# Register of Australian Herbage Plant Cultivars

## B. Legumes
## 19. Sainfoin
## *Onobrychis viciifolia* Scop. (sainfoin)

### cv. Othello
Reg. No. B-19a-1
Registered April 1980

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**Origin**

Othello was bred by Ian D. Kaehne at the Northfield Research Laboratories, South Australian Department of Agriculture. The individual parent clones were selected from an extensive collection of accessions grown as spaced plants. Selection was made for clones having an upright or semi-upright habit, prolific production of leafy shoots, good recovery after cutting, persistence under rotational grazing, high seed yield and high productivity in all seasons. The origins of the 200 selected parent clones and the percentage contribution from each origin are: France (27%), Armenian S.S.R. (26%), Spain (25%), Switzerland (10%), Czechoslovakia (6%), Hungary (5%) and Iran (1%). Contributing accessions were C.P.I. 63748, 63749, 63733, 63779, 63837, 63868, 72051, and 72052, as well as the cultivars Fakir from France and Matra from Hungary.

Submitted by the South Australian Department of Agriculture and recommended for registration by the South Australian Herbage Plant Liaison Committee. Breeders' seed will be maintained at the Northfield Laboratories, South Australian Department of Agriculture. Registered, April 1980.

**Morphological description** (3,4,10,11)

A subglabrous to pubescent, ascending-erect perennial species, 10-90 cm in height. The imparipinnate leaves have 6-14 pairs of oblong to oblong-ovate, mucronate leaflets, 4-20 × 2-6 mm, more-or-less glabrous above, adpressed pilose below. Petioles 1-2 mm. Stipules brown, membranous, connate or free. Peduncles about as long as leaves in flower, elongating in fruit to 2-3 times the length of the leaves. Flowers with 1 mm pedicels, opening first at the base of the raceme. Calyx 5-8 mm, more-or-less spreading, pilose with teeth 2 – 3 times the length of the tube. Corolla pink with purple veins, standard 10-14 mm, wings 2 mm, keel 10-12 mm. Legume 508 mm, pilose, indehiscent, foveolate sides, with 6-8 marginal teeth up to 1 mm. Mature legume light brown, containing 1 haricot-shaped brownish grey seed. Testa smooth; seed number about 70 000 per kg. Chromosome number 2n = 28 (11); plants predominantly self-incompatible and cross-fertilizing (4).

Othello (10) has smooth, ascending, cylindrical, hollow stems with 4-5 nodes, often with both primary and axillary leaves at each node. Height 65-75 cm. Leaves with 8-10 pairs of leaflets 25-30 x 8-12 mm, which is larger than most accessions except for the French cultivar Fakir, where the leaflets are 35 × 12 mm. Leaflets of Othello are frequently closely spaced, seldom overlapping, giving a densely leafy appearance. Racemes 120-140 mm with up to 50 florets, the largest among the 130 accessions surveyed. Legume 6 mm long.

Mature crowns up to 200 mm wide, tillering more freely than Fakir and ascending Iranian accessions, but about average for the species (10).

The range of morphological, plant to plant variation is greater than in Fakir but less than in Melrose in observation plots at Northfield, S.A.

**Agronomic characters** (1,5,6,7,8,9,10)

Othello is adapted to well-drained, neutral to alkaline soils, particularly members of the red earths, when inoculated with strains of rhizobia effective on *Onobrychis*. Preliminary observations indicate that endemic effective strains of *Rhizobium* are rare. Establishment on well-drained sandy soils is variable, being most successful in sites approaching neutral pH with some free lime. The seedlings are larger than those of lucerne, approaching the size of subterranean clover, and will establish with modest success in dry spells, when lucerne fails. The seedlings of Othello are equivalent to the most vigorous

in the species and will establish in Mediterranean environments in all seasons. Othello can be expected to persist as long as lucerne cultivars of medium winter dormancy.

The productivity of Othello is seldom exceeded by other accessions in any season, but is less than lucerne, cv. Hunter River. Regrowth after cutting is also seldom exceeded by other accessions, is slightly slower than Hunter River and is exceeded by non-dormant lucerne cultivars. Othello flowers early, *c*. 80 days after a spring sowing and 25 to 30 days after defoliation in spring and summer. It is adapted to rotational grazing management on a 6-week cycle. Seed production of Othello is higher than any other accession and it has yielded 600 kg $ha^{-1}$ in a first year-stand. Although the parent clones were derived from diverse sources, there has been no evidence of sterility in the first and second bulk progeny generations. It is extremely attractive to honey bees and could be expected to be an excellent nectar source.

The range of insect resistance of Othello permits it to be successfully established and maintained for hay and seed production without damage from pests of lucerne and other leguminous forages. It has field resistance to spotted alfalfa aphid (*Therioaphis trifolii* (Monell) f. *maculata*), blue green aphid (*Acyrthosiphon kondoi* Shinji), red-legged earthmite (*Halotydeus destructor* Tucker), lucerne flea (*Sminthurus viridis* L.), sitona weevil (*Sitona humeralis* Steph.), native bud worm (*Heliothis punctigera* Wallengren) and pod borer (*Etiella behrii*, Zetter). It is resistant to alfalfa weevil (*Hypera postica*, Gyllenhal) and Egyptian alfalfa weevil (*Hypera brunneipennis*, Boheman). In central South Australia it has been successfully established without the use of insecticides (10).

Othello, like all sainfoins, is a non-bloating fodder (9).

Othello is useful as an alternative pasture or fodder to lucerne in rainfed and well-drained irrigated sites, particularly as a pasture under extensive management on red earths and neutral to alkaline sands where a perennial legume is required but the use of insecticides is precluded (5). Its area of adaption on well-drained alkaline soils is the same as for lucerne, but it may be more successful than lucerne in drier sites because of its ability to grow and retain green leaf under conditions of moisture stress which arrest growth and cause leaf drop in lucerne. No leaf or stem diseases have been observed on Othello in South Australia, but it is sensitive to poorly drained soil conditions, and may not be long lived under irrigation on heavy soils (6).

**References**


1. Brockwell, J. (1979). Personal communication. Division Plant Industry, CSIRO, Canberra.
2. Broue, P., Cornish, P.S., Kaehne, I.D., and Mathison, M.J. (1975). Plant collecting in Central Asia and the Caucasus region of the U.S.S.R. *Aust. Plant. Intro. Rev*. **10**, 11-31.
3. Davis, P.H. (ed.) (1970). Flora of Turkey and the East Aegean Islands, Vol. 3. (Edinburgh Univ. Press: U.K.)
4. Fryxell, P.A. (1957). Mode of reproduction of higher plants. *Bot. Rev*. **23**, 135-233.
5. Hanna, M.R., Kozub, G.C., and Smoliak, S. (1977). Forage production of sainfoin and alfalfa on dryland in mixed and alternate row seedings, with three grasses. *Can. J. Pl. Sci.* **57**, 61-70.
6. Heinrichs, D.H. (1972). Root-zone temperature effects of flowering tolerance of legumes. *Can. J. Pl. Sci*. **52**, 985-90.
7. Koch, D.W., Dotzenko, A.D., and Hinze, G.O. (1972). Influence of three cutting systems on the yield, water use efficiency, and forage quality of sainfoin. *Agron. J*. **64**, 463-7.
8. Krall, J.L., Cooper, C.S., Crowell, C.V., and Jarvi, A.J. (1971). Evaluation of sainfoin for irrigated pasture. Agric. Exp. Stn, Monta. State Univ. Bull. No. 658.
9. Gutek, L.H., Goplen, B.P., Howarth, R.E., and McArthur, J.M. (1974). Variation of soluble proteins in alfalfa, sainfoin and birdsfoot trefoil. *Crop Sci*. **14**, 495-9.
10. St. John-Sweeting, R.S., and Kaehne, I.D. (1979). Personal communication. S.A. Dep. Agric., Adelaide.
11. Tutin, T.G., Heywood, V.H., Burges, N.A., Moore, D.M., Valentine, D.H., Walters, S.M., and Webb, D.A. (eds.) (1968). Flora Europaea: Rosaceae to Umbelliferae. Vol. 2. (Cambridge Univ. Press: U.K.)