

SEASONAL INFLUENCE ON THE EFFECT OF DHAINCHA (*Sesbaniaaculeate*. L) INCORPORATION INDIRECT SEEDED RICE

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Abstract: Intercropping of green manure in wet seeded rice for a brief spell of 35 to 40 days and incorporating in rice crop would encash the least detrimental effect of early shading, besides ensuring addition of green manure to rice crop. The field experiments were conducted in the wetland farms of Tamil Nadu Agricultural University, Coimbatore to evaluate the effect of *Dhaincha* incorporation on the agronomic yield of rice in different seasons. The experiments were laid out in Randomized Block Design with ten treatments during Summer and *Kharif* 2014. Accumulation of biomass in *Dhaincha* was distinctly increased when *Dhaincha* was sown in direct seeding rice with Drum seeder and two rows of *Dhaincha* in between rice (1:2) recorded higher biomass in summer (18.9 t ha⁻¹) and *Kharif* (15.4 t ha⁻¹) seasons. Rice with green manure intercropping and incorporating in rice Direct seeding with drum seeder + two rows of *Dhaincha* in between (1:2) during summer recorded higher grain (7630 kg ha⁻¹) and straw (8900 kg ha⁻¹) yield. In *Kharif* season the same treatment recorded grain (7468 kg ha⁻¹) and straw (8726 kg ha⁻¹) yield respectively. The dynamics of *Dhaincha* intercropping and incorporation in direct seeded rice crop, in summer and *Kharif* seasons influencing on agronomic yield, has been discussed in this paper.

Keywords: Direct seeded Rice, Season, *Dhaincha*.

Introduction

Rice is the staple food of more than half of the world's population. The term 'Rice is Life' is most appropriate for India as this crop plays a vital role in country's food security and is the back bone of livelihood for millions of rural households. In the present status rice in relation to remuneration, an effective resource management helps in cost reduction in its cultivation. Rice establishment by the conventional method of transplanting is costly and it is no way, better than wet seeded rice whose explicit advantage is labour saving. Further, by wet seeding, vegetative phase could be subjected to increase shading with least detrimental effect on rice yield, provided it is for the ultimate improvement in rice productivity. Intercropping of green manure in wet seeded rice for a brief spell of 35 to 40 days would encash the least detrimental effect of early shading besides ensuring green manure production, thus adding

organic content to the soil. Rice productivity could be improved substantially by following cheap, cost effective newer approaches as in case of green manuring to maintain soil health. To be precise, solution lies in newer ways of organic manuring (Surekha *et al.*, 2012).

Methodology

The field experiments were conducted in the wetland farms of Tamil Nadu Agricultural University, Coimbatore to evaluate the seasonal influence on the effect of *Dhaincha* (*sesbaniaaculeata*) incorporation indirect seeded rice. The experiment was laid out in Randomized Block Design with ten treatments during Summer and *Kharif* 2014. T₁ - Direct seeding with drum seeder only, T₂ - Direct seeding with drum seeder + Basal incorporation of *Dhaincha* @ 6.25 t/ha, T₃ - Direct seeding with drum seeder + one row *Dhaincha* in between (1:1), T₄ - Direct seeding with drum seeder + two rows of *Dhaincha* in between (1:2), T₅ - Direct seeding with drum seeder + one row of *Dhaincha* in between two drum (2:1), T₆ - Direct seeding with drum seeder + two row of *Dhaincha* in between two drum (2:2), T₇ - Direct seeding with drum seeder + one row of *Dhaincha* in between four rows of rice (4:1), T₈ - Direct seeding with drum seeder + two row of *Dhaincha* in between four rows of rice (4:2), T₉ - Direct seeding with TNAU Rice cum Green Manure Seeder, T₁₀ - Direct seeding + *Dhaincha* grown in border and incorporated in main field (Figure 1.). Seeds of rice variety Co 51 were used for the study. *Dhaincha* biomass production and incorporation, and its effect on rice economic yield were recorded and reported.

Results and Discussion

The results of analysis of variance indicated that effect of *Dhaincha* incorporation significantly affected agronomic yield in rice crop as compared to the absolute control. There would have been seasonal influence on *Dhaincha* production and its influence on agronomic yield of direct sown rice. Increased fresh biomass of *Dhaincha* was distinctly seen, during Summer compared to *Kharif* season. *Dhaincha* was sown in Direct seeded rice with drum seeder + two rows of *Dhaincha* in between (1:2) (T₄), recording about 18.9t ha⁻¹ in Summer and 14.2 t ha⁻¹ *Kharif*. In direct seeded rice during summer season, recorded grain (7630 kg ha⁻¹) and straw (8900 kg ha⁻¹) yield which (Figure 2.) was higher than the *Kharif* season with grain (7468 kg ha⁻¹) and straw (8675 kg ha⁻¹) yield respectively (Table 1.).

The grain yield of rice increased significantly with Direct seeding with drum seeder + two rows of *Dhaincha* in between (1:2) This might be due to the fact that steady and adequate supply of nutrients by the enhanced biochemical activity of micro-organisms coupled with large photo synthesizing surface would have helped in the production of more tillers and dry

matter with enhanced supply of assimilate to sink resulting in higher yield. Similar findings are reported by (Bridgit *et al.*, 1996). This might be due to the fact that adequate biomass production and better nutrient uptake which might have resulted in higher straw yield in these treatments. This is in accordance with the results obtained by Yadav and Lourduraj (2007). The climatic factors during summer contributed to higher biomass yield in Dhaincha influencing on enhanced rice yield.

References

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T₁ - Direct seeding with drum seeder



T₂ – Direct seeding with drum seeder + Basal incorporation *Dhaincha* @ 6.25 t/ha

T₃ – Direct seeding with drum seeder + one row *Dhaincha* in between (1:1)



T₄ – Direct seeding with drum seeder + two rows of *Dhainchain* between (1:2)



T₅ – Direct seeding with drum seeder + one row of *Dhaincha* in between two drum (2:1)



T₆ – Direct seeding with drum seeder + two row of *Dhaincha* in between two drum (2:2)



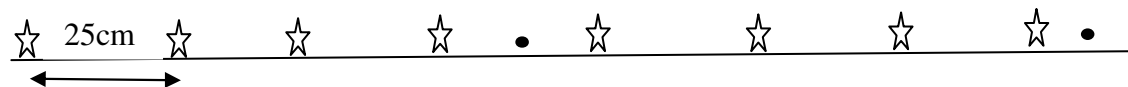
T₇ – Direct seeding with drum seeder + one row of *Dhaincha* in between four rows of rice (4:1)



T₈ – Direct seeding with drum seeder + two row of *Dhaincha* in between four rows of rice (4:2)



T₉– Direct seeding with TNAU Rice cum Green Manure Seeder



T₁₀– Direct seeding + *Dhaincha* growing in Border incorporated in main field

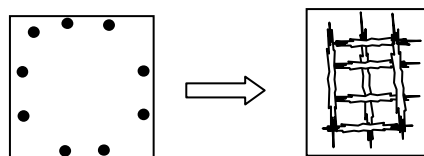


Figure 1. Treatment details of the experiment conducted

Table 1.Effect of *Dhaincha* incorporation on grain and straw yield in rice during Summer and Kharif season

Treatments	Summer season 2014				Kharif season 2014			
	<i>Dhaincha</i> Biomass (t ha ⁻¹)	<i>Dhaincha</i> Nitrogen content (%)	Rice Grain yield (kg ha ⁻¹)	Rice Straw yield (kg ha ⁻¹)	<i>Dhaincha</i> Biomass (t ha ⁻¹)	<i>Dhaincha</i> Nitrogen content (%)	Rice Grain yield (kg ha ⁻¹)	Rice Straw yield (kg ha ⁻¹)
T₁	-	-	4218	5578	-	-	4145	5393
T₂	-	-	5000	5798	-	-	4827	5613
T₃	14.2	2.56	6959	8853	12.4	2.48	6793	8675
T₄	18.9	2.58	7630	8900	15.4	2.50	7468	8726
T₅	7.9	2.53	6385	7958	6.8	2.45	6225	7786
T₆	11.8	2.54	6222	7705	10.2	2.46	6043	7514
T₇	6.4	2.49	5784	7021	5.8	2.42	5623	7848
T₈	10.9	2.47	6051	7437	9.8	2.40	5891	7265
T₉	5.4	2.47	5686	7046	4.9	2.40	5610	7025
T₁₀	4.8	2.45	5322	6301	4.6	2.38	5155	6122
SEd	0.5	0.16	314	116	0.4	0.16	284	192
CD (P = 0.05)	1.0	NS	660	242	0.8	NS	596	400

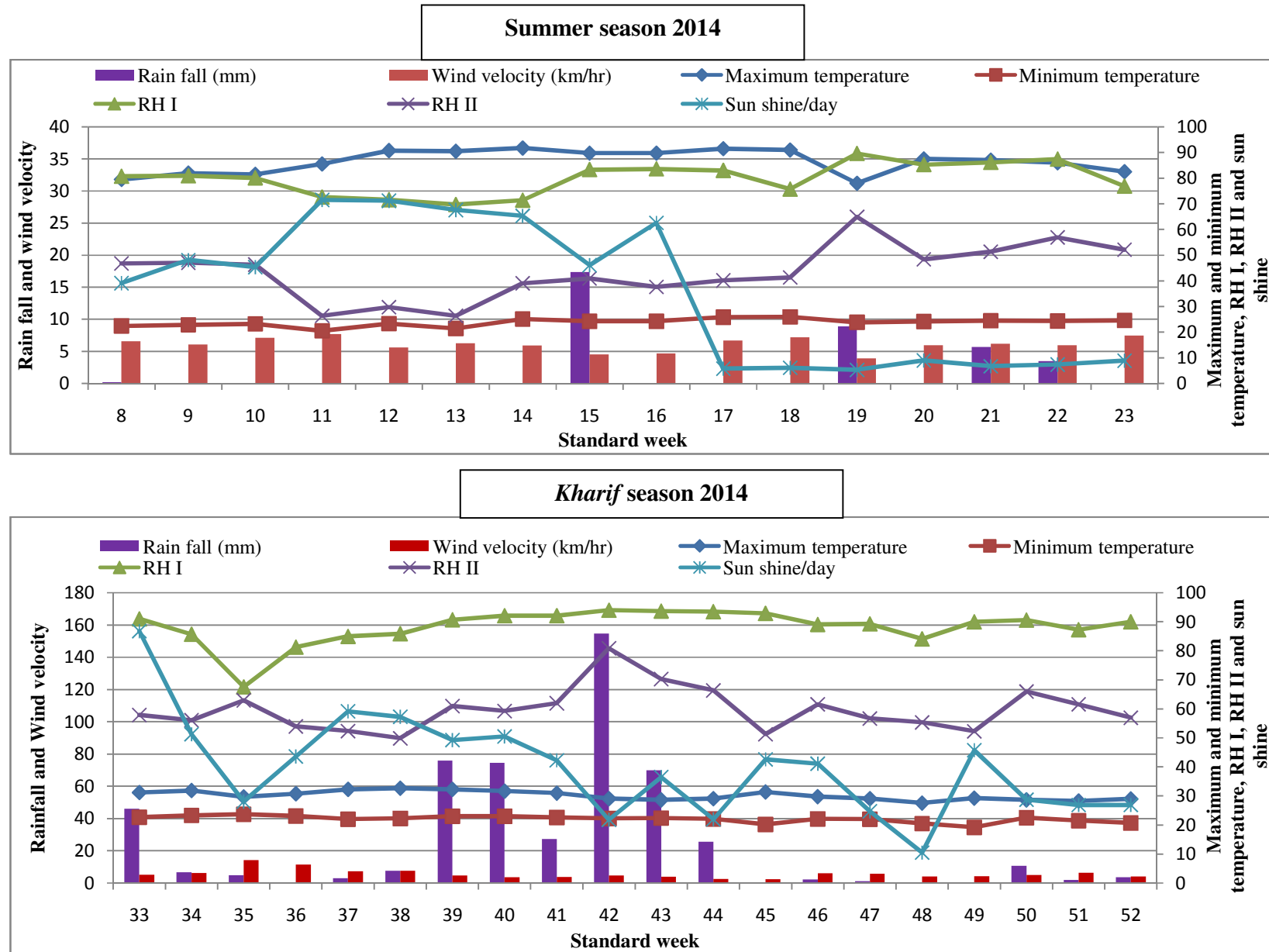


Figure 2. Meteorological data during Summer and Kharif season - 2014