

## UTILISATION OF COIR PITH AS MANURE FOR GROUNDNUT

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A field experiment was carried out to evaluate the usefulness of Coir Pith (a waste from the coconut husk in coir fibre industry) as manure for groundnut crop in sandy loam soils of Agricultural Research Station, Alianagar. Groundnut, CO 1, was sown with 12 treatments consisting of, absolute control, and NPK alone and in combination with raw coir pith and coir pith inoculated with *Pleurotus* sp, a fungus, at 12.5 t/ha. The results revealed a significant increase in groundnut pod yield to the combined application of the inoculated coir pith and NPK.

The coir industry in India is over a century old and provides employment to about half-a-million in rural areas. Coconut husk is the raw material for coir industry. Coir pith, a waste from the coconut husk after separating coir fibre accounts to the tune of 3.4 lakh tonnes from the industries in India. This waste material, is being thrown on the highways and burnt, since the accumulation in the industrial yards is causing concern of the industries for want of space and disposal of coir pith for the fibre production. Earlier studies made in this university have clearly indicated the usefulness of the coir pith as its addition to the farm soil substantially increased the farm output in rice, grapes and sorghum (Ramaswami *et al.*, 1985; Ramaswami and Gothandaraman, 1985). It retains five times its weight of moisture and contains 0.21% N, 0.09% P<sub>2</sub>O<sub>5</sub>; 0.84% K<sub>2</sub>O and 26.10% organic carbon. The decomposition of coir pith by the effective microorganisms will

release the nutrients for the crops. An attempt is made in this paper to study the effect of coir pith on the yield of groundnut and on the soil properties

### MATERIALS AND METHODS

Two field experiments were conducted in sandy loam soil of Agricultural Research Station, Alianagar (Coimbatore district) with 12 treatments viz., control, N alone (10kg N/ha), PK alone (10 kg P<sub>2</sub>O<sub>5</sub>/ha + 45 kg K<sub>2</sub>O/ha), NPK, coir pith at 12.5 t/ha and coir pith 12.5 t/ha inoculated with *Pleurotus* sp. with and without N, PK and NPK. The treatments were replicated thrice adopting randomised block design. The cultivar CO 1 was sown in two different seasons viz., March '85 to June '85 and July '85 to November '85 at two locations. The soils of two locations are sandy loam, neutral in reaction and in available nutrient status low in nitrogen, high in phosphorus and medium in potassium. The crop was grown upto

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Table 1. Effect of coir pith on pod and haulm yield of groundnut in two field experiment (kg/ha)

Treatment	First experiment March, '85 to June, '85		Second experiment July, '85 to November, '85	
	Pod yield	Haulm yield	Pod yield	Haulm yield
Control	1804	3766	1188	2300
N alone (10 kg N/ha)	1992	4200	1408	2160
PK alone (10 kg P <sub>2</sub> O <sub>5</sub> + 45 kg K <sub>2</sub> O/ha)	1861	3734	1892	2460
NPK	2082	4466	1892	2680
Coir pith 12.5 t/ha (CP)	1641	3366	1804	2980
Coir pith 12.5 t/ha inoculated with <i>Pleurotus</i> (CPI)	1905	3834	2068	2580
CP + N	1804	3600	1232	2060
CP + PK	1967	4132	2156	3340
CP + NPK	2068	4400	2244	2800
CPI + N	2433	4200	1672	2660
CPI + PK	2450	4534	2376	3420
CPI + NPK	2486	4634	2640	3260
SE	137	288	282	N.S.
CD (P=0.05)	403	844	826	

Table 2. Effect of coir pith on soil properties

Treatment	PH	EC (milli mhos/cm)	Available nutrients (kg/ha)		
			N	P	K
Control	6.8	0.09	216	72	251
N alone (10 kg N/ha)	6.8	0.06	257	85	288
PK alone (10 kg P <sub>2</sub> O <sub>5</sub> + 45 kg K <sub>2</sub> O/ha)	7.0	0.07	234	71	275
NPK	6.9	0.06	228	56	288
Coir pith 12.5 t/ha (CP)	6.8	0.05	187	66	344
Coir pith 12.5 t/ha inoculated with <i>Pleurotus</i> (CPI)	7.0	0.07	234	71	368
CP + N	6.8	0.06	263	72	384
CP + PK	6.7	0.07	257	82	400
CP + NPK	6.8	0.06	239	63	428
CPI + N	6.7	0.08	234	78	396
CPI + PK	6.9	0.06	198	82	388
CPI + NPK	6.8	0.07	249	82	372
SE	N.S.	N.S.	14	N.S.	12
CD (P=0.05)			41		35

maturity and the yield of pod and haulms were recorded. Post harvest soil samples analysed for soil properties viz., pH, EC, available N, P and K using the procedures outlined by Jackson (1973). The pod and haulm yield data and the post harvest soil properties data were subjected to statistical scrutiny for better interpretation.

## RESULTS AND DISCUSSION

The results of the pod and haulm yield of the two field experiments are given in Table 1. The data of pod and haulm yield of the two experiments are significant except that of haulm yield of second experiment. The data on pod yield of first experiment revealed a significant increase in pod yield in all the treatments of inoculated coir pith when applied along with, N, PK and NPK. A combined application of pith inoculated with *pleurotus* and NPK (T<sub>12</sub>) registered a significantly higher yield over absolute control and NPK by 38 and 19 per cent but was on par with T<sub>10</sub> and T<sub>11</sub>, wherein the inoculated coir pith was applied with N and PK respectively. Coir pith when applied alone had registered a nine per cent reduction in pod yield. This might be due to the shift in C:N ratio which would have immobilised the soil nitrogen as could be seen from the post harvest soil analysis (Table 2).

The yield of haulms of the first experiment registered the highest yield of 4634 kg/ha in T<sub>11</sub>, which was distinctly superior to absolute control by 13 per cent increase, however, it was in par with other treatments except T<sub>10</sub> and T<sub>9</sub>.

The data of pod yield of second experiment revealed a significant increase

in pod yield at T<sub>12</sub> registering 122% increase over absolute control and 39% over NPK control. The effect of treatments on haulm yield was not significant.

The results of the analysis of the post harvest soil samples of the first experiment are given in Table 2. The addition of inoculated coir pith had a pronounced effect on the available nitrogen and potassium contents of the soil while the other properties were not affected by the treatments. The available nitrogen had a drastic reduction when uninoculated coir pith was applied. The soil available nitrogen might have been utilised by the soil microbes for synthesis of cellular constituents. The enhanced availability of nitrogen and potassium caused by the application of inoculated coir pith would have favoured the crop growth resulting in higher pod and haulm yield of groundnut.

From the foregoing discussion it could be concluded that the application of coir pith at 12.5 t/ha inoculated with *pleurotus* and applied along with NPK increased the yield of groundnut, besides maintaining the fertility of the soil.

## REFERENCES

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