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Research note:

Impact of organic nutrition on leaf area, chlorophyll content and dry matter partitioning of scented rice under upland ecosystem

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Key words : Organic nutrition, Chlorophyll, Rice, Ecosystem.

Nutrient management is an integral part of rice crop production technology. Application of inorganic fertilizers alone has lead to environmental pollution and deterioration of soil health. Use of nutrient through organic sources improves physical, biological and chemical condition of soil. Photosynthesis productivity depends on leaf area, chlorophyll content and gas exchange. Leaf area per plant is an important determinant in production and photosynthesis (Watson, 1947).

The study was undertaken to investigate the impact of organic nutrition on leaf area, chlorophyll content and dry matter partitioning of rice under upland ecosystem. A field experiment was carried out at Marathwada Agricultural University, Parbhani during 2004 in randomized block design with ten treatments replicated thrice. The rice variety Basmati 370 sown by drilling method at 30 cm row spacing with 60 kg/ha seed rate. The treatment details are T_1-control, T_2-RDF (80 : 50 : 50 kg NPK/ha), T_3-vermicompost (2.5 t/ha), T_4- neem cake (1.5 t/ha), T_5-biofertilizers (Azotobactor 1.5 kg/ha + PSB 5 kg/ha), T_6-FYM (10 t/ha), T_7- green leaf manuring (GLM) with *glyricidia* (10 t/ha), T_8-FYM (5 t/ha) + biofertilizers (*Azotobacter* + PSB), T_9-GLM (5t/ha) + biofertilizers (*Azotobacter* + PSB) and T_{10}- FYM (5t/ha) + GLM (5t/ha) + biofertilizer (*Azotobacter* + PSB). Chlorophyll content (mg/g) of fresh leaf weight (a, b, a/b and total) was determined at tillering and flowering stage following (Arnon, 1949), Leaf area/plant was determined at flowering stage with leaf area constant (0.82) (Sawant, 1982). Dry matter partitioning was determined at flowering and maturity stage.

Application of recommended nutrition through inorganic sources recorded significantly more leaf area over no nutrition and biofertilizer application but it was *at par* with all the organic nutrition sources treatments. This optimum response of nutrition may be attributed to deficient nature of soil nutrients which leads to more protein synthesis from the manufactured carbohydrate resulting in more protoplasm (Cell division) and its hydration (cell elongation) leads to improve leaf area or

Table 1 : Leaf area, chlorophyll content and dry matter partitioning as influenced by different treatments

Treatments	Leaf area cm^2/ plant	Chlorophyll content								Per cent partitioning					
		Tillering stage				Flowering stage				Flowering stage			Maturity stage		
		Chl 'a'	Chl 'b'	Total chl	Chl a/b	Chl 'a'	Chl 'b'	Total chl	Chl a/b	Stem	Leaves	Panicle	Stem	Leaves	Panicle
T_1	516.74	3.14	0.98	4.09	3.20	3.41	1.15	4.58	2.95	66.84	21.91	11.23	58.50	14.23	27.11
T_2	668.42	3.49	1.59	5.08	2.19	3.64	1.66	5.19	2.18	61.34	25.51	13.14	45.80	18.91	35.18
T_3	550.84	3.40	1.06	4.46	3.21	3.60	1.17	4.77	3.07	65.57	21.92	12.50	53.23	13.93	32.91
T_4	621.15	3.37	1.31	4.59	2.53	3.50	1.40	4.90	2.50	64.80	22.05	13.13	51.20	14.71	34.06
T_5	541.20	3.46	1.04	4.51	3.32	3.55	1.15	4.70	3.08	65.71	22.36	12.18	53.44	13.38	33.29
T_6	641.78	3.38	1.36	4.73	2.48	3.52	1.44	4.94	2.43	65.94	21.22	12.82	50.50	14.93	34.67
T_7	651.07	3.44	1.40	4.85	3.24	3.57	1.45	5.01	2.47	65.23	21.97	12.78	49.95	15.69	34.34
T_8	612.44	3.23	1.21	4.44	2.66	3.44	1.26	4.68	2.71	64.92	22.46	12.60	50.58	14.52	34.88
T_9	619.12	3.27	1.27	4.46	2.62	3.46	1.35	4.81	2.55	65.85	21.34	12.80	50.67	14.06	34.71
T_{10}	661.16	3.45	1.51	4.96	2.26	3.62	1.61	5.23	2.23	62.89	23.52	13.66	48.55	16.08	35.32
S.E. $\pm$	40.86	0.11	0.23	0.29	0.26	0.07	0.18	0.20	0.17	1.20	1.5	0.8	2.6	1.6	1.4
C.D. (P=0.05)	122.60	0.32	NS	0.86	NS	0.21	NS	0.60	NS	3.60	NS	2.38	7.7	4.8	4.2
CV %	12.16	11.25	8.17	7.63	9.65	8.21	12.54	11.26	10.89	9.27	9.09	7.71	11.71	7.81	10.11
Mean	608.40	3.35	1.27	4.62	2.77	3.53	1.36	4.48	2.62	64.90	22.42	12.68	51.24	15.04	33.64

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