Bangladesh Rice J. 1(1): 1-10 (1990)

DIFFERENTIAL IMPACT OF TENANCY ON MODERN RICE CULTIVATION IN AN AREA OF BANGLADESH.

M. R Islam, B. A. A Mustafi and N. Islam.
Bangladesh Rice Research Institute, Gazipur-1701.

Abstract

The study was aimed to analyse the impact of tenancy on inputs use and their productivity, factors shared output as well as income shared by production participants. Two output sharing arrangements, 50 : 50 and 6Z: 33, were observed between owner and tenant farmers. Majority tenant farmers reported that the 67: 33 arrangements were prominent. In case of input sharing, 50 : 50 and 100 : 0 arrangements were prevailed. Input sharing arrangement varied. Regardless' of the nature of output sharing, the majority of the pure tenant farmers reported that 50% of the cost of input like seeds, fertilizers, insecticides but none for bullock, irrigation and labour were shared by the land owners, while the majority of the owner-cum-share croppers reported that no cost of inputs was shared by the land owners. In terms of income earned, the owner farmers were more beneficiaries that the pure tenant farmers and owner-cum-share croppers. Of the factors used in the production processes, land earned the highest share of out· followed by human labour. The contribution of human labour and fertilizers to production were found significant under all types of tenurial classes. Farm size has significantly negative contribution to production.

Bangladesh Rice J. 1 (1) : 11-16 (1990)

EFFECT OF CULTIVAR AND TIME OF NITROGEN APPLICATION ON GRAIN YIELD AND GRAIN PROTEIN CONTENT OF RICE

N. Islam, A.M.A. Kamal and M. R. Islam BRRI, Gazipur-1701,
Agronomy department, BAU Mymensingh.
Bangladesh Rice Research Institute, Gazipur-1701

Abstract

The effect of N application at different growth stages of BR14, BR15, and BR16 cultivars of rice as direct seeded aus crops was studied to determine the growth stage (s) most sensitive to N application in terms of grain yield and grain protein content. Although the cyltivars were similar with respect to grain yield and grain 'protein content, BR14 had the tallest plants (100cm) with the shortest growth duration (135 days). Nitrogen fertilization at- late tillering stage gave higher grain yield (2.8t/ha) which resulted from higher tillering ability, higher perecntage of tiller survival and greater grain bearing capacity than when N was applied at any other growth stage. Grain protein increased significantly with a delay in N fertilization. Grain protein content was the highest, 7.82%, when N was applied at the anthesis stage.

Bangladesh Rice J. 1(1): 17-22 (1990)

CRITICAL CROP-WEED COMPETITION PERIOD IN WET SEASON TRANSPLANTED RICE

J. C. Biswas, SK. A. SFittar and S. B. Siddique

Bangladesh Rice Rice Research Institute, Gazipur-1701

Abstract

Rice-weed competition, dominant weed species and their impact on the yield of transplant aman rice were studied in two field experiments. The critical rice-weed competition period varied from 30 to 40 days depending on weed species and their abundance. The total number of weeds removed and their dry weight increased gradually and increase in the frequency of weeding. The highest number of weed rElffioved was 169/m^2 weighing 52 g/m^2 only. Sedges were the major weed group and Cyperus difformis was the dominant species followed by Cynodon dacty/on and M6nochoria va.GTna/is, respectively, in 1987. Grass was the major weea group in 1988 and the dominant species was Cynodon dacty/on. The other major weeds were Fimbristy/is linora/is and Cyperus diffortnis.

Bangladesh Rice J. 1 (1) : 23-31 (1990)

VARIATIONS AND INTERRELATIONSHIP IN ROOT AND SHOOT CHARACTERS OF SELECTED RICES UNDER AEROPONIC CULTURE

R. K. Das, M. A. Islam, M. K. Bashar, N. M. Miah and G. C. Loresto*

Bangladesh Rice Resarch Institute, Gazipur 1701, Bangladesh -International Rice Germplasm Centre (IRGC), International Rice Research Institute (IRRI), P.O. Box 933, Manila, Philioppines

Abstract

The root and shoot characteristics of 17 aus rices of Bangladesh and 3 upland rice varieties of the Philippines were studied under aeroponic culture. Plant characteristics contributing to drought resistance, namely thick radicle, deep and thick root, high rootshoot ratio, low tiller number and tall plant are present in the traditional aus and upland rice varieties which have high or moderately high levels of drought resistance.

Bangladesh Rice J. 1(1) : 32-36 (1990)

IMPACT OF FURROW IRRIGATION ON RICE PRODUCTION

Md. Jahirul Islam and M. A. Ghani. Bangladesh Rice Research Institute, Gazipur, Bangladesh

Abstract

Field experiments were conducted in the boro seasons of 1981, 1982 and 1983 to determine the impact of furrow irrigation on rice production. Among the different furrow irrigation methods, such as, 3, 5 and plant rows in between furrows, the highest grain yield and water use efficiency were observed with the 3row design. The yield difference between normal flooding and 3-row irrigation in between furrows was not significant. About 40-

60% irrigation water could be saved by using the 3-row furrow irrigation method compared with the conventional flooding method of irrigation.

Bangladesh Rice J. 1(1) : 37-47 (1990)

INFLUENCE OF VARIETY, SEEDLING AGE AND NITROGEN LEVEL ON THE GROWTH AND YIELD OF RICE GROWN ON SALINE SOIL

M.A. Rashid,M.L. Aragon and G.L. Denning Bangladesh Rice Research Institute, Gazipur 1701, CLSU, Munoz, N.E.Philippines, and **IRRI** Los Banos, Laguna, Philippines.

Abstract

An experiment was conducted during the dry season (January to May) in a farmer's field in sto. Tomas, Pampanga, Philippines, to study the effects of seedling age and N level on the performance of IR26, IR42 and IR9764-45-2-2 grown on a saline soil. The average ECe of the soil during the first four weeks of crop growth ranged from 4.76 to GA8 ds/m.

the 40 and 60d old seedlings of the three rice varieties had a higher survival rate than had the 20d old seedlings. The 40d old seedlings gave higher grain and straw yields regardless of N level and variety. This higher grain yield with the 40d old seedling was due to relatively low mortality rate at the early stage, and greater tiller and panicle production.

Bangladesh Rice J. 1(1) : 48-54 (1990)

EFFECT OF NITROGEN FERTIIZER MANAGEMENT AND PLANT POPULATION DENSITY ON NITROGEN FERTILIZER USE EFFICIENCY IN IRRIGATED (BORO) RICE

N.!. Bhuiyan and A. L. Shah

Abstract

A field experiment was conducted at the BRRI farm, Joydebpur (Grey Terrace soil) during the Boro seasons of 1981 and 1983 using BR3 as the test crop to study the effect of N fertilizer application schedule and plant population density on crop Performance, N use efficiency, N uptake and apparent N recovery of the added N fertilizer under irrigated rice culture. Three N fertilizer application schedules were tested with two plant population densities, 25 hills/m^2 and 50 hills/m^2.

Plant population density did not influence grain and straw yields although the panicle number per unit area was significantly increased due to an increase in population density. The application of N fertil:zer at the rate of 60 kglha, irrespective of the application schedule produced more panicles per unit area than when no N was applied, and significantly increased grain and straw yields over control. The three-split application of N fertilizer excluding a basal dose was more effective than the two-split, basal inclusive method or the all-basal application method in terms of the yield of wetland rice, and N fertilizer efficiency. It was concluded that it may not be necessary to increase plant population density to achieve the desired yield level provied a proper N fertilizer application schedule is maintained, specially on soils having moderate to high level of total N.

Bangladesh Rice J. 1(1) : 55-63 (1990)

STORAGE OF SEEDLINGS FOR TRANSPLANT AMAN RICE

A.R. Gomosta, H.A. Quayyum, A. H. Malia and M.Z, Haque
Bangladesh Rice Research Institute Gazipur-1701, Bangladesh.

Key words : Rice seedling, Storage

Abstract

Seedling storage materials and methods was tested as a contingency means of preserving seedlings for transplant Aman rice after the recession of flood water in flood-prone areas. Twenty and 40 d old seedlings of BR11 were stored in mud and in water. The seedlings were transplanted after 1 to 4 weeks of storage. Seedling s.urvival after transplanting was 85% irrespective of age when stored in mud. In case of storage in water, seedling survival decreased with the increase in storage period and grain yield decreased to zero when the seedlings were stored for 3 to 4 weeks. Yield of 3-4 t/ha was obtained with 40 d old seedlings stored for 1 week. With seedlings stored in mud, yield varied from 2.8 to 3.5 t/ha among the storage period treatments. The results indicated that 20 to 40 d old seedlings stored in mud for 4 weeks and 40 d day old seedlings stored in water for 1 week would be appropriate for transplant aman after the recession of flood water to achieve reasonable yield.

Bangladesh Rice J. 1 (1) : 64-72 (1990)

XYLEM VESSEL VARIABILITY AT THREE POSITIONS OF RICE ROOT (Oryza sativa L.)

M.K. Bashar Bangladesh Rice Research Institute Gazipur 1701

Key Words : Variability, Xylem *vessel.*

Abstract

Root xylem *vessel* numbers and areas at different positions of the roots of one African upland rice *variety,* Moroberekan and one semidwarf modern lowland *variety,* IR20 were studied. The plants were grown in hydroponic culture in a phytotron glasshouse under controlled conditions. Samples were taken from the base, middle and tip of roots from randomly selected plants. Within a root, the lowland *variety* produced both a higher number as well as a larger area of xylem vessels at the base; the xylem vessel number and area gradually decressed at the middle and tip of the root. This trend was not observed in the upland variety. There were no significant differences amolig the plants and roots within plants in Mo-roberekan in respect of xylem *vessel* number or area. *However,* the IR20 plants showed significant differences in root xylem vessel number. The

smallest contribution to the total variation was due to root while the greatest contribution in cases of both the characters and both the varieties came from the sampling position within root. Thus, sampling should be from a certain section of the root, preferably from the tip.

Bangladesh Rice J. 1 (1) : 72-78 (1990)

INHERITANCE OF SPIKELET AND PRIMARY BRANCH NUMBER IN A SIX-PARENT DIALLEL CROSS OF RICE

M.A. Hossain and R. Nahar Bangladesh Rice Research Institute Joydebpur, Gazipur-1701

Key words Diallel cross, Quantitative inheritance, *Oryza sativa* L

Abstract

The inheritance of spikelet number and primary branch number per panicle was studied in a six-parent diallel cross of rice. In case of spikelet number per panicle, overdominance was observed whereas partial dominance was found for primary branch number per panicle. The presence of nonallelic interaction of the complementary type was indicated for both the characters. Correlation coefficient values for the characters showed the presence of an equal proportion of positive and negative dominant genes in the parents. Symmetrical distribution ·of genes with plus and minus effects at loci showing dominance was observed in the parents for spike let number per panicle. Only one group of dominant genes was observed to condition both the traits. Heritability for spike let number per panicle was estimated at 33.23% in the narrow sense and 93.91 % in the broad sense.

Bangladesh Rice J. 1 (1) : 79-84 (1990)

Short Communication

GENETICS OF BACTERTAL LEAF BUGHT RESISTANCE IN RICE

M. S. Ali, N. M. Miah, M. A. Newaz and S. A. Miah Bangladesh Rice Research Instutite, Gazipur-1701

and BAU, Mymensingh

Abstract

The genetics of resistance to bacterial leaf bilght (BLB) of three breeding lines, namely, BR161-2B-25, RP633-76-1 AND BR319-1-HRH was studied against the bacterial isolate BX05. Susceptible varieties used for crossing were Dharial, Marichbati and Panbira.

Hybrid populations (F1-F3) were clip-inoculated at booting stage using 2-day-old culture of BX05. Disease evaluation 2 weeks after inoculation indicated that bacterial leaf blight resistance in the test materials is controlled by a single recessive gene.