



Department of
Primary Industries and
Regional Development

Journal of the Department of Agriculture, Western Australia, Series 3

Volume 4
Number 3 May-June, 1955

Article 9

5-1955

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H. G. Elliott

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Elliott, H. G. (1955) "Phalaris Tuberosa - Toowoomba Canary Grass," *Journal of the Department of Agriculture, Western Australia, Series 3*: Vol. 4: No. 3, Article 9.

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PHALARIS TUBEROSA

Toowoomba Canary Grass

By H. G. ELLIOTT,

Assistant Superintendent of Dairying



AS far as can be ascertained, the grass now known as *Phalaris tuberosa* was first imported from America in 1884 by the Queensland Department of Agriculture for trial at the Toowoomba Experimental Farm, hence the popular name, Toowoomba Canary Grass.

At the time of its importation it was known as *Phalaris bulbosa* and until about 18 years ago it was known by this name or as *Phalaris commutata*. Since that time, botanists have agreed that the correct nomenclature is *Phalaris tuberosa*, the name by which it is known today.

Apparently it was not until some 24 years after its introduction that the first favourable reports of the grass were published.

The Agricultural Gazette of New South Wales reported in October 1908 that *Phalaris* growing at the Hawkesbury Agricultural College had "leaves and stems that were soft and succulent and the plant grows to a height of 2½ ft. It is a splendid grass for winter and spring feed and gives good growth to December, when it seeds. The plants are very frost-resistant and apparently very drought-resistant."

The Wagga Experimental Farm reported that it was "very promising as a pasture grass" and the Bathurst Experimental Farm stated that "the grass made good

growth throughout the summer months, grew continuously through the winter and withstood frosting. The crowns of the plant are compact and withstand considerable trampling."

IN WESTERN AUSTRALIA

The plant appears to have been first grown successfully in this State by Mr. A. Snell at Harvey and by Sergeant W. Brodie at the Police Station, Donnybrook. Excellent growth of *Phalaris* plants can still be seen on the original areas, and also along the roadways near these sites.

Except where grown under irrigated conditions, *Phalaris tuberosa* gives early autumn winter and spring growth, and its productiveness is practically nil during the period from early summer until the event of the first autumn rains. It is capable of adapting itself to wet cold conditions and also to extreme dryness. Generally speaking, its adaptability to extreme conditions is amazing.

In Western Australia this grass appears to be well adapted to large areas of land

receiving a rainfall of 17in. or over, which is of the winter rainfall and summer drought type. At Wongan Hills Research Station, during the year 1938, with a rainfall of 12.76in. its persistence was remarkable, but very little growth was obtained; this grass, however, had been growing without a legume association.

The areas of *Phalaris tuberosa* growing in Western Australia are increasing but still comparatively small and the factors that appear to have contributed towards the restricted use of this grass are:—

- (1) The absence or comparatively poor spread of *Phalaris* plants on non-cultivated land by means of seed.
- (2) The early lack of adequate knowledge with reference to the methods of soil preparation and type, seeding and subsequent fertilising of this grass.
- (3) The comparatively high price of the seed.
- (4) The inability of the young seedlings to compete with strong growing annuals.

BOTANICAL DESCRIPTION*

“Perennial, caespitose, the culms more or less swollen at the basal internodes, or forming hard woody stocks, 2-4ft. in height, erect or ascending, sometimes geniculate below. Sheaths much shorter than the upper internodes, tight and striate; ligules long, thin, white and hyaline, truncate and soon becoming lacerated. Leaf blades firm, rather soft, prominently striate, tapering into long, weak, fine points. Panicle cylindrical, spikelike, up to 5½in. in length, compact, tapering at both ends or sometimes broader at the base, the spikelets usually erect, the peduncles ultimately long exerted.

“Glumes subequal lanceolate, rather straight, more or less acute but not long pointed, 3-nerved, the lateral nerves prominent; margins wide, hyaline but firm, keeled, flat, the keel produced into a prominent dorsal wing extending over the upper two-thirds of the glume and gradu-

ally narrowed at each end, minutely serrulate or entire and not notched. Sterile lemmas not very unequal, the lower about one-quarter, the upper on-third the length of the fertile lemma, both sparsely hairy, and appressed to the fertile lemma, more or less linear and concave. Fertile lemma acutely ovate-elliptical, silky with appressed hairs, faintly nerved, becoming firm in fruit; palea acute, slightly less in length than the fertile lemma, glabrous except for the terminal tuft of a few short hairs.”

SEED AND STRAIN

Owing to the difficulty of detecting the difference between the seed of the valuable perennial type, *P. tuberosa*, and that of the inferior annual, *P. minor*, it is essential for the buyer to purchase certified seed only. The seed tester can, however, determine the difference between the two by the following processes:—

- (1) On the germinating filter paper *P. tuberosa* shows a white tip to the rootlets, while *P. Minor* definitely shows a pink tip.
- (2) Under the ultra-violet light (quartz lamp, seeds of the *P. tuberosa* when germinated on filter paper will show the roots clearly defined while with the *P. Minor* the rootlets are not at all visible.

Certification schemes have been instituted in Australia for *Phalaris tuberosa* seed, and farmers are requested to purchase only certified seed when obtaining their requirements. Both the South Australian and Western Australian seed have given and are giving good results in this State. At the present time new strains under test at Wokalup Research Station are showing great promise.

WHERE TO SOW

Because of its suitability to a wide range of climatic conditions *Phalaris tuberosa* is of great value as a pasture component. It is growing successfully in areas of 17 to 40in of winter rainfall, in summer drought conditions and in the irrigation areas.

At the Waite Institute in South Australia it proved to be one of the best perennial grasses for the district where the

* From article by C. A. Gardner and G. R. Meadly—Canary Grasses of W.A. Journal Department of Agriculture, W.A. Vol. IX, pp. 275-285, 1932.

summer months are hot and dry and the average rainfall below 24in.

This grass appears to be best suited to the heavier soil types, but will grow well on the lighter soils which have a clay sub-soil not more than 12 in. below the surface. As an association with a legume is essential, it is recommended to establish it in old subterranean clover paddocks or sow the variety of subterranean clover most suitable to the district at the same time.

SOIL PREPARATION

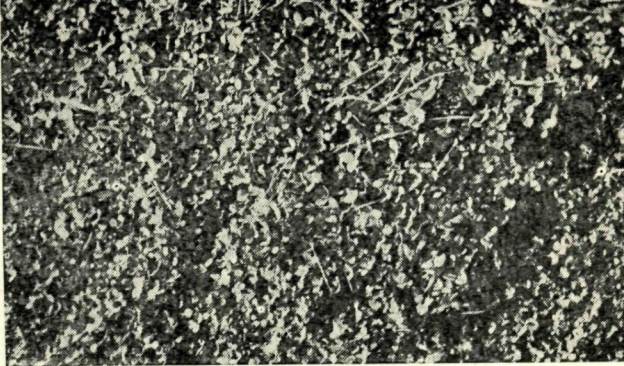
In areas of 25in. and under this is a most important factor for the future establishment and growth of this grass. It is recommended that a well prepared fallow, free of weeds and well consolidated be used. If this is available early seeding can be carried out. A firm consolidated seed bed is most essential for success. If fallowed land is not available the area to be sown should be lightly ploughed and worked down. After weed germination further cultivation will be required to destroy the weeds. After cultivation the area should be well rolled with a T-bar roller, the seed to be sown about mid-May and rolled or lightly harrowed in. Good results have been obtained by cultivating the area with a "combine" or springtyne cultivator after the weed germination has occurred. The seed is then mixed with superphosphate just prior to it being sown with the "combine" or drill set so that shallow planting is carried out. On lighter types of soil, deeper planting to 1in. can be adopted. It is recommended, however, that a well prepared seed bed be used, as a little extra trouble in the early stages is well repaid later.

TIME TO SOW

The seed may be sown from the middle of April on well worked fallow, until mid-September in the higher rainfall areas. Under irrigated conditions excellent results have been obtained from spring planting, and this is recommended when an association with white clover is required.

RATE OF SEEDING

Under all conditions 2 lb. of seed per acre is recommended and if subterranean clover seed is being sown at the same time,



A mixture of *Phalaris tuberosa* and white clover in an irrigated pasture at Nannup.

6 lb. of subterranean clover seed and 2 lb. of *Phalaris tuberosa* seed per acre would be required. In the irrigation areas 2-3 lb. of *Phalaris* and 2 lb. of white clover seed per acre would be sufficient. It is not recommended to mix any seed of the ryegrasses with *Phalaris* at the time of establishment, owing to the vigorous nature of their growth in the early stages, which is detrimental to the establishment of the *Phalaris* unless excellent subsequent management with grazing is carried out. It must be remembered always that this grass is highly sensitive to competition in the early stages of growth, from any vigorous growing grass or weed, such as capeweed. Newer strains now being developed are more tolerant to weed competition. Clovers such as subterranean clover and white clover can, however, be grown, and are desirable in the initial establishment of *Phalaris*.

FERTILISER

At least 2 cwt. of superphosphate per acre should be used at the time of establishment, and a subsequent application of 1 cwt. per acre in the spring is advantageous. Two cwt. per annum should be used in the following years as a top dressing. On new land and unfallowed land that has not been under subterranean clover previously the using of 1 cwt. of sulphate of ammonia per acre at the time of planting may be beneficial.

MANAGEMENT

During the first year it is essential that weeds or any vigorous growing plants should not be allowed to dominate the young *Phalaris* plants. If necessary, infre-

quent quick, heavy grazing, should be carried out, and any subsequent grazing should not take place at closer intervals than 6-10 weeks, according to growth. Early in October, if weeds are still troublesome, mowing should be carried out and the field closed up to allow the *Phalaris* plants to produce seed heads. Once the plants have seeded grazing can then be carried out more or less indiscriminately until the autumn rains commence, then the grazing periods should be in about six weekly intervals. Once established, *Phalaris tuberosa* is thoroughly perennial, increases its basal size and, grazed judiciously, forms a good turf in association with clover. It is succulent and palatable to stock of all kinds. It is a strong grower, and being a deep-rooting plant is reasonably drought-resistant.

BLACKBERRY CONTROL

Satisfactory progress in the control of blackberry by spraying with the synthetic hormone spray, 2,4,5-T has been made in the Warren district where two of the Agriculture Protection Board's mobile spraying units operated, in co-operation with the road board.

The rate of spraying has been accelerated by equipping the four-wheel-drive vehicles with trailers, thus enabling larger quantities of the weedicide to be carried and reducing the time spent in refilling.

Although rain prevented spraying for some days during February, the total area sprayed during the month was 40 acres. A total of 60 acres has been sprayed in the Manjimup, Middlesex, Yanmah, Dean Mill and Balbarrup districts.

The campaign is being regarded favourably in the Manjimup area where farmers have requested the loan of knapsack sprays to treat small areas of blackberry on their properties.

The Collie Coalfields Road Board is following up control work carried out in previous years, and the Bridgetown, Balingup, Busselton and Margaret River Road Boards have eradication programmes planned.

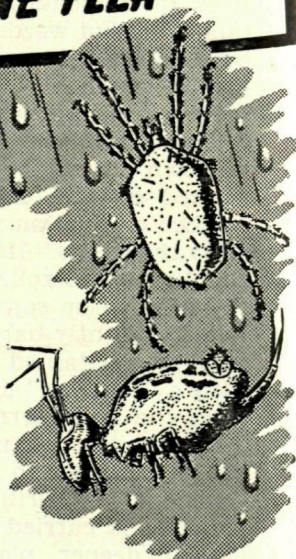
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