FORM 2

THE PATENTS ACT, 1970
(39 of 1970)
&
THE PATENTS RULES, 2003

COMPLETE SPECIFICATION
(See section 10, rule 13)

"TRANSGENIC PLANTS FOR NITROGEN FIXATION"

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The following specification particularly describes the invention and the manner in which it is to be performed.

10. A vector comprising the polynucleotide of claim 9.

11. The vector of claim 10, wherein the nucleic acid sequences as defined in claim 2 are operably linked to heterologous control sequences capable of directing transcription and preferably expression of the nucleic acid sequences in a host cell, preferably plant cell.

12. A cultivated plant, plant cell or seed thereof comprising the genetic material as defined in claim 1 or 2, the polynucleotide of claim 9, the vector of claim 10 or 11 and/or obtainable by a method according to any of claims 1 to 8, preferably exogenously expressing the genetic material.

13. Use of genetic material of *Oryza longistaminata* for imparting, increasing or modifying root association of a plant with a nitrogen fixing microorganism, reducing nitrogen fertilization demand of a plant, and/or improving nitrogen sustainability of cereals.

ABSTRACT

TRANSGENIC PLANTS FOR NITROGEN FIXATION

Provided are genetic material and nucleic acid sequences useful of increasing yield, biomass, growth rate, vigor, nitrogen use efficiency and/or abiotic stress tolerance, preferably tolerance to nutrient deficiency of a plant. Specifically, the improvement of nitrogen fixation properties in cultivated plants is described.

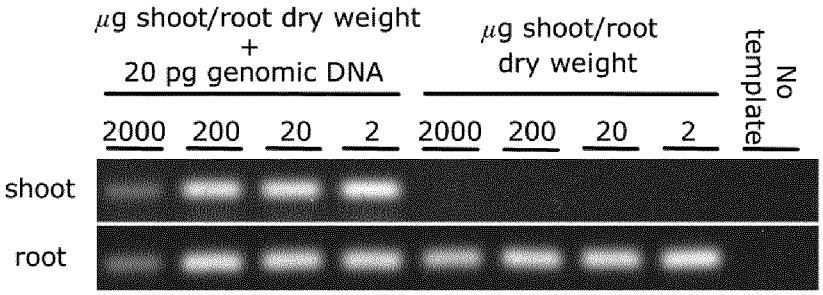
µg shoot/root dry weight
+
20 pg genomic DNA
µg shoot/root
dry weight
No
template
2000
200
20
2
2000
200
20
2
shoot
root

Fig. 1

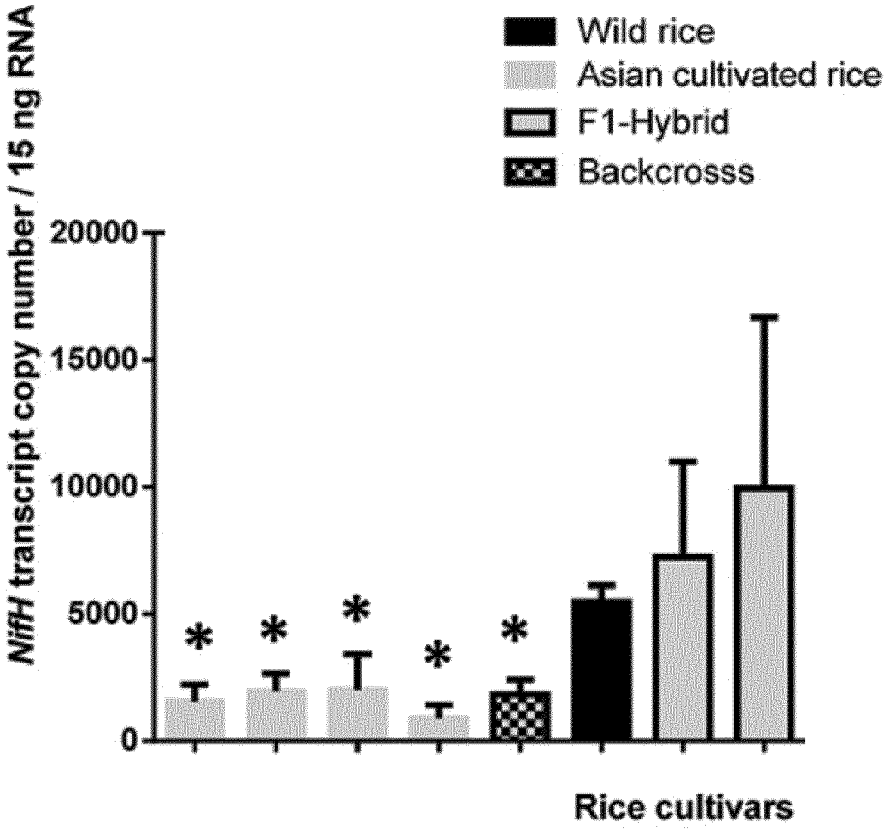
Wild rice
Asian cultivated rice
F1-Hybrid
Backcrosss
NifH transcript copy number / 15 ng RNA
20000
15000
10000
5000
0
*
*
*
*
*
Rice cultivars

Fig. 2

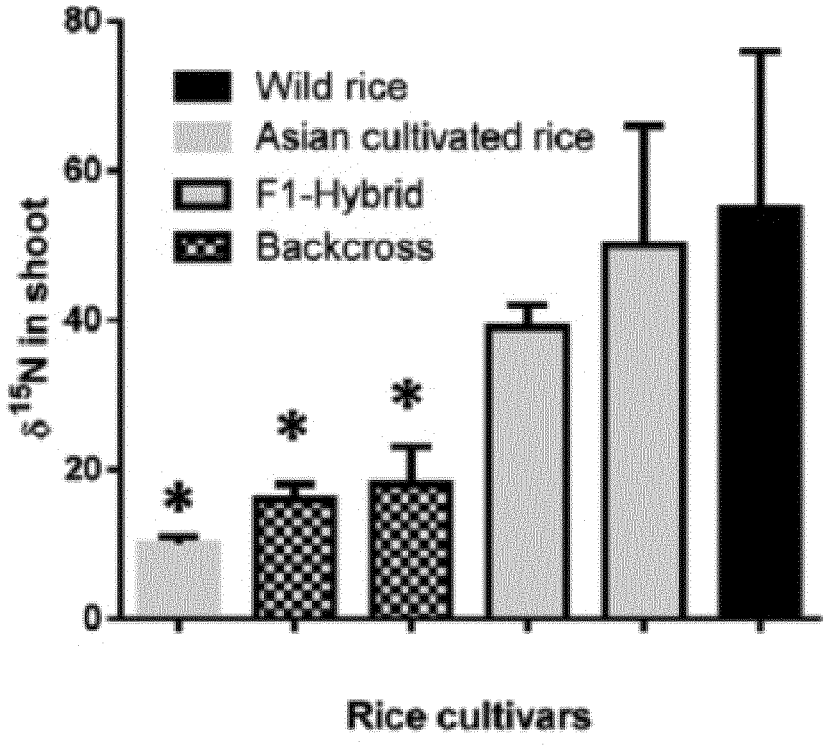
80
60
40
20
0
δ15N in shoot
Wild rice
Asian cultivated rice
F1-Hybrid
Backcross
*
*
*
Rice cultivars

Fig. 3