

## FARMERS' PARTICIPATION IN RICE VARIETY SELECTION

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### ABSTRACT

*Direct interview of 64 outstanding and experienced male and female farmers by using structured questionnaire and focus group discussion in Long An revealed that the important criteria in rice varietal selection included high yield and high price at harvest. However, male farmers considered more about the rice traits associated with the adaptation to abiotic and biotic environmental conditions while female farmers were more concerned about the characteristics related to post – harvest, especially good eating quality and high income from selling high rice price. Thus, to not neglecting women's criteria, it is necessary to increase breeding and planting high quality rice.*

### INTRODUCTION

Farmers are a key to all contemporary development concerns – food security, environmental sustainability, poverty alleviation, population and rural social development. Our goal is not only obtain the food security but also development of high quality food to meet the demand of domestic and international consumption. Recognizing such important quality rice in crop production, it is necessary to identify farmers' criteria and perception in varietal selection. This will help rice breeders to breed good quality rice variety by incorporation of farmers' criteria as well as extension workers to develop the effective transferring strategies of quality rice.

This paper presents how farmer perceived and selected a modern and traditional rice variety based on varietal traits in Long An province. It aims to explain why farmers adopt and maintain the rice varieties through their perceptions and selection criteria.

### METHODS OF DATA COLLECTION AND ANALYSIS

Ben Luc and Can Duoc Districts in Long An province were selected as representative site where farmers planted both traditional and modern rice. The modern rice varieties (MV) was introduced in the province in 1968. The first MV's were IR8 and IR5. Initially, this was introduced to few places. These MV's reached the other farmers through the extension system. Meeting was organized to inform farmers, and they were asked to evaluate the performance of the MV's in their fields. The MV's with good performance were multiplied and spread.

The main cropping pattern is Modern rice - Traditional rice. The modern rice varieties are sown from late April to early May when the raining season starts and harvested in early August. Seeds of traditional rice varieties are sown in the seedbed in July and the transplanting time is in the middle of August. February is the month of harvesting traditional rice.

Though the modern rice varieties are rapidly adopted in different areas in the Mekong Delta, farmers in Long An still maintained the traditional rice (25 to 40 % of the rice areas).

To gather the general information and picture of farmer's rice trait preference, the method of focus group discussion (FGD) (ASA 1997) and individual interview were employed. We used the method of purposive sampling of farmers for this study. Farmers in FGD and individual interview are representative and outstanding farmers chosen with help of the chairperson of Farmers' Club and leader of Women's Association of the communes in the district. From 10 to 15 farmers were selected to join in focus group discussion. Sixty-four active rice farmers (total of 32 male and 32 female) were purposively chosen for

individual interview. Direct interview was applied by using structured questionnaire. Active farmers should be involved in decision-making matters, perform farm operations, aware of the input used in the farm particularly the varieties of the crop used. The chairperson of Farmers' Club and leader of Women's Association of the communes assisted in identification of active male and female rice farmers.

The survey was conducted by using the structure questionnaire and graphic presentation of the traits to be used in varietal selection.

The interview schedule was divided into 2 parts: 1) farm information, and 2) choosing important traits of rice variety. The graphics that includes 20 drawings of rice variety traits was use in part 2.

For part 2 – choosing the important traits in selecting rice varieties -, all the graphics presenting of the traits were shown and explained for the farmers to understand. Farmers were asked to choose the graphics of the traits that they consider in selection of rice varieties to plant. The sets of the graphics carrying traits without farmers' consider were discarded. From the traits chosen, farmer gave weighting of the importance for each trait. To assess how farmers evaluate the chosen traits, the question: "if you have 100 peanut seeds, how many seeds you distribute to each trait according to its importance" was asked. The number of seeds were distributed to a particular trait corresponded to its weight or importance. The weight per trait of all respondents was summed up. From this, the proportion of each trait was calculated. The weighting of each trait for traditional and modern rice was done separately.

## **RESULTS AND DISCUSSION**

In Ben Luc district, farmers have been being grown the traditional rice varieties namely: Tai Nguyen, Nang Thom Cho Dao, Thom Thai (Nam Thom). Tai Nguyen and Nang Thom Cho Dao are the most popular traditional rice varieties. However, Tai Nguyen is most important traditional rice, according farmers the proportion of Tai Nguyen is 70% while of Nang Thom Cho Dao is 30%. They also mentioned that Tai Nguyen produced higher yield than Nang Thom Cho Dao about 0.5 t/ha. Nang Thom Cho Dao has weaker stem and more susceptible to rice diseases than Tai Nguyen. Farmers mentioned that Nang Thom Cho Dao produces stronger aroma in My Le Commune (Can Duoc District) than in other communes. Previously, farmers in Ben Luc District planted traditional rice named "Nang Tung". At that time, this was the best local rice because of its high yield (4 tons/ha). "Tung" means 'jumping', when farmers harvested good yield, they jumped as a sign of happiness. However, this local rice was not planted anymore because of its low price at harvest.

In Can Duoc district, Tai Nguyen and Nang Thom Cho Dao are also popular. However, Nang Thom Cho Dao is more important. Previously, farmers planted the local glutinous rice called "Nep Thu Thua" and this was lost because of low price, low milling recovery (less than 50%) and thick rice husk. Both men and women mentioned that the sticky rice IR 29 (short duration rice) is the best variety.

### ***Soil characteristics and water source mentioned by farmer***

#### **Soil characteristics**

They identified majority of farmers' lands in two districts as loamy soil. Few of them had the farm with clayed loam soil. Most of farmers faced the problem of slightly acid sulfate soil followed by saline affection.

#### **Water source**

Farmers in the selected sites used rainwater to plant rice. They also combine other water sources as pumping and water gravity when it is convenient. In Ben Luc District, farmers pumped water from the river to the field in case of not enough rainwater. In Can Duoc, aside the rainwater, farmers could obtain the naturally flow of water from the river to the fields and few of sometimes pumped water into their fields. The relatively location of the fields and raining distribution affected the methods of irrigation.

**Table 1.** Biophysical conditions for varieties reference mentioned by farmers (%)

Item	Ben Luc district	Can Duoc district
<i>Soil type</i>		
Loam soil	93	87
Clayed loam soil	7	13
<i>Soil problem</i>		
Lightly acid soil	20	67
Lightly alkaline soil	-	27
Lightly saline acid soil	47	7
None	33	7
<i>Source of irrigation</i>		
Rainfed	100	100
Partially natural flow from river	60	33
Partially pumping from river	13	7

\*Multiple responses

### ***Traditional rice diversity***

Majority of farmers (87% of men and 93% of women) in Ben Luc and Can Duoc districts have been planting Tai Nguyen variety. More women than men preferred this variety because they said it was less susceptible to insect and disease, tolerant to lodging and producing high yield than other local rice as Nang Thom Cho Dao about 0.5 t/ha. Women prefer Nang Thom Cho Dao because of its good eating quality (soft and good smell after cooking) and the high price at harvest (double price compared to other rice). Women also mentioned the multiple use of the rice straw of traditional rice (long rice straw for mushroom cultivation, making broomstick, and feeding cattle), which was not regarded by the men. Few of farmers (7%) planted other local rice as Nang Thom Som and Tai Nguyen Dot Bien.

### ***Modern rice diversity***

The important modern rice was IR29 (sticky rice) and Jasmine. Farmers preferred IR29 because it is good for processing many products (different types of cakes, sweets, swollen rice paper, vine, etc...). Women reported that they preferred the price of Jasmine and the eating quality. On the other hand, men preferred to IR50404 because of its high yield (4-5t/ha) and resistance to insect pest.

The traditional rice varieties that men and women farmers liked best were Tai Nguyen and Nang Thom Cho Dao. The modern rice as Jasmine, OMCS94 (IR59606-94), OM1723... were like best by men and women in Ben Luc and IR29 in Can Duoc.

### ***Male and female farmers' criteria of useful traits of rice varieties***

Preliminary findings show that the most important criteria for both men and women to select a variety are the grain yield follow by the price at harvest (Table 3). In addition to the above important traits, men were more concerned with the trait of resistance to insect pest for selection of modern rice meanwhile women were more concerned with the trait of taste and milling recovery. This preference maybe associated with women's responsibility in feeding family members. Women were also more concerned to storage quality of traditional rice than men were. The traditional rice as Tai Nguyen and Nang Thom Cho Dao varieties can be stored for three months without reducing the rice quality (not be attacked by storage pest and fungi). Women tried to keep their rice for a certain time to wait for higher price than at harvest. More men than women were concerned to the traits of adaptation of a rice variety to good or poor soil

conditions. Men in Ben Luc district also considered the characteristics of resistance to lodging in selection of a rice variety. Women in Can Duoc district were concerned to the aromatic trait of traditional rice due to its association with the high price. They also want that the modern rice should be good for processing of many rice products.

These findings indicate that, aside from two important traits of grain yield and price, men considered more to the resistance and adaptation to the biotic and abiotic conditions of the environment. On the other hand, women were more concerned to the post harvest characteristics such as eating quality, milling recovery, storage quality, and aroma producing of cooked rice. Women were knowledgeable about which traits are useful to choose a rice variety to plant. In addition, women in Can Duoc selected modern rice with good characteristics for processing of many rice products. Women's criteria in varietal selection are associated with their domestic responsibility as cooking and feeding family members and economic concern for family survival by selecting the traits of high milling recovery, high price and high yield. This opens an area for the breeders to add women's criteria to their own criteria for the selection or breeding a new variety.

### CONCLUSIONS AND IMPLICATIONS

Men and women have certain common criteria for varietal selection as high yield and high price. However, men have some criteria, which are different to those of women. Men are more concerned to physical conditions and abiotic conditions for the plant being grown. Women are more concerned to the post harvest traits as eating quality, aroma producing of cooked rice, milling recovery and good for Women have shown their skill in selection of varietal traits, which are adaptable and suitable to plant on their lands. In addition, women also select a certain criteria that can increase family income from rice farming and improve health by selection of good eating quality rice.

**Table 2.** Quality rice planted by farmers

Quality rice planted by farmers	Traditional rice planted before
IR 64, OM CS 94 (IR69606-94), OM 1490, Nep IR 29, OM 1305, OM 1723, OM 2517, OM2518, OM3536, VD 20, VND 95-20, Nep IR 29, Jasmin 85, Jasmin, KhaoDawMali (Thom Thai), Nang Thom Cho Dao, Tai Nguyen, Nang Thom Som, Nep Mua, Tai Nguyen, Huong Lai, Nep Thai	Nang Cha, Lua Sen, Ba Bui, Nep mua, Nang Tung, Nang Huong, Trang Lun, Nep Tra Nho

**Table 3.** Traits, which farmers mentioned as useful traits they consider in selecting modern and local rice varieties (weighting of trait in %)

Trait	Ben Luc				Can Duoc			
	Weight for modern rice		Weight for local rice		Weight for modern rice		Weight for local rice	
	Male	Female	Male	Female	Male	Female	Male	Female
1. Grain yield	20.78	14.72	22.99	11.97	21.44	12.12	19.53	12.79
2. Taste (eating quality)	3.89	9.94	7.57	10.24	5.99	5.56	9.20	11.03
3. Size and shape of rice grain	2.01	6.54	0.53	4.30	2.53	7.23	1.73	7.28
4. Milling recovery	3.89	8.55	4.25	27.82	3.93	11.57	4.27	9.81
5. Duration/ Maturity	1.34	2.39	1.06	2.94	3.93	4.56	2.67	0.88
6. Adaptation to land level	4.83	2.26	3.19	1.68	3.33	4.23	3.33	4.74
7. Adapts to good or poor soil	8.85	5.41	9.04	2.62	7.86	3.78	6.27	2.43
8. Response to fertilizer	2.41	3.52	1.46	2.10	1.60	1.33	2.40	0.33
9. Competitiveness to weeds	2.68	2.64	2.33	2.73	4.53	2.45	2.73	0.77
10. Resistant to insects	10.99	7.55	6.11	1.57	6.66	0.44	6.53	0.33
11. Resistant to diseases	11.66	3.77	8.50	0.63	5.46	0.89	5.07	0.66
12. Resistant to drought	2.28	3.40	-	1.57	3.46	1.78	2.40	0.99
13. Resistant to lodging	7.77	6.67	7.04	1.89	3.60	5.01	1.87	0.88
14. Tolerant to submergence/flooding	0.94	-	1.06	1.57	0.53	1.11	0.67	2.87
15. Storage quality	1.61	4.40	4.65	5.88	3.20	8.12	2.67	8.60
16. Cooking time	-	1.13	-	1.36	0.40	4.12	-	6.28
17. Aroma	2.95	3.90	2.66	5.46	1.60	1.67	5.87	11.47
18. Good for making rice products	-	2.14	0.00	1.26	3.06	11.46	0.13	0.77
19. Multiple use of rice straw	-	0.13	0.66	1.99	0.80	0.67	0.53	3.20
20. Grain price at the time of harvest	11.13	10.94	16.88	10.39	16.11	11.90	22.13	13.89
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## REFERENCES

ASA (American Statistical Association) 1997. Section of Survey methods. American Statistical Association, USA.

### Nông dân tham gia chọn giống lúa ở Long An

Phỏng vấn trực tiếp 64 nông dân nam nữ sản xuất giỏi và có kinh nghiệm theo phương pháp điều tra và mẫu phiếu lập sẵn cùng với phỏng vấn nhóm cho thấy: tiêu chuẩn chung khi chọn giống của nam và nữ nông dân là năng suất cao và giá lúa cao, khi thu hoạch. Tuy nhiên, nam quan tâm nhiều đến đặc điểm thích ứng của giống với điều kiện sinh học và vật lý của môi trường. Nữ chú ý nhiều đến các đặc tính sau thu hoạch có liên quan đến chức năng nội trợ của họ như chất lượng ngon cơm sau khi nấu và bán giá lúa cao. Vì các tiêu chuẩn khác nhau này nên cách đánh giá một giống của nam và nữ cũng khác nhau. Để không bỏ sót các tiêu chuẩn của phụ nữ, chúng ta cần đẩy mạnh tạo chọn và gieo trồng giống lúa chất lượng ngon cơm.