Bangladesh Rice j. 5(1 &2) 1-5, 1994

Performance of Direct-Seeded and Transplanted Rice under Different Water Management Practices

M A Sattar[1] and S I Bhuiyan[2]

ABSTRACT

The study was conducted to determine the effects of selected water regimes, as water stressed conditions at different growth stages on yield of direct-seeded rice over transplanted rice. Results showed that at land preparation, 29% less water was needed in the direct-seeded method compared to the transplanted method of crop establishment. Yield from all the treatments of direct-seeded rice was significantly higher (0.6 t/ha) than transplanted one using about 20 less amount of water. Under continuous saturated condition, 30% water was saved during normal irrigation period over the amount used in farmers water management practice (continuous 5-7 cm standing water) with the direct-seeded method without any significant yield reduction. In severe water stress condition at the vegetative and reproductive stages of the crop, yield losses in direct-seeded rice were 20% and 31%, respectively, compared to no-stress conditions. But, in transplanted rice, the respective yield losses were 27 and 43% Thus it indicated that direct-seeded rice was more water stress tolerant than transplanted rice.

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Bangladesh Rice. 5(1&2) 7-10. 1994

Productivity and Water Requirement of IR8 and Mixed IR8-Rayeda Cultivation for Low-lying Areas of Bangladesh

Golarn Mowla[1]

ABSTRACT

An experiment was conducted to find out the relative yield of 1R8 and mixed IRS-Rayeda cropping and also to determine the irrigation requirement, consumptive water use and crop- coefficient of IRS and Rayeda at Chonapara in Gopalganj district. The total yield of mixed IRS-Rayeda was 8.92 t/ha as compared to 7.62 t/ha in case of single IRS. Irrigation requirement of single IR and mixed IRS were 1,869 and 2295 mm, respectively. Consumptive water use of IRS was 1,682mm and for Rayeda it was 3,803 mm. The seasonal crop coefficient of IRS was found to be 1.40.

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[1]Irrigation and Water Management Division, Bangladesh Rice Research Institute, Gazipur 1701

Bangladesh Rice j. 5(1&2) 11-16, 1994

Seedling Emergence from Deep-Seeding

AR Gomosta[1] and A H Molla[2]

ABSTRACT

Seedling emergence in relation to varieties, soil texture and seed depth were studied. Six varieties, namely BRS and 5R20, Sadapankaiscli HR3O and HR43, Hashtkalni, and Molladigha were used in three different experiments. Four varieties behaved differently in mesocotyl and internode elongation for emergence of seedlings from deep seeding- BR2O and Mo!ladigha also demonstrated differences in seedling emergence in relation to soil texture. Among different seeding depths, 6 cm appears to be critical for seedling emergence. The widest variation among varieties for seedling emergence was found to be increased by one day with the increase in seeding depth by 2 cm when impedance to seedling emergence is minimal.

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Bangladesh Rice j. 5(I&2): 17-20, 1994

Incidence of the Rice Orange-headed Leafhopper in Irrigated Rice Ecosystem

Lininnahar, A N M Rezaul Karim, Nazira Quraishi Kamal and Zahirul Islam[1]

ABSTRACT

The incidence of rice orange-headed leafhopper, Thaia oryzivora Ghauri, was monitored by two methods, Eight trap and sweep net, for successive five years since 1988 in an irrigated continuous rice cropping ecosystem. In general, T. oryzivora populations were too low to Case any significant yield loss. Their abundance was relatively higher in the Bore seedbed than that (It Aus a rid T.Aman. Relative abundance on ma in rice fields was higher in the T. A man season, particularly at the early reproductive stage, than that of other rice sea suns and crop stages. Thaia oryzivora seems to remain as a minor pest of rice and chances of significant crop damage by it are very little.

[1] Entomology Division, Bangladesh Rice Research Institute, Gazipur 1701

Bangladesh Rice j. 5(I&2) 21-26, 1994

Growth and Yield of Deepwater Rice as Affected by Leaf Pruning

AR Gomosta[1], A H Khan[2] and M S Ali[2]

ABSTRACT

Green leaves of HAIV, a traditional deepwater (DW) rice variety and BR224-211-2-5, a promising deepwater rice breeding line, were pruned at 94 days after seeding (DAS). All leaves except the topmost growing one of a particular stern were pruned at the collar at an interval of 30 days. Both leaf area expansion as well as increment of stem dry weight progressed in a zig-zag pattern when leaves were pruned at different times. The severe drop followed by rapid increase in relative growth rate of pruned plants was possibly due to very small leaf area resulting in negative assimilation rate at leaf pruning followed by rapid leaf area expansion. Leaf pruning for the third time resulted decrease in yielding ability of the rice varieties. Leaf pruning for two times, however, decreased grain yield of BR224-2B-2-5 but increased grain yield of HAIV.

[1]Principal scientific Officer, [2]scientific Officer, Bangladesh Rice Research Institute, Habiganj Regional Station

Bangladesh Rice j. 5(1&2) :27-30, 1994

Harvest Index of Some BRRI Varieties under Different Fertilizer Management

A H MoHa, M A Haque, A K M Azmal MG Ali, A Quayyum and SM Ibrahim[1]

ABSTRACT

Twelve modern rice varieties were grown in the Born season to ascertain varietals response to harvest index, grain yield and biomass production under three fertilizer management, viz M_1 (control), M_2 (40-30-30 kg NPK/ha) and M_3 (80-60-60 kg NPK/ha). The studs' revealed that the varieties BR9, BRI7 and BR18 provided more grain yield compared to biomass production under low input management. Under higher management, biomass production increased more than grain yield. Therefore, these varieties would be profitable under low input management. Besides, BR18 is the only variety that yielded 4.09 t/ ha grain under low (M_1) management with the harvest index of 0.56. The harvest index decreased at higher management levels. On the other band, BR1, BR3 and BR16 yielded better under higher management level, Under low management, the yielded comparatively more biomass compared to grain yield. Therefore, it would be better to cultivate these varieties at higher management levels

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Bangladesh Rice j. 5(1&2) 31 -34, 1994

Tillage Effects on Wetland Rice Yields in Two Different Soils of Bangladesh

M Nuruzzaman, M A Saleque, M J Abedin and N I Bhuiyan[1]

ABSTRACT

Two field experiments were conducted in the Boro and transplanted Aman (T.Aman) seasons of 1990 on loam and silt loam soils of the Bangladesh Rice Research Institute (BRRI) Regional Stations, Comilla and Rajshahi, respectively. Three tillage treatments, minimum tillage, dry opening and conventional tillage were tested in randomized complete block design. The test varieties were BR20 and BRI4 in Boro at Comilla and Rajshahi, respectively and BR11 in T.A man at both the Sites. In the Boro season, no significant differences in yield was observed due to tillage treatments at Comilla. However, significantly higher grain yield was obtained from the conventional puddle field at Rajshahi compared to other treatments. In the T.Arnan season, tillage treatments did not show any significant effect on grain yield in any location.

[1]Soil Science Division. Bangladesh Rice Research Institute, Gazipur-1701.

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New Approach to Increase Service Area of Tubewells in the North Bangladesh Tubeweil Irrigation Project

MA Rashid[1], MN Hassan[1] and MA Ghani[2]

ABSTRACT

This is paper presents the results of an integrated approach named as the minimum irrigated crop acreage (MICA) to increase irrigation In coverage in the North Bangladesh Tube-well (NBT) Project, Thakurgaon, in Aus, 1988. The average irrigated area in the Aus season was 8.6 ha and 5.1ha per pilot and satellite tube well, respectively during pre- MICA period, which increased to 13.0 ha (133.8%) and 9.5 ha (127.6%), respectively during post-MICA period. The experiences of the MICA programme implementation show that the problems of suboptimal use of NBT deep tube-wells can be solved and optimum irrigable area in the dry season can be achieved if the rotational / block wise water distribution is practiced.

[1]Senior scientific Officers, Irrigation and Water Management Division, BRRI, and [2]Irrigation Engineer, World Bank Dhaka, respectively.

Bangladesh Rice j. 5 (1&2):41-45,1994

Technical and Economic Evaluation of Deep Tube-well Irrigation Systems at Feni District

M N Islam, S M M Rahman, K A Haq and M R Islam[1]

ABSTRACT

This study was conducted at Feni district in the Born season of 1985 and 1986. All DTWs were identical in the design characteristics containing 355 mm diameter and 24 m long housing pipe and 150 mm diameter of blind pipe and strainer. The design discharge of each pump was 56.6 lit/s. The actual discharges ranged from 29.8 to 58.5 lit/s and all the DTW were run within 70 to 114% of their design discharge. The average discharge was 80 of the design discharge. The designed irrigation coverage of each 1 was 32 ha. The irrigation coverage ranged from 9.6 to 31.3 ha and the average irrigated area was I 5.35 ha per DTW. The Ii iw coverage was a ttrih u ted mainly to the non—pa rti ci pa tic n ol farmers and restr cud operating hours low the pumps. Generally, the farmers operated the pumps for 7—8 hours In a day he average yield of rice was 4.02 I /}m. Ecunomic study showed that per hectare net return was Tk 7,928.01) on lull cost basis and it was T 13,714.00 on cash cost basis. The benefit-cost-ratio (BCR) was 1.59 and 2.75 on full cost and cash cost bases. So the irrigation systems are viable.

[1]Irrigation and Water Management, Farm Machinery and Post harvest Technology and Agricultural Economics Division, Bangladesh Rice Research Institute, Cazipur '701

Bangladesh Rice j. 5 (1&2):47-52, 1994

Impact of Rotational Irrigation Practice in the Ganges-Kobadak Irrigation Project

G Mowla, M N Islam, M T Islam and M Nazrul Islam[1]

ABSTRACT

The study was conducted at S8K (phase I), and S 5A and SBG (phase II) canals of the G-Kobadak Irrigation (G-K) Project during 1990 and 1991. Measured discharges were found less than the designed discharge of the selected secondary and tertiary canals except S8K, where measured discharge was about two times higher than the design discharge. Irrigated area of the selected locations increased by 878 and 937% in Aus and 105 and 130% inn Aman in 1990 and 1991, respectively at S8K. At S5A the increase was 27% in Aus in 1990 and 6 and 12% in Aman in 1990 and 1991 and at S8G by 33% in Aus in 1990 after implementation of rotation schedule. Average yield of 58K ,S5A and S8G canal areas were 4.42, 3.14 and 299 t/ ha, respectively. Results showed that irrigation coverage could be further increased if the main canal water delivery at the full supply level was maintained and farmers as well as agency personnel involved themselves with enthusiastic participation in implementation of rotation properly.

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Bangladesh Rice j. 5 (1&2):53-60, 1994

Response of Rice of Different Growth Durations to Low Light Radiation

H A Quayyum[1] and B S Vergara[2]

ABSTRACTS

Growth and yield performance of rice of different growth durations to low light radiation were studied using a photoperiod-sensitive variety BPI-76. Among the three growth durations, long (126 days). medium (106 days) and short (96 days), medium duration plants yielded highest grain under low radiation over control. The higher grain yield was mainly due to higher number of spike lets per panicle associated with higher spike let fertility and higher percentage of productive tillers. he number of tillers and panicles per hill was lower in all growth durations under low radiation than control. Under low light, dry matter per hill decreased but dry matter and leaf area per tiller increased significantly which explains the production of higher number of spike lets per panicle. The higher leaf area per tiller and higher nitrogen (N) content of the medium duration plants resulted in higher carbohydrate production during ripening period.

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Bangladesh Rice j. 5 (1&2):61-67, 1994

Marketable and Marketed Surplus of Paddy in Bangladesh: Concepts, Estimation and Factors Affecting

Abdul Latif Sarker, B A A Mustafi, Jahan Ara Arju and M Aynul haque[1]

ABSTRACT

Most of he earlier s def gross sale, marketed surplus and marketable surplus of paddy synonymously, which is not logical for a semi-subsistence rice economic of Bangladesh. The present study showed that marketable surplus was about 22% higher than gross sale and about 24% higher than marketed surplus. Earlier studies underestimated marketable surplus Net production receipts, price of paddy and family size were the three major variables explaining the variations of marketable and marketed surplus. The first two

influenced marketable and marketed surplus positively and the third one influenced those negatively. Net change in stock and net payment in kind of paddy had negative impact on marketed surplus.

[1]Scientif Officer, Head-In charge, Research Associate and Scientific Officer, respectively, Agril. Economics Division, BRRI, Gazipur-1701.

Bangladesh Rice j. 5(1 &2): 69-73, 1994

Seed Treatment as a Method of Correcting Zinc Deficiency in Rice

M Ishaque, N I Bhuiyan, G M Panaullah and M S Rahman[1]

ABSTRACT

The effect of different concentrations of Zn on the Zn absorption characteristics of three rice varieties was tested under laboratory and greenhouse conditions. Rice seeds were soaked in 0.2°/' to 1.1% $ZnSO_4$ solution for 12 hours. The absorption of Zn by rice seeds was higher from the solution of higher Zn concentration. Seed germination percentage was significantly higher with lower levels of Zn in the soaking solution. A maximum of 32 ppm Zn in the shoot of 52-day-old BR11plant was obtained with the 1.0% ZnSO4 treatment compared to 20 ppm in control (distilled water). The optimum concentration of $ZnSO_4$ solution for seed soaking was determined as 0.2% for BR11and 0.5% for BR4 and BR10.

[1] Soil science Division, Bangladesh Rice Research Institute, Gazipur 1701, Bangladesh

Bangladesh Rice j. 5(1&2): 75-80, 1994

Evaluation of Rice Grades Through Protein Content Measurement

Khandaker A Kabir, Sunil K Biswas, M Hanif Miah and Nurul H Choudhury[1]

ABSTRACT

Protein contents of 601 rice samples collected from Dhaka, Rajshahi, Khulna and Chittagong markets were between 58 and I 8%. Khulna samples had the highest and Chittagong samples the lowest average protein content. All the city market samples, except Chittagong market samples, had a wide protein content range. Thirty-one percent samples had an average 7%, 51% samples had 7-8% and I 8% samples had more thon 8% protein content. On an average coarse grade rices had higher average protein than fine grades in the all regions except Kbulna where fine grades had higher value. Pajam grades were available in all the regions except Rajshahi. This grade in Dhaka had relatively high protein (7.6%) than those available in Khulna (6.9%) and Chittagong (6.9%). Bashrul, Bhaital, and Nikhlapuri grades were available only in Khulna and had more than 8% protein. Protein content varied in different rice grades and also within the same grades. All popular grades in Chittagong had lower protein content.

[1]Grain Quality and Nutrition Division Bangladesh Rice Research Institute, Gazipur 1701.

Bangiadesh Rice:81-84, 1994

Observed and Potential Yield of Some Rice Varieties and Advanced Lines

M U Gani[1], S A Sattar[2], B C Roy[3], MA Mannan[3], M S Islam[4] and M Haque[5]

ABSTRACT

A crop growth simulation mode was used to compare the observed and potential yield of some rice varieties and breeding lines. Simulated flowering and maturity durations of all the test materials showed a good agreement with the observed data in this model in three seasons. Simulated grain yield of all the test materials agreed with the observed data in 1992 only. However, shoot dry weight and tiller production showed an overestimation n the model.

[1] Senior Scientific officer, Plant Breeding Division; [2] Principal Scientific Officer Agronomy Division; [3]Senior Scientific officer, Agronomy Division, [4]Senior Scientific officer, Plant Physiology Division; [5]Chief Scientific officer, Plant Breeding Division; Bangladesh Rice Research institute Gazipur 1701.

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Effect of Different NPK Levels and Nutrient Stress at the Reproductive Stages on the Performance of Rice under Hydroponics Culture

Md Abdul Jabbar[1], K U Ahmed[1] , A A Choudhury [1] and H Nakano[2]

ABSTRACT

A glasshouse experiment was conducted to determine the effect of different rates of NPK and nutrient stress at the reproductive s on the performance of water culture rice. Results showed that the highest grain yield of 26.2 g/ hill was obtained from the highest level of NI followed by the medium (22.7 g/hill) and low (13.2g/hill) levels. Similar trend was observed in case of spike let number and percentage of ripened grains. Nutritional stress at the reproductive stages affected the grain yield, spike let number, calm length and also the percentage of ripened grams to some extent compared to control (non-stress) irrespective of NPK levels Nutritional stress at the primary rachis branches differentiation and the reduction division stages affected grain yield more than the stress at the full heading stage. The average grain yield reduction percentages were 7, 20 and 33 in low, medium and high levels of NPK, respectively.

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Bangladesh Rice j. 5 (1 &2): 91-94, 1994

Stability Analysis of Some Rice Genotypes for Yield in Transplant Aus Environment

M H Miah[1], H U Ahmed[1], Q A Haque[1], S M Ibrahim[1], M Howlader[2] and M Haque[1]

ABSTRACT

Yield stability of nine rice genotypes was studied in transplanted ecosystems of Bangladesh across three locations over three years. The RCB design was followed with three replications in nine trials (3 locations x 3 years = 9 environments). Variation due to variety, environment and variety x environment interaction were found significant. Yield of most entries including BRRI varieties were unstable. Two entries IR25924-51-2-3 From IRRI, Philippines and KAU 1727 from India, Showed stable performance. the highest yielding entry IR7156120-3-2-1-1 was found unstable across environments which may be suitable as location specific variety.

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[1] Plant Breeding Division and [2] Agril. Statistics Division, BRRI, Gazipur 1701 Bangladesh.

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Genetic Composition of Improved Rice Varieties in Bangladesh

M A Kabir, H C Sarker, M A Salam, M Hoque and N M Miah[1]

ABSTRACT

The study was conducted to find out the genetic diversity of 25 modern rice varieties and 8 promising lines developed by the Bangladesh Rice Research Institute (BRRI) since Is incept 1970 It observed that 60% BRRI varieties were traced to the same maternal parent, Cina', implying that the components of their cytoplasm were similar. On the other hand, all BRRI varieties, except BR5 carried the same dwarfing gene from the dwart Chinese variety, Dee-gen-woo-gen (DgWg). Similarly, all prospective BR lines had the 'DgWg' gene in their background and out of 8 promising lines 6 had 'Cina' as the ultimate female progenitor During 1966 to I 990, BRRI utilized 18.4% local germplasm as parents in the varietal improvement programme with little success. It was also revealed that only 40 parents were utilized in their development

and only four Bangladeshi local germplasms were utilized for this purpose and the rest are exotic in origin. Recommendations include avoiding the use of maternal derivatives of 'Cina' as females in crosses, exploring and utilizing alternate sources of dwarfism other than DgWg, and accelerating the utilization of widely adaptive and useful local germplasm in the cross-breeding programme of BRRI.

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Cut-off Dates for Planting Modern T. Aman Rice Varieties in the Northern Region of Bangladesh

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Effect of Nitrogen Topdressing at the Full Heading Stage of Rice

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