

SHORT COMMUNICATION**EFFECTS OF SEEDING RATES AND NITROGEN DOSAGES ON YIELD OF SOME HIGH YIELDING RICE VARIETIES GROWING ON ALLUVIAL SOILS.**

Cao Van Phung, Duong Hoang Son and Tran Hoa Thuan.

ABSTRACT

Studies on effects of seeding rates and nitrogen dosages on yield of some high yielding varieties growing on alluvial soils in the Mekong delta were carried out in the dry season 2002-2003. Results showed that the promising variety OM2705 was not susceptible to rice blast and obtained grain yield as well as two leading varieties IR64 and OM1490. Seeding rate as low as 60kg/ha can also ensure high yield provided that land levelling is maintaining properly. It is recommended that nitrogen rate suitable for growing rice on these soils should be varied from 80 to 100kgN/ha depending on levels of soil nitrogen supply capacity.

INTRODUCTION

Although Vietnam is the second rice exporter on the world but net profit of farmers is continuously decreasing due to either low price on international market and high cost of production. Effort has been made to increase economical effectiveness for farmers by introduction of high quality rice varieties, modern cultural practices and applying suitable dosages of fertilizers. The mentioned

techniques were studied in two years 2002 and 2003 at three provinces namely Can tho, An giang and Dong thap in order to lower cost of rice production and increasing rice price.

MATERIALS AND METHODS

Soil: The general characters of soils in the mentioned aboved provinced were presented in the table1 below:

Table. 1 General features of soils used for experiments.

S.No.	Province	Soil taxonomy (FAO/UNESCO)	pH	Org.C%	Avail. nutrients (mg/kg)		
					N	Olsen P	K
1	Cantho	<i>Eutric Gleysol</i>	4.80-5.20	1.3-1.8	80-100	1-2	40-60
2	Angiang	<i>Umbric Fluvisol</i>	4.95-5.40	0.8-1.1	30-60	6-8	30-40
3	Dongthap	<i>Umbric Fluvisol</i>	4.90-5.30	0.9-1.3	50-70	3-4	30-50

Rice varieties: IR 64 (check) along with 5 promising varieties as Busok, OM3536, OM2464, OM2705 and OM1490 had been used in all experiments. Row seeding at two different seed rates of 60 (SR1) and 80kg/ha(SR2) were tested in An giang whereas the rates of seeding for experiment in Dong thap and Can tho were 80 (SR1) and 120kg/ha(SR2).

Fertilizers: Nitrogen (N), phosphorus (P) and potassium (K) in the forms of urea, super phosphate and muriate of potassium were used in all experiments. Different combination of fertilizers dosages were also tested to meet

requirement of rice development. Nitrogen was split and applied 3 times at 7 days after sowing (DAS) ($\frac{1}{4}$ qty.); 15-20 DAS ($\frac{1}{2}$ qty.) and the last at 35-40 DAS ($\frac{1}{4}$ qty.) meanwhile P and K were split into 2 equal parts and applied at basal and 15-20 DAS. Two fertilizers treatments were tested as 100N-40P₂O₅-60K₂O and 80N-40P₂O₅-60K₂O

Experiment layout: yield trials experiment was designed as RCB and cultural practices were followed split-split plots design.

Plant protection: Integrated pest management (IPM) was followed and pre-germinated herbicide (Sofit) was used to control weeds.

Three varieties namely IR64, OM1490 and OM2705 were tested in the dry season 2002-2003 over 3 sites; the results was shown in the table 2 below:

RESULTS AND DISCUSSION:

Experiment 1: Yield trial experiments

Table2: Yields of rice varieties at 3 provinces in dry season 02-03

Varieties	Can tho	An giang	Dong thap
IR64	4.660*	6.401**	5.483
OM1490	3.738	5.862	5.233
OM2705	4.507*	6.816**	5.021
Significance	5%	1%	non-significance
CV%	12.425	7.189	11.236

It was shown that rice variety OM1490 had lower yield than two others in Can tho and An giang provinces because it is highly susceptible to blast which is widespread in this season; however, all three varieties were infected by blast in Dong thap that is why we could not see any difference in rice yields at this site. Base on these results , it is suggested that the promising variety OM2705 can be introduced into the rice export varieties set because the variety OM1490 is now highly susceptible to blast.

Experiment 2: Effects of seed rates and nitrogen dosages on rice yields.

Results presented in table 3 showed that rice yields were more or less the same under

different seed rates at two sites An giang and Dong thap; however, low seeding rate is more suitable for rice development at Can tho province. Sice the indogenous soil nitrogen in Can tho is higher than two other sites (Table1) so that rice plant can grow vigorously and its tillering capacity can easily compensate for the low population at the onset. This finding is also in accordance with the previous report by Luat et al., (1999).This result proves that seeding rate applying as low as 60kg/ha can also give high yielding provided that land levelling is maintain properly. The finding clearly indicates that cost of rice production can be reduced further by saving seeds for farmers.

Table3: Effect of seed rates and nitrogen dosages on rice yields

Location	Nitrogen		Seed rate		CV%
	100kgN/ha	80kgN/ha	SR1	SR2	
Dong thap	5.194	5.297	5.008	5.483	14.356
An giang	6.837**	5.883	6.208	6.512	11.625
Can tho	3.938	5.103**	4.560**	3.710	12.317

Note: ** Statistically significance at 1%

Among the three soils types using in these experiments, available nitrogen in Can tho has the highest value meanwhile that one in Angiang has the lowest and Dong thap soil comes in between. As a result soil in An giang reponed to high dosage of N fertiliser application but in Can tho high N usually accompanies to high risk of pests especially

blast that is why 80kg N/ha gave higher yield than 100 kgN/ha (Table3). This result is also confirmed with the others reports by Dung et al., (1993, 2002) and Diep and Tan (1992).

CONCLUSIONS

- The promising varieties OM2705 gives comparable yield with IR64 and OM1490

which are commonly grow on alluvial soils. The salient feature of OM2705 is that it is not susceptible to blast; therefore, it can be introduced into export rice varieties set.

- It is now the general seed rate recommended for row seeding is about

100-120 kg/ha. Under the condition of good land levelling, seeding rate can be reduced further up to 60 kg/ha to increase economic efficiency in rice production.

- Depending on soil nitrogen status, it is suggested that N dosage should be applied at 80-100 kg/ha in the dry season.

REFERENCES

- Dung HT, PS Tan and BB Bong. 1993. Effects of N, P, K fertilisers on UTL rice variety. CLRRI reports of Winter-Spring 1992-1993.
- Dung HT, PS Tan and CV Hach. 2002. Effects of nitrogen dosages on high yielding rice variety. CLRRI reports of Winter-Spring 2001-2002.
- Diep LN, PS Tan and CV Hach. 2002. Long term fertilisers experiment results in the dry season 2001-2002. CLRRI reports of Winter-Spring 2001-2002.
- Luat NV, BTT Tam and ND Thanh. Row seeding method. CLRRI annual report 1999.

SUMMARY IN VIETNAMESE

Ảnh hưởng của các mật độ sạ và liều lượng đạm trên năng suất các giống lúa cao sản trồng trên vùng đất phù sa.

Nhằm gia tăng hiệu quả kinh tế trong sản xuất lúa vùng ĐBSCL, đề tài cấp nhà nước KC06-02NN được tiến hành trên vùng đất phù sa ven sông Hậu tại 3 tỉnh Cần Thơ, An Giang và Đồng Tháp. Kết quả thí nghiệm cho thấy giống lúa OM2705 có năng suất cao tương đương với 2 giống IR64 và giống OM1490 và ít bị thiệt hại do bệnh cháy lá. Vì vậy có thể đưa vào bộ giống lúa xuất khẩu. Trong điều kiện đảm bảo tốt mật bằng đồng ruộng, sạ hàng ở mật độ 60 kg/ha vẫn đảm bảo cho năng suất cao và tiết kiệm được giống lúa. Mức phân đạm áp dụng trong vụ Đông-Xuân cho vùng đất giàu hữu cơ chỉ nên bón ở mức 80 kgN/ha và vùng đất nghèo hữu cơ như ở Chợ Mới chỉ nên sử dụng ở mức 100 kgN/ha là thích hợp.
