

Establishment of Surface-Sown Pastures in Wheat Stubble in North Western New South Wales

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Cropping in north western NSW destroys native Mitchell grass pastures. After a rotation of 10 to 20 years of cropping, pastures need to be re-established to repair soil damage. One method of re-establishment is to aerially sow pasture species just before the last crop in a rotation is harvested (Wettenhall, 1991).

METHODS

Seed of Mitchell grass (*Astrelba lappacea*), buffel grass (*Cenchrus ciliaris*) and purple pigeon grass (*Setaria incrassata*) was sown into wheat crops near Walgett just before harvest in November or December 1987, 1988, 1989 and

1990; *Panicum coloratum* was added to the above grasses sown in 1988, 1989 and 1990) in experiments with 4 replications.

All seed was treated with permethrin to reduce losses to seed-harvesting ants. Wheat stubble was retained, reduced in height by cutting or completely removed. Establishment counts were made in the summer or autumn following sowing and survival counts made over time.

RESULTS AND DISCUSSION

Of the four years the best establishment occurred from

Table 1: Establishment and survival (plants/m²) of perennial grasses (mean for 3 species 1987 and 4 species 1988 to 1990) surface-sown into wheat crops just before harvesting.

Sowing time	Establishment		Plants/m ²						
			Survival						
	10/88	9/89	5/90	1/91	3/92				
	E	E	S	E	E	S	E		
11/87	0.8	0.2	0.6	1.4	0.3	0.8	0.1	0.4	
11/88	5.6	-	2.6	1.0	1.5	0.7	2.1	0.6	
12/89	12.6	Discontinued due to flooding							
11/90	21.2	-	-	-	-	0	8.2		

E = established plants; S = seedlings

the November, 1990 sowing (Table 1) in response to 90 mm rain in January and 25 mm in February 1991. These plants produced large amounts of seed by April, 1991 despite no rain after early February and survived the following winter. By autumn 1992, there were 8 plants/m² remaining, which is a thick grass sward. Grasses that established from the 1987 and 1988 sowings had their numbers reduced by cold in the following winter but produced sufficient seed to

enable recruitment in autumn 1990. These two sowings survived heavy and lax grazing respectively; ground cover of *A. lappacea*, *P. coloratum*, *S. incrassata* and *C. ciliaris* in the 1988 sowing being, respectively, 46, 40, 39 and 2% in January, 1991. The low ground cover of *C. ciliaris* was due to intolerance of cold and drift from glyphosate applied to an adjoining wheat crop.

Plants from all sowings produced massive seed yields in autumn 1991. The different stubble treatments had little effect on establishment or survival of the grasses. Percentage establishment of *Cenchrus ciliaris* was highest and that of *Panicum coloratum* lowest. The reverse was true for cold tolerance. *Panicum coloratum* appears the most persistent of the grasses up to 1991 based on comparisons in the 1988 sowing. The major advantage of sowing after cropping is that the paddock is weed free and the stubble provides protection for emerging seedlings.

REFERENCES

- Wettenhall, J. (1991). Aerial seeding - Rewards and risks at Goondiwindi. *Proceedings of the Sixth Annual Conference of the Grassland Society of NSW*, pp 46-8.