




French serradella - soft seeded

Scientific name(s)

Ornithopus sativus

Strengths

- Deep-rooting behaviour on deep sandy soils (deeper than subclover) can extend the length of growing season.
- Contributes to soil nitrogen.
- Tolerant of acid soils and high levels of soil-available aluminium.
- Very productive in spring with high nutritive value (vegetative, silage, hay).
- Highly palatable and low bloat risk.
- Tolerant of aphids.
- Ease of seed production.
- Soft seeded cultivars like 'Cadiz'  do not require dehulling
- Compatible with summer growing grasses.

Limitations

- Intolerant of prolonged waterlogging.
- Soft seeded varieties are susceptible to false breaks of season (germination and seedling death following out of season rainfall).
- Susceptible to native budworm/heliothis and lucerne flea.
- Slow early growth in colder districts from late autumn breaks.
- Requires companion summer-growing species for all-year-round paddock production.

Plant description

Plant: Many-branched, finely hairy, annual legume with stems up to 70 cm. The growth habit is erect initially becoming semi-erect with time (prostrate under grazing). It has a deep root system, but not as deep as that of yellow serradella.

Stems: Slender, covered with fine, short white hairs, densely leafy.

Leaves: Fern-like, comprising 19-35 oblong, broadly pointed leaflets, 4-13 mm long, 3-6 mm wide, bluish green in colour.

Flowers: White to dark pink in colour, forming in clusters of 2-7.

Pods: Flattened, straight or slightly curved, 12-25 mm long, and constricted between seeds, tapering into a beak c. 2 mm long, and breaking into 3-7 single-seeded segments at maturity.

Seeds: Yellow - light brown, oblong in shape, 3 mm by 1.5 mm. About 250,000 (seed-in-hull), 350,000 - 450,000 (dehulled)/kg.

Pasture type and use

Useful in permanent pastures or in pasture crop rotations for boosting productivity and nitrogen fixation. Soft seeded cultivars best suited to short-term (phase) pasture systems (e.g. for management of herbicide resistant weeds). Hard seeded cultivars can be used in phase pasture systems or in self-regenerating ley farming systems.

Where it grows

Rainfall

Lower rainfall limit: 350 mm average annual rainfall where seed production is required.

Upper rainfall limit: restricted primarily by waterlogging or inundation, but will grow in areas with up to 800 mm average annual rainfall.

Soils

Best on deep (more than 60 - 80 cm), well-drained sands and sandy loam soils, but hard-setting soils (e.g. sodic) are unsuitable. Adapted to soils with pH less than or equal to 7.0 and as low as 4.0, with exchangeable aluminium levels up to 30% CEC. Deficiencies such as phosphorus, potassium, sulphur and molybdenum need correction.

Temperature

Suitable for temperate and Mediterranean inland areas of southern Australia. Can tolerate infrequent mild frosts but not extended periods below zero degrees.

Establishment

Companion species

Grasses: Italian ryegrass, fescue. Summer-growing perennial species where appropriate (e.g. consol lovegrass, panic grass, Premier digit grass, rhodes grass).

Legumes: biserrula, gland clover, subterranean clover, yellow serradella.

Sowing/planting rates as single species

Soft seeded cultivars (e.g. 'Cadiz', 'Grasslands Koha') do not require dehulling and are sown in the pod form (7-15 kg/ha pod).

Hard-seeded cultivars (e.g. 'Erica', 'Margurita') are sown as seed (5-8 kg/ha).

Sowing/planting rates in mixtures

Soft seeded cultivars 4-8 kg/ha pod.

Hard seeded cultivars 2-4 kg/ha seed.

Sowing time

Autumn (April to early June).

Inoculation

Group S (Serradella Special), granular or slurry. Slurry inoculation should not be lime pelleted.

Fertiliser

Similar fertiliser strategy to subterranean clover (depending on soil analysis). Often 100 kg/ha superphosphate and 50 kg/ha potash (e.g. 100 kg/ha muriate of potash), trace elements depending on application history.

Management

Maintenance fertiliser

Applied pre or post seedling emergence. Seed production will benefit from potassium (50 kg/ha potash) applied at flowering.

Grazing/cutting

French serradella is suited to moderate set stocking as well as rotational grazing. It can be severely damaged if heavily grazed following a long period of regrowth resulting in rank growth. Can be cut for silage at pre-flowering to early flowering stage and for hay at early to mid flowering.

Seed production

Adequate soil nutrition (P, K, S) is required for maximum productivity. Good weed control is essential (especially of capeweed). Winter graze to prevent excessive dry matter build-up and reduce grazing pressure during flowering to maximise seed production. Avoid grazing during periods of moisture stress. In high rainfall areas, seed production may be problematic due to excessive stem (vine) growth and lodging. Seed production is generally in the range of 200 - 500 kg/ha (dehulled seed) but yields up to 800 kg/ha are possible.

Ability to spread

French serradella regenerates each year after summer from the soil seed bank. Seed does not spread rapidly from the initial site of establishment. Less than 10% of seed eaten by grazing animals passes through the digestive tract, with more passing through cattle than sheep.

Weed potential

Not regarded as an environmental weed. Can be easily controlled in grain crops with conventional in-crop broadleaf herbicides (especially sulphonyl ureas).

Major pests

Native budworm (heliethis) and thrips during seed formation, redlegged earth mite (some tolerance), blue oat mite (some tolerance), lucerne flea, pasture loopers, cutworm, vegetable weevil, jassids. Can be susceptible to red-legged earth mite at seedling (seed-leaf/cotyledon) stage. Budworm (heliethis) can reduce seed production.

Major diseases

Few disease problems observed. Potential diseases include brown leaf spot and rhizoctonia root rot.

Herbicide susceptibility

Tolerant of imazethapyr, imazamox, bromoxynil and flumetsulam. Susceptible to sulphonyl ureas, simazine and phenoxy based herbicides.

Animal production

Feeding value

High nutritive value. At flowering; 15-25% crude protein, 65-75% dry matter digestibility, 9.5-10.5 MJ/kg DM metabolisable energy.

Palatability

Highly palatable, although sheep may avoid grazing young plants when no prior experience of grazing serradella.


Production potential

Annual dry matter production is commonly in the range of 3-7 t/ha but yields up to 10 t/ha are possible.

Livestock disorders/toxicity

No problems reported.

Cultivars

Cultivar	Seed source/Information
Cadiz 	Western Australia - Department of Agriculture and Food Seedmark
Erica	Guide to Australian Pasture Legumes Seedmark
Margurita	Guide to Australian Pasture Legumes
Grasslands Koha	Pasture species database - University of Melbourne

 Denotes that this variety is protected by Plant Breeder's Rights Australia

Further information

NSW Department of Primary Industries - French serradella Agnote DPI-273
Department of Agriculture and Food WA Farmnote 12/97
Department of Agriculture and Food WA Farmnote 62/2003

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Author and date

Dr Clinton Revell

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