

## The performance of cereals, grain legumes and rapeseed on stubble versus fallow in the Wimmera

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Fallowing is the usual practice in the Wimmera, with a fallow-wheat or fallow-wheat-pasture rotation, sowing into burnt stubble generally being restricted to barley. However, changing requirements have led to an increase in cropping intensity with more crops being stubble-sown. In 1980, therefore, a pilot trial was set up to investigate the performance of barley (Clipper and Weeah), wheat (Olympic), triticale (Tyalla), field peas (Buckley and Dun), chickpeas (5629B) and rapeseed (Marnoo) sown on fallow or stubble on a grey, self-mulching clay soil. As soil fertility is important in planning cropping strategy, the comparison was made on high fertility (0.11 TSN) and low fertility (0.08 TSN) soils (1).

**Table 1: % yield loss on stubble compared with fallow**

Crop	Low fertility		High fertility	
	1980	1981	1980	1981
Clipper	72	48	14	40
Weeah	64	64	3	-
Olympic	69	48	-	34
Tyalla	70	45	60	-
Dun	5	+32	21	5
Buckley	8	+14	16	-
Cicer	13	32	44	-
Marnoo	86	68	73	44

In the high-fertility situation barley showed the smallest reduction in yield, but on the low-fertility soil the grain legumes were least affected by stubble sowing. This ability of grain legumes to grow well when sown into low-fertility stubbles is important because of their role in increasing soil fertility.

In 1981, a further trial has been set up in which there will be extensive sampling of soil water and mineral nitrogen. In addition, the stubble-sown areas have been split for a nitrogen application. The mineral nitrogen figures for the soils at sowing were:

Low fertility - fallow - 47.23 kg/ha to 120 cm depth stubble - 10.05 kg/ha to 120 cm depth

High fertility - fallow - 92.07 kg/ha to 120 cm depth stubble - 20.15 kg/ha to 120 cm depth

Although all the figures are low, possibly owing to the hot dry summer reducing mineralisation, there was considerably less available nitrogen in the stubble.

The performance of the crops differed somewhat in 1981. Stubble-sown barley did not yield so well on high fertility. However, field peas consistently yielded well when sown onto stubble. The addition of nitrogen to the stubble plots did not significantly affect the grain yields of any crop.

1. Mahoney, J. E. (in press). Australian Field Crops Newsletter.