TILLAGE OF PREVIOUSLY PUDDLED PADDY FIELDS FOR YALA SEASON SESAME (GINGELLY) PRODUCTION.

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Introduction:

Traditionally, sesame is grown under rainfed condition during Yala season under "Chena" conditions in the dry zone of Sri Lanka. Foreign demand for sesame is making this an increasingly important crop and additional acreages are being considered for its production. Potential areas for its production in Yala season are irrigated well drained Reddish Brown Earths, which may not receive sufficient water for production of other field crops. Besides, sesame becoming a profitable crop, it requires relatively low amounts of water, low management and short season making it a suitable crop for well drained paddies during yala season.

One of the problems of growing sesame in Yala during a paddy cycle is that the soil will have been puddled for rice production in Maha season. Puddling the soil destroy the soil structure and creates a shallow hard pan which impedes drainage. This study then, examines whether tillage can distroy the hardpan, improve the soil structure, and increase sesame production in paddy fields.

Materials and Methods:

The experiment was conducted in catchment 'C' at the Agricultural Research Station, Maha Illuppallama. The soil (well drained Reddish Brown Earth) had been cultivated to paddy for three years previously. Tillage treatments included:-

1. Surface scraping - paddy stubble and weeds were scrapped by mammoty and left on the surface.

2. Shallow tillage - ploughed 8-10 cm deep.

3. Deep tillage - ploughed, with inversion to about 15 cm.

The treatments were replicated four times in a complete randomized block design. The plots (7 x 6 meters) were seeded with MI.3 sesame in rows 30 cm apart and thinned to 5 - 6 cm. within row after germination. Fertilizer application at planting included superphosphate (126 kg/ha) and muriate of potash (63 kg/ha). Urea (63 kg/ha) was applied one month after seeding. Seeding was on 24 March 1982 and harvest on 15 June. No irrigation was applied.

Rainfall during Yala 1982 are given below with a comparison of long term mean values.

Month	Mean Rainfall (mm)	1982 rainfall (mm)	Rainfall Distribution 1st 10 days,	2nd 10 days	3rd 10 days
March	99.1	97.4	13.0	3.9	80.5
April	188.0	114.8	1.1	46.7	67.0
May	99.1	162.9	62.0	68.9	32.0
June	28.0	17.3	11.3	6.0	0.0

Results and Discussion:

Deep tillage resulted in increased yield over surface scraping and shallow tillage (Table 1). Yields from surface scraping and shallow tillage did not differ. Deep tillage resulted in lower bulk density (1.46 gm/cm3) Low bulk density usually indicates high porosity which facilitates free drainage, helps in exchange of air, keeps the soil temperatures low and maintains favourable soil moisture characteristic for plant growth. The results suggest that deep ploughing a previously puddled soil would increase sesame production during Yala season due to improved soil physical conditions.