11. Serradella

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

Reg. No. B-11a-8. Registered on January 15, 1990.

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Origin

Paros was collected by D.J. Gillespie in 1978, 2 km east of Parikia on the island of Paros, Greece. The collection site has an altitude of 100 m and an annual rainfall of approximately 475 mm. The site was a moderately grazed donkey track with a grey gritty sand soil type, stoney, pH 6.0. Tested under the collector's code number DP6.

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 1984).

Submitted by the Western Australian Department of Agriculture and recommended for registration by the Western Australian Herbage Plant Liaison Committee. The Western Australian Department of Agriculture will maintain breeders seed.

Morphological description

Paros differs from the 'typical' *O. compressus* cultivars Pitman and Tauro in the following characters: growth remains prostrate and spreading well into the flowering stage; stems and pods more strongly pigmented, especially where exposed to the sun, pigment brownish purple; pods are non-segmented, much more strongly curved and do not break up readily into single seeded segments at maturity. This contrasts to pods of Madeira which are segmented and break up under moderate mechanical stress and pods of Pitman which are segmented and break up spontaneously after maturity.

The leaves of Paros have up to 12 leaflets pairs and are subtended by characteristically large and prominent bracts with 4.5–5.5 leaflet pairs; inflorescences with 2–5 flowers and pods; seeds up to 12 per pod; seeds a little larger than those of Pitman and Tauro, 250,000–300,000 per kg dehulled.

Agronomic characters

Paros flowers early, about 93 days at Perth with mid-May sowing, i.e. about 2 and 20 days earlier than cvv. Madeira and Tauro respectively. However, the rate of pod maturation in Paros is more rapid than in Madeira, mature seed being produced approximately six days earlier (D.L. Lloyd, unpublished data).

Clean dehulled seed production of Paros has been impressive with highest yields being in the order of 800–900 kg/ha. In a group of 33 lines tested over four years at Esperance (W.A.), Paros consistently rated in the top five for seed production. At Albany (W.A.) in 1985, Paros was rated in the top six lines for seed production in two stage 2 evaluation trials. In both trials Paros was rated ahead of Madeira. In 1987, seed yield of Paros exceeded that of Madeira at both Merredin and Geraldton (W.A.) although total seed production at these sites was low.

Seed production of Paros in South Australia has also been consistently high being second to Tauro at Stewarts Range and Conmurra in 1985 and second to Uniserra at Keith in 1985. At Stewarts Range in 1986 it was ranked 12 out of 26 lines but still produced 639 kg/ha of dehulled seed. In Queensland (D.L. Lloyd, unpublished data), seed production of Paros has been excellent, though slightly less than Madeira. In

1985 at Toowoomba, Paros produced 390 kg/ha clean, dehulled seed compared with 540 kg/ha from Madeira. In 1985 at Stanthorpe, Paros produced 2.72 t/ha podded seed compared with 2.86 t/ha from Madeira.

Paros is particularly hardseeded and laboratory tests show it to have a very slow rate of softening. This contrasts to Pitman which has a substantially lower hardseed content (Bolland 1987).

Regeneration of Paros in the second year has often been lower than Madeira, probably due to a slower rate of hardseed softening. This may be due in part to the non-segmented pod morphology of Paros, which results in less pod/soil contact than occurs with the segmented pods of Madeira. Dry matter production is often lower during early winter although differences are not as great in spring. Regeneration after cereal cropping has however been particularly good, being superior to Pitman and Eneabba at Merredin (W.A.) and to Tauro at South Stirlings, Dinninup and Arthur River (W.A.), in 1986.

Paros is tolerant of high aluminium concentrations, in contrast to Madeira which is particularly sensitive (Drew 1987).

Paros may be useful in mixtures with Madeira on sandy soils in low rainfall areas of Western Australia (300–375 mm annual average). Its high level of hardseed should improve long term persistence of serradella, particularly in situations where the pasture is cropped. Its tolerance of high aluminium levels should give it an advantage over Madeira on strongly acid soils. It could also fill similar niches in central and northern New South Wales (R.D. Freebairn, pers. comm.). Paros will also be used in mixtures of serradella cultivars (particularly Madeira, Enaebba and Jebala) for sowing on sandy soils in hotter, drier areas of southern inland Queensland (D.L. Lloyd, pers. comm.).

Acknowledgments

Paros 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), L. Cransberg (Albany) and M.A. Ewing (Merredin); in South Australia by A.D. Craig (Kybybolite); in New South Wales by T.P. Drew (Trangie) and R.D. Freebairn (Coonabarabran); in Queensland by D.L. Lloyd (Toowoomba) and in Victoria by S.G. Clark (Hamilton) and L.J. Hamilton (D.A.R.A., Bairnsdale).

Pure seed production was supervised by D.A. Nicholas and C.J. Sykes (Western Australian Department of Agriculture). Funds were provided by the Herbage Seed Trust Fund.

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References

BOLLAND, M. (1987) Serradella, subterranean clover and medic research at Esperance, Western Australia. *Technical Bulletin No. 76. Department of Agriculture, Western Australia.*

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Book review

Persistence of Forage Legumes

G.C. Martin, A.G. Matches, R.F. Barnes, R.W. Brougham, R.J. Clements and G.W. Sheath (Eds). American Society of Agronomy Inc., Madison, Wisconsin, USA. 1989. 572 pp.

Available from the Tropical Grassland Society. A$27 plus postage.

This book is the proceedings of a workshop held in Hawaii in July 1988 between pasture scientists from Australia, New Zealand and the USA and also from CIAT in Colombia. The stated objectives were to document problems of forage legume persistence, review known restraints to persistence, and to resolve what were the gaps in knowledge that would allow modelling of forage persistence. The 33 individual papers have been presented under the sections — Overview of Problems, Development and Growth Characteristics, Edaphic and Climatic Constraints, Cultural Practices and Plant Competition, Plant-Animal Interface, Major Pests and Diseases, Genetics and