Determination of sowing times for sod-seeded crops on the central tablelands of New South Wales

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Limitations imposed by terrain and soil effectively restrict use of agricultural land on the central tablelands to grazing enterprises. Cropping as an alternative to grazing might be considered if reliability could be improved. Further, the adoption of sod-seeding techniques would allow greater flexibility at planting. However, planting time with this technique is influenced by the timing of germinating rain, and where crops are to be sown, by cultivar and probability of frost incidence at flowering. An initial step in the development of a cropping system is to ensure that a range of crops and cultivars adapted to the environment is available for planting over an extended period. A field experiment aiming to determine earliest sowing times for a number of crop/cultivars is described here.

Methods

Ten crop/cultivars (Table 1) were sod-seeded on 27 April and 17 June 1983 onto plots pretreated with glyphosate (2 1 ha^{-1}) two weeks before each planting. Layout was a randomised block design with four replicates. A thermograph with a soil probe (2 cm depth) was used to estimate mean daily temperature.

Results and Discussion

Degree days accumulated between seedling emergence (E) and flowering (F) (Table la), and flowering dates (Table lb) for each planting were used to calculate a planting time where flowering would coincide with the mean date of the last heavy frost (14 October (I)).

<u>Table 1.</u> Degree-days, flowering dates, estimated earliest planting dates and yield of ten crop/cultivars sod-seeded at Orange, 1983.

Crop/cultivar \ Planting date	a) ΣDegree-days (E to F)		b) Flowering date		c) Earliest planting date	d) Grain yield ($t\ ha^{-1}$)	
	27iv	17vi	27iv	17vi		27iv	17vi
Marnoo rape	1251	1015	27ix	14x	18vi	4.2	1.5
Dun peas	1321	1173	5x	27x	14v	3.4	3.9
Uniharvest lupins	1353	1219	9x	30x	27iv		
Clipper barley	1392	1208	17x	28x	21iv	3.4	4.3
Satu triticale	1683	1375	29x	7xi	12iv	4.5	4.2
Coolabah oats	1689	1401	28x	7xi	13iv	4.6	3.2
Banks)	1701	1442	30x	11xi	9iv	3.5	3.7
Osprey)wheat	1766	1438	2xi	10xi	6iv	5.5	4.1
Isis)	1893	1717	9xi	27xi	21iii	5.1	4.9
Maple peas	1891	1801	13xi	5xii	15iii	3.2	4.1

Planting dates adjusted on this basis provided dates ranging from 15 March for Maple peas to 18 June for Marnoo rape, a period of 14 weeks (Table lc). To ensure greater flexibility of the technique it will be necessary to extend the range of planting dates from early March through to the end of July, another six weeks. Choice of cultivars with a greater vernalization requirement, and grazing will permit earlier plantings while strictly long day plants could be considered for late winter-early spring plantings. The earliest planting dates (Table lc) can only be regarded as approximate, however because of the influence of other factors on flowering time. In addition species such as rape and peas have extended flowering periods and would not be expected to be as adversely affected by frost at flowering.

In 1983 frosting appeared to have little affect on flowering as reflected by yield of Marnoo rape and Dun peas (Table 1d). The last heavy frost occurred on 8 October.

1. Foley, J.C. 1945. Bull. No. 32. Commonwealth Meteorological Bureau. 142 pp.