Guidelines and Style for IRRN Contributors

To improve communication and to speed the editorial process, the editors of the *International Rice Research Newsletter (IRRN)* request that contributors use the following guidelines and style:

Style

- Use the metric system in all papers. Avoid national units of measure (such as cavan, rai, etc.).
- Express all yields in tons per hectare (t ha) or. with small-scale studies, in grams per pot (g/pot) or grams per row (g/row).
- Define in footnotes or legends any abbreviations or symbols used in a figure or table.
- Place the name or denotation of compounds or chemicals near the unit of measure. For example: 60 kg N/ ha; not 60 kg/ha N.
- The US dollar is the standard monetary unit for the *IRRN.* Data in other currencies should he converted to US$.
- Abbreviate names of standard units of measure when they follow a number. For example: 20 kg/ha.
- When using abbreviations other than for units of measure, spell out the full name the first time of reference, with abbreviations in parenthesis, then use the abbreviation throughout the remaining text. For example: The efficiency of nitrogen (N) use was tested. Three levels of N were ... *or* Biotypes of the brown planthopper (BPH) differ within Asia. We studied the biotypes of BPH in ...
- Express time, money, and measurement in numbers, even when the amount is less than 10. For example: 8 years; 3 kg ha at 2-week intervals: 7%; 4 hours.
- Write out numbers below 10 except in a series containing some numbers 10 or higher and some numbers lower than 10. For example: six parts; seven tractors; four varieties. *But* There were 4 plots in India, 8 plots in Thailand, and 12 plots in Indonesia.
- Write out all numbers that start sentences. For example: Sixty insects were added to each cage; Seventy-five percent of the yield increase is attributed to fertilizer use.

Guidelines

- Contributions to the IRRN should generally be based on results of research on rice or on cropping patterns involving rice.
- Appropriate statistical analyses are required for most data.
- Contributions should not exceed two pages of double-spaced, typewritten text. Two figures (graphs, tables, or photos) per contribution are permitted to supplement the text. The editor will return articles that exceed space limitations.
- Results of routine screening of rice cultivars are discouraged. Exceptions will be made only if screening reveals previously unreported information (for example, a new source of genetic resistance to rice pests).
- Announcements of the release of new rice varieties are encouraged.
- Use common — not trade — names for commercial chemicals and, when feasible, equipment.
- Do not include references in IRRN contributions.
- Pest surveys should be quantified with data (% infection, degree of severity, etc.).

Genetic evaluation and utilization

OVERALL PROGRESS

Selection for plant height during rapid generation advance in rice breeding

B. S. Vergara, S. K. Bardhan Roy, and G. Pateña, Plant Physiology Department, International Rice Research Institute

Plants grown under low temperature conditions are shorter than those grown at higher temperatures. When grown in low temperature areas, cultivars such as IR8 become very short and the semi-dwarf plant type is inappropriate and inadequate. Selection of cold-tolerant lines for optimum plant height is possible under IRRI farm conditions with the use of lines with plant height of more than 130 cm. Whether such selection is possible or not during rapid generation advance (RGA) in the greenhouse needs to be studied.

In the RGA method for cold-tolerant crosses, many factors affect the expression of plant height. High temperature and close spacing may result in tall plants, while low nutrient level and short growth duration may result in short plants. These factors interact during RGA, especially in the F_2 when plants are generally sown at closer spacing.

A correlative study using two crosses – K78-13/JR5908 and Fujisaka 5/KnlB-361-1-8-6-9 – was run through RGA. Plant height and growth duration of the individual plants in different generations ($F_2 - F_4$) Were measured. Plant height of both greenhouse and field-grown F_4 were also measured. The correlation values (r) for plant height among the different generations are in the table. Although the correlations among the generations are highly significant because of the large number involved, the low values show that selection for plant height should not be done during RGA. A nutrient deficiency condition may inhibit the elongation of late-maturing lines during RGA.

At F_2 of both crosses, the correlation values between plant height and growth duration were as follows:

K78-13/1R5908	0.12939**
Fujisaka 5lKnlB-361-1-8-6-9	0.30620**

The low negative values of correlation indicate that the late-maturing lines are not necessarily tall, or nutrient deficiency inhibited the height expression of the late-maturing lines, which are usually tall. Since growth duration is of primary importance in cold-tolerant rices, selection for earliness should take precedence over selection for optimum height. ■

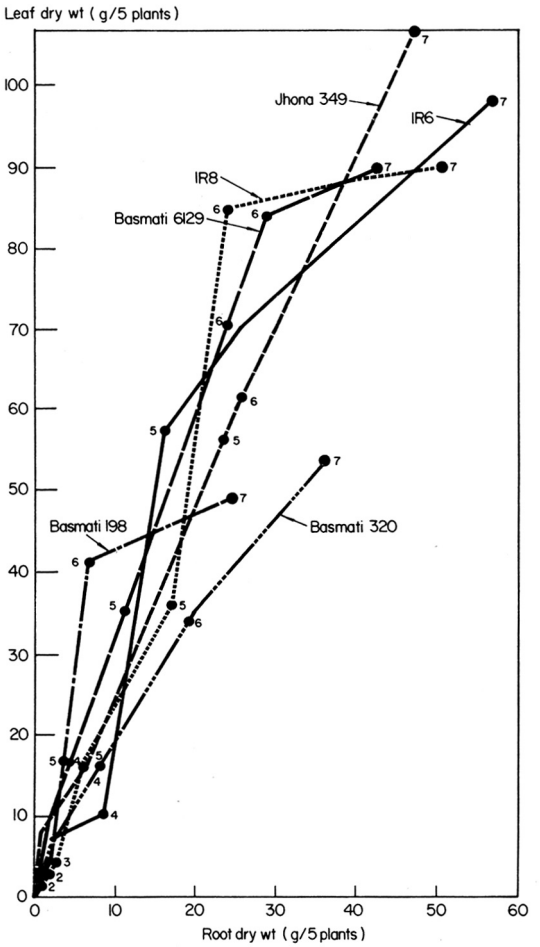
Crosses	F_2 vs F_3	F_3 vs F_4	F_4 greenhouse vs F_4 field
K78-13/IR5908	0.29537**	0.45626**	0.39191**
Fujisaka 5/KnlB-361-1-8-6-9	0.40056**	0.60491**	0.08347**

** = significant at 1% level.

Varietal differences in leaf and root production

Mujibur Rahman Khan, Bangladesh Rice Research Institute, Joydebpur, Dacca; and Mohammad Amin Khan, University of Agriculture, Lyallpur, Pakistan

Balanced growth of leaf and root systems is recognized as important for efficient uptake of water and nutrients by roots and their use by leaves in both normal and stress conditions. Experiments conducted with six rice varieties at the University of Agriculture indicate marked varietal difference in balanced growth of leaves and roots at various growth stages (1–7), at 15-day intervals. The relationship between leaf and root growth was



Relationship between leaf dry weight and root dry weight. 1 = 15 days after sowing (DS), 2 = 30 DS, 3 = 45 DS, 4 = 60 DS, 5 = 75 DS, 6 = 90 DS, 7 = 105 DS.

most balanced in Jhona 349, a reportedly salt-resistant variety. The low-yielding Basmati 320 and Basmati 198 deviated most by producing either low leaf-to-root weights for the former or low root-to-leaf weights for the latter (see figure). IR8, Basmati 6129, and IR6 also showed moderately good relationships in terms of root-to-leaf weight production. Varietal screening for balanced growth of root-to-leaf weight may be helpful in identifying gene pools suitable for growth in diverse situations. ■

The International Rice Research Newsletter (IRRN) invites all scientists to contribute concise summaries of significant rice research for publication. Contributions should be limited to one or two pages and no more than two short tables, figures, or photographs. Contributions are subject to editing and abridgement to meet space limitations. Authors will be identified by name, title, and research organization.

Diallel analysis of plant height, tiller number, and panicle length in rice

Mujibur Rahman Khan, Bangladesh Rice Research Institute, Dacca; and Moharnmad Amin Khan, University of Agriculture, Lyallpur, Pakistan

Genetic information obtained by diallel analysis of some rices revealed additive type of gene action for plant height and tiller number and complete dominance type of gene action for panicle length in a study conducted with some traditional and modern rices and their F_1 progenies. Jhona 349, a traditional type, possessed most of the dominant alleles for plant height and tiller number, whereas IR6 possessed an excess of the dominant alleles for panicle length. IR6, IR8, and Basmati 320 had most of the recessive alleles for plant height and tiller number, while Jhona 349 had an excess of the recessive alleles for panicle length. Basmati 320 and IR8 had also many dominant alleles for panicle length.

Diallel analysis of the same rices and their F_1 progenies revealed overdominance type of gene action for number of spikelets per panicle, number of grains per panicle, and additive type of gene action for panicle weight. IR6 and IR8 had most of the dominant alleles for number of spikelets per panicle and number of grains per panicle, while Jhona 349 had an excess of dominant alleles for grain weight. Basmati 320 had an excess of the recessive alleles for number of spikelets per panicle and number of grains per panicle. Basmati 320, IR6, and IR8 had most of the recessive alleles for grain weight.

Rice cultivars possessing some desirable floral traits influencing outcrossing

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Although F_1 hybrid rice varieties have been successfully developed and cultivated in China, the ease and cost of the production of hybrid seed would determine to what extent the approach can be employed to develop high yielding hybrids in other rice-growing countries of the world. The floral structure of rice is not well-adapted to cross-pollination and less than 1% natural outcrossing is observed normally. On male-sterile plants, however, up to 33–45% seed set has been obtained in China. Several floral traits – stigma size, stigma exsertion, duration of opening of spikelet, and anther size and filament length – are known to influence outcrossing in rice. In the hybrid rice research program at IRRI, 86 elite breeding lines were studied for stigma length, stigma breadth, stigma exsertion, anther length, anther breadth, and filament length. There was sufficient