

Summary

Ploughing and pressing with three different presses was compared with ploughing only on a sandy loam soil in ideal moist conditions. The three press treatments appeared to increase the number of plants established, but at harvest there was no significant difference in yield between the four treatments.

Object

To provide information on the selection and use of furrow presses when used on:-

- (a) Light soil conditions to eliminate or minimise subsequent cultivation and improve seedbed conditions.
- (b) Heavy land to consolidate the soil, preventing moisture loss and aiding cultivations following ploughing.

This trial was one of a series co-ordinated by ADAS Mechanisation Advisory Officers on several Experimental Farms.

Treatments

1. Ransomes reversible '109' 4 x 36 cm furrow plough.
2. Hill and Osborne single row press (8 rings each of 70 cm diameter and 69 kg weight).
3. Lemkin Variopack Double row press. 110 WDP 160-70 (16 rings each of 70 cm, with a total weight of 842 kg)
4. Flexicoil Tandem 152 cm wide. P205RD spiral configuration press (total weight (765 kg).

The furrow presses used for treatments 2, 3 and 4 were attached to the plough used for treatment 1. Ploughing was carried out using a Ford 7600 tractor on 20 October. Soil conditions on a shallow cultivated barley stubble were ideal, i.e. moist but not waterlogged, the land having drained satisfactorily after 88.6 mm of rain had fallen in the previous month. The soil type was a sandy loam (Ashley Series) and the plough depth was 25 cm.

On 4 October the site was sown without any further cultivation, with Galahad winter wheat. All inputs of herbicide, nitrogen and fungicide were applied thereafter as standard farm practice.

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Results 1985 (first year)

Draft, speed, power and wheel slip data

Treatment	Draft kg	Average speed m/s	Power KW	Wheel slip %
Plough only	-	1.24	-	9.17
Plough with Hill & Osborne press	236	1.39	3.3	10.66
Plough with Lemkin Variopack press	268	1.19	3.2	13.43
Plough with Flexicoil Tandem press	230	1.26	2.9	11.09

Draft and power requirement was measured using a Bean weighpad which had been adapted for use as a towing link.

1. The results for slip and draft suggest there was a small difference between the various presses. The Lemkin, which was the heaviest press used appeared to have a higher draft requirement and this resulted in more slip.

Compressed soil level, crop establishment and yield

Treatment	Soil level (lift above pre-plough compressed level cm)	Plants established m ² 30 October	Grain yield t/ha at 85% dm
(ESE)			(+0.116)
Plough only	11.6	232	7.26
Plough with Hill & Osborne press	8.4	267	7.40
Plough with Lemkin Variopack press	8.4	261	7.06
Plough with Flexicoil Tandem press	8.4	272	7.03
Mean		258	7.19
SE per plot (15 d.f.) = ± 0.232 t/ha or 3.24% of GM			

1. When compared with the plough only treatment the three presses used all appeared to compact the soil by similar amounts.
2. Without pressing, the plough left a rough cloddy seedbed but despite this plant establishment was adequate. After pressing, seedbed conditions were ideal, and when compared with ploughing only, all three press treatments increased the number of plants established.
3. There were no significant differences between the grain yields of the four treatments compared.

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