New hard-seeded French serradella cultivars (*Ornithopus sativus* Brot.)

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The use of the pasture legume French serradella (*Ornithopus sativus*) has been restricted in eastern Australia due the lack of hard seed in Cadiz, the only cultivar currently available. Although Cadiz has proven highly productive in the first year, rain over summer can cause premature germinations of seed, quickly depleting the seed reserve and resulting in poor seedling numbers when the true seasonal break occurs in autumn (Dear *et al.*, 2002). This has limited its use in eastern Australia to a 1- or 2-year forage plant. In contrast, in Western Australia and South Australia, with a more Mediterranean climate and less summer rain, the area sown to Cadiz has increased dramatically over the last few years.

French serradella has two distinct advantages over subterranean clover, namely the ability to produce rapid growth in early autumn and a deeper-rooting habit that enables it to better withstand moisture stress in late spring and prolong the period of green feed. This deep-rooting habit makes it particularly suitable to sandy, well-drained soils; but it will also grow well on soils with a higher clay content.

Another advantage of French serradella is the ease with which seed can be harvested on-farm. Unlike subterranean clover, which must be suction harvested, French serradella can be direct harvested using conventional headers. This has led to significant quantities of Cadiz seed becoming available at a relatively low cost and also enables farmers to harvest their own seed.

In recognition of the potential of this species and to expand the use of French serradella in areas that receive significant falls of summer rain, a selection program was undertaken by Brad Nutt at the Centre of Legumes in Mediterranean Agriculture to select lines with significantly higher levels of hard seed. The lines produced by this program were subsequently evaluated by the National Annual Pasture Legume Improvement Program, resulting in the release of two new lines, FSH-3 and FSH-7, which have initial hard-seed levels of about 64% to 71% compared to about 5% in Cadiz. These lines are being commercialised in 2003, with commercial seed expected in 2004. Performance of the lines at one of the sites in New South Wales is presented in Table 1.

One of the few limitations of French serradella is its susceptibility to native bud worm (*Helicoverpa punctigera* Wllgr.), which can consume the seed pods after flowering. The pest only occurs episodically, and care needs to be taken in new stands to ensure it does not prevent seed set. Once good seed reserves are established, this pest should not be a problem. The new lines are tolerant of cow pea and blue green aphids and moderately tolerant of redlegged earth mites.

Reference

Dear, B. S., Sandral, G. A., Wilson, B. C. D., Rodham, C. A., and McCaskie, P. 2002. Productivity and persistence of *Trifolium hirtum, T. michelianum, T. glanduliferum* and *Ornithopus sativus* sown as monocultures or in mixtures with *T. subterraneum* in the south-eastern Australian wheat-belt. *Australian Journal of Experimental Agriculture* 42:549–556.

Table 1. Dry matter, regeneration, and seed yield of hard-seeded French serradella selections compared to commercial cultivars at Moombooldool, NSW. Sown 1999, cropped 2000, regenerated pasture 2001.

Line/ cultivar	DM 27/12/99 (kg/ha)	Seed yield 1999 (kg/ha)	Regen 2000 (plants/m²)	Regen 2001 (plants/m²)	DM 4/10/01 (kg/ha)
99FHS-3	9,056	506	623	540	1,813
99FHS-7	6,143	986	712	330	1,250
Cadiz	4,004	601	43	482	3
Charano	3,370	815	78	157	824
Dalkeith	607	41	695	558	156
Santorini	5,276	1,132	31	367	287