Extension, Technology, and Client Constraints in Hybrid Rice Technology as Perceived by Farmers and Extension Agents in the Philippines

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Abstract
Rice is the main staple food for 75% of the population in the Philippines. The Hybrid Rice Program was initiated in 1998 to improve rice production. Over the years, the Philippines has made tremendous growth in rice production and productivity through its Hybrid Rice Program (HRP). The promotion of hybrid rice is a challenging and time consuming task. Besides increasing population and other production factors, the hybrid rice technology is characterized by problems and constraints. This study examined constraints—extension, technology, and client—in the promotion of hybrid rice technology as perceived by extension agents and farmers in the Isabela province. A random sample of 257 farmers and 132 extension agents responded to a three-section survey instrument. Data was collected by personal interview method. The major technology constraints were: cost of pesticide, cost of labor, pests and disease problems, cost of fertilizer, and availability of educational materials. The extension constraints perceived by both groups were: lack of transportation, inadequate number of extension workers to carry out hybrid rice promotion work, and availability of teaching aids to teach farmers. Availability of credit for rice production and cost of inputs were identified as client constraints. Overall, when all the 45 constraints were examined, significant differences were found between extension agents and farmers for 25 constraints. Interestingly, extension agents perceived these 25 constraints significantly higher than farmers.

Keywords: Hybrid rice, extension, constraints
Introduction
Rice is the major calorie source for a large segment of the earth’s population. Among food grains, rice is viewed as the most important grain due to human nutrition, food security, and economic significance. In Southeast Asia, rice plays an important role as it accounts for a major share of cereal consumption and daily calorie intake in the region. In the Philippines, rice is the main staple food for about 75% of the population (GMA Program, 2002). Over the years, the Philippines has made tremendous growth in rice production and productivity through its Hybrid Rice Program (HRP). Despite these efforts, there is still a need to improve rice production to meet the demands of the growing population. Redona et al (2001) predicts that by 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. Besides increasing population and other production factors, the hybrid rice technology is characterized by problems and constraints. A number of researchers have addressed these constraints in different parts of the world for different crops under different Extension systems (Sigman & Swanson, 1984; Radhakrishna & Bowen, 1991; Reynar & Bruening, 1996; Ukaga, Radhakrishna, & Yoder, 1994; Hussain, 2001; Bagchee, 1994; Khush, 2001; Sands, 1986; Hondrade, et al., 2003). Consensus from these studies reveal several constraints in the areas of appropriateness of technology, linkage between research and extension, technical training, extension training, mobility, teaching aids, equipment, organization, coordination and other problems.

In a study conducted by Radhakrishna and Bowen (1991), extension directors in India identified lack of transportation (mobility) as a major constraint facing extension, followed by lack of appropriate training programs for farmers and extension personnel, and lack of coordination of activities between extension and other various government agencies. In addition, extension directors identified lack of teaching and communications equipment as a constraint. Extension directors, however, did not identify linkage between extension and research and technology as constraints. Similar findings were reported by Ukaga, Radhakrishna, and Yoder (1994) for Nigerian extension directors/officers. In the Nigerian study, however, lack of transportation (mobility) was not a major constraint in carrying out extension work mainly because Nigeria is an oil producing/exporting country and as such they did not perceive mobility as a major constraint.

Reynar and Bruening (1996) replicated the Radhakrisha and Bowen study in Bangladesh using three groups of extension personnel—Thana, Block, and administrators. Lack of technical training, new technology conflicting with traditions and practices, conditions of roads, and misuse of government vehicles by extension staff were identified as constraints. In addition, the three groups of personnel identified research priorities not matching with the needs of farmers as a constraint.

Hondrade et al. (2003) in a study of hybrid rice production in the Davao del Sur province of Philippines found that almost one-half of the respondents did not encounter major problems in growing hybrid rice. However, farmers expressed several concerns in growing rice which included susceptibility of rice to pests and diseases, poor seed germination, low seed purity, lack of funds, and economic base of farmers for adopting technologies. Hondrade et al. concluded that the decision to adopt a new technology or a program primarily depends on the economic benefits of new technology compared to the existing ones.

Findings from other studies also identified constraints relative to rice crop. These include: lack of transportation for extension workers, high cost of labor and inputs (Hussain, 2001; Pingali, Morris, & Moya, 1998; Siddiqui & Illyas, 1998). The demand for more labor in hybrid rice production constrained the farmers in Japan not to adopt the technology (Ikeda, 1998).
Hussain et al. (2001) reported that in Bangladesh, the high cost of labor is one of the major constraints in hybrid rice production. The labor cost for hybrid rice production in Bangladesh accounts for about 33% of the total cost. In Sri Lanka, the declining labor force had a negative impact on rice farmers who use improved crop management (Abeysekera, Dhanapala, & Abeysiriwardena, 1998). However, Pingali, Morris and Moya (1998) on a positive note reported that widespread adoption of hybrid rice would certainly increase the demand for labor. They concluded that increased labor requirements for hybrid rice production could then generate employment in the countryside especially in rural areas.

Sands (1986) indicated that technology development and transfer efforts should take into consideration the goals of farm household and the constraints and opportunities confronting the integrated household production system. He concluded that socio-economic situations of small farmers must be understood if viable technology or new program is to be designed and successfully transferred.

**Purpose and Objectives**

The overall purpose of this study was to identify constraints—extension, technology and client in hybrid rice technology as perceived by extension agents and farmers (clients) in Isabela province of the Philippines. The following objectives guided the study:

1. describe demographic profile of respondents—farmers and extension agents,
2. identify constraints as perceived by farmers and extension agents relative to technology, extension and client constraints, and
3. determine differences, if any, between farmers and extension agents relative to the three constraints.

**Methodology**

Data for this study came from a larger study that was conducted in the Philippines in 2003. A random sample of 262 farmers and a census of 132 extension agents were selected. The sample of farmers and extension agents were further stratified by municipality class (a key variable, somewhat similar to county structure in the U.S.). Procedures suggested by Krejcie and Morgan (1970) were used to select farmers.

A three-section survey instrument was developed to collect data. The survey contained the following information: 1) 45 statements (16 for technology, 14 for extension, and 15 for client) measured on a four-point scale that ranged from 1=not a constraint to 4=a major constraint, 2) demographic information (municipality class—5 classes, age, gender, income, land ownership, education level, etc.), and 3) open-ended comments from farmers and extension agents. The face and content validity of the instrument was established using a panel of experts which comprised of faculty and graduate students of a land-grant university, PhilRice scholars residing in the US and in Japan, and selected PhilRice researchers based in the Philippines. The instrument was pilot tested in Nueva Ecija province and found to have acceptable reliability. Alpha coefficients were as follows: 0.91(extension constraints), 0.83 (technology constraints), and 0.89 (client constraints).

Survey enumerators and data encoders were recruited to collect data from farmers, while for extension agents, surveys were delivered to their offices and completed surveys were collected by the researcher. A one-day orientation for the enumerators was also conducted. The researcher collected the completed interview schedules from the enumerators for further analysis and data cleaning. Data collected from both farmers and extension agents were analyzed using the
Statistical Program for Social Sciences (SPSS). Both descriptive and inferential statistics were
used to summarize the data.

**Objective 1: Demographic profile of farmers and extension agents**

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 a
college education (these include farmers who finished a bachelor’s degree, and some graduate
studies), 12% reported completing some college, 16.3% had completed high school education,
and 6.6% received a diploma from a vocational school, while 11.7% had completed elementary
education. More than one half (56%) of the farmers have been planting rice for more than 16
years.

The majority of the extension agents (68%) were between 41 to 55 years old. Twenty-one
percent were in the age group 19 to 40 years, while 11% were in the age group of 56 to 65 years.
A little over one-half (54.5%) of the extension agents were male, while 45.5% were female. All
extension agents had completed a bachelor’s degree and approximately 10% had completed
master’s degree. About 19% of the extension agents had taken some credits leading to master’s
degree. Majority of the extension agents on average had 16 years of extension service (58%). A
substantial number of extension agents (90%) were married.

**Objective 2: Technology, extension and client constraints as perceived by farmers and extension
agents**

A 45-item instrument (16 items for technology; 14 for extension; and 15 items for client’s
constraints) was used to identify the constraints in the promotion of the hybrid rice as perceived
by hybrid rice farmers and extension agents. The items were measured on a four-point scale
ranging from 1 (not a constraint) to 4 (a major constraint). Farmers’ perceptions of these
constraints are presented first, followed by extension agents’ perceptions.

Of the statements that were considered by farmers as technology constraints in the
promotion of the hybrid rice (Table 1), the *cost of pesticide* and the *cost of labor* received the
highest mean of 3.07 (SD= 1.13) and 3.03 (SD= 1.12), respectively, suggesting as a *moderate
constraint*. This was followed by insect pest problems (*Mean*=2.67, *SD*= 1.24), competitiveness
of income of hybrid rice against other inbred varieties (*Mean*=2.5, *SD*= 1.28), cost of fertilizer
(*Mean*=2.0, *SD*= 0.96), and availability of educational materials on hybrid rice (*Mean*=1.99, *SD=
1.05). All the four statements mentioned were perceived as *slight constraint*. The statement,
*frequency of visits of the extension agents to hybrid rice farmers*, received the lowest mean score
of 1.12 (SD= 0.50), indicating *not a constraint* in the promotion of hybrid rice.

For extension agents, on the other hand, the statement, *cost of pesticide*, received the
highest mean score at 3.71 (SD = 0.55) among the technology constraints (Table 1) followed by
the statement, *cost of labor* (*Mean*=3.55, *SD = 0.79), and *hybrid rice has more insect problems*
(*Mean*=3.53, *SD = 0.79). The statement, *frequency of visits of the extension agents to hybrid rice
farmers*, received the lowest mean score (*Mean*=1.31, SD= 0.78).
Table 1

Farmers’ and Extension Agents’ Perceptions of Technology Constraints in the Promotion of Hybrid Rice Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>Farmers (n=257)</th>
<th>Extension agents (n=132)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M*</td>
<td>SD</td>
</tr>
<tr>
<td>Cost of pesticide</td>
<td>3.07</td>
<td>1.13</td>
</tr>
<tr>
<td>Cost of labor</td>
<td>3.03</td>
<td>1.12</td>
</tr>
<tr>
<td>Hybrid rice has more insect pest problems</td>
<td>2.67</td>
<td>1.24</td>
</tr>
<tr>
<td>Competitiveness (in terms of income/earnings) of hybrid to other rice farmers</td>
<td>2.50</td>
<td>1.28</td>
</tr>
<tr>
<td>Cost of fertilizer</td>
<td>2.00</td>
<td>0.96</td>
</tr>
<tr>
<td>Availability of educational materials on hybrid rice</td>
<td>1.99</td>
<td>1.05</td>
</tr>
<tr>
<td>Funds to sustain the promotion of hybrid rice are available in my municipality</td>
<td>1.78</td>
<td>0.96</td>
</tr>
<tr>
<td>Cost of F1 seeds</td>
<td>1.64</td>
<td>0.84</td>
</tr>
<tr>
<td>Support of LGUs to agricultural programs</td>
<td>1.54</td>
<td>0.81</td>
</tr>
<tr>
<td>Reliability of the hybrid rice technology.</td>
<td>1.52</td>
<td>0.77</td>
</tr>
<tr>
<td>Taste of milled rice</td>
<td>1.48</td>
<td>0.83</td>
</tr>
<tr>
<td>Willingness of farmers to attend to hybrid rice farmers’ classes</td>
<td>1.42</td>
<td>0.77</td>
</tr>
<tr>
<td>Technical capability of extension workers to assist farmers in hybrid rice production</td>
<td>1.41</td>
<td>0.69</td>
</tr>
<tr>
<td>Availability of credit support.</td>
<td>1.38</td>
<td>0.65</td>
</tr>
<tr>
<td>Availability of quality seeds</td>
<td>1.34</td>
<td>0.65</td>
</tr>
<tr>
<td>Frequency of visits of the extension agents to hybrid rice farmers</td>
<td>1.12</td>
<td>.50</td>
</tr>
</tbody>
</table>

Scale: 1 (not a constraint) to 4 (major constraint)

Extension constraints

Regarding extension constraints in the promotion of the hybrid rice, farmers rated most of the statements under two indicating somewhat of a constraint (Table 2). The statements, transportation for extension agents involved in hybrid rice promotion, and adequate number of extension agents to promote the hybrid rice, received the highest mean score of 1.68 (SD= 0.87) and 1.66 (SD= 0.79), respectively. The statement, morale of the extension agents toward their work, received the lowest mean score of 1.31 (SD= 0.62).

Of the extension constraints perceived by the extension agents (Table 2), the statement, transportation for extension agents involved in hybrid rice program received the highest mean
score of 3.02 ($SD= 1.09$). This was followed by the statements, *incentives for extension agents involved in hybrid rice promotion* ($Mean=2.66, SD= 1.07$), and *availability of teaching aids for hybrid rice promotion* ($Mean=2.47, SD= 0.98$). The statements, *confidence of farmers in extension agents* ($Mean=1.53, SD= 0.73$), and *competence of extension agents to promote hybrid rice* ($Mean=1.52, SD= 0.78$), received the lowest mean scores respectively.

Table 2

Farmers’ and Extension Agents’ Perceptions of Extension Constraints in the Promotion of Hybrid Rice Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>Farmers (n=257)</th>
<th>Extension Agents (n=132)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M^*$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Transportation for extension agents involved in hybrid rice promotion</td>
<td>1.68</td>
<td>0.87</td>
</tr>
<tr>
<td>Adequate number of extension agents to promote hybrid rice</td>
<td>1.66</td>
<td>0.79</td>
</tr>
<tr>
<td>Confidence of farmers in extension agents.</td>
<td>1.59</td>
<td>0.78</td>
</tr>
<tr>
<td>Availability of inputs to conduct demonstration trials on hybrid rice</td>
<td>1.59</td>
<td>0.76</td>
</tr>
<tr>
<td>Feedback from extension agents to Hybrid Rice Experts.</td>
<td>1.53</td>
<td>0.71</td>
</tr>
<tr>
<td>Feedback from Hybrid Rice Experts to extension agents</td>
<td>1.50</td>
<td>0.72</td>
</tr>
<tr>
<td>Incentives for extension agents involve in hybrid rice promotion</td>
<td>1.50</td>
<td>0.78</td>
</tr>
<tr>
<td>Training programs for extension agents on hybrid rice</td>
<td>1.47</td>
<td>0.72</td>
</tr>
<tr>
<td>Availability of teaching aids (pictures, curriculum, etc) for hybrid rice promotion</td>
<td>1.40</td>
<td>0.71</td>
</tr>
<tr>
<td>Recognition of extension agents involved in hybrid rice promotion</td>
<td>1.39</td>
<td>0.68</td>
</tr>
<tr>
<td>Satisfaction of extension workers in their work.</td>
<td>1.38</td>
<td>0.65</td>
</tr>
<tr>
<td>Interest of extension agents to their duties in promoting hybrid rice</td>
<td>1.35</td>
<td>0.61</td>
</tr>
<tr>
<td>Competence of extension agents to promote hybrid rice.</td>
<td>1.34</td>
<td>0.60</td>
</tr>
<tr>
<td>Morale of extension agents towards their work.</td>
<td>1.31</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Scale: 1(not a constraint) to 4 (major constraint)
Client constraints

Of the client constraints (Table 3) as perceived by farmers, the statement, *cost of inputs in hybrid rice production* received the highest mean score (*Mean*=2.37, *SD*= 1.15). Majority of the statements had a mean score between 1 and 2 indicating “not a constraint” to “a slight constraint.” The statement, *educational level of the hybrid rice farmers* received the lowest mean (*Mean*=1.33, *SD*= 0.74).

Table 3

Farmers’ and Extension Agents’ Assessment of Client Constraints in the Promotion of Hybrid Rice Program

<table>
<thead>
<tr>
<th>Statement</th>
<th>Farmers (n=257)</th>
<th>Extension Agents (132)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement</td>
<td>M*</td>
<td>SD</td>
</tr>
<tr>
<td>Cost of inputs in hybrid rice production.</td>
<td>2.37</td>
<td>1.15</td>
</tr>
<tr>
<td>Availability of credit for hybrid rice production.</td>
<td>1.90</td>
<td>0.99</td>
</tr>
<tr>
<td>Resistance of farmers to hybrid rice technology</td>
<td>1.79</td>
<td>0.91</td>
</tr>
<tr>
<td>Complexity of the hybrid rice technology.</td>
<td>1.72</td>
<td>0.88</td>
</tr>
<tr>
<td>Marketing of hybrid rice.</td>
<td>1.70</td>
<td>0.92</td>
</tr>
<tr>
<td>Peer pressure on the adoption of hybrid rice</td>
<td>1.61</td>
<td>0.75</td>
</tr>
<tr>
<td>Incentives for adopting the hybrid rice technology.</td>
<td>1.52</td>
<td>0.82</td>
</tr>
<tr>
<td>Timely availability of inputs in hybrid rice production.</td>
<td>1.50</td>
<td>0.78</td>
</tr>
<tr>
<td>Availability of required inputs for hybrid rice production</td>
<td>1.47</td>
<td>0.75</td>
</tr>
<tr>
<td>Acceptability of hybrid rice by traders</td>
<td>1.47</td>
<td>0.75</td>
</tr>
<tr>
<td>Interest in adopting hybrid rice technology.</td>
<td>1.44</td>
<td>0.72</td>
</tr>
<tr>
<td>Training opportunities for hybrid rice farmers</td>
<td>1.40</td>
<td>0.74</td>
</tr>
<tr>
<td>On-farm visits of extension agents to hybrid rice farmers</td>
<td>1.39</td>
<td>0.69</td>
</tr>
<tr>
<td>Resources of hybrid rice farmers.</td>
<td>1.35</td>
<td>0.69</td>
</tr>
<tr>
<td>Educational level of hybrid rice farmers.</td>
<td>1.33</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Scale: 1 (not a constraint) to 4 (major constraint)

Regarding clients’ constraints (Table 3) as perceived by extension agents, the statement, *availability of credit for hybrid rice production*, received the highest mean score (*Mean*=3.45, *SD*= 0.81).
followed by the statement, \textit{cost of inputs in hybrid rice production} ($\text{Mean}=3.34, \text{SD} = 0.81$). The statement, \textit{on-farm visits of extension agents to hybrid rice farmers} received the lowest mean score ($\text{Mean}=1.66, \text{SD}= 0.81$) from the extension agents.

\textbf{Differences in constraints}
Technology, extension, and client constraints as perceived by farmers and extension agents were compared using an independent t-test. Results are shown in Table 4. Significant differences at the .001 level were found between farmers and extension agents for all the three constraint categories. Interestingly, extension agents perceived the constraints significantly higher than farmers (Table 4). A closer examination of each of the 45 constraint statements included in the three categories revealed significant differences between farmers and agents for 25 constraint statements.

\begin{table}
\centering
\caption{T-test Results for Differences Between Farmers and Extension Agents by Constraints}
\begin{tabular}{lcccc}
\hline
Constraints & $M^a$ & $SD$ & $M^a$ & $SD$ & \textit{Mean Difference} & \textit{t-value} \\
\hline
Technology (16-64) & 29.78 & 7.85 & 39.45 & 6.01 & -9.66 & -13.06* \\
Client (15-60) & 23.96 & 7.93 & 38.92 & 7.27 & -14.95 & -17.93* \\
\hline
\end{tabular}
\end{table}

* p<.001

\textbf{Conclusions and Discussion}
Overall, both farmers and extension agents perceive constraints in promoting hybrid rice technology in Isabela province of the Philippines. The major technology constraints in the promotion of hybrid rice program as perceived by both farmers and extension agents were: cost of pesticide, cost of labor, pests and disease problems, cost of fertilizer, and availability of educational materials.

The extension constraints perceived by both groups were: lack of transportation, inadequate number of extension workers to carry out hybrid rice promotion work, lack of incentives for agents, and availability of teaching aids to teach farmers. These constraints were perceived as “somewhat a constraint” by farmers, while agents perceived them as “moderate constraint.”

A majority of constraints under “client” constraints were perceived as “somewhat a constraint” by both groups of respondents. However, availability of \textit{credit for rice production} and \textit{cost of inputs} were perceived as “moderate” constraint.
The high cost of pesticides is aggravated by the incidence of diseases and pests in hybrid rice production. This problem confronting the hybrid rice farmers in Isabela is also prevalent among farmers engaged in hybrid rice production in China, Vietnam, and India as reported by studies of Pingali, Morris, and Moya, (1998); and Reddy, Krishnaiah, Zhang, and Shen (1998).

The cost of labor is another constraint identified by farmers and extension agents in the promotion of hybrid rice technology. Several studies have reported labor costs as a limiting factor in the promotion of hybrid rice. For example, in Japan, the demand for more labor in hybrid rice production constrained the farmers in Japan not to adopt the technology (Ikeda, 1998). Furthermore, Husain et al (2001) reported that in Bangladesh, the high cost of labor is one of the major constraints in hybrid rice production. While labor costs is deemed by farmers and extension agents in Isabela as one of the constraints in the promotion of hybrid rice technology, some leaders and scientists in rice R&D sees the positive aspects and benefits of increased labor requirements in hybrid rice production. Pingali, Morris & Moya (1998) reported that widespread adoption of hybrid rice would certainly increase the demand for labor. Hence, the increased labor requirements for hybrid rice production could then generate employment in the countryside especially in rural areas.

In the extension constraints, the issue of transportation for extension was identified as moderate constraint by the extension agents themselves while the farmers indicated the transportation constraint as a slight constraint. Based on the researcher’s field interviews with extension agents, most lamented on the low and inadequate amount of travel expenses they received from the local governments. For instance, to monitor farmers engaged in hybrid rice production in remote areas, extension agents have to hire vehicles to reach the area. The high cost of fare and the minimal frequency of travel become a limiting factor in timely monitoring of activities of farmers. In some cases, particularly in barangays where roads are not developed, access to public transportation is limited. The problem of transportation and mobility of extension agents is also reported also in studies by Blanckenburg, (1984); Radhakrishna & Bowen, (1991); Kibwika et al., (1999); Virmani (1998); Van den Ban and Hawkins, (1996); Bagchee, (1994); Swanson (1997); Schwartz and Kampen, (1992).

Among the client constraints as assessed by the farmers and the extension agents, the statement, cost of inputs in hybrid rice production got the highest mean score for farmers. The statement, availability of credit for hybrid rice production got the highest mean score for the extension agents. The statement, educational level of the hybrid rice farmers has the lowest mean score for farmers, while the statement, on-farm visits of extension agents to hybrid rice farmers got the lowest mean score for the extension agents.

**Recommendations**

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

It is recommended that the technology of hybrid rice production should evolve into less dependence of inputs without significant loss of expected yield. The optimum yield of hybrid rice should be reached without heavy dependence on production inputs pesticides and fertilizers. Since pesticides was identified as one of the major constraint in the promotion of hybrid rice, the use and practice of Integrated Pest Management (IPM) should be promoted and included in the production technology of hybrid rice. Plant breeders should also develop hybrids that are resistant to major pests and diseases. Likewise, it is recommended that the price of hybrid rice seeds be reduced to a level that is affordable to marginal farmers yet profitable for seed growers.
To lower the expenditure of farmers for pesticides use, Breeders should be urged to produce hybrid seeds that are resistant to pests and diseases (Virmani & Zaman, 1998; Paroda, 1998; Redona et al, 2001).

It is recommended that adequate transportation allowance be provided to the extension agents involved in the promotion of the hybrid rice. The current number of extension agents involved in the promotion of the hybrid rice should also be increased so that more farmers will be reached at a given time. Budgetary allocations should be increased so that new vehicles can be purchased and old one’s are properly repaired and maintained. Given the economic and budgetary situation of the Philippines, purchasing new vehicles to all extension agents appears to be an impossible task and seems most uneconomical. It is recommended that HRP program use mass media (especially TV, the Internet and radio) to reach farmers. In addition, depending on the situation of farmer groups, extension agents should use more group contact methods to reach farmers and to promote hybrid rice program.

Need exists for a thorough review of existing training programs offered to extension agents in the area of hybrid rice. Such a review ill help update technical competence and skills of extension agents. In addition, need exists to provide state-of the-art communications equipment and teaching aids to all extension offices. Provision of latest tools using the current information technology may help reduce travel and thereby minimize mobility problems. With proper communications technology and equipment, extension agents can use group methods more often to reach large number of rice farmers at reduce travel and time.

**Educational Importance**

Findings of this study should be shared with PhlRice officials and the Philippine government, especially, extension and research to make informed decisions about hybrid rice program. Second, this study should be replicated in all provinces to better understand the constraints in carrying out hybrid rice program. Third, further research is warranted to examine, in depth, the role of municipality classes in the promotion of hybrid rice program as municipality classes have a major say in resource allocation and in policy making.

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