

Patenting - In class exercise

Methods of Scientific Working for Crop Science (3502-440)

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Description of the invention

The following section describes the invention.

WO 2017/192117

PCT/US2016/030392

Highly Effective and Multifunctional Microbial Compositions and Uses

TECHNICAL FIELD OF THE INVENTION

[0001] The present technology relates generally to compositions and methods of a highly effective and multifunctional strain of *Trichoderma gamsii* (formerly *T. viride*).

BACKGROUND OF THE INVENTION

[0002] The following description is provided to assist the understanding of the reader. None of the information provided or references cited is admitted to be prior art to the present invention. Microbial agents applied as seed treatments or other methods of application have been shown to increase plant growth and development. The most effective of these organisms colonize plant roots internally and induce beneficial changes in gene expression and that therefore give rise to changes in plant physiology. These alterations in plant physiology include coordinated up-regulation of entire biochemical pathways in plants. Nevertheless, the need remains for highly functional seed treatments and applications that improve upon the prior art, where efficient and efficacious changes in this respect include (i) reliable and consistent plant growth and yield promotion, (ii) enhanced root growth and development resulting in larger and deeper root systems, (iii) improved resistance to such abiotic stress including too little or too much water, salt and soil contamination, (iv) increased fertilizer use efficiency and especially nitrogen fertilizer use efficiency, enhanced antioxidant levels in produce, where all of the effects noted above require energy, and can only occur if photosynthesis is enhanced. These microbial agents efficiently improve photosynthesis.

SUMMARY OF THE INVENTION

[0003] The present technology relates generally to compositions, methods and systems entailing one or more microbial agents possessing multifunctional capabilities selected from the group consisting of an increase in one or more beneficial plant attributes comprising plant growth, yield, root development, resistance to abiotic stresses, photosynthetic efficiency, reduction of foliar disease, controlling nematodes, inducing systemic changes in plant gene expression, remaining localized in the plant root system, protecting planted seeds from soil-borne pathogens, and controlling populations of insect pests, wherein the increase in the one or more beneficial plant attributes is compared to a plant or plant system without the one or more microbial agents; and an agronomic carrier.

Figure 1: First page of a patent application of using *Trichoderma* in plant cultivation

1. What is the core of the invention?
2. Where do you recognize the inventive step?
3. How general is the patent description?

Claims made in the patent application

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CLAIMS

What is claimed is:

1. A composition comprising:
 - a. one or more microbial agents possessing multifunctional capabilities selected from the group consisting of an increase in one or more beneficial plant attributes comprising plant growth, yield, root development, resistance to abiotic stresses, photosynthetic efficiency, reduction of foliar disease, controlling nematodes, inducing systemic changes in plant gene expression, remaining localized in the plant root system, protecting planted seeds from soil-borne pathogens, and controlling populations of insect pests, wherein the increase in the one or more beneficial plant attributes is compared to a plant or plant system without the one or more microbial agents; and
 - b. an agronomic mediator selected from the group consisting of an adjuvant, a carrier, a planting medium, and/or one or more nutrients, wherein at least one component of the agronomic mediators does not naturally occur in combination with one or more of the other agronomic mediators.
2. The composition of claim 1, wherein the agronomic mediator is selected from the group consisting of humic acid, fulvic acid, nitrogen containing proteins, urea, ammonium nitrate, sodium, phosphorous, potassium, calcium, magnesium, sulfur, iron, manganese, magnesium, copper, boron, granule, and/or composite compositions for stimulating the formulation of granules, dust, powders, slurries, films, liquid suspensions, coating, pelleting and/or combinations thereof.
3. The composition of claim 1, wherein the one or more microbial agents is a single microbial agent possessing all of the one or more beneficial plant attributes.
4. The composition of claim 3, wherein the single microbial agent is *Trichoderma gamsii* (NRRL B-50520).
5. The composition of claim 1, wherein the agronomic carrier is selected from the group consisting of composite compositions for stimulating the formulation of granules, dust, powders, slurries, films, liquid suspensions, coating, pelleting and/or combinations thereof.

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Figure 2: The claim section of the patent

1. Are the first claims (of a long list not shown) general claims or specific claims?
2. Do you understand the claims?
3. Do you recognize a strategy to make the claims as broad as possible, or are the claims very specific?

The complete patent application is at <https://patentimages.storage.googleapis.com/c7/7d/d3/8bfdcee75c9d6a/WO2017192117A1.pdf>