

Register of Australian Herbage Plant Cultivars

B. Legumes

1. Clover

Trifolium resupinatum L. var. *resupinatum* Gib. & Belli (Persian clover) cv.

Kyambro

Reg. No. B-1k-1

Registered January 1988

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Origin

Kyamro is a selection from a line of *T. resupinatum* collected by G.M. Halloran of the University of Melbourne, Victoria, in 1975. It occurred as a volunteer in a barley crop 20km east of Osmaniye in central southern Turkey (Coll. Site 16, No. 165). Seed was first received by the South Australian Department of Agriculture in 1977 and designated S.A. 12239.

Kyambro was selected from S.A. 12239 at Parafield Plant Introduction Centre in 1982 on the basis of a leaf marker, better early winter and spring vigour and earlier flowering and designated S.A. 18920. It was subsequently evaluated on the rendzina soils at Lochaber, Straun and Bool Lagoon in the south east of South Australia from 1983 to 1987. Seed from plants selected in 1982 was increased in isolation at Kybybolite Research Centre in 1985. Subsequent generations segregated for leaf markers, indicating an unknown degree of outcrossing. Originator: A.D. Craig, Kybybolite.

Submitted for registration by the South Australian Department of Agriculture and recommended for registration by the South Australian Herbage Plant Liaison Committee. Basic seed will be maintained by the South Australian Department of Agriculture. Registered January 1988.

Morphological description

Persian clover is an ascending to erect, predominantly hollow-stemmed, glabrous annual species. Glabrous leaflets are borne on glabrous or pubescent petioles. Leaflets vary from 1.0 – 2.5cm long, ovate-oblong to rhomboidal in shape, tapering at the base and rounded or tapering at the apex. Leaf margins dentate, with alternately larger and smaller, upwardly oriented teeth. Peduncles are longer than subtending leaves. Stipules are ovate-oblong, membranous with longitudinally striated nerves, united below, the free portion subulate, as long as longer than the united part. Flowering heads axillary, 1.0 – 1.5cm across. Pedicels thick, glabrous and about one quarter to one half the length of the glabrous calyx tube. Flowering calyx lobes linear lanceolate, unequal and shorter than the tube. Corolla resupinate, deep pink to purple, fragrant. Fruiting head stellately globular, calyces inflated, ovoid to elliptical with prominent reticulate venation in fruit. Pod membranous, lenticular with one brown to yellowish-green seed. Seeds dispersed by entire heads or single calyces. $2n = 14,16,32$ (Zohary and Heller 1984).

Kyambro is typical of var. *resupinatum*, producing fine stems, small leaves and an abundance of lateral shoots. This contrasts with Maral (var. *majus*), which produces few thick stems and large, plain leaves (Barnard 1969). Kyambro displays a range of leaf markings of various colours, positions and degrees of distinctiveness. Approximately 30% of plants are plain leafed, 20% display a light central crescent only, and 40% possess distinct red or white wings (or both), and 10% have other markings. Kyambro has a more prostrate growth habit than Maral. Kyambro produces very small seeds (2.0 million/kg), compared with 820 000 seeds/kg in Maral (Craig 1985).

Agronomic characters

Although very small seeded, Kyambro establishes readily in the year of sowing. It nodulates effectively with either Group or group C inoculum, although Group C is more effective (P.J. Cunningham, pers. Comm.) Kyambro produces herbage yields up to 90% higher than Maral Persian clover in the establishment year, with levels up to 9t/ha being recorded on ungrazed plots at Straun. Most growth is made in spring.

Kyambro commences flowering about 24 days earlier than Maral at Naracoorte (139 days compared with 163 days). As far as is known, Kyambro is essentially self pollinated. A limited degree of outcrossing occurs within Persian clover, although the presence of honey bees may substantially

increase seed yield (Weaver and Weihing 1960). The seed of Kyambro will be commercially produced under a pedigree certification system.

In the establishment year, Kyambro produced seed yields 2-3 times greater than Maral. Seed yield in excess of 1300 kg/ha have been obtained at Bool Lagoon and Straun, up to 800kg/ha on the shallower rendzina soils at Lochaber.

Kyambro has over 95% hardseeds at maturity, reducing to the low 80's by April. This characteristic enables it to persist, despite heavy over-summer grazing and intermittent out of season rainfall. Kyambro regenerates well in second and third year stands, while Maral fails to regenerate because of lack of hardseededness and relatively low seed yields. Seed of Kyambro may be direct headed using conventional harvesting equipment.

Kyambro displays good recovery from grazing or cutting, particularly when frequently defoliated. In regularly mown strips at Kybybolite Research Centre, it became prostrate, recovered well from cutting and set abundant seed, suggesting that it will be well suited to continuous grazing.

Kyambro has shown good resistance to clover scorch disease, *Kabatiella caulivora* (Kirch.) Karak (D.J. Gillespie, pers. com.), clover leaf spot, *Phoma medicaginis* (Malbr. and Roum.) and stem and leaf rust, *Uromyces trifolii-repentis* (Liro). It contains no detectable levels of formononetin, biochanin A, genistein and coumestrol (P.G.H. Nichols, pers. com.).

Glasshouse tests reveal that Kyambro possesses moderate resistance to spotted alfalfa aphid (*Therioaphis trifolii* (Monell) f. *maculata*), low resistance to blue green aphid (*Acyrtosiphon kondoi* Shinji) and low resistance to cow pea aphid (*Aphis craccivora* Koch). On the other hand, Maral is resistant to spotted alfalfa aphid, has low resistance to blue-green aphid and is susceptible to cowpea aphid. Both Kyambro and Maral are susceptible to attack by red legged earth mite (*Halotydeus destructor* Tuck.). (D.J. Gillespie, pers. com.).

Dry herbage residues of Kyambo sampled in mid-February 1987 had a digestible dry matter content of 50%, compared with Trikkala sub clover (49%), Paradana balansa clover (48%) and Maral Persian clover (58%). The crude protein content of Kyambro was 9%, compared with Trikkala (13%), Paradana (11%) and Maral (16%). However, these differences were offset by the greater herbage production of Kyambro. Kyambro produced a total annual digestible dry matter yield of 3750 kg/ha, while Trikkala produced 30kg/ha, Paradana 1940 kg/ha and Maral 2270 kg/ha. Trikkala was poorly adapted to the alkaline soil.

Kyambro, like other cultivars of Persian clover, performs best on heavy alkaline soils. It has grown well under levels of waterlogging experienced in the south east of South Australia. While Kyambro has not been evaluated in saline environments, Persian clover is reported to produce well on soils too saline for strawberry clover (Barnard 1969).

Kyambro is a productive, persistent and rust resistant cultivar, well adapted to the rendzina soils of south-eastern South Australia. It requires a mean minimum annual rainfall of 550mm.

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References

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