Register of Australian Herbage Plant Cultivars

B. Legumes
18. Milk vetch
Astragalus hamosus L. (milk vetch) cv. Ioman

Reg. No. B-18a-1
Registered March 1977

Published in the Journal of the Australian Institute of Agricultural Science 43(1-2) March-June1977.

Origin

Derived from seed (CPI 45062) collected in 1967 by E.T. Bailey of CSIRO from a small plateau below a hilltop near Matsura, Israel. Following initial nursery row evaluation at Perth, Bailey (2), compared CPI 45062 with three other accessions of this species in sward trials at Lake Grace in 1970, and found all to be productive in forage and seed, but with little difference between lines. From 1972-74 CPI 45062 was evaluated with other accessions of this species and annual *Medicago* spp. in nursery rows (7) and swards (8) in north-western New South Wales on heavy, cracking-clay alkaline soils by P. Desborough of the New South Wales Department of Agriculture.

Submitted for registration by the New South Wales Department of Agriculture and recommended for registration by the New South Wales Herbage Plant Liaison Committee. The New South Wales Department of Agriculture will be responsible for maintenance of breeders' seed. Registered March 1977.

Morphological description (1,4,5,10,16)

The species has been described as it occurs in eastern Mediterranean areas (5,16) and as isolated plants in parts of Australia (4,10,11). At Narrabri observations on 11 accessions of both eastern and western Mediterranean origins indicate wide variation in plant size and morphology. Ioman does not possess any easily identifiable, unique characters, but can be described as follows when growing under favourable conditions. Decumbent or ascending herbaceous annual up to 60 cm with pubescent stems having adpressed basifixed hairs. Primary stems arising from ground-level crown, but producing secondary and tertiary branching. Tap root deeply penetrating and slightly branched. Leaves pinnate and imparipinnate with 19-25 leaflets in mature plants, 18-22 cm in length; leaflets 10-25 mm long, oblong, retuse, glabrous above, with adpressed bifurcate hairs below. Stipules entire, united at base and ovate 5-7 mm in length. Flowers in a short raceme of 8-12 subsessile florets, peduncle 4-6 cm. Calyx 5-6 mm with 5 teeth, 2 mm with black and white hairs. Corolla white to creamy-white; standards 10-15 mm. Pod cylindrical, strongly curved to falcate almost 2-celled, with very short white hairs, brown but lighter tone at distal end, 50-70 x 3-4 mm. Seed subquadrangular, olive-green to brown, 26-31 per pod, constituting 48-52% of total pod mass, *c*. 222 per g.

Agronomic characters (3,6,7,8,9,11,12,13,14,15)

Ioman is a highly productive, self-regenerating, annual legume capable of producing large quantities of seed. It is seemingly well adapted to the extensive alkaline soils and environment (7) of the North-West Slopes and Plains of New South Wales where it has suppressed growth of extensively naturalized and dominant *Medicago polymorpha* L. Initial trials on the Darling Downs in Queensland have indicated problems with nodulation and excessive hardseed breakdown (6).

Although prostrate in early stages of growth it becomes more erect when vigorously growing and with increased competition. Ioman has proved to be well adapted to heavy grazing, continuously carrying 15 wethers per ha during a dry winter and spring (8). It regrows well after grazing from the many crown buds at or slightly below ground level. Sheep readily graze the plants and will consume dry pods.

At Narrabri (8) *A. hamosus* (either Ioman or CPI 53300) has outyielded Jamlong, Cyfield and Cyprus barrel medics, and naturalized burr medic, in winter months, and equalled Akbar barrel medic, in both establishment years and from natural regeneration. Spring production has equalled Jemalong and Akbar and exceeded that of Clare subterranean clover. In three separate years peak yields of

ungrazed swards have ranged from 8500 to 15,000 kg ha^{-1} of dry matter in both establishing and naturally regenerating stands (8,15).

Seed production has been 2-3 times that of barrel medic. Seed is readily harvested and threshed, but requires scarification prior to sowing. Pods do not shatter and do not become entangled in the fleece.

Post-senescence hardseededness has exceeded 90% in each of 4 years at Narrabri - levels similar to those recorded for barrel medic. High dry matter yields and seedling counts in naturally regenerating stands at Narrabri attest to suitable hardseed breakdown (8).

Ease of establishment and drought tolerance predisposes to good survival of seedlings germinating in late summer and early-autumn at Narrabri. Drought tolerance of adult plants is high, an advantage in an environment subject to extended dry periods within the growing season.

Digestibility of forage of Ioman is high with IVOMD of 84% in succulent, young growth and 83% and 58% for leaf and stem fraction samples respectively at pre-senescence stage in November (12).

Fresh leaf material contains negligible quantities of isoflavones or coumestrol, but low levels (15 ppm D.W.) of 4'-methoxycoumestrol (8) which is similar to levels recorded in lucerne and burr medic and is considered harmless (9). Negligible amounts of coumestans are present in the dry pods (8).

Ioman is effectively inoculated by *Rhizobium* strain CC 1253 and has nodulated successfully in naturally regenerating field plots at three sites on the North-West Slopes and Plains (15).

Preliminary results (8) indicate that Ioman may accumulate high levels of selenium on soils high in this element. Large areas of Australian soils are deficient in selenium (11,13), but soils with high levels are scarce, especially in the areas to which Ioman appears adapted. This is indicated by selenium levels in wheat samples (3) and in native or naturalized pastures (14).

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