

EFFECT OF COIRPITH ON THE BIOMETRICAL AND YIELD PARAMETERS OF *Vigna unguiculata* L. WALP AND *Glycine max* L. IN BLACK SOIL

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The treatments with composted coirpith at 12.5 t/ha along with inorganic fertilizers and neemcake showed a great influence in increasing the biometrical and yield parameters of cowpea (*Vigna unguiculata*) and soya bean (*Glycine max*) than the control.

Keywords: Biometrical parameters; Coirpith; Yield.

One of the important ecological and environmental benefits of industrial waste disposal and recycling is the utilization of these wastes for crop productivity. Coirpith, the least used component of the coconut is produced in all coconut processing areas which may be burnt or left to rot. In Tamil Nadu, more than 500 coir factories are in operation.

Hence this research is carried out to brighten the possibilities of using coir waste as an organic manure substitute for *Vigna unguiculata* L. WALP and *Glycine max* L. in black soil.

The design for the pot culture experiment is a randomised block with eight treatments and 4 replications.

The treatments are : T₁ absolute control; T₂ NPK alone; T₃ Raw coirpith + 100 % NPK (12.5 t/ha); T₄ Raw coirpith + 50 % NPK; T₅ Composted coirpith + 100 % NPK (12.5 t/ha); T₆ Composted coirpith + 50 % NPK; T₇ Raw coirpith as mulch; T₈ Raw coirpith & Neem cake (4 t/ha).

Seven kg of black soil was filled in the pots and seeds were sown. The biometrical parameters were noted down at 30, 60 and 90 Days after sowing (DAS). Yield parameters were noted down at the 90 Days after sowing (DAS) for both the test crops.

There had been an appreciable increase in the plant height of soya bean and cowpea

with the results ranging from 80.85 cm (T₁) to 160.1 cm (T₅) and 46.56 cm (T₁) to 74.5 cm (T₅) respectively. Composted coirpith when applied to these plants increased the growth of the plants greater than the control.

The treatments in which the composted coirpith, raw coirpith, mulch and raw coirpith + neem cake greatly influenced the nodulation parameters of soyabean and cowpea. The results ranging from 15.25 (T₁) to 30.75 (T₆) for soyabean and 9.5 (T₁) to 22 (T₅) for cowpea (Table 1, 2).

The dry matter production of soya bean and cowpea plants showed the influence of coir waste with the results ranging from 2.34 gm (T₁) to 2.53 gm (T₄) for cowpea (Table 1, 2).

There was an appreciable increase in the number of pods per plant with the values ranging from 12.41 (T₁) to 36.41 (T₅) for cowpea and 18.75 (T₁) to 62.25 (T₆) for soyabean (Table 3, 4).

The pod length and pod weight of cowpea and soya bean were increased to a great extent in the treatments in which composted coirpith was applied.

The grain yield of soyabean was increased after composted coirpith mulch and raw coirpith and neem cake treatments, 94.5 gm, 93.75 and 92.25 gm respectively than the control (68.25 gm) (Table 4). In cowpea all the treatments slightly

Table 1. Biometrical Parameters of Cowpea.

Treatments	Plant height (cm)	No. of nodules	Plant fresh weight (gm)	Plant dry weight (gm)
T ₁	46.56	9.50	5.65	1.18
T ₂	49.75	12.00	7.87	1.33
T ₃	64.25	20.75	8.85	1.95
T ₄	66.75	20.50	9.13	2.53
T ₅	74.50	22.00	7.73	2.00
T ₆	69.50	20.25	6.20	2.25
T ₇	67.75	22.00	4.63	1.20
T ₈	69.75	18.25	6.85	1.55
S.E.	2.54	1.16	0.47	0.17
C.D.	9.26	4.21	1.70	0.63

Table 2. Biometrical Parameters of Soyabean.

Treatments	Plant height (cm)	No. of nodules	Plant fresh weight (gm)	Plant dry weight (gm)
T ₁	80.85	15.25	6.74	2.34
T ₂	85.25	16.25	6.09	1.50
T ₃	94.10	24.75	6.79	2.19
T ₄	90.10	28.25	6.28	1.68
T ₅	160.10	27.00	16.62	5.42
T ₆	140.11	30.75	8.14	3.17
T ₇	106.00	29.75	9.04	2.38
T ₈	110.60	29.25	6.02	1.95
S. E.	6.66	1.45	1.98	0.31
C. D.	24.23	5.28	7.22	1.12

S. E. - Standard Error

C. D. - Critical Difference

T₁ - Absolute ControlT₂ - Control with FertilizersT₃ - Raw coirpith + full NPKT₄ - Raw coirpith + Half NPKT₅ - Composted coirpith + full NPKT₆ - Composted coirpith + half NPKT₇ - Coir MulchT₈ - Raw coirpith + Neem cake

Table 3. Yield Parameters of Cowpea.

Treatments	Pods/ plants	Grains/ pod	Pod weight/ plant (gm)	Grain weight/ pod (gm)	Haulm weight (gm)	100 grain weight (gm)	Pod length (gm)
T ₁	12.4	15.0	17.0	2.0	0.58	12.7	14.9
T ₂	14.0	15.0	18.0	2.0	0.58	12.8	15.3
T ₃	17.7	15.7	18.7	2.2	0.65	13.4	15.7
T ₄	17.5	16.5	24.2	2.1	0.63	13.3	16.7
T ₅	36.4	16.5	303.5	2.2	0.59	13.3	17.0
T ₆	35.3	16.7	209.5	2.2	0.62	13.8	17.0
T ₇	30.0	16.2	156.5	2.2	0.61	13.6	16.3
T ₈	32.5	16.0	157.7	2.2	0.64	13.3	17.0
S. E.	2.26	0.17	25.74	0.06	0.01	0.09	0.21
C. D.	8.25	0.64	93.72	1.08	0.03	0.36	0.79

Table 4. Yield Parameters of Soyabean.

Treatments	Length of pod (cm)	No. of grains per pod	50 grains weight (gm)	No. of pods per plant	Pod weight (gm)
T ₁	3.00	2.00	68.25	18.75	6.15
T ₂	3.08	2.00	66.75	24.25	8.59
T ₃	3.15	2.00	80.50	39.25	15.71
T ₄	3.20	2.75	81.75	40.75	15.88
T ₅	3.93	2.50	88.75	60.50	42.30
T ₆	3.80	3.00	94.50	62.25	42.81
T ₇	3.43	2.25	93.75	41.50	26.18
T ₈	3.75	3.00	92.25	50.00	34.11
S. E.	0.06	0.12	47.49	3.77	3.41
C. D.	0.20	0.45	172.88	13.72	12.43

S. E. - Standard Error

C. D. - Critical Difference

T₁ - Absolute ControlT₂ - Control with FertilizersT₃ - Raw coirpith + full NPKT₄ - Raw coirpith + Half NPKT₅ - Composted coirpith + full NPKT₆ - Composted coirpith + half NPKT₇ - Coir MulchT₈ - Raw coirpith + Neem cake

improved the hundred grain weight than the control.

Increase in the biometrical parameters of cowpea and soyabean are related to the earlier reports of Savithri *et al*¹, in which an appreciable increase in the growth of sorghum plant was noted when coirpith was applied.

In the present study the grain yield of cowpea and soya bean were positively influenced by coirpith. This investigation supports earlier reports of Nagarajan *et al*², who inferred the application of recommended levels of major nutrients and raw coirpith at

20 t/ha and recorded the highest grain yield of groundnut.

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References

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Treatment	Length (cm)	No of pods per plant	50 grains weight (gm)	No of pods per plant	100 grain weight (gm)
C.D.	1.22	0.94	0.72	1.08	0.79
S.H.	2.28	0.17	0.04	0.09	0.57
T ₁	1.60	1.23	0.64	1.13	1.10
T ₂	1.60	1.23	0.64	1.13	1.10
T ₃	1.60	1.23	0.64	1.13	1.10
T ₄	1.60	1.23	0.64	1.13	1.10
T ₅	1.60	1.23	0.64	1.13	1.10
T ₆	1.60	1.23	0.64	1.13	1.10
T ₇	1.60	1.23	0.64	1.13	1.10
T ₈	1.60	1.23	0.64	1.13	1.10

Table 4. Yield Parameters of Soyabean

Treatment	Length (cm)	No of pods per plant	50 grains weight (gm)	No of pods per plant	100 grain weight (gm)
C.D.	0.70	0.42	1.12	1.12	1.12
S.H.	0.68	0.12	0.40	0.77	0.41
T ₁	1.80	1.32	0.40	0.41	0.41
T ₂	1.80	1.32	0.40	0.41	0.41
T ₃	1.80	1.32	0.40	0.41	0.41
T ₄	1.80	1.32	0.40	0.41	0.41
T ₅	1.80	1.32	0.40	0.41	0.41
T ₆	1.80	1.32	0.40	0.41	0.41
T ₇	1.80	1.32	0.40	0.41	0.41
T ₈	1.80	1.32	0.40	0.41	0.41

T₁ - Raw coirpith + Full NPK
 T₂ - Composted coirpith + Full NPK
 T₃ - Composted coirpith + Full NPK
 T₄ - Control with Fertilizer
 T₅ - Raw coirpith + Full NPK
 T₆ - Raw coirpith + Full NPK
 T₇ - Raw coirpith + Full NPK
 T₈ - Raw coirpith + Full NPK