

Effect of De-Fatting on the Manurial Value of Groundnut Cake

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Oil cakes are good and effective sources of nitrogen. They are at par with ammonium sulphate and in black soils of Hyderabad, which are low in available phosphates, their performance is even superior.

In Hyderabad large amounts of groundnut cake are put to use as manure. Two types of groundnut cake *viz.*, muddy cake and ordinary cake are available. The former contains 10 to 20 per cent oil while the oil content of the latter cake varies from 5 to 10 per cent. Oil from these cakes can be extracted using solvents like hexane and put to industrial uses. The residue left after solvent extraction of oil is termed "de-fatted" cake. This cake is not only free from oil but also richer in nitrogen. Logically speaking, de-fatting should improve the quality of the cake as a manure. The present paper deals with the results obtained from a pot experiment designed to test the above hypothesis.

EXPERIMENTAL

The three forms of cakes were compared against ammonium sulphate as standard. Only a single level of nitrogen *viz.*, 45 lb./acre, which was found to be an optimum dose for rice crop of 4 months duration was chosen. 50 lb. P₂O₅/acre through superphosphate was applied to all the treatments as a basic dose. The soil used was sandy clay loam. The variety of paddy chosen was H. R. 19 (maturity 115-120 days). The 4 treatments were replicated six times.

The experiment was conducted for 3 seasons and the results obtained are presented in the table below.

RESULTS AND DISCUSSION

TABLE I

Yield data

(Average of six replications)

Treatment	Average of grain yield in grams per pot			
	1952-53	1953-54	1954-55	Average
Ammonium sulphate	9.43	10.47	5.92	8.61
Muddy cake	8.31	10.97	6.73	8.67
Ordinary groundnut cake	8.67	12.05	8.05	9.59
De-fatted groundnut cake	9.67	12.28	9.49	10.48
General Mean	9.02	11.44	7.55	9.34
Critical Difference	0.90	1.54	1.33	0.71

		Conclusions			
1952-53	$\overline{T_4 T_1}$ $\overline{T_3 T_2}$	Pooled Analysis	
1953-54	$\overline{T_4 T_3}$ $\overline{T_2 T_1}$		
1954-55	$\overline{T_4 T_3}$ $\overline{T_2 T_1}$	$\overline{T_4 T_3}$	$\overline{T_2 T_1}$

From the results of the combined analysis it was seen that the treatmental differences are significant at 1.0% level. Although the differences are not consistent from season to season, yet the results clearly establish the superiority of de-fatted cake in all the seasons.

The decomposition and release of nitrogen as ammonia is regulated by the oil content of the cakes. Muddy cake which contains more oil undergoes decomposition at a slower rate than ordinary cake. Data not presented in this paper reveal that, under anaerobic conditions, 70% and 50% of nitrogen in the ordinary and muddy groundnut cakes respectively was ammonified in twenty days. Under aerobic conditions, however, 76% and 72% of nitrogen in ordinary and muddy cakes respectively were ammonified during the same interval.

De-fatted cake being almost free from oil is expected to undergo quicker ammonification and complete decomposition with the result that almost all the nitrogen added through it is used by the growing crop. In the case of other cakes, it looks that a portion of the nitrogen is not available to the crop due to their partial efficiency of decomposition and ammonification.

SUMMARY

De-fatting enhances the manurial value of groundnut cake.
