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(54) Title of the invention : IMPROVED PROCESS FOR THE SYNTHESIS OF ELECTROSPUN PURE ZNO NANOFIBERS AT LOW TEMPERATURE

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(57) Abstract :
The present invention discloses an improved and simple process for the synthesis of pure ultra-thin ZnO nanofibres involving electrospinning method. The mixing of two solutions of PVA and Zinc acetate was performed for 3-4 hours at 70 °C till the complete solubility. The obtained fiber-mesh was annealed to obtain pure ZnO nanofibers at 400 °C and 500 °C for 3 hours at constant heat flow. Rietveld refinement of XRD pattern confirms the hexagonal wurtzite structure (with space group = P63mc) of ZnO nanofibers and the sharp and well-defined diffraction peaks confirm that ZnO nanofibers have pure crystalline phase. SEM images reveal that the ZnO nanofibers have an average diameter of 315-292 nm.

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(54) Title of the invention : ANTI CANCER AND ANTI DIABETIC SYNERGISTIC COMPOSITION OF RASONT FROM BERBERIS SPECIES AND PROCESS THEREOF

(51) International classification	:A61K0036290000, A01H0005120000, C09B0061000000, C07C0403240000, B01D0053140000
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(57) Abstract :

The present invention discloses an anti-cancer, anti-diabetic synergistic composition of "Rasont" from five species of Genus Berberis. This formulation is having anti-cancerous and anti-diabetic activity. The process and method used in the preparation of present formulation is quite simple and economic. Yield of Rasont is also quite high as compared to previous processes used for Rasont preparation. The process uses five species of genus Berberis i.e., Berberis aristata, Berberis chitria, Berberis vulgaris, Berberis lycium and Berberis pseudoumbellata. The process used in present invention is economic as no complex solvents are being used for the extraction and formulation, also the process is quite hygienic as compared to already existing methods.

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Office of the Controller General of Patents, Designs & Trade Marks
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Application Details	
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TITLE OF INVENTION	A LIQUID BIODEGRADABLE FERTILIZER MATERIAL MADE OF BIOLOGICAL COMPONENTS
FIELD OF INVENTION	CHEMICAL
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ADDITIONAL-EMAIL (As Per Record)	manishaphaugat@gmail.com
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FORM 2

The Patent Act 1970

(39 of 1970)

&

The Patent Rules, 2005

COMPLETE SPECIFICATION

(SEE SECTION 10 AND RULE 13)

TITLE OF THE INVENTION

"A liquid biodegradable fertilizer material made of biological components"

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The following complete specification particularly describes and ascertains the nature of this invention and the manner in which it is to be performed: -

Field of the Invention

The invention relates to a biodegradable fertilizer formulations, as well as techniques for creating and applying them. The fertilizer mixes, in particular, contain biodegradable nutrient transporters.

Background of the invention

Agriculture and backyard gardening are increasingly using biodegradable fertilizers. According to the science, biodegradable fertilizers are those made from leftover plant and animal parts as well as from naturally occurring minerals. Both solid and liquid biodegradable fertilizers are available.

As a result, synthetic fertilizers are losing favor in the eyes of the environment. For purposes of sustainability, synthetic fertilizers should be replaced. In example, there is potential to use less energy in the manufacture of synthetic fertilizers. Additionally, there is a desire to switch out some of the synthetic fertilizer elements with naturally occurring, biodegradable ones.

As a result, one of the claimed invention's goals is to supply nitrogen for fertilizer that is derived from a natural source.

The claimed invention furthermore aims to deliver a fertilizer with a natural composition that is both biodegradable and manufactured with ecologically friendly energy.

The provision of an alternative to the current supplies of nitrogen and fertilizer is yet another goal of the idea.

Nitrogen is a crucial component of fertilizers. Both manufactured and natural sources of nitrogen are available. Manure is the most popular natural source of nitrogen for fertilizers. This is disliked for a variety of reasons, including as sanitary and aesthetic concerns, as well as challenges with getting and delivering sufficient quantities of nitrogen that is available to plants. Other natural sources exist, such as fish emulsion, but they cannot be scaled up to a large enough scale for use in commercial applications. Because of this, synthetic fertilizers using synthetic nitrogen are more widespread. The Haber-Bosch reaction is the most used way to produce synthetic nitrogen for fertilizer. Unfortunately, the Haber-Bosh reaction consumes a lot of energy and is therefore not recommended due to environmental concerns.

Typically prepared from water extracts of fish or animal waste, liquid fertilizers frequently include seaweed, which is thought to be a source of plant hormones and trace nutrients. Those created from plant waste are referred to as "compost tea." The fermentation byproducts of composts called compost teas. Normally, compost is submerged in water for up to one week to allow the mixture to ferment. A variety of bacteria found in compost tea are thought to enhance soil health and control plant diseases. However, the nutritional content of these

products is quite low, and the precise make-up of the finished product depends on a wide range of factors, including the substrate for the compost, the temperature and time of the fermentation, and so on.

US20160102024A1 describes a fertilizer composition containing naturally derived, bio-renewable nitrogen content, methods of preparing the compositions, and methods of using the compositions. The fertilizer compositions contain a nutrient carrier and a biodegradable stabilizer. Preferably, the nutrient carrier is between about 30 wt. % and about 95 wt. % of the fertilizer composition and the biodegradable stabilizer is between about 10 wt. % and about 65 wt. % of the fertilizer composition. Preferably the fertilizer has at least 3 wt. % nitrogen content.

WO2008074062A1 describes an organic fertilizer composition and a system for producing a nutrient solution prepared from the composition. In particular the present invention is directed towards a fertilizer preparation system for use with plants that require very little fertilizer or are sensitive to inorganic fertilizers such as indoor plants, bonzi and seedlings.

All biodegradable fertilizers made from plants or animals have an unfavorable odor, which is a recognized drawback. Because of this, they are particularly unsightly in household gardens and are not recommended for usage indoors. There have been initiatives to offer pelletized, deodorized biodegradable fertilizers. In actual use, the pellets retain their original odor and/or develop an unpleasant odor over time when exposed to moisture or in humid environments.

The purpose of the current innovation is to provide a biodegradable fertilizer that can at least partially overcome the aforementioned drawbacks or offer the general public a practical or profitable option.

Summary

The nitrogen in fertilizer compositions that are naturally derived and bio-renewable, as well as the processes for making them and applying them, are all part of the current innovation. The fertilizer compositions include a biodegradable stabilizer and a nutrient carrier. Biodegradable stabilizer is also included in the fertilizer mixes. Biological components comprising 20 to 40 wt. % of a protein adhesive, 2 to 15 wt. % of at least one hygroscopic mineral, 10 to 55 wt.% of water, 0 to 50 wt.% of an additive component, 10 to 20 % mixing a wood vinegar solution, and a nitric acid solution and a phosphorous acid solution at a volume ratio of 1: 0.4 to 1: 0.8 to prepare an acidic mixture are provided in the material. The biodegradable stabilizer should make-up between about 20 and 65 wt.% of the fertilizer composition, and the nutrient carrier

should be in the range of 30 to 65 wt.% . The fertilizer should ideally contain at least 3-5 wt.% nitrogen.

Detailed Description

The embodiments of this invention can indeed be applied to a variety of soil types and fertilizer application techniques that are known to competent artisans and can vary.

The compositions include a carrier for biorenewable nutrients. The compositions can use a wide variety of bio-based nutrition carriers. A nitrogen content of between 3 and about 15 wt.% , preferably between 6 and 13 wt.% , and even more preferably between 8 and 10 wt.% , characterizes particularly appropriate nutrition transporters. The nutrient carrier is preferably made of bioplastic, biocomposite, and/or algae.

Particularly suitable nutrient transporter include algae, carbohydrates, such as glyciride, starches, fats, oils, and polysaccharides; distillers grains, including both wet distillers grains and dried distillers grains with solubles; soy-based carriers such as soy oil (SO),soy flour (SF), soy polymer (SP), soy polymer with adipic anhydride plasticizer (SPA), or soy protein; proteins, such as casein, zein S11, zein S12, and other proteins; fibers, such as paper fiber, coir fiber, peat fiber, and wood fiber; clay; biopolymers such as lignins and cellulose; stover, including, but not limited to, stover from corn, sorghum, and soybeans; and other suitable organic nutrient carriers.

The nutrient carrier is often a soy-based polymer containing soy protein. Without the use of synthetic fertilisers, the soy acts as an environmentally beneficial fertilizer by supplying natural nitrogen. With regard to reduced energy usage during fertilizer manufacture and by substituting synthetic material with naturally produced bio-renewable elements, the developed soy-based formulations offer a significant improvement in sustainability.

A soy-based polymer and algae are both present in the compositions in a preferred embodiment. Algae occur in fresh water, usually attached to submerged rocks and wood or as scum on stagnant water is the major source. A good natural source of phosphorus can be found in algae, which is advantageous for particular fertilizer compositions.

The nutrient carrier content of the fertilizer compositions should be between 40 wt.% and 80 wt.% , more preferably between 45 wt.% and 70 wt.% , and most preferably between 50 wt.% and 65 wt.% .

The other aspect of the invention that a liquid biodegradable fertilizer material comprises, 20 to 40% by weight of a protein adhesive of at least one protein. Further, the degradable material comprises from 2 to 15 wt.% of at least one hygroscopic mineral, 10 to 55

wt.% of water, 0 to 50 wt.% of an additive component, 10 to 20 % mixing a wood vinegar solution, and a nitric acid solution and a phosphorous acid solution at a volume ratio of 1: 0.4 to 1: 0.8 to prepare an acidic mixture are provided in the material.

In addition, there should be between 2 and 15 weight percent of hygroscopic minerals, preferably between 4 and 11 weight percent, and even more preferably between 8 and 10 weight percent, as well as between 10 and 55 weight percent of water, preferably between 20 and 50 weight percent, and even more preferably between 40 and 45 weight percent, in degradable material.

The material may also contain an added component in a weight range of 0 to 50%, preferably between 15 and 45%, and even more preferably between 25 and 35%. The substance need not always contain the additional component. Without the use of an additional component, the inventive material resolves the technical issue indicated above.

Further aspect of the invention is to add Biodegradable Stabilizer in the composition. The stabilizer in the fertilizer mix is a biodegradable polymer. In some instances, the biodegradable stabilizer may obtain from nature. Polymer may be select from; Polysaccharides, cellulose, polylactic acid (PLA), polyhydroxyalkanoate (PHA), polyurethane (PUR), polyethylene glycol (PEG), and polyamide are examples of biodegradable high-carbon polymers that are suitable (PAM). There may also be use of additional bio-based, biodegradable high-carbon polymers. PAM and PUR are produced from castor oil and pine oil, respectively, in preferred embodiments.

When a stabilizer is present in fertilizer compositions, the fertilizer should comprise between 20 and 65 weight percent of biodegradable stabilizer, more preferably between 25 and 55 weight percent, and least preferably between 30 and 45 weight percent.

Example 1: Liquid biodegradable fertilizer material comprises i) 30% wt. protein adhesive, ii) 12% wt. hygroscopic mineral, iii) 10% wt. additive component, iv) 15 % wt. mixing a wood vinegar solution v) soya based algae, vi) 30% wt. water etc.

Example 2: Liquid biodegradable fertilizer material comprises i) 33% wt. protein adhesive, ii) 15% wt. hygroscopic mineral, iii) 8% wt. additive component, iv) 12 % wt. mixing a wood vinegar solution v) soya based algae, vi) 25% wt. water, vii) 25 and 55 weight percent high-carbon polamide based biodegradable stabilizer etc.

Table 1: Fertilizer compositions

Ingredient	First composition	Second composition	Third composition
Nutrient Transporter	25-90	35-75	40-65
Stabilizer	05-65	10-55	30-45
Water	20-50	20-40	15-30
Protein Adhesive	25	30	35

Additional ingredients	8	9	10

The nitrogen content of the fertilizer composition can range from at least 2.5 weight percent, to at least 3 weight percent, to at least 4 weight percent.

The phosphorus content of the fertilizer compositions can range from at least 1.5 weight percent to at least 2.5 weight percent to as least 3.5 weight percent.

The potassium content of the fertilizer compositions can range from at least 1 weight percent to at least 1.5 weight percent to at least 5 weight percent.

pH adjusters useful for addition to alkaline soil and/or fertilizer can include, but are not limited to, inorganic acids such as HCl, H_3PO_4 , and H_2SO_4, and organic acids such as humic, vanillic and ferulic acids. Additionally, the biochar may be made more alkaline by adding alkaline agents such as lime, bones, potassium carbonate or potassium hydroxide.

This liquid fertilizer composition is maintaining the pH of the soli and increase the productivity. Biodegradable fertilizer is an environmentally friendly and will be available in the market at nominal rate.

We Claim

1. A liquid biodegradable fertilizer material made of biological components comprising

a) 20 to 40 wt.% of a protein adhesive
b) 2 to 15 wt.% of at least one hygroscopic mineral
c) 10 to 55 wt.% of water
d) 0 to 50 wt.% of an additive component
e) 10 to 20 % mixing a wood vinegar solution

a nitric acid solution and a phosphorous acid solution at a volume ratio of 1: 0.4 to 1: 0.8 to prepare an acidic mixture are provided in the material

2. A liquid biodegradable fertilizer material as claimed in claim 1, further comprising a bio-renewable nutrient carrier and a biodegradable stabilizer.

3. A liquid biodegradable fertilizer material as claimed in claim 1, wherein the biorenewable nutrient carrier is selected from the group consisting of algae, soy-based carriers, proteins, , biopolymers, , and combinations thereof.

4. A liquid biodegradable fertilizer material as claimed in claim 1, wherein biodegradable stabilizer is selected from Polysaccharides, cellulose, polylactic acid (PLA), polyhydroxyalkanoate (PHA), polyurethane (PUR), polyethylene glycol (PEG), and polyamide.

5. A liquid biodegradable fertilizer material as claimed in claim 1, wherein nitrogen content of the fertilizer composition can range from at least 2.5 weight percent, to at least 3 weight percent, to at least 4 weight percent.

6. A liquid biodegradable fertilizer material as claimed in claim 1, wherein phosphorus content of the fertilizer compositions can range from at least 1.5 weight percent to at least 2.5 weight percent to as least 3.5 weight percent.

7. A liquid biodegradable fertilizer material as claimed in claim 1, wherein potassium content of the fertilizer compositions can range from at least 1 weight percent to at least 1.5 weight percent to at least 5 weight percent.

8. A liquid biodegradable fertilizer material as claimed in claim 1, wherein Biodegradable fertilizer is an environmentally friendly and will be available in the market at nominal rate.

Dr. Manisha

Title: A liquid biodegradable fertilizer material made of biological components

Abstract

The present invention relates to a method for producing a liquid biodegradable fertilizer material made of biological components. It consists of bio-renewable fertilizer compositions and procedures for creating and applying those compounds. The biodegradable nutrient carriers used in the fertilizer compositions, in particular, contain a naturally produced, bio-renewable nitrogen content. Biodegradable stabilizer is also included in the fertilizer mixes. Biological components comprising 20 to 40 wt.% of a protein adhesive, 2 to 15 wt.% of at least one hygroscopic mineral, 10 to 55 wt.% of water, 0 to 50 wt.% of an additive component, 10 to 20 % mixing a wood vinegar solution, and a nitric acid solution and a phosphorous acid solution at a volume ratio of 1: 0.4 to 1: 0.8 to prepare an acidic mixture are provided in the material.

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(54) Title of the invention : BIOPESTICIDE FROM BT CROP BIOWASTE AND METHOD THEREOF

(51) International classification	:A01N0065000000, A01N0065200000, A61L0011000000, A01N0065380000, A01N0059000000
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(57) Abstract :
Present invention discloses a bio pesticide which consists of a standardized aqueous extract of fresh bio waste of Bt crops and its method of preparation. The concentration of CRY protein in the standardized extract ranges from 1-5 mg/Liter, optimally 2.5 mg/L. Preparation method involves fresh bio waste collection, cold maceration using water, preferably alkaline with optimal pH 8.5; at 4-6 times, optimally 5 times the weight of fresh bio waste; filtration, characterization, sterilization and packaging.. For use in the field, same is diluted in 1000 liters of water for spraying in 1 hectare (10,000 square meters) to protect plants from pest attack. Multiple sprays can be given. Being free of chemical compounds, the bio-pesticide is suitable for use in organic farming, safe and eco-friendly, inexpensive and prevents development of pest resistance owing to presence of several phytocompounds and phytomolecules rather than a single chemical entity.

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(54) Title of the invention : A SYSTEM & METHOD FOR DRUG-FREE MODALITIES USING JACOBSON PROGRESSIVE MUSCLE RELAXATION AND CONTROLLED MENTAL VISUALISATION IN TREATING PATIENTS

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(57) Abstract :
Disclosed herein is a drug/medicine free modality technique (system and method) based on Jacobson progressive muscle relaxation and controlled mental visualisation procedure used for physical and mental healing of a wide range of patients who are suffering from hypertension, anxiety, psychological disorders. The system comprises a contented chair/bed (100), one or more sensors (200), and a health monitoring device (300). The chair/bed (100) is adapted to allow the patient body (400) to rest in a relaxed posture. The sensors (200) are coupled to the chair/bed (100) to measure one or more biological signals of the patient body (400). The health monitoring device (300) is communicatively coupled to the sensors (200) to receive, record, analyse and process the measured biological signal received therefrom. The health monitoring device (300) is integrated with an artificial intelligence tool (302) comprising a trained database associated with various parameters of Jacobson progressive muscle relaxation and controlled mental visualisation mechanism for guiding physicians (500) to: close eyes of the patient (400) after lying in the relaxed posture on the chair/bed (100), tighten a target muscle of the patient body (400) with deep inhalations, relax the target muscle of the patient body (400) with gradual exhalations, visualize a cheerful memory or image to bring mental calmness and physical comfort.

No. of Pages : 20 No. of Claims : 10