KK 15-36-C & AYUNG, TWO MODERN HIGH YIELDING RICE (*ORYZA SATIVA* L.) VARIETIES FOR IRRIGATED LOWLAND ECOSYSTEM OF PAPUA NEW GUINEA

M.S. Sajjad, Department of Agriculture and Livestock, Food Management Branch, Erap Research & Development Centre, P.O. Box 1984, Lae, Papua New Guinea.

Rice Breeding and Agronomic Research Programme, initiated during 1991, has been successful in identifying suitable varieties for Irrigated Lowland, Upland, High Altitude areas with Cool Climate and Acid Soils (P deficient) Ecosystems-oriented entries of INGER Nurseries of IRRI. We developed most promising genotypes by practising very stringent selection. At the moment we have developed a wealth of gene sources, which have enhanced our capability not only to directly commercialize some of these varieties but also to use as donors for introgression. In this article we will consider the selection of two varieties extremely suitable for Lowland Ecosystem.

During 1991, we evaluated 122 genotypes of The Seventh International Irrigated Observational Nursery-Medium 1990 and selected six genotypes namely IR 52280-138-2-3-2, IR 53395-142-3-3, KK 15-36-C, Suweon 341, 1737 and Ayung. We confirmed the highest yield potential (10.5 t/ha) of KK 15-36-C (Nepalese in origin), in a macro plot (plot size 20 m.sq.) yield trial conducted during 1992. Ayung (an Indonesian variety) was one of the entries of the macro plot yield trial. Ayung did not exhibit yield potential (8.0 t/ha) as that of KK 15-36-C in this trial. In fact it was among the second highest yielding varieties (Table 1).

The highest yield potential of both varieties were again confirmed in another macro plot (plot size 20 m. sq.) yield trial conducted during 1993 on six selections (DR 34-PDG-P4-PD2, IR 48563-22-3-2-3, Ayung, IR52280-138-2-3-2, IR 53395-142-3-3-1 and KK 15-36-C (from The Seventh International Irrigated Rice Observational Nurseries Early and Medium 1990), Niupela (as standard), Tai Ken No:2, Tai Chung Sen 10 & Tai Nung Sen 20, varieties from Technical Mission of Republic of China in Taiwan. The results of the study indicate that KK 15-36-C was the highest yielding genotype (7 t/ha) fol-

Table 1. **Comparative performance for yield and yield components of selections from The Seventeenth International Irrigated Rice Observational Nursery-Medium-1990 and standards under lowland field condition at Bubia, during 1992.**

Genotypes	Yield (t/ha)	Plant height	No. of productive tillers/hill	Panicle length (cm.)	No. of grains/panicle	Spikelet fertility %	Thousand grain weight (g)
Ayung	8.0b	116.1a	13.7d	24.8b	116.3a	86.9a	30.6a
IR 52280-138-2-3-2	8.5b	100.5b	15.6a	26.7a	95.0c	73.3c	27.7c
IR 52295-142-3-3-1	8.0b	102.7b	14.9b	27.0a	119.5a	87.6a	26.1d
KK15-36-C	10.5a	103.9b	15.9a	27.2a	123.1a	90.9a	31.7a
Wantok	6.0c	85.5c	14.5c	23.7b	106.2b	84.0b	20.7e
Tambu	6.5c	91.5c	15.1b	24.9b	127.1a	92.9a	26.0d

Figures in columns followed by different letters are significant at % level, according to DMRT.

Table 2. **Performance of promising selections from IIRON-E-1990 & IIRON-M-1990 for yield and yield components under Lowland field condition at Bubia, during 1993.**

S.No.	Designation	Yield t/ha	Plant Height (cm)	Productive tilers/hill (No.)	Panicles length (cm.)	Grains per panicle (No.)	Spikelet fertility %	Thousand grain weight (g)
1	DR34-PDG-PD4-PD2	3.0d	89.2c	6.8c	24.7d	86.9d	72.6e	23.6d
2	IR48563-22-3-2-3	4.0c	91.6c	12.4a	28.1a	117.4b	83.1a	22.9d
3	Ayung	5.0b	110.4a	7.9b	24.3d	106.8b	79.1c	28.2b
4	IR52280-138-2-3-2	5.0b	94.3c	9.3b	25.7b	87.9d	64.5f	25.3c
5	IR53395-142-3-3-1	5.ob	97.3b	9.1b	24.8d	102.2bc	81.9a	24.1d
6	KK15-36-C	7.0a	104.7b	8.0b	25.4b	111.7b	89.5b	29.6a
8	Niupela	3.0d	117.5a	5.5c	25.0c	149.6a	78.8c	23.7d
9	Tai Ken No. 2	3.0d	91.8c	5.6c	21.4f	88.2d	77.3d	20.4c
10	Tai Chung Sen 10	4.0c	88.9c	6.5c	26.0b	117.2b	65.3f	23.1d
11	Tai Nung Sen 20	3.0d	92.4c	5.9c	23.7c	78.0d	61.3g	17.4f

Figures in columns followed by different letters are significant at 5% level, according to DMRT.

lowed by Ayung (5.0 t/ha), IR 52280-138-2-3-2, IR 53395-142-3-3-1, IR 48563-22-3-2-3, Tai Chung Sen, DR 34, Niupela and Tai Nung Sen 20 (Table 2).

In addition, the varieties have been yield tested in regional yield trials conducted during 1993 at Oisca farm, Rabaul and Bubia during 1994-1995.

At Oisca farm Rabaul, KK 15-36-C & Ayung were the highest yielding of all the varieties under test (Table 3).

Table 3. **Yield potential of most promising selections, under lowland field condition at OISCA, Farm Kokopo, Rabaul, during 1993.**

Designation	Yield t/ha
Ayung	8.3a
IR 52280-138-2-3-2	6.0b
IR 53395-142-3-3-1	6.0b
KK 15-36-C	8.0a
Sanhuanzhan No. 2	5.2b
Koshihikari	5.0b

Figures in columns followed by different letters are significant at 5% level, according to DMRT.

At Bubia during 1994, KK 15-36-C was either highest yielding (6-7 t/ha) or at par with other highest yielding genotypes under study (Table 4, 5).

Ayung exhibited as high yield potential (10.5 t/ha) as that of KK 15-36-C (9.5 t/ha) in another macro plot (plot size 20 m.sq.) yield trial conducted at Bubia, during 1995 (Table 6). The plant postures of the varieties are semi dwarf (< 110 cm) with high tillering capacities, with long (more than 24 cm) and fully filled panicles with more (more than 100) and heavier grains (thousand grain weight 20 g). The foliage of KK 15-36-C remains green up to late maturity, an attribute considered very vital for photosynthates translocation up to the maturity and consequently enabling variety to yield more. Both the varieties mature in 120 days.

The grains of KK 15-36-C are long, medium bold and are awned. The milling recovery of the variety is very good. The grains are transluscent. The grains of Ayung are short and are bold. The milling recovery of the variety is satisfactory. Ayung tastes better than KK 15-36-C.

The polished grain samples have been sent for the determination of physio-chemical and

Table 4. **Yield potentials of most promising selections from IIRYN-E-1993 & two standards, in a Macro plot yield trials under Lowland field at Bubia, during 1994.**

S. No.	Designation	Days to Flowering	Yield t/ha
1	AS 13744	83b	6.0b
2	BG 850-2	85b	7.1a
3	IR 53301-133-1-1-2	83b	5.1d
4	IR 56279-C2-99-2-3-2	83b	5.5c
5	IR 56381-139-2-2	83b	6.3b
6	IR 57298-31-2-2	86b	6.0b
7	Milyang 55	83b	5.5c
8	KK 15 36-C	99a	7.1a
9	Niupela	97a	5.1d

Figures in columns followed by different letters are significant at 5% level according to DMRT.

Table 5. **Yield potentials of most promising selections from IIRYN-M-1993 & two standards, under lowland field condition at Bubia, during 1994.**

S. No.	Designation	Days to flowering	Yield t/ha
1	BR 22-3-2-2-2-1	92a	4.9c
2	BR 1725-13-7-1-2	89a	6.0a
3	IR 49461-181-2-3-2	92a	5.0bc
4	IR 58115-11-1-3-2	92a	5.4b
5	IR 58773-35-3-1-2	85b	5.3b
6	ITA 234	92a	4.5d
7	Niupela	92a	4.5d
8	KK 15-36-C	94a	5.8a

Figures in columns followed by different letters are significant at 5% level according to DMRT.

Table 6. **Comparative yield potentials of most promising genotypes, under Lowland Field at Bubia, during 1995.**

S. No.	Genotypes	Origin/cross	Yield t/ha
1	KK 15-36-C	Nepal/IR 5657-332/BKNBR-1031-7	9.5a
2	Ayung	Indonesia	10.5a
3	IR 48563-22-3-2-3	IRRI	7.1d
4	BR 1543-1-1-1-1	Bangledash	8.6ab
5	BG 850-2	Sri Lanka	7.2c

Figures in columns followed by different letters are significant at 5% level according to DMRT.

cooking traits by Food Technologists of PNG University of Technology and Trukai Industries Pty Ltd. Both varieties seem extremely suitable for general cultivation under the niche of Irrigated Lowland fields of the country.