Bangladesh Rice j. 6(1&2) : 1-5,1995

Inheritance of Recovery from Submergence in a 5 x 5 Diallel Analysis in Rice

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ABSTRACT

Inheritance of recovery from submergence in rainfed lowland rice was studied by ana lysing the combining ability and estimating the genetic parameters. BR5, Nizersail, Kumragoir, Dudmona, FR13A and their 10 Fl hybrids, constituting a 5 x 5 half diallel set, were used in the study. Estimates of genetic parameters and combining ability analysis showed significant additive and non-additive gene effects, former effects being higher than the latter. Partial dominance of submergence recovery potential was indicated by covariance-variance regression graph and estimated dominance ratio. Partial dominance for this trait was offered by one major gene or block of genes. Dominant and recessive genes were in unequal proportion in the parents and some degree of gene asymmetry existed in favour of recessive alleles. Among the parents, FR13A and Kumragoir showed favourable general combining ability (gca) effects and Nizersail the least. Narrow-sense heritability of 0.697 indicated the importance of additive gene action in submergence recovery.

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Influence of Planting Time on the Growth and Yield of Some Modern Transplanted Aman Rices

K P Halder[I], M A RashidI, S B Siddique[2], K U Ahmed[2], M A RashidI and A A Choudhury2

ABSTRACT

The varieties BR4, BRIO, BR11, BR22, BR23 and Rajasail were grown from 1 August and continued up to 5 October with 15 days interval during T. Aman, 1991 and 1992 at the BRRISonagazi farm, Feni to determine their optimum planting time and to select suitable varieties for late transplanted condition. Tiller and panicle numbers of all the varieties gradually decreased with delayed planting with little fluctuation. All varieties gave higher grain yield in 1 August planting and yield gradually decreased with the advancement of planting dates. Weakly photoperiod-sensitive varieties could be planted up to 1 September. Beyond 15 September planting, BR22 and BR23 performed better than other varieties. Growth duration of the tested varieties gradually decreased with delay planting.

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A Comparative Study of Super Granular and Prilled Urea Application in Irrigated Rice

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ABSTRACT

The study was conducted in the farmers' fields at the BRRI project area, Gazipur during the Boro seasons of 1988-89 and 1989-90. Nitrogenous fertilizer were applied at the rate of 29,58 and 87 kg/ha, separately, from urea super granule (USG) and prilled urea (PU). The performance of USG was found better than that of PU in relation to grain yield and economic profitability. Marginal and partial budgeting techniques were used to compare the benefits of use application over PU. The marginal rate of return (MRR) was highest for use application at 58 kg N/ha in both the years. Farmers' reactions were in favour of the superiority of USG over PU.

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Influence of Water Stress on Plant Water Relations in Dry-Seeded Rice

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ABSTRACT

The experiment was conducted at the International Rice Research Institute (IRRI) Research Farm during 1991 dry season. The aim of the experiment was to determine the effect of water stress on plant water relation parameters in four rice varieties. Water deficit imposed during vegetative and reproductive growth stages significantly decreased predawn leaf water potential (ΨL) and Leaf osmotic potential (π) of the tested rice varieties. After 5 days of re-watering, ΨL was completely recovered in all varieties but leaf 7t failed to do so. At the end of each stress treatment, the leaf 7t was about 0.2 to 0.3 MPa lower in stressed plants than the well-watered control plants. Such changes in leaf 7t in response to decreasing ΨL may arise from active solute accumulation (osmotic adjustment) as induced by water stress. Water stress had little effect on turgor. Among the studied varieties, BR20 had greater turgor followed by IR72. A highly significant positive correlation was observed between ΨL of the rice varieties and their corresponding leaf rolling score.

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Changing Pattern of Rice Breeding in Bangladesh

M A Kabir and M A Salam

ABSTRACT

In Bangladesh, rice research started in 1911. Breeding research of the past 80 years (19111991) is reviewed. Four strategic changes have been identified during these period: pureline breeding (1911-1935), hybridization between tall indicas (1936-1947), crossing between indicas and japonicas (1948-1965), and introduction of semidwarf and development of modern variety (MV) of rice (1966-1991).

In total, 52 pureline varieties were released for Aus, transplanted Aman (T. Aman), Boro and deepwater rice growing situations. Among them, 15 varieties have been popularly grown in different seasons. Eleven varieties were developed from crossing between tall indicas, but among them only Duller (Dumai x Larkoch) was persisted. Crossing between indicas and japonicas showed discouraging results. A large number of varieties were introduced from different rice growing countries. Among exotic collections, IRS, Purbachi and Pajam have earned popularity to farmers. These varieties possess semidwarf plant type (except Pajam), and are responsive to fertilizer and lodging tolerance. BRRI has developed several semidwarf rice varieties eg BR1 and BR3. This semidwarf plant habit show limitations to expanding MV rices in farmer fields specially in the T. Aman season. Breeders have been gradually changing this semi dwarfs «110 cm) to intermediate plant type (110-130) without losing yield potentials and lodging tolerance to adjust with the local environment.

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Effect of Seeding Methods on the Biomass Production of Rice and Growth of Weeds under Rainfed Lowland Condition

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ABSTRACT

Five rice varieties were tested in direct seeding methods under rainfed lowland conditions at the International Rice Research Institute (IRRI), Philippines from 17 August to 29 September, 1988. Under broadcast (BC) as well as line sowing (LS) culture, the plants gave a similar performance. In both the seeding methods, plant height was significantly different at 44 days after sowing (DAS). Aus454 was the tallest and IR66 was the shortest variety and the rest were intermediate in height. Among the varieties IR28526-44 produced the highest number of tillers and dry matter, irrespective of seeding methods. Weed weight was low in both the seeding methods.

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Water Saving Techniques for Crop Production

M A **Rashid and M N Islam**

ABSTRACT

Experiments on different irrigation intervals were conducted at the Amla farm, Kushtia and the North Bangladesh Tubewell Project Thakurgaon for water saving in rice irrigation. The results of the experiments indicated that 10 days irrigation interval was the best with respect to yield and water requirement. The study also showed that irrigation after 3 days of disappearing surface water required substantially less irrigation water and produced economic yield. It was also observed from the study that in water shortage area good yield of wheat can be achieved by irrigating only once during either tillering or booting stage.

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Yield Loss Due to Water Stress at Different Growth Stages of Transplanted Arnan Rice

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ABSTRACT

Grain yield loss of Nizersail and BRll due to water stress in soil for different periods during the later growth stages was assessed. Nizersail had 85% grain yield loss due to a water stress of -7 to -10 bar during booting stage through maturity. Percent yield loss was lower as the period of water stress up to maturity became shorter. Nizersail incurred a loss of 46 to 27% due to a stress of -4 to -6 bar at booting, flowering and milk stages through maturity. Percent filled grain was more affected in BRll while in Nizersail spikelet number per panicle was more affected. Yield of Nizersail, a photoperiod-sensitive variety was however much less affected than BRll.

Bangladesh Rice j. 6(1&2) : 47-51, 1995

Potassium Supplying Capacity of Wetland Rice Soils

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ABSTRACT

Two soil samples were collected from the Bangladesh Rice Research Institute experimental fields, Gazipur to study potassium supplying ability. Chemical analysis of the two soils showed that the soil-II is highly fertile in all forms of potassium content. In the K potential study, the parameters of Q/I relationship were determined. Soil-II was found better K supplying capacity than soil-I possessing high amount of readily available potassium, (- . .A.K) 0.40 meq/IOO. The ARk value of soil-I and soil-II was found 0.1 and 6.0 (M/l)1/2 x 100-^{3}, respectively. The PBCk of soil-II was (6.7 meq/IOO) x (M/l)1/2 while it was only (0.45 meq/100) x (M/l)l /2 for soil-II. The soil-II had the ability to replenish exchangeable K after being absorbed by plants. The K fertility also reflected on crop performance. Dry matter yield and other agronomic parameters were better in soil-II than soil-I.

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Use of Drainage Water of GK Project for Irrigation at Kushtia

M Nazrul Islam, M N Islam, G Mowla and M K MondaP

ABSTRACT

Through a drainage canal DIIK of the Ganges-Kobadak Irrigation Project (GK) at Kushtia, during the dry season (March - May), 0.28 - 0.42 cubic meter per second (cms) of irrigation waste water flow continuously. In the rainy season, 1.42 cms water flows through that canal. By proper water management practice, this wastage could be reused for irrigation purpose that could increase the command area by about 1279 and 2163 ha in the Aus and Aman seasons, respectively.

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Extent of Splitted Tillers and its Effect on Grain Yield of T. Arnan Rice

A A Choudhury, S B Siddique, K U Ahmed, M A Mannan, M A Mazid, M A Jabbar[1]

ABSTRACT

During T. Aman season splitting of 2-3 tillers per hill did not reduce grain yield of mother plant and replantation of 2-3 tillers after splitting from the mother plant performed well in respect of grain yield. Depending on the soil fertility and genetic potentiality of the variety (BRIl) about 48 times new area can be covered by the splitted tillers from a unit area of mother crop. Growth duration of the test variety increased by 3-12 days due to splitting of tillers.

Bangladesh Rice j. 6(1&2) : 63-67, 1995

BR25 : A New Rainfed Lowland Rice Variety for Bangladesh

M A Kabir and M A Salam[I]

ABSTRACT

BR25 (Naya Pajam), a new rice variety is an improvement over Pajam. It has been developed at the Bangladesh Rice Research Institute (BRRI) and released for commercial cultivation in the rainfed lowland ecosystem (Transplanted Amal1) of Bangladesh. The variety was bred from a cross between Pajam and IR26. Pedigree method of selection was followed in handling the segregating generations. It has a wide genetic base with japonica genome. It has tall seedlings (35.0-45.0 em), tall plant heights (> 130.0 em) but stiff culm and resistant to lodging. BR25 has tolerance to RTV, BLB, ShB, ShR, SR, BL and ufra diseases. It showed high and stable yields (4.0-4.5 t/ha). It matures within 133 days ie 10-12 days earlier than Pajam which may fits well into rice-wheat and rice-rabi cropping patterns. Grain characteristics and cooked rice qualities of BR25 are similar to Pajam.

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Effect of Planting Time on Yield of Modern Rice Varieties in the South-East Part (Chittagong) of Bangladesh

S B Siddique[1], K U Ahmed[2], M G AIF, MAJabbar[2], AA Choudh$_{ury2}$ and K P Halder[3]

ABSTRACT

Field experiment was conducted to determine the optimum planting time of three modern rice varieties at the Agricultural Training Institute (ATI), Hathazari, Chittagong, from 1989 to 1991. The varieties BRI1, BR22 and BR23 were planted from 16 July and continued up to 7 October. In the south-eastern part (Chittagong) of Bangladesh, BRI1 can be planted up to first week of September whereas planting of BR22 and BR23 can be extended to 15-20 days later than BRI1.

Bangladesh Rice j. 6(1&2) : 73-76, 1995

Effect of Time and Frequency of Hand Weeding on the Yield and Yield Components of Transplanted Modern Rice

K P Halder[1], M A RashidI, M A Rashid[2], A A Choudhury2 and MAW Miah[1]

ABSTRACT

Two field experiments were conducted to find out the effect of time and frequency of hand weeding on the yield and yield components of transplanted Aman (T. Aman) rice in 1991 and 1992 at BRRI RS, Sonagazi, Feni. The panicles/m^2, filled grains/panicle and grain yield increased with the increase in the frequency of weedings. In case of 1000-grain weight, no significant different was found among the treatments. Sedges were the major weed group in both the years. Two weedings, one at two weeks after transplanting (WAT) and another at five WAT were enough to get the significantly higher grain yield.

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Nitrogen Accumulation and Distri15ution at Different Growth Stages of Rice under Water Stress Condition

M R Ahmed[1], F JameeF and K T Ingram[2]

ABSTRACT

Water stress reduced nitrogen accumulation in different plant parts due to lower dry matter production, but increased nitrogen concentration. Among different plant parts, nitrogen accumulation in panicle was mostly affected, and plants having water stress at reproductive growth stage had the lowest panicle nitrogen accumulation. Among the tested cultivars, IR72 had the highest nitrogen accumulation in the culm of reproductive stress plants. There were highly significant positive correlations between shoot dry matter and total shoot nitrogen content, as well as grain yield and total nitrogen content.

Bangladesh Rice j. 6(1&2) : 85-89, 1995

Sesbania Rostrata: a Promising Nitrogen-fixing Green Manure in the Coastal Region of Bangladesh

S K Zaman, M A Razzaque, S M Rezaul Karim, A U Ahmed and K A Billah

ABSTRACT

The five Sesbania species, S. aculeata, S. rostrata, S. cannabina, S. sesban and S. specisa were tested for their agronomic characters and nitrogen accumulation ability. In terms of shoot draymatter yield 60 days after sowing, the species stood in the order S. rostrata> S. aculeata> S. cannabina> S. sesban> S. speciosa. The biomass of the 60 day old plants were 5.0, 5.6, 5.0,3.8, 2.8/ha for S. aculeata, S. cannabina, S. sesban, S. speciosa, respectively. The estimated amount of N fixed were 142, 219, 124, 107, 86 kg N/ha for S. aculeata, S. cannabina, S. sesban, S. speciosa, respectively.

Bangladesh Rice j. 6(1&2) : 91-94, 1995

Effect of Rate and Timing of N Application, Harvesting Date and Cutting Height on Performance of Ratoon Crop of BR17

M A Rashid[1], and Md. A Jabbar[1],S B Siddique[1], M A Rashid[2] and K P Halder[3]

ABSTRACT

Application of nitrogen at the rate of 15 to 20 kg/ha to the main crop at 15 days before harvesting produced significantly higher grain yield of the successive ratoon crop. The optimum harvesting time of the main crop was at its physiological maturity for better performance of ratoon crop. Yield of ratoon crop increased with the increase in cutting height of the main crop, the optimum being ranged from 15 to 20 cm above the ground level.

Bangladesh Rice j. 6(1&2) : 95-99, 1995

Effect of Storage on Free Sugar, Fat and Fatty Acid Content of Rice

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ABSTRACT

Free sugar content of five Aman and three Boro rice varieties was higher in un parboiled brown rice than in parboiled brown rice, but parboiled milled rice on the other hand, had much higher free sugar content than that of un parboiled milled rice. Free sugar content increased with aging in both un parboiled and parboiled rice. Fat content varied among varieties but was not influenced by storage time. Free fatty acid content also varied among varieties and increased during storage over time.

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Nitrogen Doses for Wet-Seeded and Transplanted BR14 Rice Variety

Abhijit Saha, Nur-E-Elahi, M J Abedin, M A Quddus and T Das[1]

ABSTRACT

A field experiment was conducted to determine optimum nitrogen dose for BR14 rice variety under wet seeding and transplanting methods during Boro 1992 and 1993. The nitrogen doses were 0, 30, 60, 90, 120 and 150 kg N/ha. Optimum dose for better yield was found 90-120 kg N/ha for both the methods. Irrespective of nitrogen doses, yield was significantly higher in transplanted crop, but the wet-seeded crop matured 10 days earlier.

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Short Communication

Two Viable Cropping Patterns for Yield Maximization of Deepwater Rice

M A Rashid, M A Jabbar, SB Siddique and M K Day Amin[1]