

## Economic dosage of manure for rainfed cholam of Coimbatore District\*

by

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**Synopsis:** A manurial experiment conducted during 1954-'57 at the Millets Breeding Station, Coimbatore to find out the requirement of farm yard manure or compost and artificial fertilisers for the rainfed cholam crop revealed that application of cattle manure or compost at 5 tons per acre at intervals of two years appeared to be the best.

**Introduction:** The details of the experiment conducted to assess the economic dosage of manures to the rainfed cholam crop and the inferences drawn from the data collected are presented in this paper. Application of farm yard manure to *Irungu* cholam at Kovilpatti did not improve the yield to any significant degree (Memoirs Dept. Agri. Madras, 1954). At Nandyal, the experiments indicated that it was more economical to apply farm yard manure to the sorghum crop than to the succeeding crop of cotton, as the cereal responded well to manuring, and a sufficient residual effect persisted in the second year for the cotton crop. Manurial trials on the rainfed crop of sorghum have been conducted at Guntur, Hagari, Nandyal and Kovilpatti with Ammonium sulphate (2 cwt/acre), Super (1 cwt/acre), Cattle manure (3 tons/acre) or groundnut cake (250 lb/acre). Increases 50% over control have been obtained in all the centres when the rainfall and its distribution were good and uniform.

**Material and Methods:** *Periamanjil* cholam is the most important un-irrigated variety of Sorghum grown in the Coimbatore district. Cholam Co. 1 is the standard strain of this variety. Sown in the months of July-August with the break of the South-west monsoon it comes to harvest in December-January. Cholam Co. 1 was sown under four different manurial treatments replicated six times. The treatments are detailed hereunder :

- A. No manure (control)
- B. Farm yard manure or compost at 5 tons/acre
- C. B + 20 lb. nitrogen + 20 lb. phosphoric acid
- D. B + 40 lb. nitrogen + 20 lb. phosphoric acid.

Nitrogen was applied in the form of ammonium sulphate and phosphoric acid in the form of superphosphate. As the phosphates are the less soluble, they were applied after ploughing operation just a fortnight

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before sowing, so that they may be rendered soluble and readily assimilable by the time they are required by the plants. Nitrogen was applied during the growth period very close to the plants as top dressing, a month after the sowings, just before rain was expected. Care was taken to avoid the application of manure when the plants were wet as the nitrogenous manures falling on the wet leaves is apt to burn them. Then the manure was thoroughly incorporated in the soil by hand hoeing.

The gross area of a plot was 5 cents (100 links x 50 links) and the net area was 3.6 cents. The distance between rows was two links (1' 3" approximately).

**Experimental results and discussion:** The yield data of the experiment conducted in the years 1954 to 1957 are furnished in the table. The rainfall received during the growth period of the crop shows that there is considerable variation from year to year. The ten year average which is generally called normal is 15.21 inches, received during July-December. In the year 1955, though the rainfall of 9.92 inches was below the average the crop was normal. The success of a good crop depends upon the rainfall and its distribution. In applying artificial fertilizers, the availability of water is very important for the diffusion of the salts. Receipts of 16.22 inches, 16.59 inches and 23.73 inches were recorded during the years 1954, 1956 and 1957 respectively. In the years 1954 and 1957 the rainfall and its distribution were good whereas in 1956 though the rainfall was 16.59 inches the crop failed completely due to late sowings and heavy rains during the early stages.

It is evident from the yield data that the treatment B has proved to be the best. In all the years the treatment B has given higher yields of both grain and straw and in the year 1957, it was found statistically superior to the other treatments from the point of view of grain yields. In straw yields, it was on par with the treatment D which received 5 tons of compost, 40 lb. of nitrogen and 20 lb. of phosphoric acid.

The economics of the different treatments was calculated over the control plot A. The gross average incomes of the treatments A, B, C and D worked out to Rs. 296/-, Rs. 343/-, Rs. 322/- and Rs. 338/- and their costs of cultivation were Rs. 50/-, Rs. 76/-, Rs. 95/- and Rs. 107/- respectively. The treatment B has given a net profit of Rs. 21/- per acre over the control A whereas the treatments C and D have brought a net loss of Rs. 19/- and Rs. 19/- and Rs. 14/- respectively.

From the past and the present data, the application of compost proves to be economically good. An experiment to compare the relative merits of compost and cattle manure was conducted for three years at

the Central Farm, Coimbatore. The results showed that both these manures increased the yields over the control and there was no significant difference between them. The beneficial effects of farm yard manure could be traced even upto five years after application at Kovilpatti and other places.

**Summary:** 1. A manurial experiment was conducted at the Millets Breeding Station to find out the requirement of farm yard manure and artificial fertilizers for the rainfed cholam crop with the following four treatments.

- (A) No manure (control).
- (B) Farm yard manure or compost at 5 tons per acre.
- (C) B + 20 lb. of nitrogen + 20 lb. of phosphoric acid.
- (D) B + 40 lb. of nitrogen + 20 lb. of phosphoric acid.

2. Application of manures increased the crop yields.

3. The treatment B proved to be more economical and profitable than the treatments C and D.

4. The application of cattle manure or compost at 5 tons per acre at intervals of two years appears to be the best suggestion that can be made to the growers of rainfed sorghum.

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TABLE  
Yield Data

	A	B	C	D	Stand- ard error %	Whether differences are significant or not at P=0.05 level	Critical differ- ences %	Con- clusion
	No manure (control)	Cattle manure at 5 tons/ acre	Cattle manure 5 tons + 20 lb. N + 20 lb. P <sub>2</sub> O <sub>5</sub> per acre	Cattle manure 5 tons + 40 lb. N + 20 lb. P <sub>2</sub> O <sub>5</sub> per acre				
1954								
Yield per acre in lb.	1303	1347	1501	1407	79.9	No		
GRAIN Yield as a % of the standard	100	103.4	115.1	108.0	6.1	No		
STRAW Yield per acre in lb.	3018	4284	3194	2803	217.2	No		
Yield as a % of the standard	100	142.0	107.4	126.0	7.2	Yes	21.7	<u>B D C A</u>
Money value expressed as a % of the standard	100	114.6	110.7	112.4	5.0	No		
1955								
Yield per acre in lb.	858	890	1066	1074	106.0	No		
GRAIN Yield as a % of the standard	100	103	124	125	12.3	No		
STRAW Yield per acre in lb.	3079	2912	2939	2794	217.0	No		
Yield as a % of the standard	100	95	95.9	91.0	7.1	No		
Money value expressed as a % of the standard	100	100	111.8	110.7	—	No		
1956								
			CROP FAILED					
1957								
Yield per acre in lb.	1105	1470	1207	1041	52.8	Yes	158.6	<u>B C A D</u>
GRAIN Yield as a % of the standard	100	137.0	109	94.0	4.0	Yes	14.0	<u>D B C A</u>
STRAW Yield per acre in lb.	3482	4077	3720	4820	225.0	Yes	675	<u>D B C A</u>
Yield as a % of the standard	100	117.4	107.1	120.0	6.4	Yes	19.44	<u>C B D A</u>
Money value expressed as a % of the standard	100	104.7	116.6	102.5	4.6	Yes	13.7	<u>C B D A</u>