

[54] ANIGOZANTHOS PLANT NAMED BUSH FLAME  
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[57] ABSTRACT  
A Kangaroo Paw plant (genus Anigozanthos) named Bush Flame having an orange red indumentum of the upper flower stem and ovary and perianth of the flowers, narrow glaucous blue-green foliage, Spring and early Summer flowering in outdoor warm temperate climate, and superior resistance to Alternaria species.

1 Drawing Sheet

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The present invention relates to a new and distinctive cultivar of Kangaroo Paw, known by the cultivar name Bush Flame. Kangaroo Paw is the popular name applied to all species of the botanical genera Anigozanthos Labill and Macropidia Harv and their variants and hybrids.

Anigozanthos Labill is a genus of eleven described species of herbaceous perennial plants of the family Haemodoraceae, and which are endemic to the southwestern region of western Australia. These species, together with the closely allied monotype *Macropidia fuliginosa* (Hook.) Druce, are as above noted jointly referred to by the popular common name Kangaroo Paws.

Wild populations of Kangaroo Paws grow in a warm temperate Mediterranean climate (Summer drought). Vitality is at a minimum in late Summer/early Autumn, and some species show or tend to a full deciduous dormancy at this time. Active vegetative growth is reinstated with the onset of lower temperatures and rainfall in the Autumn (Fall). The flowering season varies considerably between species, but the display period is normally of several months somewhere within the range of late Winter to mid-Summer.

Mature plants consist of a clump of leaf fans arising from ramified rhizome which exists at immediate sub-surface soil levels. Rhizome extends and branches by annual growth and is more or less persistent. Leaves and roots are replenished on an annual basis.

Leaves arise from rhizome buds and exist as fans of alternate ensheathing leaves arranged on an equitant conduplicate pattern, and with very short internodes.

Individual leaves are normally relatively straight and narrow in length, being approximately parallel sided in the lower half or more, and tapering to an acute point above. As new leaves arise in the center of each fan between the next youngest leaves, older leaves are progressively displaced at an angle. In some species older leaves may become distinctly recurved.

There is variation between species in the stature of leaf fans and in the relative width of individual leaves. In the largest species, leaves may be one meter in length and up to five centimeters wide. In the smallest species, leaves may be ten centimeters in length and one centimeter wide.

The active apical meristem in a leaf fan is located near the base of the fan during the active vegetative growth stage. Eventually, a rapid increase in length of succes-

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sive internodes occurs accompanied by a decrease in leaf size and followed by a differentiation of the apex, the overall process forming a flower stem. The overall length of the flower stem varies between 1.5 and 2.5 times the length of the basal leaves of the leaf fan according to species.

The inflorescence per se is a unilateral raceme, both series of sub-sessile to shortly pedunculate alternating flowers being oriented in the same direction. Each peduncle is marked by a pointed bract shorter than the flower. The flower is itself bilaterally symmetrical consisting of a spherical tri-locular basal ovary extending into an initially narrower and cylindrical perianth which broadens and flattens and terminates in six lobes. At anthesis the lobes which are contiguous in bud, separate and reflex, the degree varying with species. The style is simple, free, and about as long as the perianth, and terminates in a small sub spherical stigma. The six anthers have short to very short filaments, the points of insertion being towards the apex of the perianth.

Three more or less distinctive patterns in the architecture of the flower stem can be recognized. In some species the architecture is simple, with the stem being simple and terminating in a solitary raceme. In other species, the stem is initially simple but forks immediately sub-terminally, each fork terminating in a raceme. In some species, the stem is initially simple but then branches more or less dichotomously, the node being subtended by a shortened leaf. Secondary branching may occur, but eventually most branches fork, each ultimate branch or fork terminating in a raceme.

In one extreme in some species, the length of the overall flower stem can exceed two meters. At the other extreme, in some species, the stem may rarely be longer than twenty centimeters.

Racemes may be few to many flowered and individual flowers from three centimeters to ten centimeters in length varying with species.

In all species the flowers, and in all but one species the stem, are clothed with a close indumentum of velvet texture. The indumentum is colored and the stem, ovary, and perianth may be distinctively colored. Flower color or pattern of coloration normally applies to that of this indumentum. Development of pigmentation is to some degree a function of environmental con-



ditions, especially of temperature and total irradiance during bud development.

The new cultivar Bush Flame was created by the inventor as a result of a controlled crossing of a selected genotype of the species *Anigozanthos humilis* Lindl 5 (seed parent) with a selected genotype of the species *Anigozanthos rufus* Labill (pollen parent).

Asexual reproduction by applicant in Monbulk, Victoria, Australia by divisions of the rhizome and by aseptic multiplication of leaf shoots including apical meristem on nutrient media has reproduced the unique features of the new cultivar through successive generations.

The following characteristics distinguish Bush Flame from both its parents and from other Kangaroo Paws 15 known and used in the ornamental horticultural industry.

1. The cultivar exhibits superior resistance to *Alternaria* species. Both parents were themselves selected as genotypes with superior resistance when compared 20 with other cultivars of the respective species.

2. The flower stem of the cultivar is once or twice branched and rarely formed. A total of two to four racemes per stem is typical, with the length of the overall inflorescence being typically in the range 50 cm to 70 25 cm. This contrasts with both parents. The flower stem of the seed parent is normally simple with a single terminal raceme, and is rarely longer than 35 cm. The flower stem of the pollen parent is branched, and sub-terminally forked, each fork having a raceme of flowers, and 30 the length of the overall flower stem is typically in the range 90 cm to 120 cm.

3. The color of the indumentum of the upper parts of the stem and ovary and perianth of the flowers is orange-red. This contrasts with that of the seed parent where 35 the color is yellow, and with the pollen parent which is red.

4. The foliage of the cultivar is of similar length to that of the seed parent but is narrower and not distinctly recurved. The foliage of Bush Flame is distinctly 40 shorter than in the pollen parent, about as broad, and of a similar color.

5. The cultivar exhibits moderate vegetative vigor but is particularly productive of flowers. Flower stems are normally produced in Spring and early Summer in 45 warm temperate environments.

The accompanying colored photographs illustrate the new cultivar, with the colors being as true as it is reasonably possible to obtain in colored reproductions of this type. The photograph at the top is a perspective 50 view of Bush Flame in flower. The bottom photograph is an enlarged showing of the flower characteristics of Bush Flame.

The following is a detailed description of Bush Flame based on plants produced at Bush Gems Garden Nurs- 55 ery in Monbulk, Victoria, Australia. Color references are made to The Royal Horticultural Society Colour Chart except where general color terms of ordinary dictionary significance are used. Terms used have the same meaning and significance as those used and de- 60 fined above regarding the characteristics of propagation, plant form, habit of growth, foliage, flowers and rhizome common and general to all plants of *Anigozanthos*.

Parentage: A hybrid of *Anigozanthos humilis* (seed parent; selected clone) and *Anigozanthos rufus* (pollen parent; selected clone).

Propagation: Asexual by: (A) Rhizome divisions; optimum period late Summer to early Fall. (B) "In vitro" proliferation of multiple shoots from plants of apical meristem with immediate leaf primordia. Five-fold multiplication in four weeks on appropriate media. Rooting in three to five weeks at approximately 20 degrees Celcius root zone temperature in high relative humidity environment. Use of anti-transpirant sprays beneficial.

#### 10 Plant description:

(A) *Form*.—Clumping, rhizomic, perennial plant suited to cultivation in containers, in gardens (in essentially frost free environments), and as a row-crop cut flower. Clumps are relatively open, and the cultivar is especially suited to container cultivation.

(B) *Habit of growth*.—The main period of active growth — rhizome extension, production of new leaf fans, and induction/evocation of flowers—is Winter and Spring. Growth is limited in Summer, following flowering, even when irrigation is applied.

(C) *Foliage*.—The basal leaves of each leaf fan are of alternate, conduplicate, ensheathing arrangement. (1) Size and shape: Variable according to environmental conditions but normally up to 25 cm in length and 12 mm in width at base, parallel edged, tapering to a point in the upper half. (2) Texture: Glaucous bloom and indumentum of sparse to moderately dense very short light grey hairs. (3) Color: Mature, healthy foliage is green 132C. The widely spaced and diminishing size leaves of the main floral axis are similar in texture and color to basal leaves.

#### 35 Flowers:

(A) *Flowering habit*.—Flowers in dense, unilateral biseriate terminal racemes. The floral stem is branched and some branches subterminally forked. Each ultimate branch or fork bears a terminal raceme. The overall length of the inflorescence is usually in the range of 50 cm to 70 cm.

(B) *Natural flowering season*.—Spring and early Summer; young plants produced from tissue culture may have an atypical first flowering season.

(C) *Flower bud*.—Sub-cylindrical, immediately prior to opening approximately 25 mm long and 5 mm diameter, the anterior lobes of the perianth being fused in a pointed and somewhat enlarged and asymmetrical tip; color same as flowers.

(D) *Flowering raceme*.—Straight axis, the pedicels of each flower approximately 10 mm, spaced at 10 mm intervals, each flower pedicel subtended by a small bract 2 mm wide and 12 mm long. The lowest flowers of the raceme open first; buds at the anterior end continue to grow and open; 6 to 10 flowers normally reach maturity in each raceme.

(E) *Individual flower*.—Sub-spherical basal ovary approximately 22 mm in diameter, extending into a tubular perianth, approximately 22 mm in length. The perianth lobes open and partly reflex at maturity, before again closing.

(F) *Color*.—The indumentum of the peduncle is grey-orange 178A; pedicels and ovary of the flowers red 45A; the lower half of the perianth orange-red 84A, and the upper half red 48A.

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These colors show some variation with environmental conditions, being more intense at lower ambient temperatures and light levels and less intense at higher temperatures and light levels.

Disease resistance: Resistance to fungal leaf diseases (viz. *Alternaria* spp.) is superior to typical wild seed-

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ling Kangaroo paws, as confirmed by field trials at various sites and seasons.

I claim:

1. A new and distinct cultivar of *Anigozanthos* named Bush Flame, as described and illustrated, and parts thereof.

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