

Register of Australian Herbage Plant Cultivars

A. Grasses

3. Phalaris

Phalaris aquatica L. (phalaris) cv. Australian

Reg. No. A-3a-1

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Origin

Derived from seed introduced under the name of *Phalaris commutata* Roem. and Schult. in 1884 by the Toowoomba Botanic Gardens from the Agricultural Department of New York State. In all probability it came originally to U.S.A. from Italy (11). Its vigorous growth, ability to withstand drought and waterlogging, and capacity to spread naturally from seed impressed the curator of the Gardens, Mr. R. Harding, who fostered its early trial and distributed seed. It became appreciated and established at an early stage in the New England district of New South Wales. Here a vigorous seed industry was established; it became the source of much of the seed used in later development. Details of its earlier history in Australia have been reported among others by Ewart (5), Trumble (20), and Whittet (22), and references to its trials are given by Cameron (3).

Its correct botanical name has been claimed as *Phalaris commutata*, *P. bulbosa*, *P. stenoptera* and *P. aquatica* (1, 2) but Australian botanists accept the name *P. tuberosa*. Previously known as Australian commercial phalaris, the cultivar name Australian was adopted by the State Herbage Plant Liaison Committees in 1966. First certified in 1936 in New South Wales, Victoria, and South Australia and in 1948 in Tasmania.

Breeder's seed has been produced from a representative collection of plants as the basis for a pedigree system of certification (9).

Morphological description

A tufted perennial with tall erect culms, it spreads from the base by loosely branched rhizomes which grow outward for a short distance from underneath older parts of the rootstock before ascending vertically and giving rise to a tuft of well-spaced tillers. The leaves arise mainly from the base but also develop from higher nodes as the flowering stems elongate; both leaf sheaths and blades are glabrous and bluish green; and the leaf sheaths contain a pink-red anthocyanin which gives a coloured exudate when young shoots are cut near the base. Ligule 3-5 mm long and membranous, transparent to white and rounded at the tip; auricle absent but pale ledge formed at base of blade. Flowering culms erect, glaucous, stout, and hard when mature, and sometimes developing one or two small internodal swellings usually below ground level. Inflorescence a dense compact oblong to cylindrical panicle 5-12.5 cm long and 13 mm wide. Spikelets laterally flattened, 5-7 mm long, one-flowered; with two large boat-shaped glumes which are almost equal, and with usually two small sterile lemmas at the base of the fertile lemma. The glumes are strongly keeled and narrowly but distinctly winged on the upper two-thirds and are marked with white and yellowish green stripes. The lemma is covered with fine loosely pressed hairs when young, and is shiny and glabrescent when mature; it falls with the seed. The seed is cream to pale brown, smooth and shiny, narrow ovate to lanceolate, laterally compressed, about 3.25 mm long and consists of the caryopsis with the fertile lemma attached and the remnants of the sterile lemmas, the larger of which is about 1/3 length of the fertile lemma; number per kg approx. 882,000.

Young root tips of seed grown in the dark are cream with slightly yellowish tinge, in contrast to *P. minor* (16, 19) and many other lines of *P. tuberosa* (12) where they are red. The coleoptile is green in contrast to red in *P. canariensis* (16), and the stem base of young seedlings pink in contrast to green in *P. canariensis* and *P. minor* (16).

There is not a great deal of variation in Australian (19) and no evidence of the existence of ecotypes within it (11, 21). It differs from many introduced lines from the Mediterranean region in tillering habit, height of culm, and fineness of leaf, as well as such agronomic characters as time of flowering

and maturity (15, 18). It differs from American Harding grass (7) in having slightly finer and narrower leaves (15) and in being slightly less productive in late autumn and early winter (15).

Agronomic characters

Adapted to a Mediterranean-type climate of mild moist winters and hot dry summers and particularly useful within the rainfall range 435-635 mm. It exhibits a degree of summer dormancy and, following the maturation of its seed in late December, it will rarely make any growth until late summer or very early autumn. It will make limited growth in the summer only when rainfall continues and temperatures are relatively mild. It responds quickly to the first autumn rains and its most vigorous growth is made during autumn and spring. It makes some growth when winter conditions are mild though frost damage results in leaf tip burn.

It is extremely drought-resistant and persistent under heavy grazing. It can persist through dry spells and under conditions of average rainfall too low and unreliable to permit its economic establishment. It can also withstand severe waterlogging (4). Seedling vigour is poor (compared with perennial ryegrass) and establishment slow (10). Seedlings are sensitive to competition and especially light competition. Seed shatters readily.

It is adapted to a wide range of soils in the higher rainfall areas but does best on heavier-textured soils and responds to high levels of soil fertility. Under low rainfall conditions soil type becomes critical especially in determining persistence and vigour.

It may cause "Phalaris staggers" (8) and "sudden death" (13), two metabolic diseases of sheep (6); its content of the causative alkaloids is about average for the species (17). Most "sudden deaths" can be avoided by heavy continuous grazing (14).

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