Agri. Res. J. Kerala, 1981 19, (1) 89—92

RESEARCH NOTES

SCREENING RICE VARIETIES FOR DEEP WATER SITUATION THROUGH THE STUDY OF SEEDLING GROWTH HABIT UNDER SUBMERGED CONDITIONS

Out of the estimated world area of about seven million hectares under deep water (floating) rice, about 1.5 million ha is in India. The important attributes of deep water rice are their elongation capacity, nodal tillering, nodal rooting and kneeing ability. Detection of elongation capacity by simple techniques will be of considerable use in breeding programmes invoking deep water rice varieties. The present work was carried out to study the elongation capacity and seedling growth habit under water submergence.

Twenty-six deep water varieties obtained from the International Rice Deep water Observation Nursery through the I. R. R. I., Phillippines and Pankaj a semi dwarf variety were screened in these studies. Soil was filled to a depth of 6 cm in glass jars of size 44 x 22 cm. and puddled to fine tilth and the germinated seeds were sown. On the fourth day of sowing, the initial height of seedlings was taken and water added to the jar to a height of 36 cm, through the sides of the jar so as to avoid disturbance to the young seedlings. The height of the water column was demarcated by a graph paper and the seedling hight was taken on the subsequent days.

The growth habit and leaf characteristics of the young seedlings are furnished in Table-1. From the Table it is evident that the initial height of the seedlings varies from 3-9 cm. Ahmed (1974) had reported wide variability among deep water varieties with regard to seedling height. Varieties V_1 V_2 had a seedling height of 3 cm while V_6 had 8cm height. Mukherji and Bardhan Roy (1978) reported that initial height of seedling was not associated with survival percentage after submergence. The present observation that V_1 and V_2 have successfully grown out of the water level, even though their relatively low initial seedling heights is in conformity with this report.

Eight out of the 23 deep water varieties and Pankaj failed to come out of the water column, while 18 deep water varieties came up. The possible reason for the failure of these eight deep water varieties to come out of the water column may be that the stage of submergence was too early for them. Vergara et al. (1976) reported that elongation above the water level depends more on the age of the plant As reported by Maurya (1974) the failure of these varieties to come up could also be due to the different rates of survivals in different types of flood. The failure of variety Pankaj to come out of the water surface is due to its non-floating habit and this observation agrees with the report by Datta and Banerji (1976).

From Teble-1 it is evident that there is wide variation among deep water varieties on the number of days they have continuous/steady growth, number of days required to come out of the water surface and the maximum height attained.

Table—I

Seedling characteristics and growth habits of deep water rice varieties

Sl. No.	Varieties	Height of seedlings in cm on the 4th day after germination	No. of days taken to cross 36 cm water	No. of days having steady growth	Maximum growth in cm	Rate of growth per day in cm	Ratio of 2nd leaf to leaf sheath
1	2	3	4	5	6	7	8
V_1	BKN-6986-66-2	3.0	8	8	36+	4.13	0.89
V_2	BKN-6986-108-3/IR. 262/PG-56	6.0	7	7	36+	4.29	0.92
V_3	C.R. 3. G/Pe a/BPI-76	6.0	6	6	36+	5.00	0.72
V_4	IR. 442-2-58/IR. 95-31-41 LMN	6.0	7	7	36+	4.29	0.76
V_5	Tadaungpo	6.0	6	6	36+	5.00	0.71
V_6	Yodaya	8.0	5	8	36+	3.50	0.76
V_7	BKN-6986-17[illegible]-5	4.0	6	6	36+	5.33	0.88
V_8	CN-536	6.0	12	12	36+	2.50	0.88
V_9	CN[illegible]41	7.0	6	6	36+	4.83	0.96
V_{10}	Cu[illegible]	6.0	6	6	36+	5.00	0.79
V_{11}	Go[illegible]-84	3.0	7	7	36+	4.71	0.78

1	2	3	4	5	6	7	8
V_{12}	Habiganj Aman-I	6.0	*	7	31	3.57	1 07
V_{13}	Kekowa Bao	4.0	*	3	10	2.00	0 82
V_{14}	Saran Kraban	7.0	7	7	36+	4.14	1.08
V_{15}	BR-229-B-88	4.0	*	7	32	4.00	0.96
V_{16}	Sulpan	7.0	*	14	33	1.86	1 07
V_{17}	Buna Jata	5.0	*	3	26	2.63	1.17
V_{18}	Balam	6.0	7	7	36+	4.29	1.00
V_{19}	Mura Basal	6,0	*	10	28	2.20	0.80
V_{20}	Sungwala	5.0	«	3	12	2.33	0.73
V_{21}	Beguamon	7.0	4	4	36+	7.25	0.97
V_{22}	Karkite-87	7.0	4	4	36+	7.25	0.74
V_{23}	BKN-688 6-45-1	6,0	6	6	36+	5.00	0.82
V_{24}	IR. 5825-41-2-p. 1/IR-2061-213/ Nam Sangi 19/IR. 1416-131	5,0	9	9	36+	3.44	0.87
V_{25}	IR. 5825-41-2-p. 4/IR-2061-213/ Nam Saugi 19/IR. 1416-131	5.0	8	8	36+	3.85	0.89
V_{26}	IR-5853-135-4-p. 3 Nam Saugi 19/IR. 2071-88/IR. 2061/214	4.0	6	6	36+	5.33	0.97
V_{27}	Pankaj	5.0	*	12	30	2.08	0.84

+ Covered the 06 cm water column

+ Not crossed the water columns

These factors and the initial height of the seedlings determine the rate of growth of the seedlings per day under water. The minimum rate of growth of 1.86 cm/day was recorded by Sulpan but this grew to a height of 33cm. The maximum rate of growth of 7.25 cm/day was recorded in varieties V_{21} and V_{22}. Datta and Banerji (1974) recorded daily growth rate of 5-6 cm but in the present study, the maximum dai!v growth was 7.25 cm.

In majority of the varieties, the seedlings had only two leaves and in a few cases, the 3rd leaf was just emerging. In most cases the ratio of the 2nd leaf blade to leaf sheath was found to be less than 1 and this is in conformity with the report of Hamamura and Saengpetch (1977).

സംഗ്രഹം

ആഴത്തിൽ വെള്ളം നിൽക്കുന്ന പാടങ്ങളിലേക്ക് അനുയോജ്യമായ 26 ഇനങ്ങളുടെ വെള്ളത്തിലെ വളർച്ച, ഇലയുടെ സ്വഭാവം എന്നിവ പഠന വിധേയമാക്കിയതിൽ വെള്ളത്തിലെ മുന്തിയ വളർച്ച നിരക്കു, തൈകളുടെ രണ്ടാമത്തെ ഇലയുടേയും പോളകളുടെയും നീളങ്ങൾ തമ്മിൽ ഒന്നിൽ കുറഞ്ഞ അനുപാതം എന്നിവയെ ആസ്പദമാക്കി പ്രത്യേക ഇനങ്ങളുടെ ആഴമുള്ള വെള്ളത്തിൽ വളരാനുള്ള കഴിവ് നിർണ്ണയിക്കാമെന്നു കണ്ടു.

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(*M S Received: 13—7—1980*)