

Vacuum harvesting of the native grass *Microlaena stipoides*

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The native grass *Microlaena stipoides* produces weeping culms in its reproductive phase. The spikelets fall entire from the inflorescence at maturity. This presents problems for commercial harvesting as conventional all-crop headers require a standing head and seed retention (Loch *et al.* 1994). This experiment trialed two commercially available vacuum machines for harvesting *Microlaena*.

The harvest site was the *Microlaena* nursery located at the University of New England property Clarks Farm. Two equal areas were harvested in December 1994. One area was machine harvested using a McCulloch Super Air Stream 1V gas blower/vac which draws air through a centrifugal fan (McCulloch). The second area was hand harvested by shaking the culms into a bucket (Hand 1). A second harvester, a Flymo electric vacuum which employs a venturi-vacuum system bypassing the fan, was trialed using the same methodology in February 1995 (Flymo, Hand 2). The samples were divided into eight replications using a stratified sampling technique. Components were weighed separately and four replications of potentially germinable material (50 individuals) from each treatment were imbibed and incubated to determine germination percentage.

Results and Discussion

Dry weight comparisons show that the Flymo harvest sample had the highest proportion of spikelets, negligible amounts of immature and stripped spikelets (caryopses) and a minimal portion of trash (Table 1).

One kilogram of *Microlaena* collected in December 1994 and harvested with the McCulloch would be expected to produce only 438 g of germinable spikelets/caryopses. Furthermore, the presence of fungi on many spikelets/caryopses was noted and suggested damage during the harvesting process. Hand harvested material collected on the same day would be expected to yield 744 g of germinable spikelets per kg with little evidence of fungal infection.

The Flymo harvested sample compared favourably with the Hand 2 sample. One kilogram of the Flymo material would be expected to produce 950 g of germinable spikelets.

References

- Loch, D.S., P.W. Johnston, T.A. Jensen and G.L. Harvey (1994). Harvesting, processing and marketing of Native Grass Seeds - Developing a new Australian industry? National workshop on Native Seed Biology for revegetation (eds S.M. Bellairs & L.C. Bell) pp. 87-91.

Table 1. Comparison of the components of vacuum and hand harvested samples of *Microlaena stipoides* cv. Griffin. The mean dry weight percentage of components and percentage germination (data in brackets) of spikelets and caryopses for samples collected using two types of vacuum harvesters (McCulloch and Flymo) are compared with hand harvested samples.

Component	Percentage dry weight and Percentage germination (in brackets)			
	McCulloch	Hand 1	Flymo	Hand 2
Spikelets	61.3 (64.0)	91.4 (81.5)	97.4 (97.5)	95.7 (98.0)
Caryopses	23.5 (19.5)	0.0 (0.0)	0.1 (0.0)	0.1 (0.0)
Immature spikelets	9.3	6.5	1.5	3.5
Trash	5.9	2.1	1.0	0.7