

Farming will never be a success unless the farmer  
had more voice in the disposal of  
his produce.—P. Morrel.

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## SORGHUM—STUDIES IN SOWING DEPTHS

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The prevalent agricultural practice in the red loamy soils round about Coimbatore of sowing the local yellow variety *Peria Manjal Cholam*, deep, behind a country plough in seasons of deficient timely rains led to the study of the general question of the response of the local variety to different depths of sowing.

The sowings were done in pots with adequate drainage in a foot of soil. 100 seeds represent each unit, and prior to sowing, the germination percentage of the seeds was recorded by sprouting them on wet blotting paper in an incubator. A standard strain—A. S. (*Andropogon Sorghum*) 29—was selected. A seed was recorded as germinated when it managed to push out a bit of green beyond the soil surface. A seedling with its various parts is drawn in figure 1.

TABLE I.

A. S. 29 in different depths of sowing.

Sowing depth in inches	Germination percentage	Average length of mesocotyl in inches	Average number of secondary roots arising from base of Coleoptile
Surface	88	0.0	4.70
$\frac{1}{2}$	100	0.3	4.39
1	97	0.9	4.22
2	95	1.9	3.76
3	85	3.0	3.36
4	72	3.1	3.28
5	52	3.7	3.09
6	16	4.0	1.10

Taking it that deep sowing may have to be resorted to under certain circumstances it will be obvious that not all strains successfully respond to deep sowing and that the poor germination capacity of A. S. 80 and A. S. 1374 is due to their comparative inability to produce enough length of mesocotyl and coleoptile combined, to give them that push up necessary to bring out the seedlings to the surface.

This led to the general question of varietal response in this direction. Different varieties were chosen and sown at the standard depth of 4" and the results are tabulated below.

TABLE VI.

Sorghum varieties sown 4" deep.

Number and name of variety	Germination percentage in germination tray	Germination percentage in pots	Average mesocotyl + coleoptile length of germinated seedlings in inches
A. S. 553—Tella Jonna, Nandyal...	83	1	...
„ 1053—Sen Cholam, Salem ...	92	60	3.84
T. 6—Pacha Jonna, Nandyal.	75	71	3.61
A. S. 1894—Brown Cholam (A. S. 186 clan) ...	95	73	4.20
„ 1010—Pedda Jonna, Bezwada.	100	79	3.81
„ 403—Thalavirichan Cholam, Goundanpalayam ...	98	80	4.05
„ 1047—Karum Cholam, (Irungu) Manaparai.	96	85	4.19
„ 29—Peria Manjal Cholam, Coimbatore ...	94	87	4.03

It will be noticed that there is an appreciable variation in the different varieties in their combined mesocotyl and coleoptile lengths and that this length determines the number of successful germinations. It will thus be evident that this capacity will have to be remembered as one of the probable factors in determining successful seed germinations under dry farming conditions.

In TABLE VI, the one per cent germination in pots of A. S. 553, Tella Jonna, Nandyal, giving 83 per cent of germination in the tray, was pursued.

TABLE VII.

Sowing depths of Tella Jonna, Nandyal (A. S. 553)

Sowing depth in inches	Percentage of germination in	
	Black Soil	Red Soil
$\frac{1}{2}$	85	85
1	50	80
2	45	60
3	10	5
4	0	0

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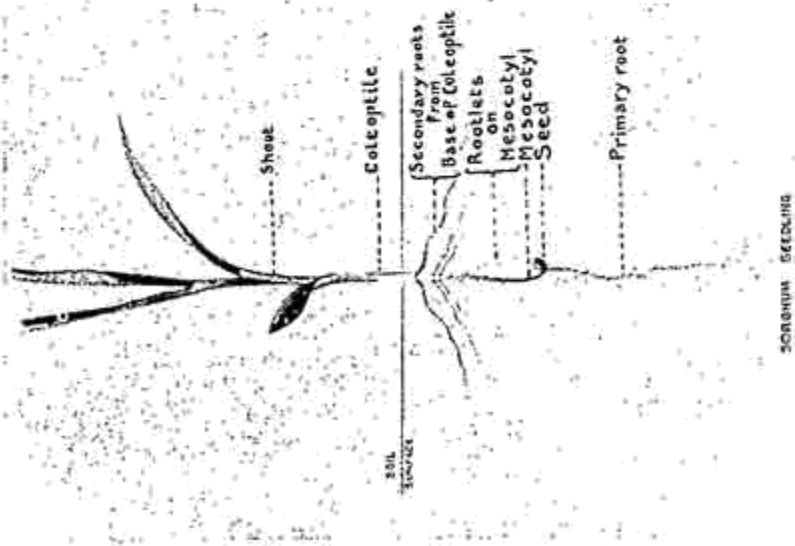


FIG. 1

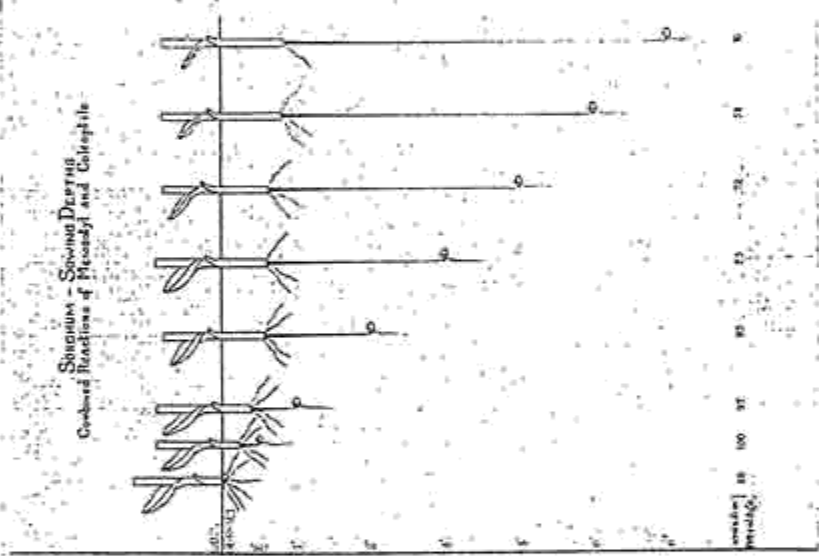


FIG. 2

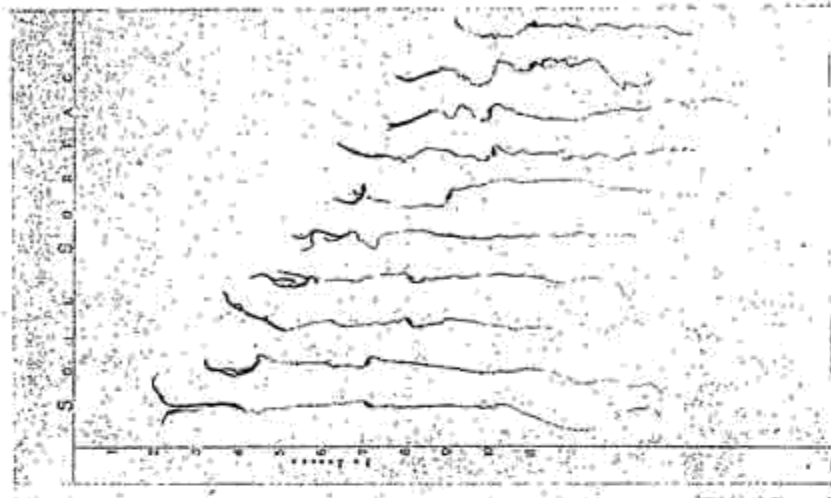


FIG. 3



FIG. 1



FIG. 2



FIG. 3



FIG. 4

Fig. 1. Sugarcanes being tied together to overcome lodging. Fig. 2. A well-tied group after the final wrapping. (Roping is visible where  $\times$  is marked). Fig. 3. A view of the cane field after roping is finished. Fig. 4. Roping and twisting of leaves.  
*N.B.*—Roping can be seen where  $\times$  is marked in the photographs.

A progressive increase of germination with shallower sowings is observable, more noticeably in the heavy black than in the lighter red soils.

An examination of the ungerminated 4-inch depth sown pot of TABLE VI showed that out of 100 seeds sown, 62 sprouted, 18 of them giving an appreciable and measurable length of mesocotyl and coleoptile, whose average mesocotyl length was 1.62 inches, and average coleoptile length was 1.06 inches, their combined average lengths being 2.68 inches, which is 1.32 inches below the soil surface. This varietal difference in response to depths of sowing in terms of germination percentage is graphically brought out in this instance.

These studies reveal the importance of this early phase of the seedlings' existence and the need for their study in the general scheme of the evolution of a successful strain.

#### SUMMARY

Sowing depth in Sorghum varies with soil and moisture conditions. Successful germination is due to the combined effort of mesocotyl and coleoptile. This combined length is a varietal character and is elastic within limits. Appreciable differences are noticeable within strains. This aspect of a strain will have to be remembered in its evolution.

### A SHORT NOTE ON THE SUGARCANE CULTIVATION IN HINDUPUR TALUK

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My idea in writing this article is to popularize some of the methods adopted by the Hindupur ryots in growing sugarcane. Garden cultivation is important in this taluk and sugarcane forms the chief commercial crop which pays ready money to the ryot. Notwithstanding the various difficulties met with by the ryots in growing a crop of sugarcane every year they cultivate at least half an acre of sugarcane always.

**Varieties of sugarcane.**—The two popular varieties are 'Pedda Cheruku' and 'Chinna Cheruku' (big and small canes as literally translated). Pedda Cheruku is more juicy than the other, but on personal observation both the varieties yield 350 to 400 maunds of jaggery (1 maund=25 lbs.) per acre. The thinner variety resists drought better and gives a better quality of jaggery which fetches a higher price. Ryots are often impressed with the better tonnage of the canes and so Pedda Cheruku is more popular. Sometimes gardens can be seen where both the varieties are grown as a mixture in order to improve the quality of the jaggery.

**Rotations.**—There is a common belief that sugarcane after tobacco yields best and that a superior quality jaggery is obtained from such a crop. As tobacco is limited to particular areas the general rotation is paddy or ragi and sugarcane. Between paddy and ragi, ryots prefer paddy to precede sugarcane since they believe the soil improves in its condition after a paddy crop.

**Preparatory cultivation.**—The land is ploughed eight to twelve times with a wooden plough generally bigger than the ordinary country plough, to