

***Zoysia macrantha* Plant Named ‘MAC03’**

LATIN NAME OF GENUS AND SPECIES OF PLANT CLAIMED

Zoysia macrantha

VARIETY DENOMINATION

‘MAC03’

BACKGROUND OF THE INVENTION

The present invention relates to a new and distinct vigorous-growing perennial variety of *Zoysia macrantha*, which has been given the variety denomination of ‘MAC03’. Its market class is that of a turf grass. ‘MAC03’ is intended for use as a lawn grass in gardening, landscaping, sports fields and amenity horticulture including coastal areas with exposure to salt.

The new *Zoysia macrantha* cultivar is a seedling selection discovered in a controlled planting of *Zoysia macrantha* wild forms, not patented. These selections were originally collected from coastal areas of NSW, Australia including Central Coast and Wollongong. The new cultivar was discovered and selected as a single plant within a population of plants of *Zoysia macrantha* designated ‘T11’ during summer 2006-2007 in a controlled environment at Clarendon, New South Wales, Australia. ‘T11’ was the result of a previous five generations of selections based on fast speed of growth and overall turf habit (strong density, rapid ground coverage) from 2000 to 2005. The result of the final selection from the ‘T11’ generation was greatly improved growth rates more suited to lawn use.

‘MAC03’ was first asexually propagated by cutting and division of stolons in 2007 in Clarendon, New South Wales, Australia. ‘MAC03’ has since been further asexually propagated by means of cutting and division of stolons. The distinctive characteristics of the variety have remained stable and true to type through successive cycles of asexual propagation.

SUMMARY OF THE NEW VARIETY

The following characteristics of the new cultivar have been repeatedly observed and can be used to distinguish ‘MAC03’ as a new and distinct cultivar of *Zoysia macrantha* plant:

1. Fast speed of growth; and
2. Strong plant density; and
3. Medium tolerance to salt; and
4. Broad leaf width; and
5. Broad thickness of stolon internode
6. Long stolon length

Plants of the MAC03 differ from plants of the *Zoysia macrantha* parent 'T11' and wild forms from coastal areas of NSW, Australia including Central Coast and Wollongong, primarily in having a faster speed of growth, stronger plant density, broader leaf width, broader thickness of stolon internode and a longer stolon length.

'MAC03' is the first improved selection of the *Zoysia macrantha* species to be commercialized.

BRIEF DESCRIPTION OF THE PHOTOGRAPHS

The accompanying photographs show, as nearly true as it is reasonably possible to make the same in color illustrations of this type, typical foliage and growth characteristics of the new cultivar. Colors in the photographs differ slightly from the color values cited in the detailed description, which accurately describes the colors of 'MAC03'.

FIG. 1 illustrates a 'MAC03' plant in soil grown for approximately 14 weeks in an outdoor environment showing strong plant growth density and spread of stolons.

FIG. 2 illustrates the plant growth habit of a 24 week old 'MAC03' plant grown in a 200mm pot compared to the parent 'T11' and wild forms.

FIG. 3 illustrates 'MAC03' stolon and inflorescence detail compared to the parent 'T11' and wild forms.

DETAILED BOTANICAL DESCRIPTION

The following is a detailed botanical description of a new and distinct variety of an *Zoysia macrantha* ornamental plant known as ‘MAC03’. Plant observations were made on plants grown in Clarendon, New South Wales, Australia. Unless indicated otherwise, the descriptions disclosed herein are based upon observations made from February 2008 of mature ‘MAC03’ plants grown in nursery pots in greenhouse and outdoor growing areas with day temperature ranging from 25°C to 35°C, night temperatures ranging from 10°C to 15°C, and light levels ranging from 6 to 8 klux. Plants were grown for about 24 weeks with one plant per 20 cm container. Plants were trimmed 10 weeks before assessment. Those skilled in the art will appreciate that certain characteristics will vary with older or, conversely, younger plants. ‘MAC03’ has not been observed under all possible environmental conditions. Where dimensions, sizes, colors and other characteristics are given, it is to be understood that such characteristics are approximations or averages set forth as accurately as practicable. The phenotype of the variety may vary with variations in the environment such as season, temperature, light quality, light intensity, day length, cultural conditions and the like. Color notations are based on *The Royal Horticultural Society Color Chart*, of The Royal Horticultural Society, London, 2007 edition.

Technical Description of the Variety.

The description of the variety below is taken from a pot trial conducted in the Summer 2007-2008 in Clarendon, New South Wales, Australia. Plants were six-months old at the time of observation.

Plant Characteristics: vigorous-growing perennial, stoloniferous grass, culms decumbent, habit prostrate becoming erect when flowering.

Stolon: Roots at nodes, length long to very long (mean 40 cm) internode length (4th from tip) medium (mean 29 mm), diameter of internode broad (mean 2 mm), color of internode when exposed to sunlight grayed purple (RHS 187A), diameter of node medium to broad (mean 2.6 mm), branching medium, subtended by a leafy sheath with length 16 to 24 mm.

Leaf: attachment cauline, length long (mean 96 mm), width broad (mean 3.8 mm), color of blade green (RHS 146B), leaf veins parallel and obscure, shape ligulate, cross section flat, apex narrow acute, leaf margin entire.

Ligule: Ligule is a fringe of hairs, not prominent.

Awns: Absent.

Inflorescence: Spike-like single raceme, length medium to long (mean 52 mm), color yellow green (RHS 147B).

Glumes: predominant color grayed purple (RHS N186C), length 3-4 mm

Lemmas: color approximately grayed purple (RHS N186C), length 4-5 mm.

Anther color: yellow white approximately yellow white (RHS 158A), length about 2.5 mm.

Stigma color: white (RHS 155D).

Cultural notes: 'MAC03' has been observed to survive to a cold temperature of -12° Celsius. 'MAC03' has been tested for heat tolerance to 44° Celsius and survived in Brisbane, Queensland, Australia. 'MAC03' has an average tolerance to salt in coastal conditions, typical of the species. 'MAC03' grows well in sandy loam and heavy clay soil conditions. 'MAC03' has good shade tolerance with normal growth at 50% shading. 'MAC03' competes well with invasive weeds. It produces roots well when being stolonised, and transplants well as sod.

Disease Resistance: 'MAC03' has no known disease susceptibilities and is considered typical of the species for pest and disease tolerance.

Comparison Trials with other Varieties:

A comparative trial was carried out including ‘MAC03’, ‘T11’ (unpatented, parent), ‘Terrigal ecotype’ (unpatented) and ‘Wollongong ecotype’ (unpatented). These comparative plant selections are not commercial varieties of common use and were used in the trial as they are the nearest known plants for comparison and found in some Australian coastal ecosystems.

The results of the comparison trials are shown in **Tables 1 and 2** below. In summary:

- ‘MAC03’ has stronger plant growth vigor than ‘T11’, ‘Terrigal ecotype’ and ‘Wollongong ecotype’.
- ‘MAC03’ has longer stolon length than ‘T11’, ‘Terrigal ecotype’ and ‘Wollongong ecotype’.
- ‘MAC03’ has a broader stolon node diameter than ‘T11’.
- ‘MAC03’ has a broader stolon internode diameter than ‘T11’, ‘Terrigal ecotype’ and ‘Wollongong ecotype’.
- ‘MAC03’ has a longer leaf length than ‘T11’, ‘Terrigal ecotype’ and ‘Wollongong ecotype’.
- ‘MAC03’ has a broader leaf width than ‘T11’, ‘Terrigal ecotype’ and ‘Wollongong ecotype’.
- ‘MAC03’ has a longer inflorescence spike than ‘Wollongong ecotype’.

The comparison trials and results are described in more detail below.

The comparative trial was conducted in Clarendon, New South Wales, Australia in Spring 2007 to Summer 2007-2008. ‘MAC03’, ‘T11’, ‘Terrigal ecotype’ and ‘Wollongong ecotype’ were compared. Individual stolons were taken from open beds, and were then planted in 200mm pots filled with soilless potting mix. Nutrition was maintained with slow release fertilizers, which were added at the time the *Zoysia* were potted. The plants were grown in full sun in the open, with irrigation. All plants were trimmed equally 10 weeks before assessment. The pots were 24 weeks old at the time of trial. The trial design consisted of thirty pots of each variety arranged in a completely randomized design. Measurements were taken in February 2008. The results are shown in **Table 1** (descriptive data) and **Table 2** (statistical data) below.

Table 1

Organ/Plant Part: Context	MAC03	T11	Terrigal ecotype	Wollongong ecotype
Plant: habit	stoloniferous	stoloniferous	stoloniferous	stoloniferous
Plant: vigour	strong to very strong	medium to strong	medium	weak to medium
Stolon: length	long to very long	medium	medium	short to medium
Stolon: diameter of node	medium to broad		medium	medium
Stolon: internode length	medium	medium	medium	medium
Stolon: internode thickness	broad	medium	medium	medium
Stolon: colour when exposed to sunlight	187A	187A	187A	187A
Leaf blade: shape	ligulate	ligulate	ligulate	ligulate
Leaf blade: length	long	medium to long	medium	medium
Leaf blade: width	broad	medium	medium	medium
Leaf blade: colour	146B	146A	146A	146A
Leaf blade: apex	narrow acute	narrow acute	narrow acute	narrow acute
Leaf blade: attitude	horizontal to semi-erect	horizontal to semi-erect	horizontal to semi-erect	horizontal to semi-erect
Leaf blade: profile in cross-section	flat	flat	flat	flat
Inflorescence: length of spike	medium to long	medium to long	medium	medium
Inflorescence: length of peduncle	medium	medium	medium	medium
Inflorescence: anthers	present	present	present	present
Peduncle: colour (RHS)	147B	147B	147B	147B
Glume: predominant colour (RHS)	N186C	N186C	N186C	N186C

Table 2**Stolon: length**

Mean	40.40 cm	20.70 cm	18.60 cm	15.00 cm
Standard. Deviation	6.50 cm	3.50 cm	4.00 cm	3.00 cm
Lsd/significance	7.06	P<=0.01	P<=0.01	P<=0.01

Stolon: diameter of internode

Mean	1.95 mm	1.34 mm	1.44 mm	1.40 mm
Standard. Deviation	0.40 mm	0.20 mm	0.20 mm	0.20 mm
Lsd/ significance	0.32	P<=0.01	P<=0.01	P<=0.01

Stolon: diameter of node

Mean	2.60 mm	2.04 mm	2.23 mm	2.40 mm
Standard. Deviation	0.60 mm	0.40 mm	0.30 mm	0.30 mm
Lsd/ significance	0.48	P<=0.01	ns	ns

Leaf blade: length

Mean	96.30 mm	63.90 mm	43.70 mm	53.20 mm
Standard. Deviation	11.90 mm	23.30 mm	13.40 mm	13.40 mm
Lsd/ significance	17.72	P<=0.01	P<=0.01	P<=0.01

Leaf blade: width

Mean	3.80 mm	2.92 mm	2.71 mm	3.10 mm
Standard. Deviation	0.70 mm	0.20 mm	0.50 mm	0.30 mm
Lsd/ significance	0.49	P<=0.01	P<=0.01	P<=0.01

Inflorescence: length of spike

Mean	52.20 mm	49.90 mm	45.50 mm	40.10 mm
Standard. Deviation	3.90 mm	4.90 mm	4.70 mm	9.60 mm
Lsd/ significance	7.10	ns	ns	P<=0.01

where ns = not significant difference; P<=0.01 = significant difference 1% level

FIG. 1



FIG. 2

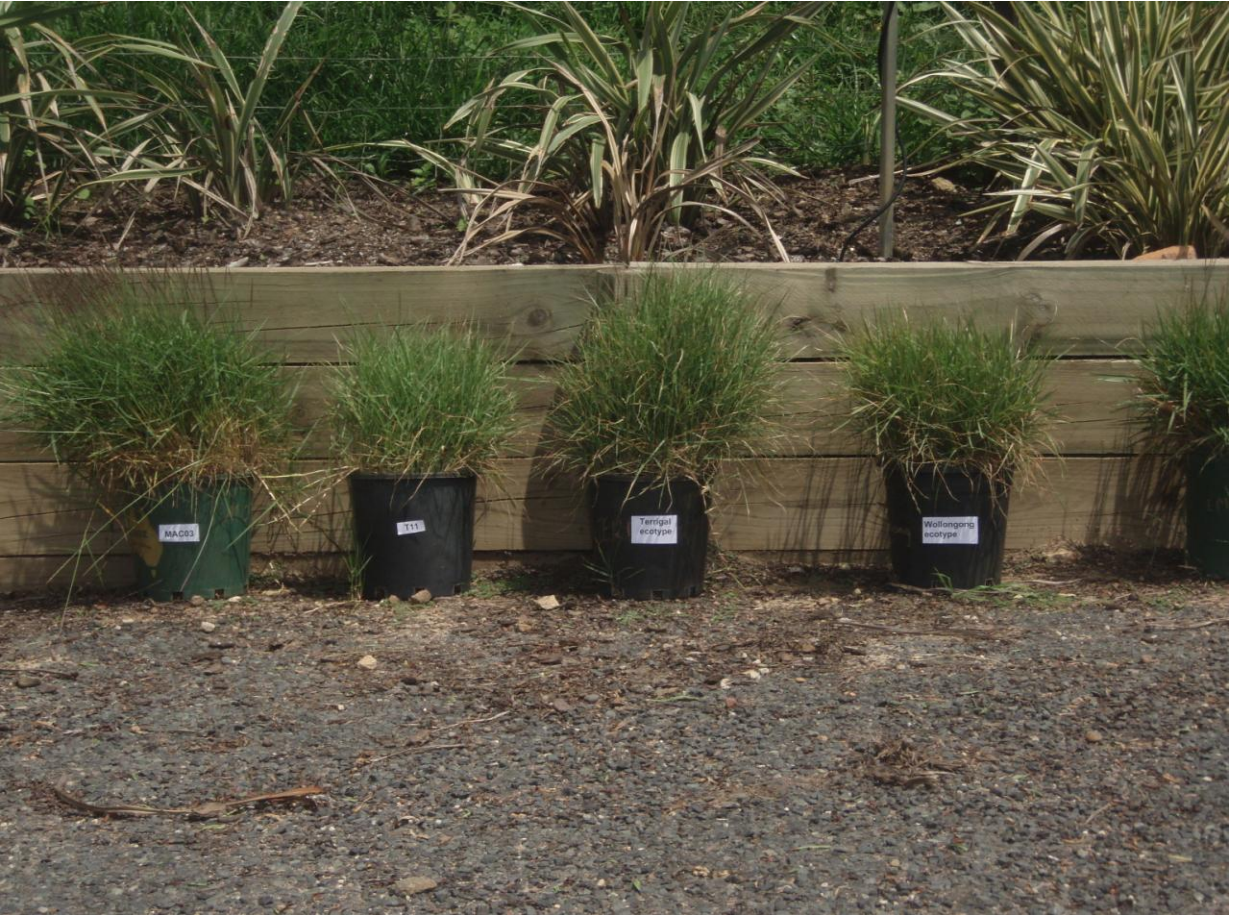


FIG. 3

