

In seed increase stands Kelson has produced 300 kg per ha of clean seed. This is approximately half the yield of early maturing lines grown under the same conditions.

Kelson has consistently outyielded the early maturing snail medics in small plot screening experiments. Where it has been compared with early maturing lines in commercial Rhodes grass pasture grazed by cattle, it has shown superior dry matter production. Kelson has outyielded Robinson in spring by a factor of four, over a two year period (Weston and Lehane 1986).

Kelson has a high level of hard seed. In a comparison with Robinson, Kelson retained 89.6% hard seed and Robinson 73.8% hard seed five months after harvest at Parafield, S.A. (E. J. Crawford, pers. comm.).

During vegetative growth, Kelson is tolerant of both the spotted alfalfa aphid (*Therioaphis trifolii* (Monell) f. *maculata*) and the blue green aphid (*Acyrtosiphon kondoi* Shinji). Snail medics become moderately susceptible to both aphids after flowering.

Late flowering exposes Kelson to conditions suitable for *Heliothis* sp. multiplication. Damage has been recorded in seed production swards.

Seed production under certification has been undertaken by the South Australian Seedgrowers Co-operative Limited.

ACKNOWLEDGEMENT

We are indebted to the Department of Agriculture of South Australia for maintenance of the National Medic Collection, for initial screening and characterisation of accessions and for distribution of seed to other States. The contribution of the Wheat Research Council in providing funds for a National Annual Medic Improvement Programme is also acknowledged.

REFERENCES

- CLARKSON, N. M. and RUSSELL, J. S. (1975).—Flowering responses to vernalization and photoperiod in annual medics (*Medicago* spp.) *Aust. J. Agric. Res.* 26, 831-838.
 WESTON, E. J. and LEHANE, K. J. (1986).—Pasture Management Branch Technical Annual Report. Queensland Department of Primary Industries, p.77.

11. SERRADELLA

- (a) *Ornithopus compressus* L. (yellow serradella) cv. **Madeira**
 Reg. No. B-11a-6. Registered March, 1988.

Primary Selectors: DR J. S. GLADSTONES and DR M. D. A. BOLLAND

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Final Selector: D. L. LLOYD

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Origin

Collected by C. M. Francis and Carlos Gomez Pitiera, INIA, Badajoz, Spain, on July 5, 1979 at Pico Don Barcelos, near Funchal, Madeira. Latitude 32°37'N, longitude 16°54'W; altitude 250 m; annual rainfall approximately 500 mm; growing on friable chocolate-brown loam derived from basalt, pH 6.5; no current grazing. Tested under the collector's code number MC2.

It was included in a 1981 distribution of 32 lines and a 1982 distribution of 100 selected serradella lines for testing across southern and eastern mainland Australia (Gladstones, J. S. [1984]. *Aust. Pl. Breed. Genet. Newsletter*, **34**, 58-62).

Submitted by the Western Australian Department of Agriculture and the Queensland Department of Primary Industry, and recommended for registration by the Western Australian and Queensland Herbage Plant Liaison Committees. The Western Australian Department of Agriculture will maintain breeders' seed.

Morphological description

Madeira is more erect and lighter green than cvv. Pitman and Tauro, especially in the early growth stages and when ungrazed. Well-grown leaves have up to 15.5 leaflet pairs; leaflets up to 12×5 mm; bracts with 4.5-5.5 leaflet pairs; peduncles 30-45 mm; inflorescences with 3-5 florets and pods; pods 30-45 \times 3 mm, curved to nearly straight, clearly segmented into up to 11 single-seeded segments. Seeds about 175,000 per kg in hull, or 350,000 de-hulled.

Agronomic characters

Madeira flowers early, about 95 days at Perth (85 at Toowoomba) with mid-May sowing, i.e. about 10 (12), 18 (30) and 32 (53) days earlier than cvv. Uniserra, Tauro and Pitman respectively. The pods are sufficiently segmented to break up into single-seeded segments when fully mature and dry, but usually less readily than those of cv. Tauro and especially cvv. Uniserra and Pitman. They tend to remain intact on the mature plants until strongly disturbed.

Madeira has been outstanding in trials on sandy surfaced soils in south-east Queensland. At Leyburn, in a marginal climatic environment west of the Condamine River, its regeneration and dry matter production in trials sown between 1981 and 1985 have been superior to that of cvv. Uniserra, Pitman and Tauro, and the line DP6 (another promising early-flowering line). Madeira possesses more early vigour than cvv. Uniserra, Pitman and Tauro and in the more favourable environment of the Granite Belt (where late-flowering cultivars are successful), it produces more dry matter in the early spring than the other cultivars. Early growth is quite erect, but the plant adopts a prostrate habit under grazing. Seed production in Queensland studies has been high and 2.8 t/ha cleaned pod was recovered from a seed increase area after vacuum harvesting in 1986. No direct data are available on hard-seededness. Measurements of field regeneration suggest that hard-seededness is sufficiently higher than in Pitman, and possibly Tauro, to cause poor second-year regeneration in cool south-coastal areas of Western Australia (L. Cransberg, [1987]. *Serradella Newsletter* 1); nevertheless regeneration has been excellent in south-east Queensland. Madeira has poor tolerance of aluminium toxicity (T. P. Drew, [1987]. *Serradella Newsletter* 1) and may not, therefore, be successful on highly acid soils.

Madeira should fill an urgent need in the marginal temperate environment of south-east Queensland, on sandy-surfaced soils with surface pH 5.5-6.5, for a pasture legume to alleviate the winter/spring protein deficit for animals. It could also fill that role in similar niches in northern New South Wales, and would appear to be a logical choice for trial on non-calcareous sandy soils in medium to low rainfall areas of Australia with uniform or winter-dominant rainfall.

ACKNOWLEDGMENTS

Madeira was tested as part of an interstate collaborative testing scheme for serradellas. The main field trials in Western Australia were conducted by M.D.A. Bolland (Esperance) and L. Cransberg (Albany); in South Australia by A. D. Craig (Kybybolite); in Victoria by S. G. Clarke (Hamilton); in New South Wales by T. P. Drew (Trangie); and in Queensland by D. L. Lloyd (Toowoomba).

Initial pure seed production was by T. O. Albertsen and J. S. Gladstones (Western Australian Department of Agriculture).

The introduction and initial evaluation of Madeira were assisted financially by the Wheat Industry Research Committee of Western Australia and the Australian Wool Research Trust Fund.

11. SERRADELLA

a. *Ornithopus compressus* L. (yellow serradella) cv. Elgara

Reg. No. B-11a-7. Registered June, 1988.

Final Selectors: MR R. D. FREEBAIRN

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MR T. P. DREW

Department of Agriculture, New South Wales, Agricultural Research Centre, PMB 19, Trangie, N.S.W. 2823.

Origin

Elgara (CPI 65291B) was collected in 1973 by J. S. Gladstones, Western Australian Department of Agriculture, near El Khatouat, 40 km SSW of Rommani in the Zaer-Zayan region, south of Rabat, Morocco. The collection site has an altitude of 600 m and an annual average rainfall of approximately 500 mm. Soil type is a well drained gritty brown loamy-sand to sandy-loam, pH about 6.5, derived from granite. This line was common in uncultivated natural pasture among cork oaks, under apparently moderate grazing. The main associate legume was *Trifolium cherleri*. Tested throughout Australia under the collector's code number GMO65.2. One of four slightly differing strains separated out of GMO65.

Elgara was selected by T. P. Drew, New South Wales Department of Agriculture, Trangie, from a set of 99 lines in five species of *Ornithopus* supplied by the Western Australian Department of Agriculture in 1982 (Gladstones, J. S. [1984] *Aust. Pl. Brdg. Genet. Newsletter*. **34**, 58-62). Thirteen lines were sufficiently promising in initial trials at Balladoran to re-test at nine sites throughout New South Wales. Of these, Elgara was consistently the most vigorous and productive of the early-maturing group at the drier sites.

Submitted 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 maintain breeders' seed.

Morphological description

Elgara has slightly broader leaflets than cvv. Pitman and Avila, particularly in the early stages of growth. Elgara is erect in growth habit reaching a height of 25-45 cm in ungrazed swards in which Pitman was 15-30 cm high. Pods are 25-45 mm × 2.0-3.5 mm, slightly to strongly curved with constrictions and weak abscission layers between segments. Mature pods fall from the plant more