Bangladesh Rice j. 9(1&2): 1-5, 1998

Effect of Boro Rice and Dhanicha (Sesbania rostrata) Establishment Methods on the Productivity of Improved Cropping Pattern in the Irrigated Environment

A H Khan, N E Elahi and S B Naseem

ABSTRACT

The study was conducted to determine the effect of Boro rice and green manure (GM) dhaincha (Sesbania rostrata) establishment methods on the performance of improved pattern (Mv Boro-GM-MV T. Aman) in the flood-free irrigated ecosystem. Both wet-seeded BRRI dhan28 sown in the line and broadcast in the puddled field gave significantly higher yield than transplanted (TP) BRRI dhan28 during the Boro season. Although transplanting delayed crop maturity yet it took lesser field duration than wet seeding. Regardless of the Boro establishment methods, stem transplanted S. rostrata produced two times higher amount of dry matter and N yield than those obtained by direct seeding. The higher yield of N contributed to the increased grain yield in succeeding BR11. The lowest grain yield of BR11 was produced in plots preceded by fallow (no green manuring). Regardless of the establishment methods, green manuring substituted 40 kg N/ha for succeeding BR11 crop. Wet-seeded BRRI dhan28 grown as line or the broadcast method followed by stem transplanting of S. rostrata and subsequently followed by BR11 produced total higher grain yields and earned about 53% more net returns over the traditional TP BRRI dhan28-Fallow-transplant BR11 pattern.

Bangladesh Rice j. 9(1&2): 7-10, 1998

Mass Culture of White Tip Nematode (Aphelenchoides Besseyi) and Effect of Temperature on its Survival

M A Latif, T H Ansar, M Rahman and M A Bakr

ABSTRACT

Two experiments were conducted to find out the effect of temperature on the survival of white tip nematode (Aphelenchoides besseyi) in rice grain and to determine the fungal hosts for its mass culture. Ten fungi, namely Rhizoctonia solani. Epicoccum pupurascens. Pestalotia oryzae, Drechslera oryzae, Alternaria tenuis, Chaetominum sp., Curvulariaoryzae. Fusarium semitectium, Rhyzopus sp. and Penicillium sp. were tested in vitro and found that other nine fungi acted as hot of this nematode except Penicillium sp. Aphelenchoides besseyi failed to reproduce on Penicillium sp. The rate of multiplication of the nematode was maximum of E. purpuracens followed by P. oryzae. F. sesmitectum, R. solanic, C. oryzae. D. oryzae. A. tenuis. Chaetomium sp. and Rhizopus sp. The suitable temperature for the survival of the nematode was 25^0C for male and second stage larvae, and 28 ± 2^0C for female, third and fourth stage larvae.

Bangladesh Rice j. 9(1&2): 11-16, 1998

Effect of Salinity on the Growth, Grain Yield and Pollen Viability in Rice

S Khatun and T J Flowers

ABSTRACT

A glasshouse experiment was conducted to compare the effects of salinity applied at different growth stages and grain yield of the rice cultivar IR36. The plants were exposed to a pulse of salinity for two weeks at the seedling, panicle initiation and the boot stages. Significant reduction of plant height and straw weight was observed at 25 and 50 mM Na when applied at the seedlings stage. In terms of grain yield per plant, all these growth stages were sensitive to salt, but grain yield reduction was highest when salt was applied at the panicle initiation and the lowest when applied at the boot stage. When seedlings were salinised, grain yield reduced due to reduced number of

productive tillers per plant. Rice pollen was viable for a short time, with an approximately 50% loss of viability within 20 minutes of anthesis. Salt applied at the panicle initiation stage had an adverse effect on pollen viability and the number of fertile tillers and caused a large number of spikelets to degenerate, resulting in a greater loss of grain yield at the panicle initiation stage than other stages. Pollen viability was more sensitive to exposure of plants to salt at the boot stage than at any other stages; the effect of salt on pollen was the only reason for reduced seed set, and loss of grain yield at stage.

Bangladesh Rice j. 9(1&2): 17-22, 1998

Contribution of Tillering Time to Grain Yield as Influenced by Plant Densities and Nitrogen Levels

A L Shah

ABSTRACT

Two experiments were conducted at the Bangladesh Rice Research Institute (BRRI) Regional Station, Habigonj in the dry season in 1996 to determine the contribution of tillering times to grain yield as influenced by plant densities and N levels. Number of productive tillers per hill was higher at wider spacing than closer spacing irrespective of N levels and gradually decreased over weeks. Seedling number per hill and N levels interacted independently with weekly productive tillers and decreased over weeks. In both the experiments, grains per panicle decreased with higher plant density and also over weeks. Grain yield increased with the increase of mother plants from decreased spacing and yield become zero in the fourth at 10- x 10-cm spacing. However, cumulative yield of 20- x 10-cm spacing was higher than wider spacing or equal to close spacing where mother plants yielded 2 t/ha and the productive tillers, 1 t/ha per week in the first three weeks and decreased to 0.2 t/ha in the fourth week. Application of 120 kg N/ha significantly increased the mean yield (average over spacing) than N control, but the difference between N_{60} and N_{120} was not significant. Average yield of mother plants and subsequent weekly productive tillers yield average over N levels decreased significantly, but the trend was similar as 20- x 10-cm spacing. Seedling number per hill did not increase the grain yield but, yield of mother plants increased with the increased of seedling numbers and N levels. However, in seedling number experiment 60 kg N/ha gave the highest cumulative yield which was similar to 20- x 10-cm spacing.

Bangladesh Rice j. 9(1&2): 23-28, 1998

Performance Evaluation of Different Sowing Methods of Upland Aus Rice

M Maqsudar Rahman, M Syedul Islam and M A Baqui

ABSTRACT

Trials were conducted with three seeding methods-hand broadcasting, Lithao and BRRI seed drill in the Aus season of 1992 and 1993 at the Bangladesh Rice Research Institute (BRRI) in upland soil condition to determine their performances. Results indicated that the labour requirement and weeding cost for seed drill,, Lithao-1 and hand broadcasting methods were 613, 705 and 1,005 man hr/ha and Tk. 2880/-, 3433/- and 49540/- per ha, respectively. The seed rate for the seed drill, Lithao - 1 and hand broadcasting methods were 62, 80 and 80 kg/ha, respectively. Although different seeding methods did not influence the grain yield but the seed drill method and Lithao-1 method of sowing were found better in terms of cost saving than the conventional and broadcasting method.

Bangladesh Rice j. 9(1&2): 29-37, 1998

Effectiveness of Setoff Hebricide for Weed Control in Boro Rice

S T Hossain, G J U Ahmed, M S Kabir, Z U Ahmed and S Khondkar

ABSTRACT

The study was conducted in three different sites at BRRI farm, Nogopara and Salna of Gazipur district to observe the effectiveness of SETOFF a new selective herbicide for controlling weeds in Boro rice during 1995-96. Phenotypically, this herbicide has no phytotoxic effect on rice plant. Application of SETOFF with different doses has lower the cost of production and gave comparable grain yield to two hand weedings.

Bangladesh Rice j. 9(1&2): 39-43, 1998

Evaluation of Sample-hill Method as an Alternative to Crop-cut Method for Estimating Transplanted Rice Yield

M K Dey Amin, D N R Paul, K Rahim and M S Kabir

ABSTRACT

The study was conducted to evaluate the effectiveness of the sample-hill method against the crop-cut method for estimating transplanted rice yield. The grain yield of transplanted rice estimated by the traditional crop-cut method and the sample-hill method did not differ significantly from the actual yield. The percent deviation of the estimated yield obtained by the crop-cut method and the sample-hill method from the actual yield appears to be similar for all plots. The sample-hill method was found to be as good as crop-cut method and the results suggested that the sample-hill method may well be used as an alternative to the conventional crop-cut method for estimating transplanted rice yield.

Bangladesh Rice j. 9(1&2): 45-55, 1998

Effect of Rice Establishment Method on Water Use and Productivity of Rice and Chickpea under Rainfed Lowland Ecosystem

A L Rathore, A R Pal, K K Sahu and A P Singh

ABSTRACT

Field experiments were conducted in lowland Vertisols with the objectives to escape rice form drought by advancing sowing and achieve establishment of chickpea in residual soil moisture after harvest of rice. Treatments included three methods of establishment (dry seeding of rice: seeding in ploughed dry soil by seed-drill before start of rain; were seeding: drilling of seed at proper soil moisture after field preparation and transplanting with rainwater and with farm pondwater) and two irrigation: life saving irrigation to rice during drought stresses and no irrigation (rainfed), were laid out in randomized block design and replicated four times. Dry seeded rice (DSR) advanced crop establishment by 20-30 days and harvested 20-30 days earlier to transplanted rice. The dry seeded rice used pre-monsoon rains effectively in the crop

establishment and early maturity escapes the crop from drought stresses at later stages of rice. The field water balance showed that water requirement (evapotranspiration + deep percolation) of dry seeded rice was 859-880 mm, whereas 965-970 and 960-1016 mm water respectively was required in wet seeded and transplanted rices. Rainwater use efficiency was higher in dry seeded rice (6.7-7.8 kg/ha- mm) as compared to wet seeded (4.8-6.5 kg/ha-mm) and transplanted rices (5.3-6.1 kg/ha- mm). Deeper and denser rooting in dry seeded rice can tolerate more water stress than wet seeded and transplanted rice. Early harvesting of rice provided favourable residual moisture (188-217 mm) for establishment of chickpea after rice. The dry seeded rice technique was found suitable in relation to efficient rainwater use, productivity and farmer's income.

Bangladesh Rice j. 9(1&2): 57-60, 1998

Biomass Production of Dhaincha (Sesbania rostrata) and its Carryover Effect on the Following Rice Crops

MB Rahman, MA Mannan Akanda, ABS Sarker, GJU Ahmed & MA Mazid

ABSTRACT

An experiment was conducted at the Bangladesh Rice Research Institute (BRRI) farm, Gazipur during 1991 to 1993 to determine the optimum seed rate of *dhaincha* for biomass production and its carryover effect on the following rice crops. *Dhaincha* seeds were sown @ 25, 50, 75 and 100 kg/ha and 60-day-old dhaincha was incorporated in situ before transplanting of Aman (T. Aman) rice. The incorporation of higher biomass resulted from increased seed rates of *dhaincha* enhanced total nitrogen in the soil. Fifty kg seed/ha was enough to produce biomass more than 5.0 t/ha (dry weight). Incorporation of *dhaincha* biomass increased grain yield of the following T. Aman and Boro rice.

Bangladesh Rice j. 9(1&2): 61-65, 1998

Economic Impact of Sesbania rostrata Intercropping with Rice in Rainfed T. Aus- T. Aman Cropping Pattern

MA Quayum, BAA Mustafi, MA Jalil Mridha, MA Mazid and SB Siddique

ABSTRACT

The study showed that supply of N either from urea of from *Sesbania rostrata* green manure (GM) intercropped with rice increased grain yield over the control in both the pair row and single row planting methods under rainfed conditions. However, in economic analysis the GM intercropped with rice had no effect on increasing gross and net returns. The benefit cost ratio was the highest in paired row rice with 30 kg N/ha followed by 60 kg N/ha. Dominance and marginal analyses indicated that the crop establishment practices in pair row rice with 30 kg N/ha was the best and suitable as it gave 3,222% marginal rate of return. There was no GM intercropping effect in T. Aus-T. Aman pattern in rainfed conditions.