

## Desiccation resistance in *macrotyloma axillare*

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The following observation is made largely to draw attention to the remarkable degree of resistance to desiccation exhibited by *M. axillare*, relative to some other tropical forage legumes. Those involved in fundamental studies of water relations in pasture plants may find this species a useful test plant in comparative studies. Furthermore, as *M. axillare* is an African perennial herbaceous legume closely related to the horse gram (*M. uniflorum*) of southern India, it may be a useful source of drought resistance for the latter species (a putative F<sub>1</sub> hybrid has been obtained between *M. axillare* the Australian native form of *M. uniflorum* (1)). In itself, *M. axillare* is a useful pasture plant in Queensland where cv. Archer has a reputation for drought tolerance and early spring growth under dry conditions (2).

### Methods

This observation was incidental on a pot study to observe growth of legumes under low phosphorus conditions (M.A. Gilbert and K.A. Shaw, unpublished data). Relevant perennials (from 16 herbaceous and woody genera) are summarised in Table 1.

The potting mix (1.1 kg/pot) was river sand (94% coarse, 4% fine, 1% silt, 1% clay) which retained about 11.5% moisture after 48 h free drainage, and 0.4% when air dry. Seed was sown in a plant house at Walkamin Research Station 2-4 March 1977. From 16 March to 1 June, pots were sub-irrigated twice daily with nutrient solution. They were subsequently allowed to dry naturally until rewatered on 18 August. From then until 16 March 1978 they were watered daily from the domestic water supply. Observations included length of the primary axis, numbers of surviving plants following rewetting, and final dry weights of tops and roots of survivors per pot. Initial plant numbers varied from one to ten per pot, with a single pot of each line.

TABLE 1. No. of lines tested, plant size at 24 May 1977, and survivors.

Genus and species	No. of lines	Main axis length cm	(CV%)	Surviving lines (16 Dec. 1977)
<i>Macrotyloma axillare</i>	21	6.3	(36.7)	20
<i>Desmodium</i> spp. (8)	9	5.4	(51.9)	0
<i>Leuzanena leucocephala</i>	2	6.5	(10.9)	0
<i>Stylosanthes hamata</i>	19	6.0	(35.9)	0
<i>scabra</i>	15	4.5	(23.8)	0
spp. (3)	6	3.1	(27.9)	0
Other species (15)	19	7.3	(65.0)	0

### Results and Discussion

Mean plant size in each group 8 days before the drying phase started is given in Table 1. At that time the 21 lines of *M. axillare* averaged 5.0 plants/pot; at 6 September 1977 it was considered (from inspection) that 3.9/pot were alive, of which 0.7/pot retained some original leaf and 2.6 were regrowing. There were no survivors among the other species.

At 16 March 1978 the 20 surviving lines of *M. axillare* had means of: 3.8 plants/pot, main axis length 98 cm, and total dry matter 5.6 g/pot (including 1.8 g of roots). Apart from the slightly waxy appearance of the plant, which may indicate a highly impervious cuticle, no explanation is offered for the apparent high resistance to desiccation observed in *M. axillare*, and the observation requires formal confirmation.

1. Staples, I.B. 1982. Proc. Aust. Agron. Conf., 1982. (In press.)

2. Barnard, C. 1972. Register of Australian Herbage Plant Cultivars. CSIRO: Canberra.