

An average yield of four to six tons inbred rice were produced by 64% of the farmers during the last three wet season croppings and 63% of the farmers during the last three dry season croppings. For the hybrid rice, 51% of the farmers got an average yield of six to eight tons. Almost 70% of the hybrid rice farmers planted hybrid rice in more than one cropping season.

Objective 2: Assessment of the performance of the Hybrid Rice Program and Current Promotional Activities

A 20-item instrument (seven items for LGU; eight items for regional office; and five items for private sector) was used to assess the performance of the three units (LGU, Regional Office, and private sector) as perceived by hybrid rice farmers. The items were measured using a four-point response scale ranging from 1 (strongly disagree) to 4 (strongly agree).

The overall perceptions of farmers relative to the performance of LGUs were 3.15 with a standard deviation of 0.61 (see Table 1). This overall value indicates that hybrid rice farmers “somewhat agreed” to the statements that measured the performance of LGUs in the promotion of hybrid rice program. Six of the seven items received a mean value of over 3.0. The highest item mean value ($M=3.38$; $SD=0.81$; 0.75 , respectively) was reported for two statements, *the LGU provides training support to hybrid rice farmers* and *the LGU implements various agricultural projects*. The lowest item mean value ($M=2.63$; $SD=.97$) was reported for the statement, *“LGU provides financial assistance to hybrid rice farmers.”*

Table 1

Farmers’ Assessment on the Performance of Local Government Unit (LGU).

Statement	<i>n</i>	<i>Mean</i>	<i>SD</i>
The LGU provides training support to hybrid rice farmers	248	3.38	0.81
The LGU implements various agricultural projects	251	3.38	0.75
The extension agents are well-supported by the LGU in terms of professional trainings	241	3.29	0.79
The LGU supports farmers’ cooperatives engaged in hybrid rice production	243	3.26	0.76
The LGU has regular consultation with farmers to address problems related to hybrid rice production	251	3.22	0.81
The LGU has maintained good collaboration with farmers’ organizations in support of hybrid rice farmers	249	3.06	0.75
The LGU provides financial assistance to hybrid rice farmers	227	2.63	0.97
Overall	244	3.15	0.61

Scale: *1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree

The overall perceptions of farmers relative to the performance of the regional office of the DOA was 3.26 with a standard deviation of 0.60 (see Table 2). The statement, *regional office personnel has good working relationships with Extension agents involved in the hybrid rice program* received the highest mean rating ($M=3.37$, $SD=0.72$). Almost all of the

statements were rated three or above by the farmers, indicating that they “somewhat agreed” with the performance of the regional office of the DOA.

Table 2

Farmers’ Assessment on the Performance of the Regional Office of the DOA

Statement	<i>n</i>	<i>Mean</i>	<i>SD</i>
Regional office personnel has good working relationship with Extension Agents involved in Hybrid Rice Program	186	3.37	0.72
The regional office encourages community participation to promote Hybrid Rice Program	243	3.35	0.76
Regional office personnel has good working relationship with DA national personnel involved in hybrid rice program	163	3.31	0.76
Regional office personnel has good working relationship with L	177	3.30	0.73
The regional office provides reference materials to hybrid rice farmers	236	3.22	0.88
Regional office personnel has good working relationship with hybrid rice farmers	197	3.19	0.78
The regional office is regularly monitoring their hybrid rice projects at the local level	222	3.07	1.49
It is easy for hybrid rice farmers to access technical assistance from the regional office	220	2.89	0.86
Overall	205	3.26	0.60

Scale: *1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree

As shown in Table 3, the overall mean for the private sector performance was 2.80 ($SD=0.63$). The statement, private sector is buying the hybrid milled rice, was rated highest by farmers ($M=3.12$, $SD=0.82$). However, farmers were “skeptical” about the non-government organizations such as banks providing financial assistance to farmers for growing hybrid rice ($M=2.57$, $SD=.0.89$)

Table 3

Farmers’ Assessment on the Performance of the Private Sector

Statement	<i>n</i>	<i>Mean</i>	<i>SD</i>
Private sector is buying the hybrid milled rice	248	3.12	0.82
Collaboration is evident between the private and the government in promoting hybrid rice.	231	3.01	0.83
Private sector provides technical assistance to solve local problems of the farming sector.	246	2.77	0.89
Private sector especially the NGOs provide educational support to hybrid rice promotion.	216	2.70	0.99
Non-government organizations especially the banks provide financial assistance to farmers for growing hybrid rice.	220	2.57	0.89
Overall	232	2.80	0.63

Scale: *1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree

Of the three sectors assessed by the farmers, the regional office of the DOA was rated the highest ($M=3.27$, $SD=0.60$), followed by the LGUs ($M=3.15$, $SD=0.61$), and the private sector ($M=2.80$, $SD=0.63$).

Current Promotional Activities under Hybrid Rice Program

A 17-item instrument was used to assess the current promotional programs and activities of the hybrid rice program as perceived by farmers and extension agents. These 17 items were measured on a scale ranging from (1) strongly disagree to (4) strongly agree.

Almost all of the statements on the current promotional program and activities under the Hybrid Rice Program has a mean score greater than three indicating that farmers generally have a positive perception (somewhat agree to strongly agree) on the current promotional program and activities under the Hybrid Rice Program (see Table 4). The overall mean for the current promotional program and activities under the hybrid rice program was 3.5 ($SD=0.69$). This indicated that farmers “agreed” to the current promotion efforts undertaken by the hybrid rice program. The statements, *the educational materials for hybrid rice are easy to understand* ($M=3.76$, $SD=0.49$), and *the educational materials for hybrid rice are easy to read* ($M=3.76$, $SD=0.54$) received the highest mean scores. The statement, *advertisements on hybrid rice can also be seen in TV* was rated the lowest ($M=2.95$, $SD=0.85$).

Objective 3: Demographic Relationships

No significant relationships were found between farmers’ gender, educational level, and class of municipalities and their assessment of LGUs, regional office of the DOA, and private sector. Similarly, no significant relationships existed between gender, educational level, and class of municipalities and assessment of the current promotional program of the Hybrid Rice Program.

Conclusions and Recommendations

Based on the results of the study, the following conclusions and recommendations are offered:

Overall, the hybrid rice farmers in the Philippines have a positive assessment on the performance of the local government units (LGUs). Furthermore, the findings also suggest that LGUs have maintained good collaboration with farmers’ organizations, provided support in training the farmers and in the implementation of various agricultural projects. However, farmers agreed that the financial assistance provided to hybrid rice farmers was inadequate.

It is recommended that the good collaboration between LGUs, farmers’ organizations, and other stakeholders in the promotion of hybrid rice be sustained and strengthened. LGUs should provide additional and adequate financial support to farmers engaged in hybrid rice production. If local funds are not available and adequate to provide the necessary financial support needed by farmers, the LGUs should seek other ways and means to augment local funds needed to help the farmers.

Table 4

Farmers' Assessment on the Current Promotional Programs for Hybrid Rice

Statement	<i>n</i>	<i>Mean</i>	<i>SD</i>
The educational materials for hybrid rice are easy to understand.	256	3.76	0.56
The educational materials for hybrid rice are easy to read.	254	3.74	0.56
I believe that the government is really serious in promoting hybrid rice in our country	255	3.57	0.61
The LGU has always promoted the hybrid rice	252	3.54	0.67
I think many farmers in rural areas have already heard about the hybrid rice	251	3.53	0.62
Seeds are available for farmers who want to cultivate hybrid rice	253	3.52	0.70
The educational materials for hybrid rice are readily available	247	3.48	0.74
Technical assistance about hybrid rice is available from ATI whenever needed	245	3.46	0.69
The promotion campaign on hybrid rice will succeed	236	3.45	0.65
The trainings conducted on hybrid rice are adequate	253	3.43	0.66
There are adequate number of educational materials available for distribution to hybrid rice farmers	250	3.42	0.67
The educational materials for hybrid rice are affordable	232	3.41	0.75
There are enough references you can buy about hybrid rice	243	3.41	0.73
The extension workers regularly visits the hybrid rice farmers	256	3.28	0.91
The billboards I saw about hybrid rice farming on the road attract the attention of the passersby	250	3.12	0.77
Radio is still the number one source of information for farmers on hybrid rice	252	3.01	0.91
Advertisements on hybrid rice can also be seen on TV	255	2.95	0.85
Overall	249	3.41	0.63

Scale: *1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree

The findings of this study revealed that the farmers have positive assessment on the regional office of the Department of Agriculture. Likewise, findings also suggested that the regional office encouraged community participation in the promotion of hybrid rice. However, results also suggested that farmers have limited access to technical assistance from the regional office.

The hybrid rice farmers have positively assessed the performance of the private sector. Furthermore, the findings also suggested that the public patronized hybrid milled rice and that collaboration was evident between the private and the government sector in the promotion of hybrid rice. The findings also showed that NGOs especially the banks lacked in providing financial assistance to farmers.

It is recommended that the current promotional program and activities of hybrid rice be sustained and strengthened to reach more farmers in the countryside. The use of various mass media should be maximized to reach as many farmers as possible. The promotional activities

should also include technology demonstration, field days, training and farmers' classes, and on-farm visits of extension agents and other technical personnel involved in hybrid rice production. Efforts should be made to identify potential areas in Isabela not reached by the current promotional program so that farmers in this area will be aware of the technology.

Finally, the promotion of the hybrid rice program in the province of Isabela is not only intended to provide information and create awareness about the hybrid rice technology, but more importantly, the promotion should lead the farmers to adopt the technology. Hence, the current promotional program and activities must emphasize the economic benefits and rewards of the hybrid rice technology so that the farmers will be motivated

The collaborative efforts of the local government units (LGUs), the regional office of the Department of Agriculture, and the private sector must be directed towards the provision of necessary support services and infrastructure so that the technology will be more acceptable to farmers. Tran (2003) expressed that promoting wide adoption of hybrid rice technologies and gaining adequate political support for national programs remain of utmost importance. Hence, strong commitment and support from government officials, policy makers, senior research management and scientists in rice R&D, extension agents, farmers, and the private sector are essential to promote hybrid rice technology so that the goal of food security and rice self-sufficiency will be attained.

Finally, findings from this study should be shared with all stakeholders involved in the Hybrid Rice Program in the Isabela province of the Philippines. In addition, this study should be replicated in other provinces in the Philippines to assess the Hybrid Rice Program. Such a study allows for making comparisons between provinces and provides justification for programmatic improvements and allocation of resources.

Educational Importance

The educational importance for the study focus around three sets of implications-- technology promotion, policy toward hybrid rice promotion, and research on hybrid rice.

In the area of technology promotion, it was suggested that 1) Philippine government, including PhilRice, sustain and further strengthen the good collaboration between LGUs, private sector, and the regional office, 2) create a cadre of professionals totally engaged in hybrid rice farming and provide opportunities for their professional growth.

A policy for institutionalizing support services for hybrid rice promotion was also recommended. Further research on rice should focus on developing hybrids that are resistant to pests and diseases and technology development that are less dependent on inputs.

Research relative to the role of private sector in hybrid rice program should be conducted. Finally, further research is needed to determine coordination efforts between LGUs, regional offices of the DOA, and the private sector. Such efforts will help in strengthening the promotional activities of hybrid rice program in the Philippines.

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