

100 Documents

Publication numbers	Title	Current assignees
CN204305740U U	Agricultural irrigation system	HENAN JIAJIAYOU AGRICULTURAL TECHNOLOGY
EP2991955 A2	Fertigation composition and method for fertigation	SABIC
EP2268594 A2	Fertilizer suspension and method of preparation	LAWRENCE BROOKE ENGINEERING
WO2019157444 A1	Apparatus for automated fertilization and/or irrigation, and methods of making and using the same	DEERPOINT
US20110077784 A1	System and method for injecting a fluid additive into a fluid dispensation system	VIRID SERVICES
US8628598 B1	Method and system for agricultural fertigation	MILLER DEBORAH L, ...
EP1379987 A1	Computer specified fertilizer application for agricultural fields	FARMERS EDGE PRECISION CONSULTING, ...
EP2248790 A1	Sulfur-containing fertilizer composition and method for preparing same	MOSAIC
US9004374 B1	Irrigation method using thixotropic materials	PATHWAY BIOLOGIC
US4917304 A	Automatic controller for injection of additives into irrigation water	AVANTI MANUFACTURING
US20070290072 A1	Chemical application apparatus for sprinkler systems	GROVES GARY L JR
EP-833806 A2	An aqueous fertilizer suspension containing at least phosphate ions and calcium or magnesium ions and a use of the suspension	KEMIRA AGRO
US20160185673 A1	Method and composition for agricultural potassium-plus fertigation	MILLER DEBORAH L, ...
US8821646 B1	Compositions and methods for cleaning and preventing plugging in micro-irrigation systems	MILLER DEBORAH L, ...
US4870991 A	Lawn sprinkler fertilizer device	MCMILLAN THOMAS A, ...
US5022585 A	Automatic chemigation	MANNO RAY
US20060108455 A1	Lawn chemical application system	THORNTON BRIAN
WO2006131056 A1	Fertilizing method for agricultural irrigation	HIGHEFFI TECHNOLOGY BEIJING
US3669357 A	Injection and distribution unit for a lawn sprinkler system	CHARLES A OVERBEY
US20040049978 A1	Combined controller apparatus for a horticultural watering system	FERTIGATION TECHNOLOGIES
WO201842312 A1	Soluble granular fertilizer for fertigation	SABIC GLOBAL TECHNOLOGIES
US5135174 A	Automatic micro-feeding system for applying multiple	CHAPLINSKY MICHAEL J

Publication numbers	Title	Current assignees
	independent plant nutrients to irrigation systems	
EP1230195 A1	Water soluble fertilizer compositions	EVERRIS INTERNATIONAL
CN205671156U U	Water conservancy sprinkling irrigation equipment	YING ZHIHUA
WO200055702 A1	Liquid injection apparatus and method for horticultural watering systems	FERTIGATION TECHNOLOGIES
WO200721512 A2	A device for injecting and mixing liquid fertilizer with water flow in a sprinkler system pipeline	BOWLES, C. ANTHONY, ...
US10233128 B1	Method and composition for agricultural potassium and nutrient fertigation	MILLER DEBORAH L, ...
US20040094208 A1	Apparatus for adding fertilizer to water in an underground sprinkling system and fertilizer therefor	FERTILE EARTH SYSTEMS
EP-949221 A1	Composition suitable as liquid fertilizer containing sulphur as potassium tetrathionate	BRENNTAG
US4867192 A	Apparatus for controlling irrigation water pH for golf courses	TERRELL B JOE, ...
FR2515839 A1	Programmable controller for water and fertiliser sprinkler system - comprises microprocessor with clock unit and selectors for time periods and operating modes	SEII
EP2882281 A1	Method of reducing atmospheric ammonia in livestock and poultry confinement facilities	VERDESIAN LIFE SCIENCES
EP-755369 A1	A suspension fertilizer suitable for irrigation fertilization, and a process for its preparation	KEMIRA GROWHOW
EP2819498 A1	Monitoring and control of soil conditions	AGQ TECHNOLOGY
EP2906049 A1	Process for the manufacturing of a nutritive composition comprising iron	PRAYON
US4545396 A	System for optimum irrigating and fertilizing	MILLER RICHARD N, ...
US4635848 A	Irrigation additive delivery system	LITTLE CHARLES F
CN205623617U U	Solar energy type farmland irrigation device	DU LINAO
US8434697 B1	Autonomous system for injecting additives into irrigation water	OLT PETER
US4456176 A	Apparatus for processing and dispensing fertilizer or insecticide	AGIUS JOSEPH L
EP---3587 A1	Agrochemicals based on stabilized azulomic acids	BAYER
EP-276179 A2	Method for manufacture of slow-release fertilizers	HAIFA CHEMICALS
CN205648584U U	Utilize solar energy power generation's convenient type irrigation device	JIANGSU PRECISION WORK PUMP INDUSTRY
US4895303 A	Sprinkler system fertilization regulator	FREYVOGEL FRANK C
WO2016176991 A1	Testing device for integrated irrigation and disinfection	JIANGSU UNIVERSITY
US7695541 B1	Non-acidic, high calcium load aqueous fertilizer	TIGER INDUSTRIES
US3796559 A	Processes for introducing zinc micronutrients into liquid	PLATTE CHEMICAL

Publication numbers	Title	Current assignees
	fertilizers	
WO2014190307 A1	Anhydrous ammonia supplemented with agricultural actives	VERDESIAN LIFE SCIENCES
US20100268391 A1	Resource use management in yards and gardens	DEERE
EP1023686 A1	Multi-variable rate dispensing system for agricultural machines	CHEM EQUIPMENT
EP2243353 A1	System and method for managing resource use	DEERE
EP1282654 A2	Anionic vinyl/dicarboxylic acid polymers and uses thereof	VERDESIAN LIFE SCIENCES
EP1392101 A2	System for automated monitoring and maintenance of crops including computer control of irrigation and chemical delivery using multiple channel conduit	VINEYARD INVESTIGATIONS
US5366159 A	Automatic lawn and garden feeding apparatus	CHILDERS LANCE L
WO200884495 A2	Novel agricultural composition	SHAH DEEPAK PRANJIVANDAS
EP1373914 A1	Anionic polymers composed of dicarboxylic acids and uses thereof	VERDESIAN LIFE SCIENCES
EP3099167 A1	Adjuvants for plant growth regulators	VERDESIAN LIFE SCIENCES
CN104396417 A	Big field micro-irrigation distributed type precise fertilizer-applying pesticide-applying device	INSTITUTE OF GEOGRAPHIC SCIENCES & NATURAL RESOURCES RESEARCH CAS
EP2958877 A1	Fertiliser coating containing micronutrients	YARA
WO2018156189 A1	Multi-nutrient granular fertilizer compositions and methods of using the same	PRODUQUÍMICA INDÚSTRIA E COMÉRCIO
WO201535031 A1	Polymer-boric acid compositions	VERDESIAN LIFE SCIENCES
US20070245936 A1	Apparatus and method for the injection of viscous fertilizer below the surface of the soil	AMERICAN WATER WORKS
WO2016130695 A1	Coating for improved granular fertilizer efficiency	LAND VIEW
CN109348817 A	Corn planting drop irrigation device	JILIN ACADEMY OF AGRICULTURAL SCIENCES
US20010034304 A1	Manufacture and use of an deposition aid	HELENA HOLDING, ...
EP1871727 A1	Sequestering agent for micronutrient fertilisers	ADELAIDE RESEARCH & INNOVATION, ...
WO200238522 A2	Soil improving and fertilising composition	AQUA SOIL
EP-846408 A1	Method for treatment of waste material	GUYOT, JEAN-NOEL
EP2906052 A1	Nutritious inorganic iron composition	PRAYON
US4701204 A	Composite comprising a substrate coated with polymeric	EXXONMOBIL RESEARCH

Publication numbers	Title	Current assignees
	complexes	& ENGINEERING
US20160185678 A1	Polymer-boric acid compositions	VERDESIAN LIFE SCIENCES
WO201045687 A1	Fertiliser composition	DULUXGROUP
EP-954514 A1	Fertilizer compositions including chelated metal ions	STOLLER ENTERPRISES
US20040011102 A1	Lignocellulose fiber composite with soil conditioners	RAYONIER PERFORMANCE FIBERS
EP1560801 A1	A process for the manufacture of sulphur-containing ammonium phosphate fertilizers	SHELL
US20090277506 A1	Irrigation systems and methods	LINDSAY
US20060150697 A1	Anionic polymers composed of dicarboxylic acids and uses thereof	VERDESIAN LIFE SCIENCES
US4995418 A	Fertilizer sprinkler apparatus	CERVOLA WILLIAM F
CN1609072 A	Liquid fertilizer specially for water-saving irrigation and its prepn process	XI AN TONGZE INVESTMENT
WO2014152994 A1	Fertilizer composition and method for preparing the same	MOSAIC
EP1296555 A2	Controlled release agricultural products and processes for making same	PURSELL AGRI TECHNOLOGY
US4526573 A	Suction-irrigation equipment with control valve	SMITHS INDUSTRIES
EP1311461 A2	Controlled release urea-formaldehyde liquid fertilizer resins	KOCH AGRONOMIC SERVICES
US20100024500 A1	Methods and compositions for soil amendments and organic waste management	HEART OF NATURE
EP1630150 A2	Method for producing a fertilizer with micronutrients	MOSAIC
EP2854511 A1	Continuously calibrating chemigation injection unit	SYNGENTA PARTICIPATIONS
EP3167916 A1	Wound treating apparatus and method	SMITH & NEPHEW
EP2244217 A1	A method for providing an application to plants	DEERE
US5578486 A	Recombinant microbial fertilizer and methods for its production	INTERNATIONAL TLB RESEARCH INSTITUTE, ...
EP3078650 A1	Seed product comprising seed coated with polyanionic polymer	VERDESIAN LIFE SCIENCES
EP2243352 A1	Robotic watering unit	DEERE
CN106810359 A	Zinc-enriched kiwifruit nutrient injection	SHANG SHENGJIE
US20070185621 A1	System and method for controlling injection into an irrigation system	GILMORE DAN
US20100240533 A1	Micronutrient fertilizers and methods of making and using the same	AGTEC INNOVATIONS
US6393927 B1	Method and apparatus for real-time determination and	US DEPARTMENT OF

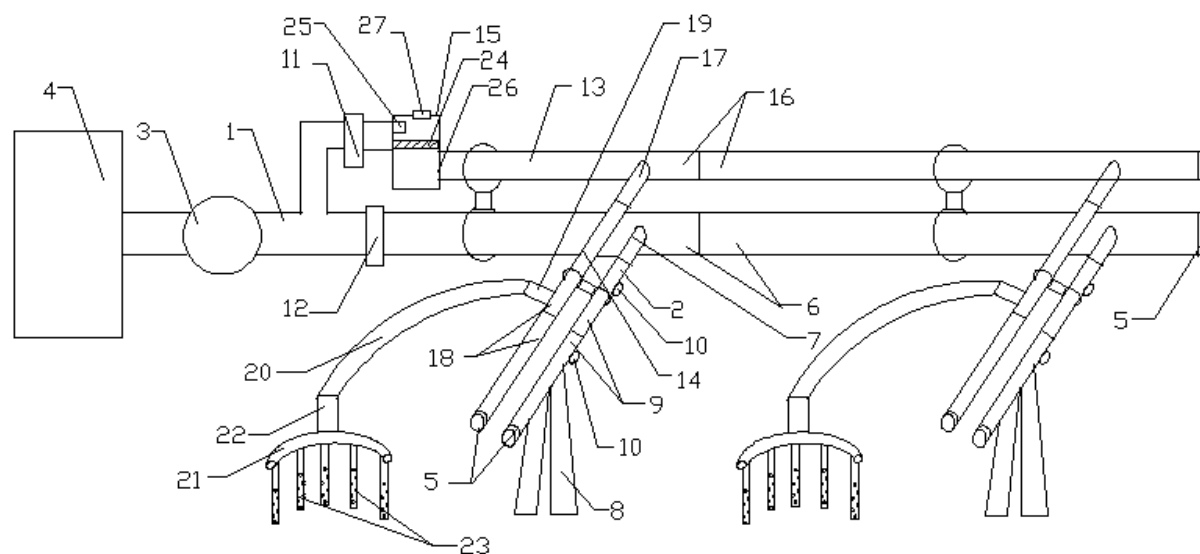
Publication numbers	Title	Current assignees
	application of nitrogen fertilizer using rapid, non-destructive crop canopy measurements	AGRICULTURE
EP2884834 A1	Controlled on-demand irrigation system	VALMONT INDUSTRIES
EP-912463 A1	Neutral metal alkanoate micronutrient solutions and method of manufacturing same	PLATTE CHEMICAL
US5927603 A	Closed loop control system, sensing apparatus and fluid application system for a precision irrigation device	SIMPLOT
US20050211802 A1	System for uniform dispersal of agricultural chemicals	AGRI INJECT
EP2168990 A2	Water-swellaable hybrid material with inorganic additives and process for its preparation	GEOHUMUS INTERNATIONAL RESEARCH & DEVELOPMENT GM

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Title

(CN204305740U)

Agricultural irrigation system

Images**Publication numbers with kind code & date**[CN204305740](#)

U

2015-05-06

CN204305740U

**Abstract**

(CN204305740)

The utility model discloses an agricultural irrigation system which comprises an irrigation water spray system and a nutrient injection system. The irrigation water spray system comprises a main water spray pipeline and multiple sets of branch water spray pipelines, wherein one end of the main water spray pipeline is connected with a water source through a water pump, the multiple sets of branch water spray pipelines are arranged in parallel, and spray heads are arranged on the lower surfaces of auxiliary pipelines of each set of water spray pipelines. The nutrient injection system comprises a main nutrient injection pipeline, branch nutrient injection pipelines and nutrient underground injection structures, wherein one end of the main nutrient injection pipeline is communicated with the main water spray pipeline through a fertilizer mixing box and a first valve, the multiple sets of branch nutrient injection pipelines are arranged in parallel, and auxiliary pipelines of each set of branch nutrient injection pipelines are provided with the corresponding nutrient underground injection structures. By means of the agricultural irrigation system, effective irrigation of water and nutrients can be achieved, sufficient absorption of crops is ensured, and the agricultural irrigation system is capable of being assembled and disassembled, convenient to move and capable of being repeatedly used.

Inventors

齐仁龙

QI RENLONG

张庆辉

ZHANG QINGHUI

张东林

ZHANG DONGLIN

朱小会

ZHU XIAOHUI

赵海发

ZHAO HAIFA

卜方伟

BU FANGWEI

齐永昌

QI YONGCHANG

Latest standardized assignees - inventors removed

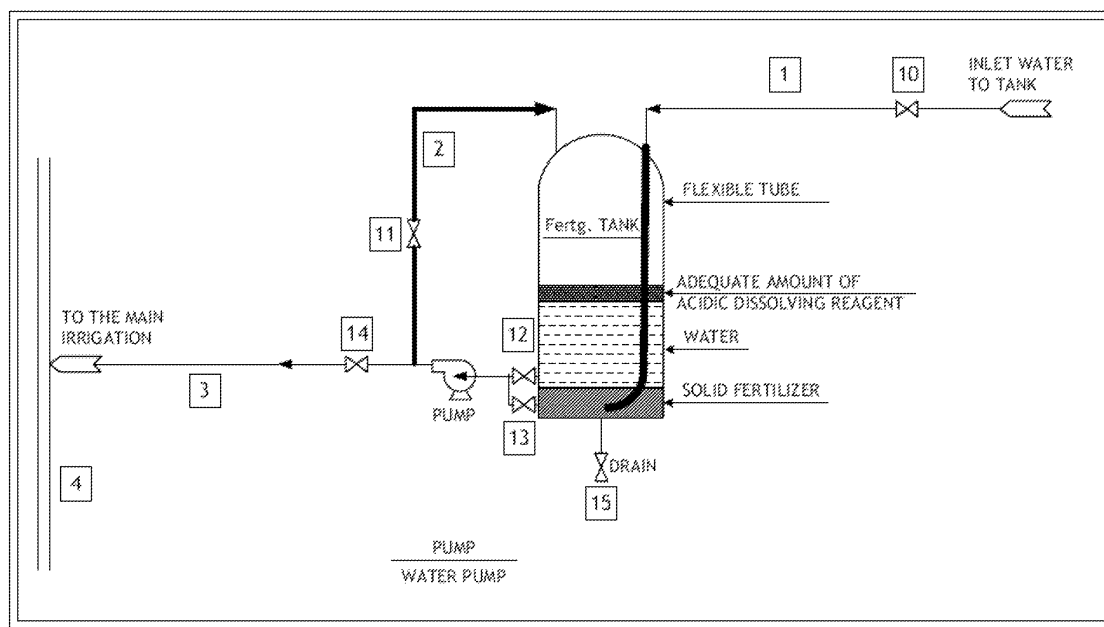
HENAN JIAJIAYOU AGRICULTURAL TECHNOLOGY

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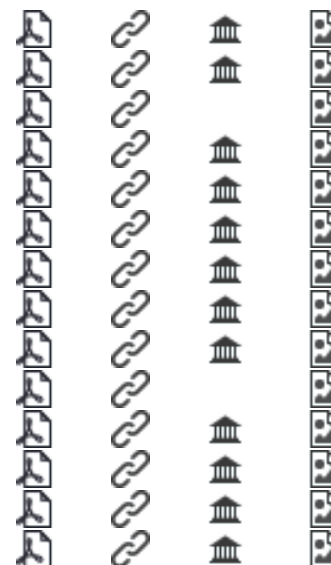
Title

(EP2991955)

Fertigation composition and method for fertigation

Images**Publication numbers with kind code & date**

IN323408	B	2019-10-22	IN-323408
ES2727389	T3	2019-10-15	ES2727389
TR201907136	T4	2019-06-21	TR201907136
EP2991955	B1	2019-04-17	EP2991955
US10117378	B2	2018-11-06	US10117378
AU2014261114	B2	2016-10-06	AU2014261114
IN8738/DELNP/2015	A	2016-07-15	IN2015DN08738
US20160073578	A1	2016-03-17	US20160073578
EP2991955	A2	2016-03-09	EP2991955
AR096127	A1	2015-12-09	AR--96127
CN105143150	A	2015-12-09	CN105143150
AU2014261114	A1	2015-09-24	AU2014261114
WO2014/177932	A3	2015-03-05	WO2014177932
WO2014/177932	A2	2014-11-06	WO2014177932

**Abstract**

(EP2991955)

Disclosed herein is a method for fertigation comprising: (a) providing an acidic mixture of water and a fertilizer dissolving agent; (b) contacting the acidic mixture with a fertilizer composition in fertigation equipment to dissolve the fertilizer composition and to form a fertigation composition; and (c) contacting the fertigation composition with soil. Also disclosed are a fertigation composition and a fertilizer system.

Inventors

KHALEEL MOHAMED AKASHA M

Latest standardized assignees - inventors removed

SABIC

Family 3/100 - FAMPAT - ©Questel

Title

(EP2268594)

Fertilizer suspension and method of preparation

Publication numbers with kind code & date

EP2268594	B1	2018-10-10	EP2268594
CA2718084	C	2017-02-07	CA2718084
US9346717	B2	2016-05-24	US9346717
US20150158776	A1	2015-06-11	US20150158776
EP2268594	A4	2015-03-04	EP2268594
HK1156594	A1	2014-12-19	HK1156594
US8864867	B2	2014-10-21	US8864867
CN102026940	B	2014-04-02	CN102026940B
US20140076012	A1	2014-03-20	US20140076012
US8568505	B2	2013-10-29	US8568505
US20130111960	A1	2013-05-09	US20130111960
US8361184	B2	2013-01-29	US8361184
US20120198899	A1	2012-08-09	US20120198899
US8197572	B2	2012-06-12	US8197572
US8110017	B2	2012-02-07	US8110017
US20110226028	A1	2011-09-22	US20110226028
CN102026940	A	2011-04-20	CN102026940
EP2268594	A2	2011-01-05	EP2268594
WO2009/151677	A3	2010-03-11	WO2009151677
CA2718084	A1	2009-12-17	CA2718084
WO2009/151677	A2	2009-12-17	WO2009151677
US20090229331	A1	2009-09-17	US20090229331

**Abstract**

(EP2268594)

A concentrated, homogenous, stable, water-soluble fertilizer suspension comprising: water-soluble mineral nutrients of at least nitrogen, phosphorous, potassium, calcium, and magnesium; and an organic stabilizing additive; and wherein the pourable, aqueous suspension has water-soluble mineral nutrients amounting to at least about 80 percent by weight (wt. %) of the suspension.

Inventors

WELLS GEOFFREY DYLAN

Latest standardized assignees - inventors removed

LAWRENCE BROOKE ENGINEERING

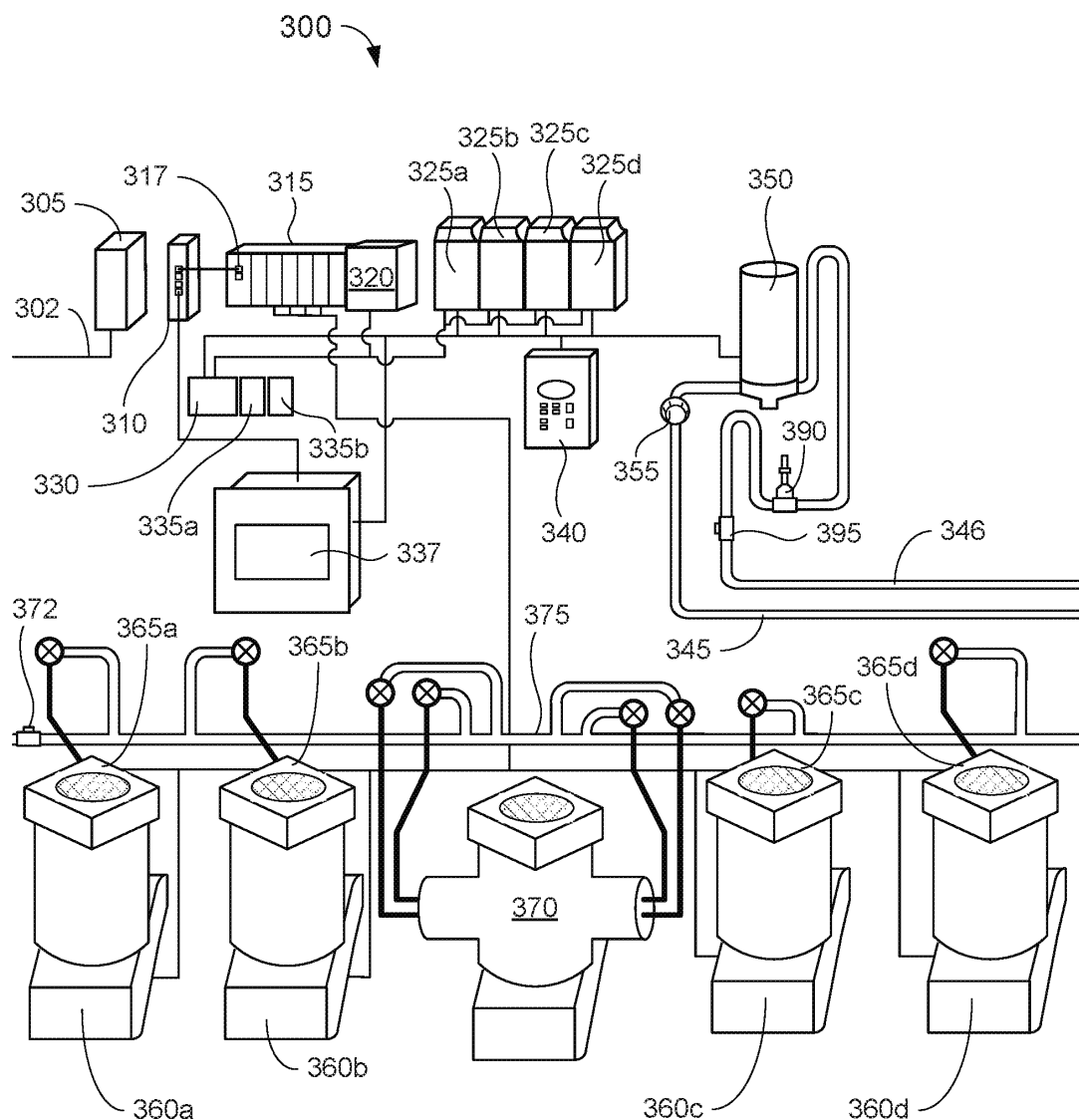
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Title

(WO2019157444)

Apparatus for automated fertilization and/or irrigation, and methods of making and using the same

Images



Publication numbers with kind code & date

US20190246558	A1	2019-08-15	US20190246558
WO2019/157444	A1	2019-08-15	WO2019157444
US10271474	B1	2019-04-30	US10271474



Abstract

(WO2019/157444)

An automated irrigation and/or fertigation apparatus, including a container, a plurality of pumps in the container, and a controller operably connected to each of the plurality of pumps is disclosed. Each of the pumps is configured to provide a unique fertilizer, nutrient and/or micronutrient to irrigation water. The controller is configured to control settings of each of the pumps to provide a predetermined amount of each unique fertilizer, nutrient and/or micronutrient to the irrigation water over a predetermined period of time. Corresponding methods of fertilizing a field and of making the automated irrigation and/or fertigation apparatus are also disclosed.

Inventors

MILLER JOHN
MILLER DEBORAH
PENCZAK JOHN
CHOW JASON

Latest standardized assignees - inventors removed

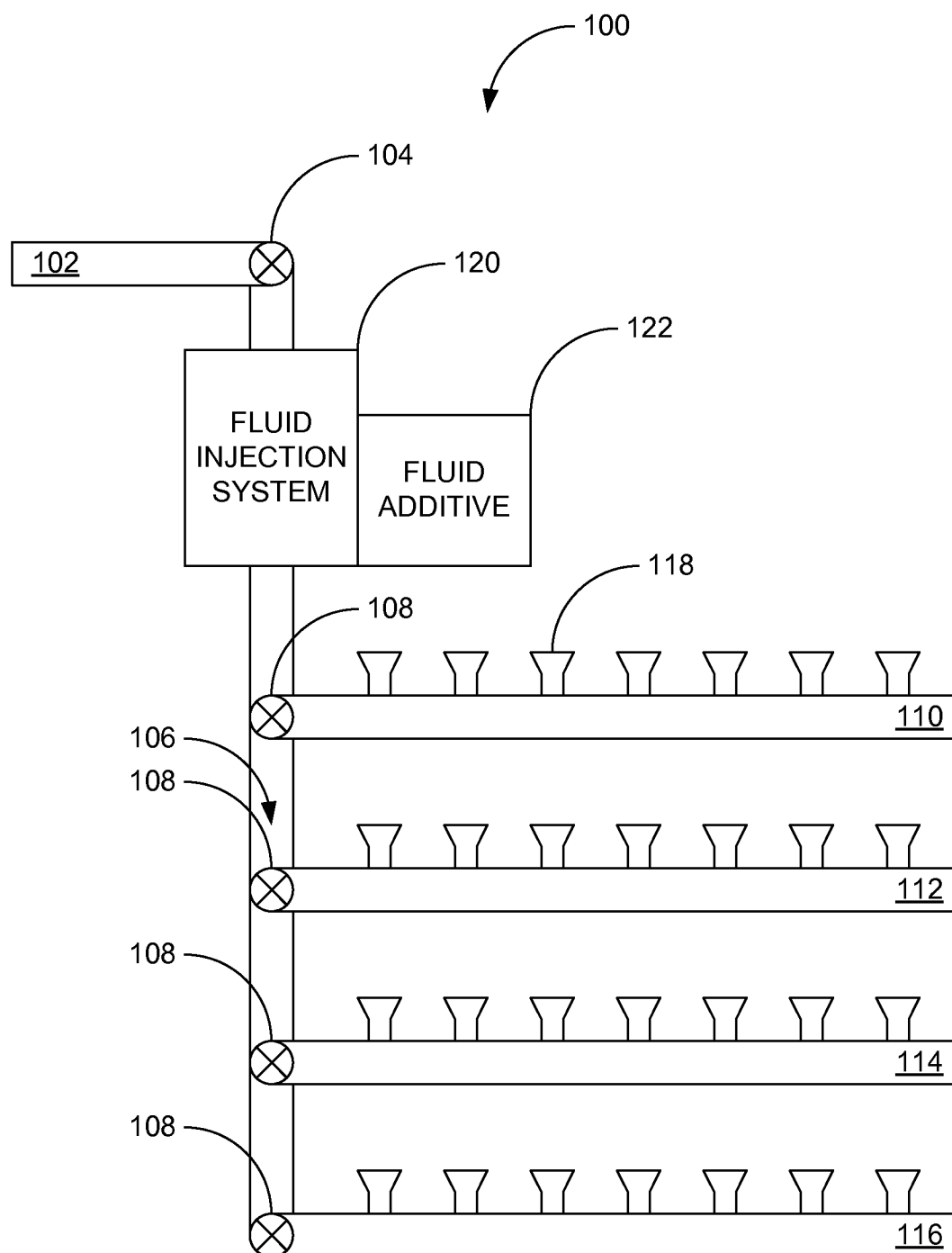
DEERPOINT

Family 5/100 - FAMPAT - ©Questel

Title

(US8565925)

System and method for injecting a fluid additive into a fluid dispensation system

Images**Publication numbers with kind code & date**

US9678512	B2	2017-06-13	US9678512
US20160011603	A1	2016-01-14	US20160011603
US9008848	B2	2015-04-14	US9008848
US20140174546	A1	2014-06-26	US20140174546
US8565925	B2	2013-10-22	US8565925
US20110077784	A1	2011-03-31	US20110077784

**Abstract**

(US20110077784)

A method for operating a fluid dispensation system is provided. The method includes receiving a first control signal indicating that a fluid dispensation device within the fluid dispensation system is active, and determining a fluid additive quantity based upon the identity of the fluid dispensation device. The method also includes activating a fluid additive injection system, where the fluid additive injection system injects the fluid additive into the fluid dispensation system in response to the activation. The method further includes receiving a second control signal from the fluid additive injection system when the fluid additive quantity for the zone has been injected into the fluid dispensation system, and deactivating the fluid additive dispensation system in response to the second control signal.

Inventors

LIPS JON

Latest standardized assignees - inventors removed

VIRID SERVICES

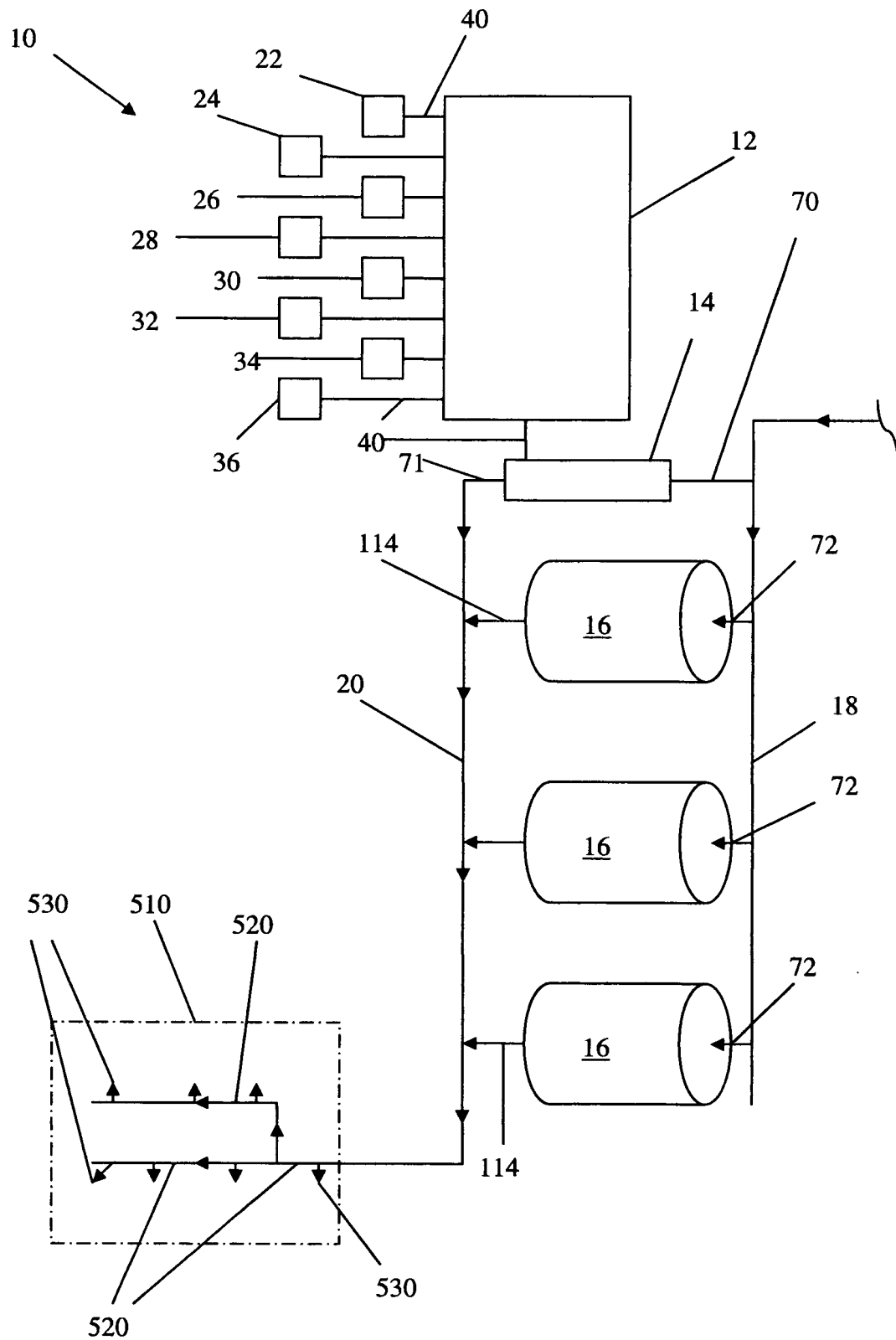
Family 6/100 - FAMPAT - ©Questel

Title

(US8628598)

Method and system for agricultural fertigation

Images



Publication numbers with kind code & date

US9148993	B1	2015-10-06	US9148993
US8986417	B1	2015-03-24	US8986417
US8986418	B1	2015-03-24	US8986418
US8979969	B1	2015-03-17	US8979969
US8721758	B1	2014-05-13	US8721758
US8690982	B1	2014-04-08	US8690982
US8690983	B1	2014-04-08	US8690983
US8690984	B1	2014-04-08	US8690984



US8628598

B1

2014-01-14

US8628598

**Abstract**

(US8628598)

An agricultural fertigation method includes the continuous in situ manufacture of one or more fertilizers within the irrigation system upstream of the agricultural field being irrigated. Co-reactant raw materials, namely sulfuric acid, phosphoric acid, nitric acid, potassium hydroxide, urea, ammonium hydroxide, ammonia, calcium nitrate and/or magnesium nitrate, are intermixed with each other and with the stream of the flowing irrigation water. The stream of flowing irrigation water dampens the resultant dissolution and reaction exotherms. A system wherein raw materials are efficiently continuously fed to the irrigation system main line or a side-arm reactor efficiently implements the method.

Inventors

MILLER JOHN C

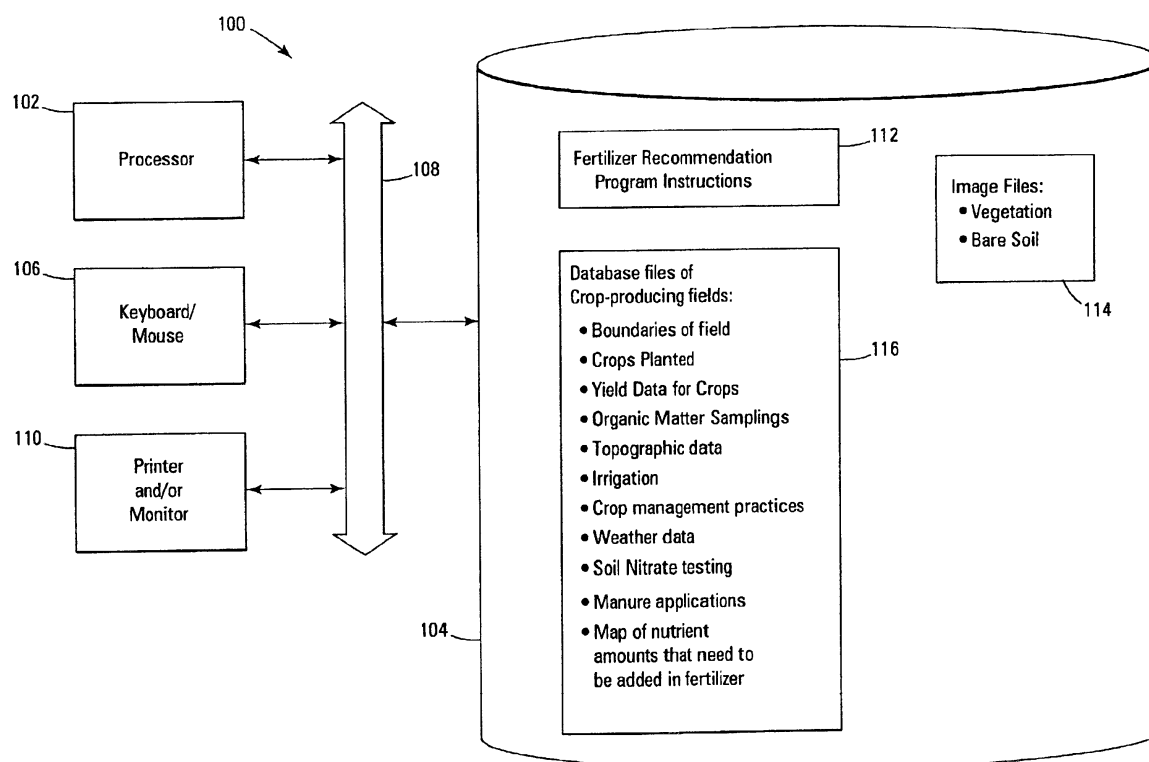
MILLER DEBORAH L

Family 7/100 - FAMPAT - ©Questel

Title

(EP1379987)

Computer specified fertilizer application for agricultural fields

Images**Publication numbers with kind code & date**

AU2008202110	B2	2011-03-03	AU2008202110
AU2008202110	A1	2008-06-05	AU2008202110
US7343867	B2	2008-03-18	US7343867
CA2439575	C	2008-02-19	CA2439575
US20070186830	A1	2007-08-16	US20070186830
US7171912	B2	2007-02-06	US7171912
EP1379987	A4	2006-08-09	EP1379987
US20050165552	A1	2005-07-28	US20050165552
US6889620	B2	2005-05-10	US6889620
IN0851/MUMNP/2003	A	2005-04-29	IN2003MN00851



BR0207723	A	2004-12-28	BR200207723				
MXPA03007772	A	2004-11-12	MX2003PA007772				
CN1505794	A	2004-06-16	CN1505794				
EP1379987	A1	2004-01-14	EP1379987				
AR032918	A1	2003-12-03	AR--32918				
US20030019408	A1	2003-01-30	US20030019408				
WO02/69230	A8	2002-10-10	WO200269230				
CA2439575	A1	2002-09-06	CA2439575				
WO02/69230	A1	2002-09-06	WO200269230				

Abstract

(EP1379987)

A map of site specified amount of soil nutrient (140) is applied in fertilizer to an agricultural field using a map of specified amount of the nutrient needed to produce the maximum yield (132). Subtracted from the amounts of needed nutrient from the current existing nutrient in the field (138) and thus producing the map of site specified nutrient amount to be added to the soil (142). The nutrients amounts are added by using the map and conventional variable rate fertilizer application methods. The amount of soil nutrient need to produce the maximum yield is created using site-specific map measures of biomass produced from a pass season created from a remotely sensed biomass image (120).

Inventors

FRAISSE CLYDE

SU HAIPING

HARROUN PAUL JOSEPH

LINDGREN TIMOTHY A

Latest standardized assignees - inventors removed

FARMERS EDGE PRECISION CONSULTING

FARMERS EDGE

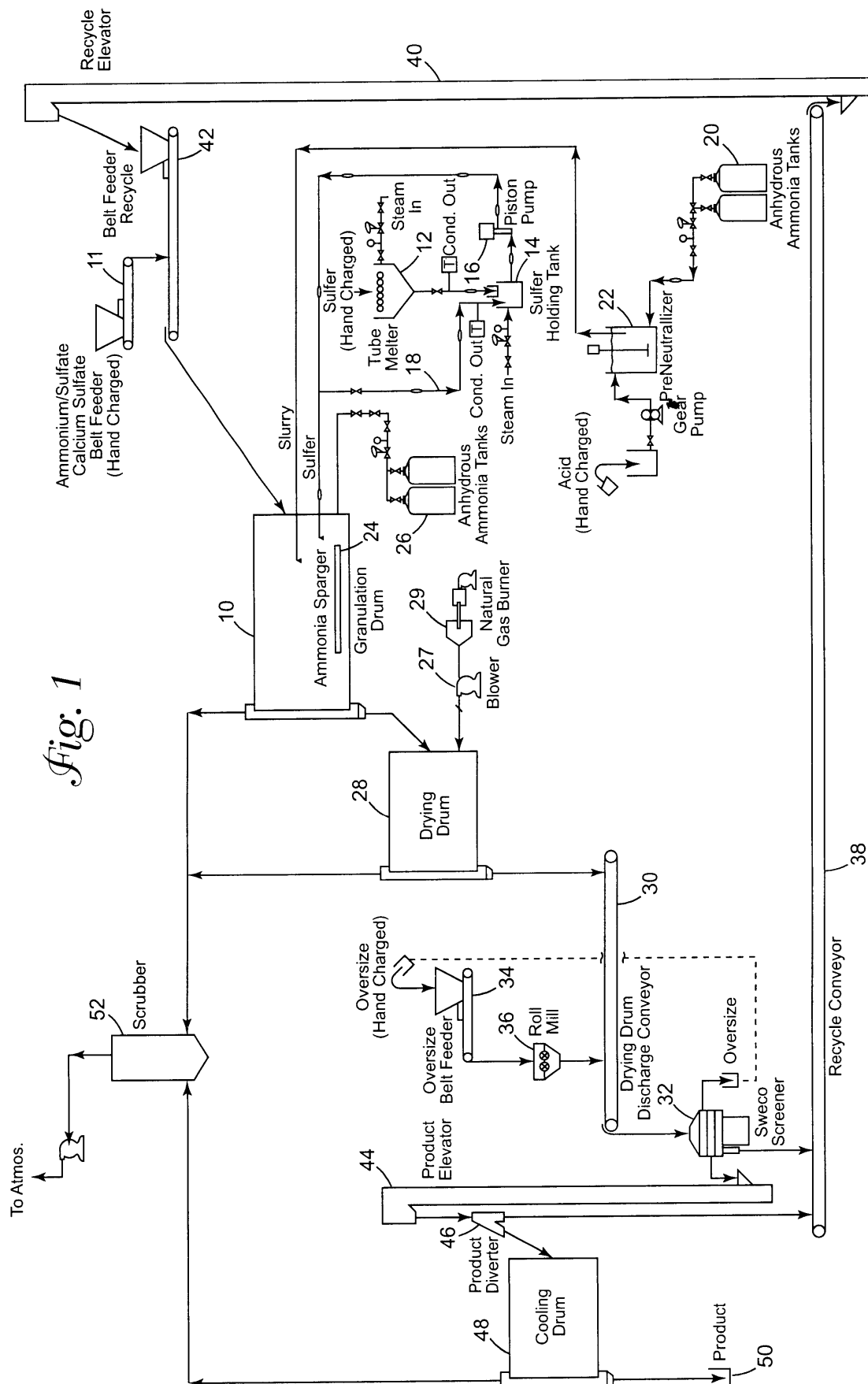
Family 8/100 - FAMPAT - ©Questel

Title

(EP2248790)

Sulfur-containing fertilizer composition and method for preparing same

Images



Publication numbers with kind code & date

TH49409	B	2016-05-13	TH--49409B
BR0117303	B1	2012-05-29	BR200117303
IN252212	B	2012-05-04	IN-252212
BR0106649	B1	2011-11-29	BR200106649
DE60143489	D1	2010-12-30	DE60143489



AT488484	T	2010-12-15	ATE488484				
EP1351899	B1	2010-11-17	EP1351899				
EP2248790	A1	2010-11-10	EP2248790				
CN100434399	C	2008-11-19	CN100434399C				
CA2375055	C	2008-09-23	CA2375055				
CN1990434	A	2007-07-04	CN1990434				
KR100732129	B1	2007-06-27	KR100732129				
AU783579	B2	2005-11-10	AU-783579				
EP1351899	A4	2004-08-11	EP1351899				
MA26041	A1	2004-04-01	MA--26041				
EP1351899	A1	2003-10-15	EP1351899				
ZA200200193	B	2003-07-09	ZA200200193				
AR028578	A1	2003-05-14	AR--28578				
US6544313	B2	2003-04-08	US6544313				
LT4997	B	2003-02-25	LT---4997				
IN0038/DELNP/2002	A	2003-02-22	IN2002DN00038				
CN1380879	A	2002-11-20	CN1380879				
LT2002010	A	2002-10-25	LT200200010				
TH53007	A	2002-09-09	TH--53007				
MXPA02000619	A	2002-07-30	MX2002PA000619				
TR200200206	T1	2002-06-21	TR200200206				
BR0106649	A	2002-04-02	BR200106649				
KR20020016894	A	2002-03-06	KR20020016894				
US20020011088	A1	2002-01-31	US20020011088				
AU6112001	A	2001-11-26	AU200161120				
CA2375055	A1	2001-11-22	CA2375055				
WO01/87803	A1	2001-11-22	WO200187803				

Abstract

(EP2248790)

A fertilizer composition that includes a plurality of particles in which the particles feature a plurality of sulfur platelets embedded within a fertilizer portion, and a method for preparing this composition in which fertilizer-containing particles are sprayed first with a sulfur spray, and then with a slurry containing fertilizer or a precursor thereof, followed by curing.

Inventors

PEACOCK LAWRENCE A

SHIRLEY ARTHUR R JR

Latest standardized assignees - inventors removed

MOSAIC

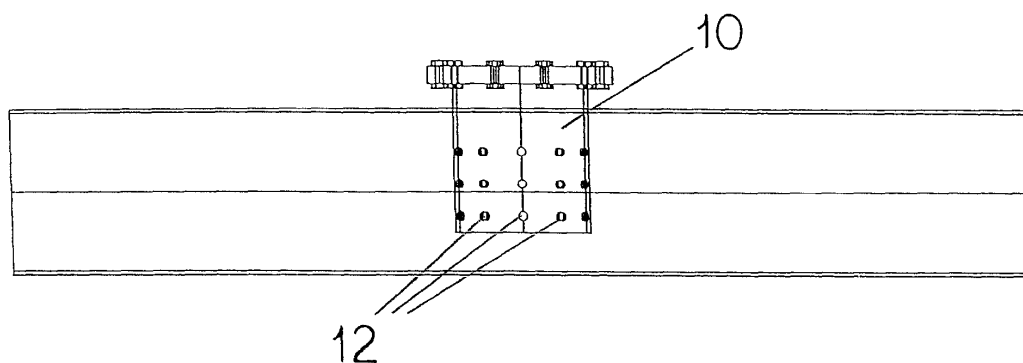
Family 9/100 - FAMPAT - ©Questel

Title

(US9004374)

Irrigation method using thixotropic materials

Images

**Publication numbers with kind code & date**[US9004374](#)

B1 2015-04-14

US9004374

**Abstract**

(US9004374)

The steps of the irrigation method include: flowing a stream of water having input and output and intermediate location; interposing a feeding device into the stream of water at the intermediate location, the feeding device having input and output ends; inserting a quantity of nutrient fertilizer into the feeding device; converting the nutrient fertilizer from the viscous state to the less viscous state through the flow of water through the feeding device; and intermixing the viscous nutrient fertilizer with the water entering the feeding device whereby the water leaving the device to plants and soil will include a fertilizer.

Inventors

GANS STEPHEN

Latest standardized assignees - inventors removed

PATHWAY BIOLOGIC

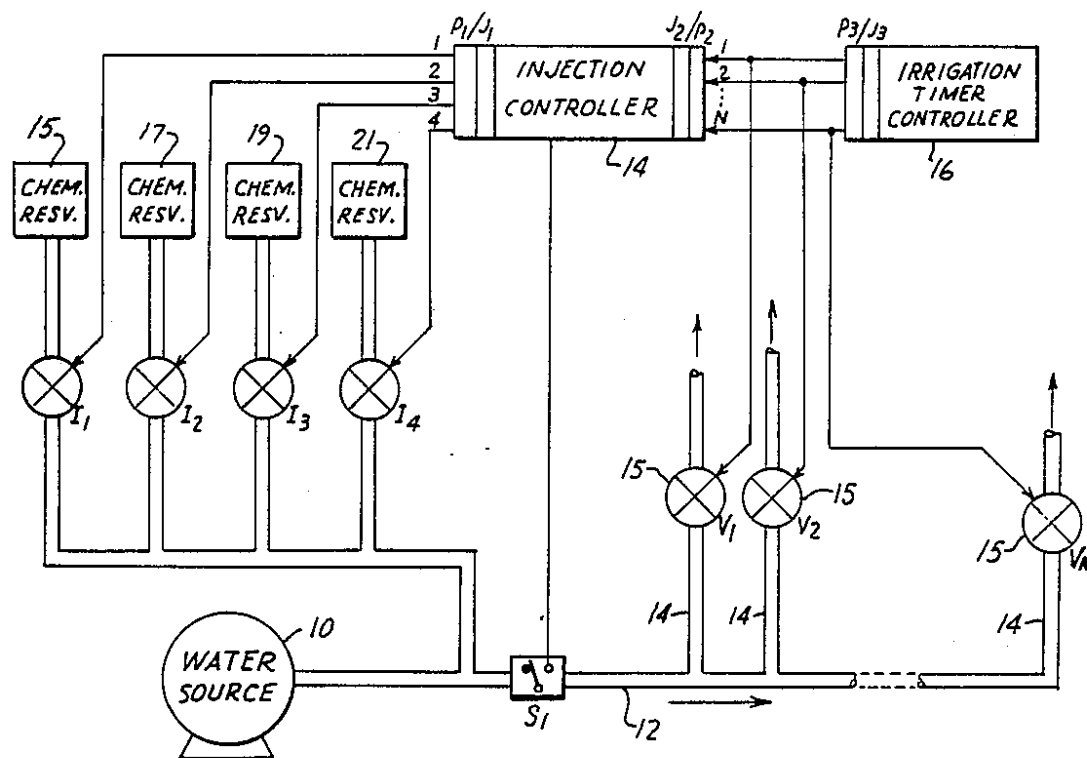
Family 10/100 - FAMPAT - ©Questel

Title

(US4917304)

Automatic controller for injection of additives into irrigation water

Images



Publication numbers with kind code & date

US4917304

A 1990-04-17

US4917304



Abstract

(US4917304)

An injection control system selectively to activate circuitry for controlling injection of additive chemicals into an existing automatically timed irrigation system having an irrigation timer. This control system includes a plurality of storage reservoirs for storing one or more additives. Conduits deliver these additives to the existing irrigation system. The control system includes a central processor programmed for intended operation, and sensors sensing the flow condition valves in the existing irrigation system. The control system thereby controls supply of additives during the operation of the existing system.

Inventors

MAZZEI ANGELO L

WEARIN JIM

FIGGS JOSEPH E

Latest standardized assignees - inventors removed

AVANTI MANUFACTURING

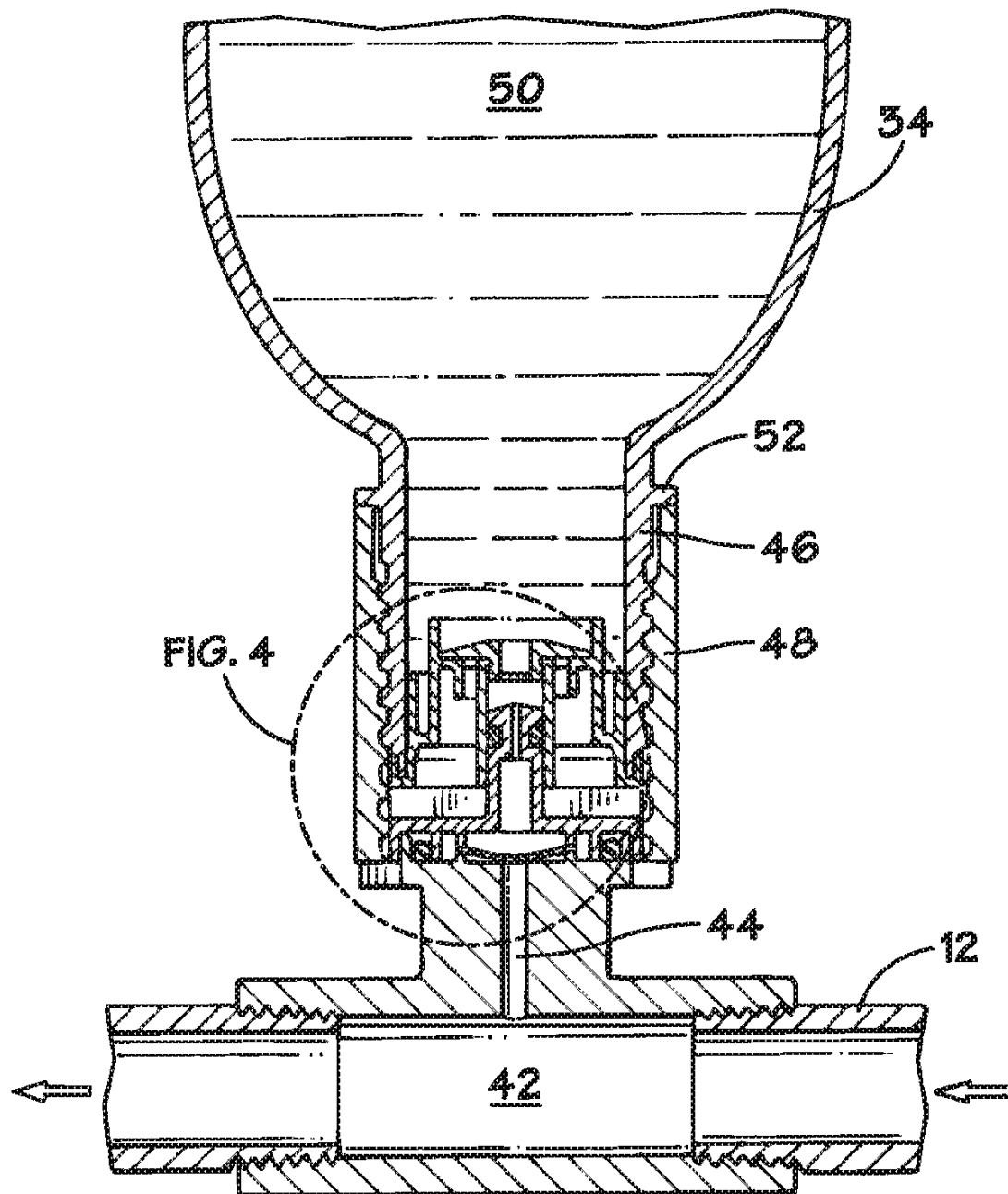
Family 11/100 - FAMPAT - ©Questel

Title

(US8746593)

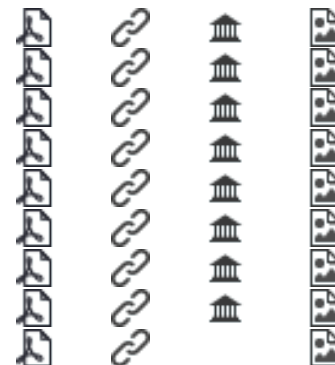
Chemical application apparatus for sprinkler systems

Images



Publication numbers with kind code & date

US9370788	B2	2016-06-21	US9370788
US20140231548	A1	2014-08-21	US20140231548
US8746593	B2	2014-06-10	US8746593
CA2591731	C	2009-10-27	CA2591731
GB2439202	B	2008-08-13	GB2439202
US20070290072	A1	2007-12-20	US20070290072
GB2439202	A	2007-12-19	GB2439202
CA2591731	A1	2007-12-16	CA2591731
GB0711415	D0	2007-07-25	GB200711415



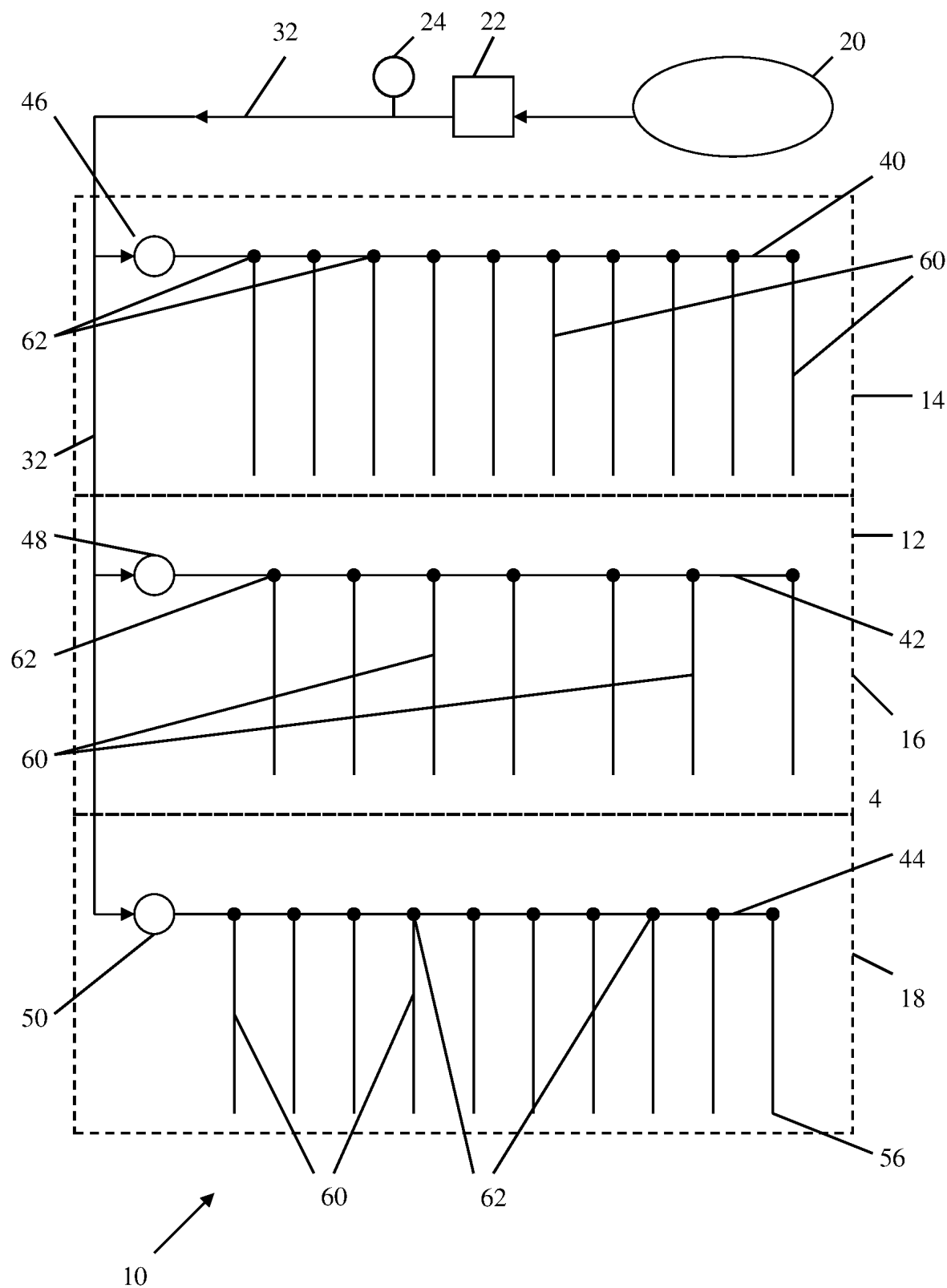
Abstract

(US20070290072)

A liquid chemical dispenser for an irrigation system comprises a removable supply container for the chemical which, in a first embodiment, comprises a valve for preventing spillage of the chemical during attachment of the container to the

GROVES GARY L JR

The invention relates to a stable, concentrated aqueous fertilizer suspension, which can be diluted with water to provide a working solution. The suspension contains 10 to 60 % by weight of water and 40 to 90 % by weight of a plant nutrient composition based on at least a calcium, and/or a magnesium and a phosphate ion, and the suspension comprises at least one plant nutrient containing water-insoluble solid particles with a particle size less than 50 μm , the pH of the suspension



Publication numbers with kind code & date

[US9856179](#)

B2 2018-01-02

US9856179

[US20160185673](#)

A1 2016-06-30

US20160185673



Abstract

(US20160185673)

An agricultural potassium-fertilization method for emitter-irrigation potassium-plus fertilization feeds a potassium-plus nutrient feedstock comprised of potassium formate and additional yield-assist constituent(s) and water to an active emitter-irrigation system discontinuously, at levels of 0.15 to 50 gal./min, during one to six nonconsecutive irrigation days during a crop cycle.

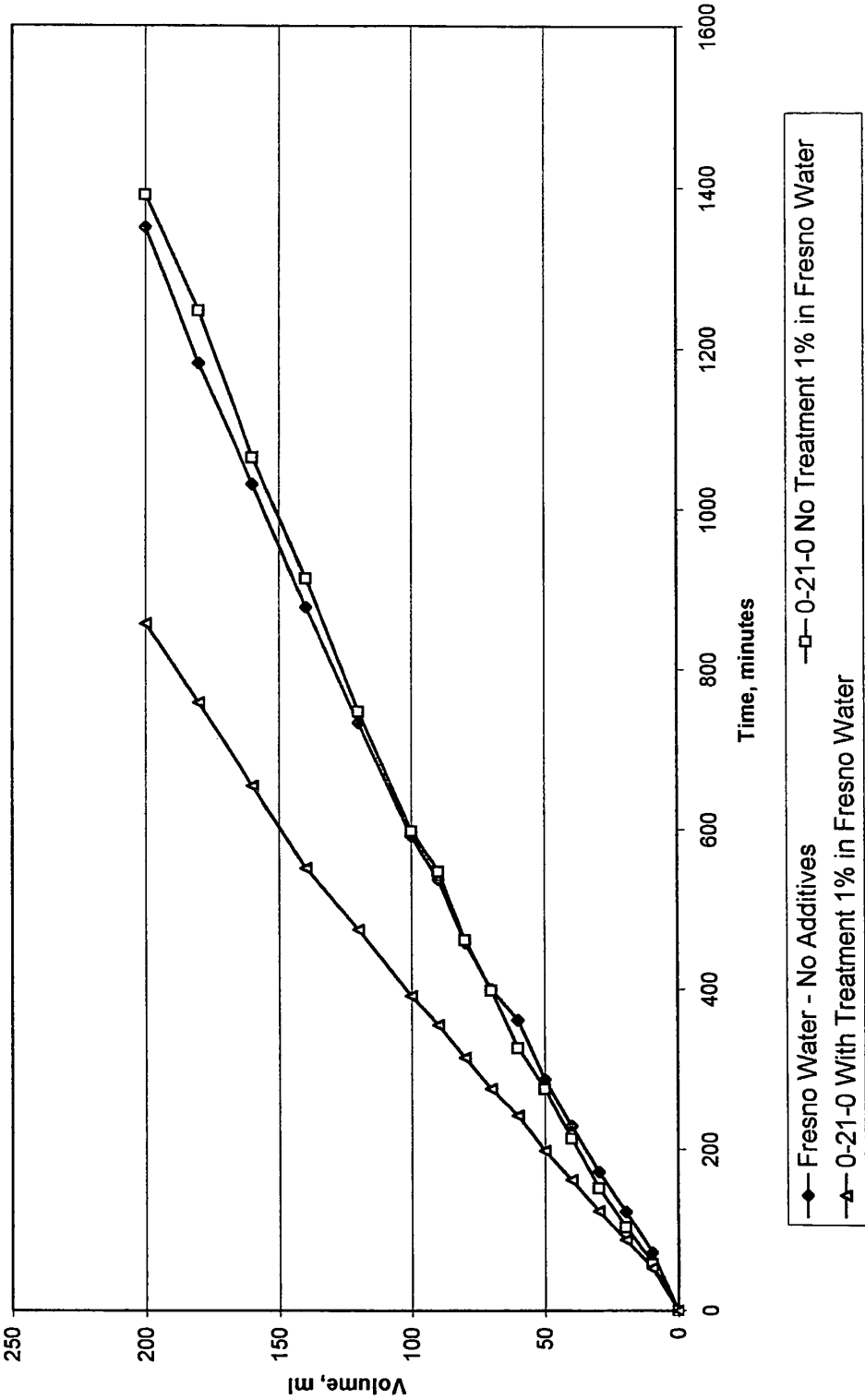
Inventors

MILLER JOHN C
MILLER DEBORAH L

Family 14/100 - FAMPAT - ©Questel

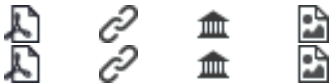
Title
(US8821646)
Compositions and methods for cleaning and preventing plugging in micro-irrigation systems
Images

FIGURE 1
Elution Rates of Water vs. Fertilizer (0-21-0) With & Without Treatment



Publication numbers with kind code & date

US9439345	B1	2016-09-13	US9439345
US8821646	B1	2014-09-02	US8821646



Abstract

(US8821646)

An irrigation system cleaning formulation contains a sufficient concentration of a water-soluble organic acid which has a $pK(1)a$ of less than about 4.0. A cleansing irrigation water contains a sufficient amount of such cleaning formulation, and a method of cleaning an irrigation system uses such cleaning formulation.

Inventors

MILLER JOHN C

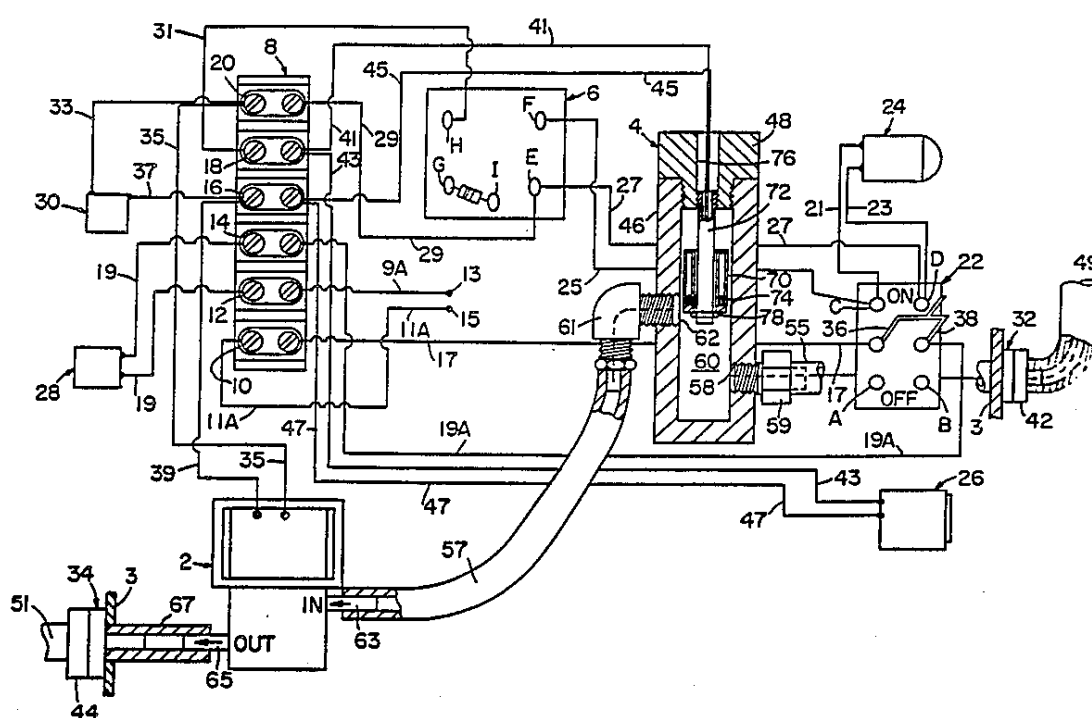
MILLER DEBORAH L

Family 15/100 - FAMPAT - ©Questel

Title

(US4870991)

Lawn sprinkler fertilizer device

Images**Publication numbers with kind code & date**

US4870991

A

1989-10-03

US4870991

**Abstract**

(US4870991)

An apparatus for directing a liquid fertilizer into an irrigation system having a liquid fertilizer flow conduit with the valve of a solenoid valve and the float of a float switch located in series and an electric circuit with the switch of the float switch, solenoid of the solenoid valve and automatic timer device in series. The apparatus directs fertilizer therethrough when electricity is delivered to the switch, solenoid, and automatic timer device when the switch is closed by the float and the timer is conducting electricity.

Inventors

MCMILLAN THOMAS A

MITCHELL HENRY W

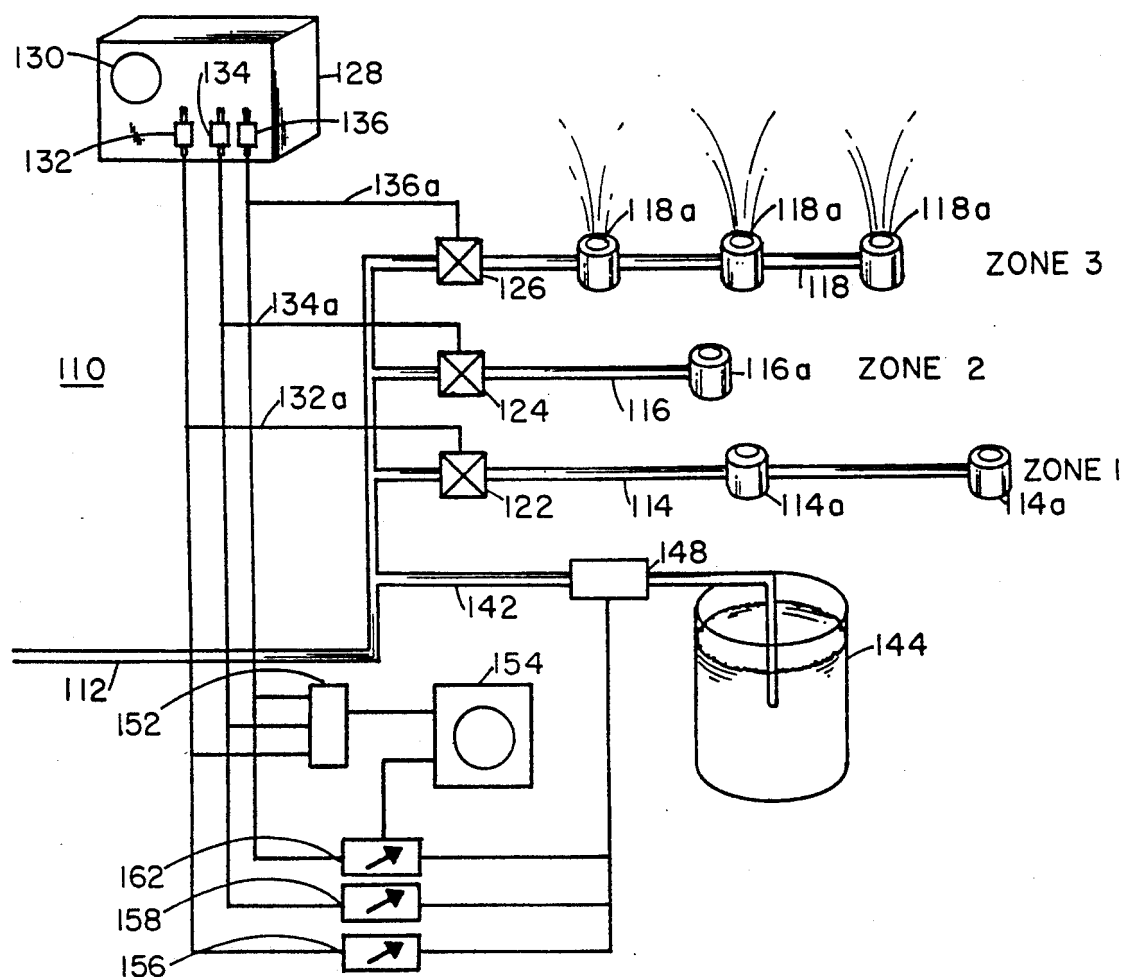
Family 16/100 - FAMPAT - ©Questel

Title

(US5022585)

Automatic chemigation

Images



Publication numbers with kind code & date

US5022585

A 1991-06-11

US5022585



Abstract

(US5022585)

Apparatus and method for automatically irrigating and fertilizing a plurality of zones in a lawn and other botanical systems. A conventional underground sprinkler system may be employed having a source of liquefied fertilizer to be inserted into the main water supply or any of the zonal lines when water is being delivered to one of the zones. A clock is used to establish a maximum duration of fertilizer delivery. Normalizing timers are employed to restrict the flow of fertilizer as a fraction of the maximum duration depending on which zone is being irrigated.

Inventors

BURGESS DONALD A

Latest standardized assignees - inventors removed

MANNO RAY

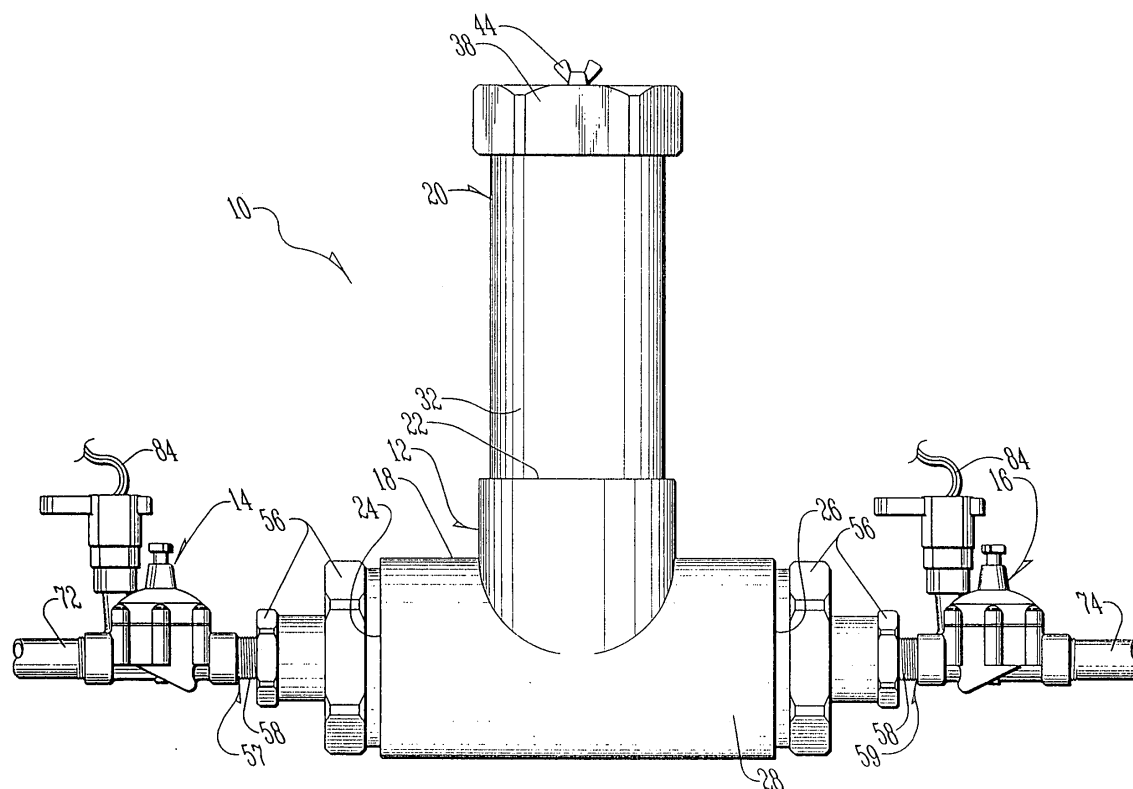
Family 17/100 - FAMPAT - ©Questel

Title

(US20060108455)

Lawn chemical application system

Images

**Publication numbers with kind code & date**

US20060108455

A1 2006-05-25

US20060108455

**Abstract**

(US20060108455)

A lawn chemical application system is disclosed. The system comprises a dispenser having a lower chamber, an upper chamber, an upstream opening, and a downstream opening. The dispenser may be formed by a tee connector and a cylinder secured to an upper opening of the tee connector. Powered valves are operably connected to the upstream and downstream openings of the dispenser. The powered valves may be wired to open and close simultaneously. A lower portion of the upper chamber may be disposed below an upper portion of the lower chamber and above a lower portion of the lower chamber, leaving the lower portion of the lower chamber unobstructed over substantially its entire length. The lower portion of the upper chamber may have a plurality of openings to provide for adequate mixing of water with the chemicals stored in the upper chamber. In operation, soluble matter or other chemicals are placed in the upper chamber of the dispenser, and the two valves are opened simultaneously. Water flows through the first powered valve and into the dispenser, where the water is mixed with soluble matter or other chemicals stored in the upper chamber of the tee. The solution or mixture then passes from the dispenser, through the second powered valve, to one or more sprinkler heads of the irrigation system. When the application is finished, the valves are closed simultaneously.

Inventors

THORNTON BRIAN

Family 18/100 - FAMPAT - ©Questel

Title

(WO2006131056)

Fertilizing method for agricultural irrigation

Publication numbers with kind code & date

IL187811

B 2012-02-29

IL-187811

IL187811

A 2008-08-07

IL-187811

CN100407898

C 2008-08-06

CN100407898C

WO2006/131056

A1 2006-12-14

WO2006131056

CN1875688

A 2006-12-13

CN1875688



Abstract

(WO2006/131056)

A fertilizing method for agricultural irrigation includes a step of passing aqueous solution of activation agents through a fertilizer fixed bed composed of nonaqueous granular phosphatic fertilizer and fertilizer or mineral containing medium or trace element to achieve irrigation water for irrigating plants. With the method of present invention, the consumption of fertilizer can less 30-60% than that of conventionally fertilizing method, and thus the utilization ratio of fertilizer is up to 70-90%.

Inventors

LI DIPING

XU XIUCHENG

WANG HAOBIN

LI DONGGUANG

李韵萍

许秀成

王好斌

李冬光

Latest standardized assignees - inventors removed

HIGHEFFI TECHNOLOGY BEIJING

Family 19/100 - FAMPAT - ©Questel

Title

(US3669357)

Injection and distribution unit for a lawn sprinkler system

Images

SHEET 1 OF 3

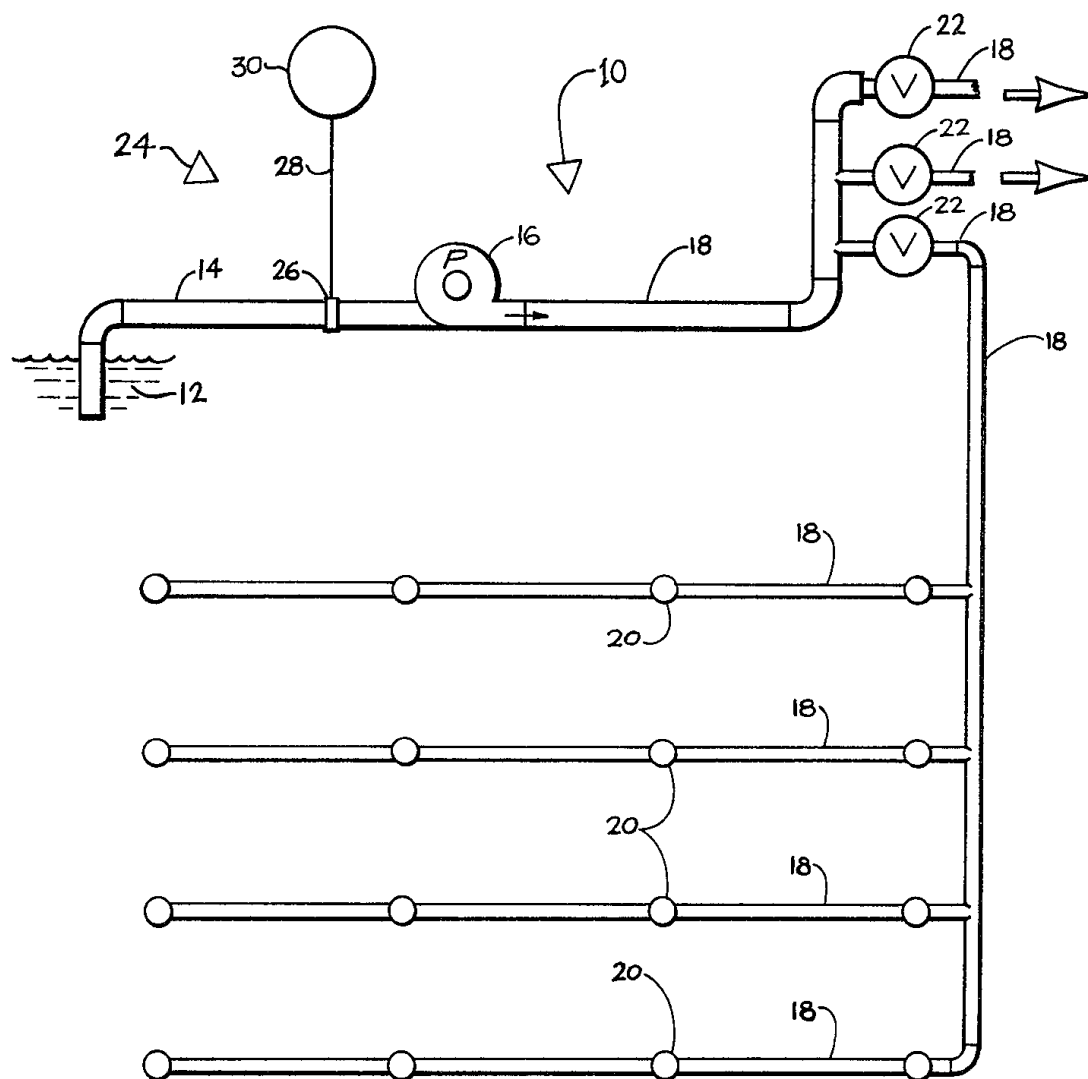


FIG. 1

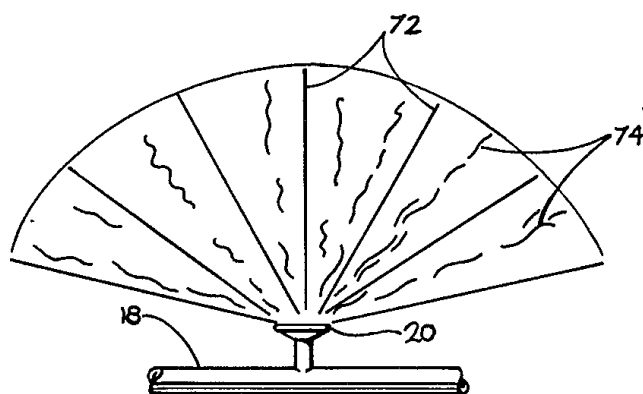


FIG. 11

INVENTOR.
CHARLES A. OVERBEY



Abstract

(US3669357)

An injection and distribution unit for a lawn sprinkler system. The unit, which includes a reservoir, transfer tube and connector, injects liquid fertilizers and pesticides into the lawn sprinkler system. The fertilizer or pesticide is injected upstream of the pump and is mixed with water passing through the sprinkler system and distributed to the lawn or to nursery stock. The injection and distribution unit does not materially reduce flow through the system and is easily connected to existing pump suction pipes made of galvanized iron, polyvinyl chloride (PVC), polyethylene and other materials.

Inventors

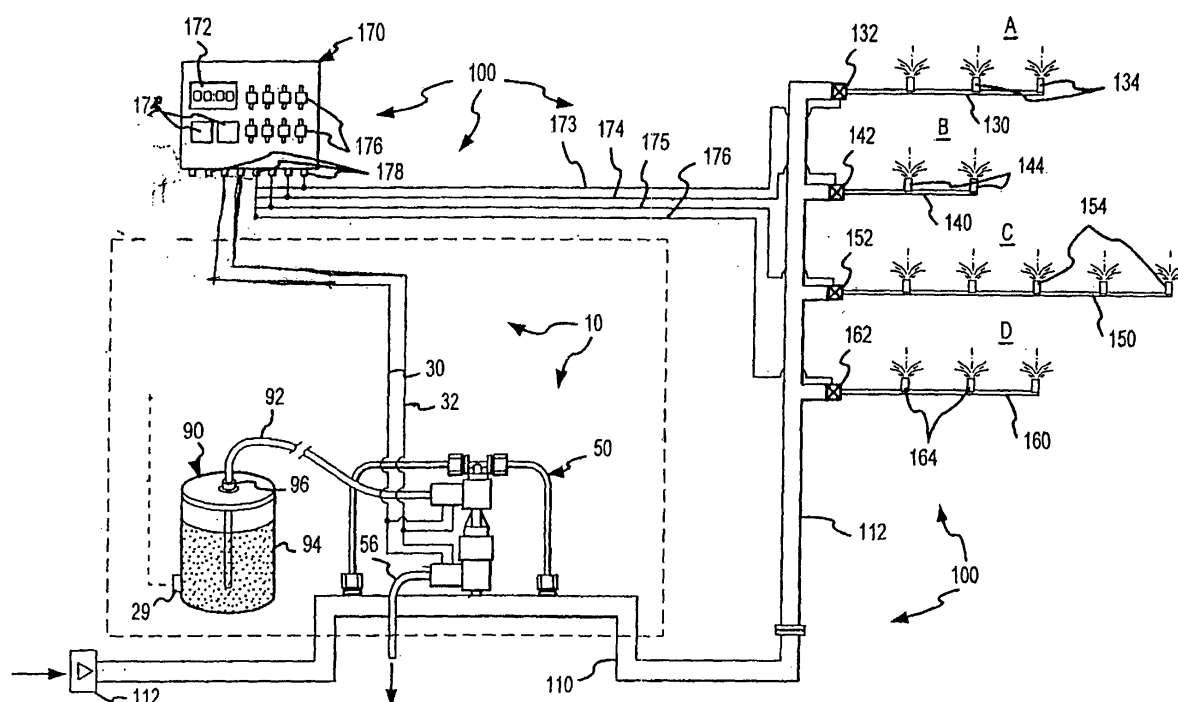
OVERBEY CHARLES A

Family 20/100 - FAMPAT - ©Questel

Title

(US20040049978)

Combined controller apparatus for a horticultural watering system

Images**Publication numbers with kind code & date**[US20040049978](#)

A1 2004-03-18

US20040049978

**Abstract**

(US20040049978)

A system and method that provides for injection control of a liquid additive in a liquid dispensation system. Included as part of the system is a controller device configured to generate one set of control signals for initiating and terminating liquid dispensation to one or more areas while simultaneously generating at least one second control signal which controls the injection rate of a liquid additive to the liquid being dispense. The liquid dispensation rate may be controlled according to a number of criteria, which are received from an external source from the controller or retrieved from an internal memory. The system may be further configured such that the dispensation rate is modified according to a detected condition.

Inventors

LIPS EDWIN A

LIPS JON S

Latest standardized assignees - inventors removed

FERTIGATION TECHNOLOGIES

Family 21/100 - FAMPAT - ©Questel

Title

(WO201842312)

Soluble granular fertilizer for fertigation

Publication numbers with kind code & date

US20190194084	A1	2019-06-27	US20190194084
BR112019002787	A2	2019-05-14	BR112019002787
CN109641813	A	2019-04-16	CN109641813
BR112019002787	A1	2019-03-19	BR112019002787
AU2017319426	A1	2019-01-24	AU2017319426
WO2018/042312	A1	2018-03-08	WO201842312

**Abstract**

(WO2018/042312)

Disclosed herein is a fertilizer composition including a plant nutrient comprising a phosphorus compound; and an inorganic acidic compound free of phosphorus. The fertiliser composition can also comprise a fertilizer granule and a coating disposed on the fertilizer granule wherein the fertilizer granule comprises a plant nutrient; and the coating comprises sulfuric acid, nitric acid, hydrochloric acid, or a combination. The plant nutrient comprises a phosphorus compound. The fertilizer composition is useful in fertigation.

Inventors

KHALEEL MOHAMED AKASHA

Latest standardized assignees - inventors removed

SABIC GLOBAL TECHNOLOGIES

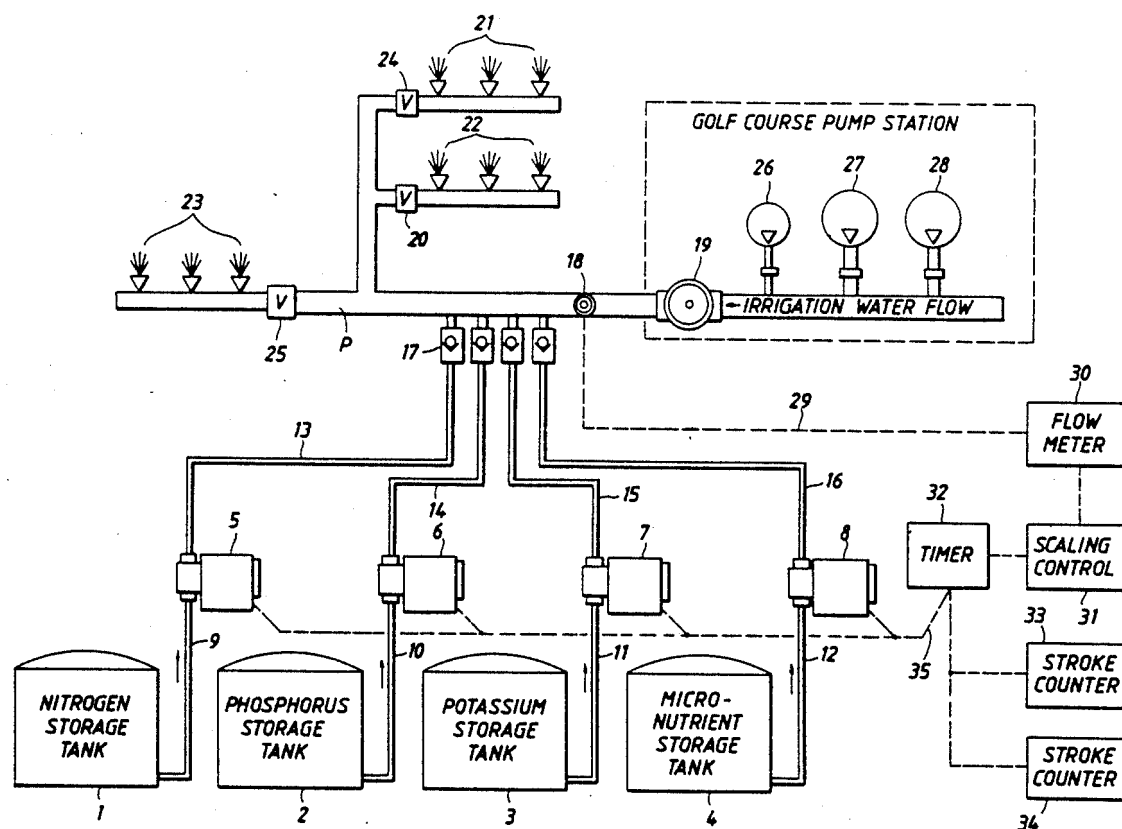
Family 22/100 - FAMPAT - ©Questel

Title

(US5135174)

Automatic micro-feeding system for applying multiple independent plant nutrients to irrigation systems

Images



Publication numbers with kind code & date

US5135174

A 1992-08-04

US5135174



Abstract

(US5135174)

An automatic feeding system for applying multiple plant nutrients utilizing multiple nutrient pumps and a central mechanism to inject each nutrient individually into a flowing irrigation line during irrigation, allowing thereby for selecting the desired nutrient ratio by adjusting the output setting of each pump.

Inventors

CHAPLINSKY MICHAEL J

Family 23/100 - FAMPAT - ©Questel

Title

(EP1230195)

Water soluble fertilizer compositions

Images

$$61 \frac{n}{M_{w,acid}}$$

Publication numbers with kind code & date

NO332348

B1 2012-09-03

NO-332348

ES2371860

T3 2012-01-10

ES2371860

AT520635

T 2011-09-15

ATE520635

EP1230195

B1 2011-08-17

EP1230195

JP4672945

B2 2011-01-28

JP4672945

CA2386510

C 2007-05-22

CA2386510

AU781502

B2 2005-05-26

AU-781502

IL149018

B 2005-02-20

IL-149018

EP1230195

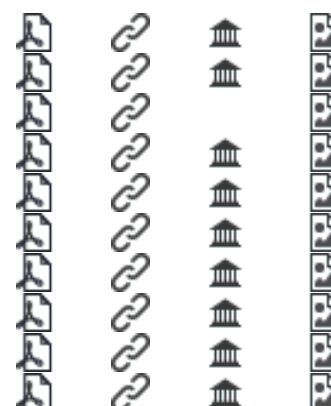
A4 2004-06-02

EP1230195

NZ518310

A 2004-02-27

NZ-518310



JP2003511333	A	2003-03-25	JP2003511333				
IL149018	A	2002-11-10	IL-149018				
WO01/25168	A9	2002-09-26	WO200125168				
MXPA02003511	A	2002-09-02	MX2002PA003511				
EP1230195	A1	2002-08-14	EP1230195				
NO20021662	A	2002-06-03	NO200201662				
NO20021662	L	2002-06-03	NO20021662				
NO20021662	D0	2002-04-08	NO200201662				
US6312493	B1	2001-11-06	US6312493				
AU1075601	A	2001-05-10	AU200110756				
CA2386510	A1	2001-04-12	CA2386510				
WO01/25168	A1	2001-04-12	WO200125168				

Abstract

(EP1230195)

The present invention relates to a solid water soluble fertilizer composition containing one or more fertilizer materials and a phosphate free, organic acid which is solid at ambient temperatures. The fertilizer materials include primary macro nutrients, secondary macro nutrients, micro nutrients and mixtures thereof. The organic acid has a water solubility of at least 10 g/l (at 25 DEG C) and an acidifying effect in the range of 0.5 to 1.3 g HCO₃⁻/g acid. The acidifying effect is defined as the amount of HCO₃⁻ that can be transformed into H₂CO₃ per gram of acid and is calculated in accordance with formula (I), wherein Mw_{acid} is the molecular weight of said acid and n represents the number of dissociation constants (i.e., pKa values) of the acid below the value of 6.35. The acid should be present in the composition in an amount sufficient to reduce the HCO₃⁻ level in water treated with the composition by between about 60 - 400 parts per million when applied to the water at a dosage of 1 gram per liter.

Inventors

ELTINK MICHAEL GUSTAAF

VAN ROIJ PHILIP

TIJSMA EDZE JAN

TERLINGEN GIJSBERTUS ANTONIUS

VAN KAATHOVEN HENDRIKUS GIJSBERTUS ADRIANUS

Latest standardized assignees - inventors removed

EVERRIS INTERNATIONAL

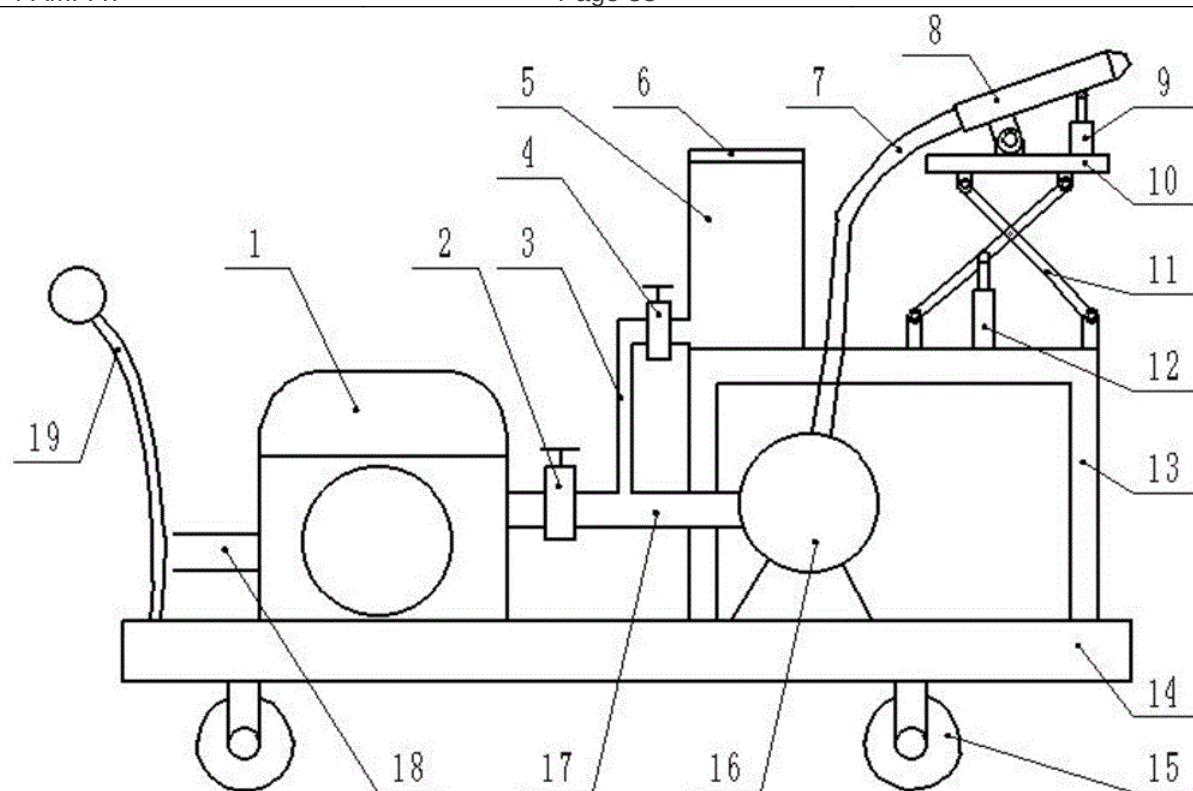
Family 24/100 - FAMPAT - ©Questel

Title

(CN205671156U)

Water conservancy sprinkling irrigation equipment

Images

**Publication numbers with kind code & date**

CN205671156

U

2016-11-09

CN205671156U

**Abstract**

(CN205671156)

The utility model relates to a hydraulic engineering technical field, more specifically the water conservancy sprinkling irrigation equipment that says so not only can adjust the angle and the height of shower nozzle, enlarges the irrigation scope through inhaling the booster pump certainly moreover, sneaks into fertilizer or medicine through the liquid reserve tank to the aquatic, realizes that the function is diversified. The inlet tube is installed on the diesel oil pump, and the diesel oil pump is connected to the one end of water pipe II, and the other end of water pipe II is connected from inhaling the booster pump, is provided with control valve I on the water pipe II. Be provided with control valve II on the branch pipe, the lid is connected on the liquid reserve tank, and the liquid reserve tank is connected on the support, and the one end of water pipe I is connected from inhaling the booster pump, the other end connection nozzle of water pipe I, and the shower nozzle articulates on the platform, and the one end of telescopic link I is connected on the platform, and the other end of telescopic link I articulates on the shower nozzle. The one end that the hinge was cut articulates on the platform, and the other end that the hinge was cut articulates on the support, and the one end fixed connection of telescopic link II is on the support, and the other end of telescopic link II articulates on the hinge is cut.

Inventors

应志华

YING ZHIHUA

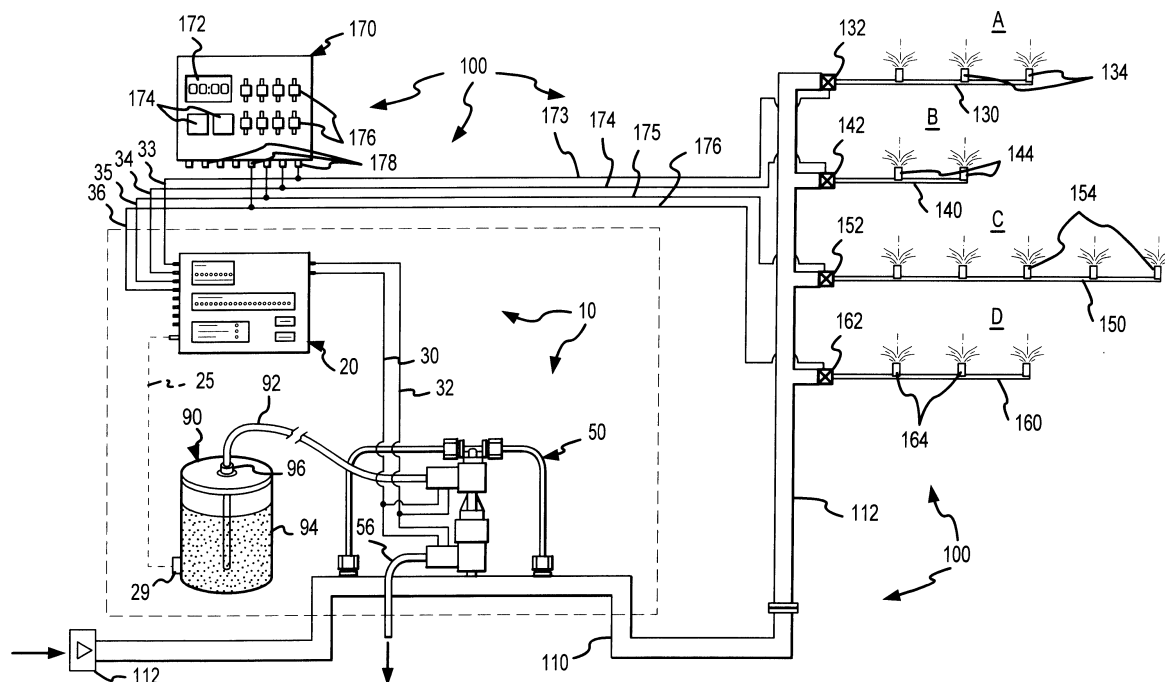
Family 25/100 - FAMPAT - ©Questel

Title

(WO200055702)

Liquid injection apparatus and method for horticultural watering systems

Images



Publication numbers with kind code & date

US6314979	B1	2001-11-13	US6314979
AU3902200	A	2000-10-04	AU200039022
WO00/55702	A1	2000-09-21	WO200055702



Abstract

(WO00/55702)

An apparatus and method is disclosed for the automatic injection of a liquid additive into a horticultural liquid dispensation system. The invention includes a programmable controller (20) and an injection assembly (50) comprising at least one solenoid valve (52, 54) and injector (70). The controller senses which of a plurality of watering zones is currently being watered, and effects the transmission of electrical pulses to the solenoid valve, causing the valve to open/close and thereby produce stroking of a spring-loaded piston (72) within the injector.

Inventors

LIPS JOHN S

Latest standardized assignees - inventors removed

FERTIGATION TECHNOLOGIES

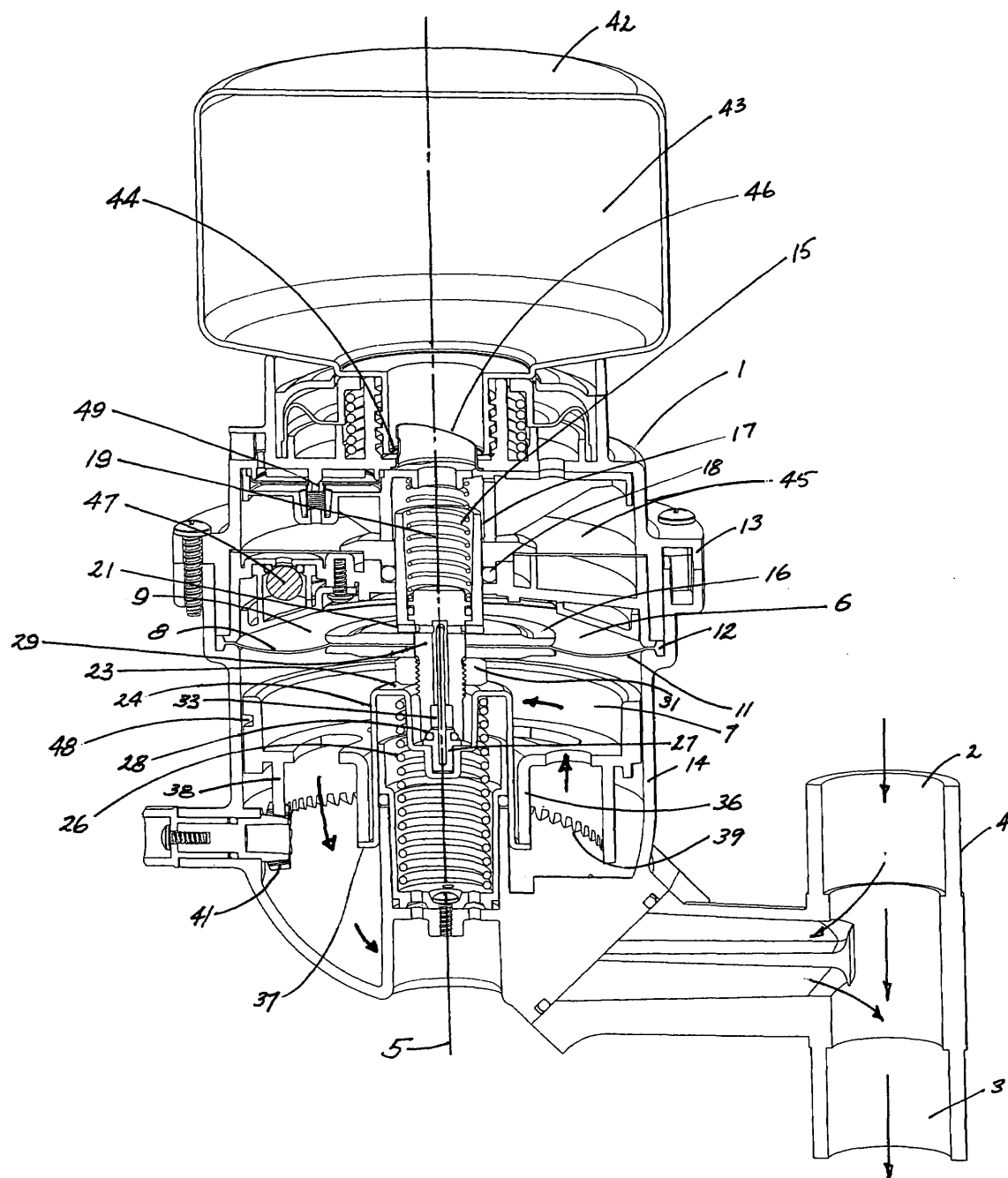
Family 26/100 - FAMPAT - ©Questel

Title

(WO200721512)

A device for injecting and mixing liquid fertilizer with water flow in a sprinkler system pipeline

Images



Publication numbers with kind code & date

WO2007/021512	A3	2007-06-07	WO200721512
WO2007/021512	A2	2007-02-22	WO200721512
US7083118	B1	2006-08-01	US7083118



Abstract

(WO2007/021512)

The invention relates to a device for mixing a liquid such as fertilizer with water flow in a sprinkler pipeline where the liquid is timely dispensed over a period of time from a fertilizer chamber into a mixing chamber for mixing with the water before re-entering the pipeline. The device has a flexible diaphragm that sealingly separates a mixing chamber from a fertilizer chamber. A central disk is fixedly carried by the diaphragm and is biased by a first spring that applies a restoring force upon displacement of the central disk. A valve seat on an axial extension of the central disk extending into the mixing chamber is so dimensioned and proportioned to seat a pin holder fixed to an adjuster holder upon engagement by the pin holder. The adjuster holder is responsive to a second spring and the water pressure in the mixing chamber. When the water flow is sufficiently reduced, the accompanying reduction in the water pressure will permit the second spring to expand and seat

the pin holder in the valve seat thereby preventing further flow of the liquid from the fertilizer chamber into the mixing chamber.

Inventors

BOWLES C ANTHONY

JOHNSON DWIGHT N

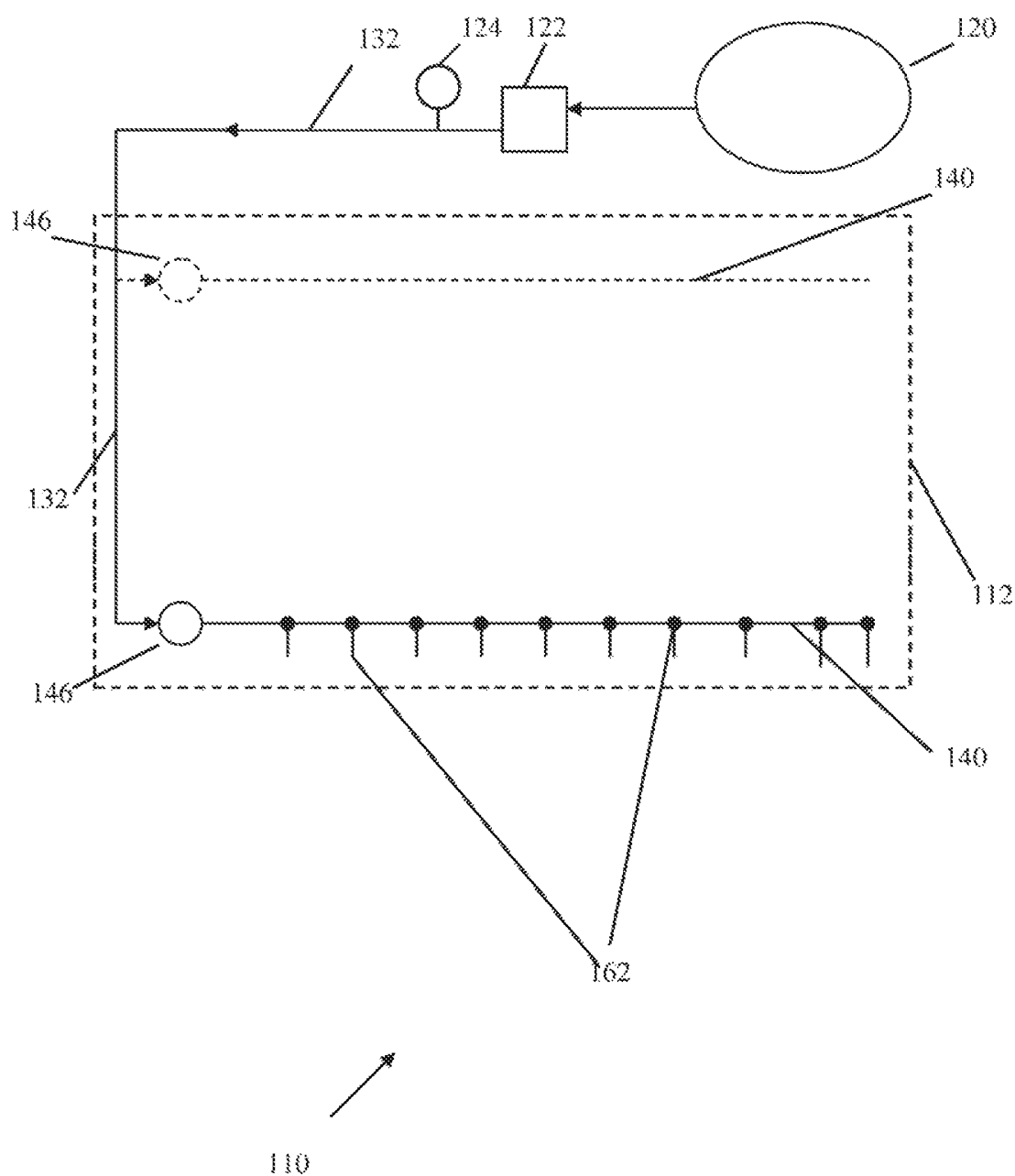
CANO IGANCIO

Family 27/100 - FAMPAT - ©Questel

Title

(US10233128)

Method and composition for agricultural potassium and nutrient fertigation

Images**Publication numbers with kind code & date**[US10233128](#)

B1 2019-03-19

US10233128

**Abstract**

(US10233128)

An agricultural potassium-fertigation method for emitter-irrigation potassium-plus fertigation feeds a potassium-plus nutrient feedstock comprised of potassium formate and additional yield-assist constituent(s) and water to an active emitter-irrigation system discontinuously, at levels of 0.15 to 50 gal./min, during one to six nonconsecutive irrigation days during a crop cycle.

Inventors

MILLER JOHN C

MILLER DEBORAH L

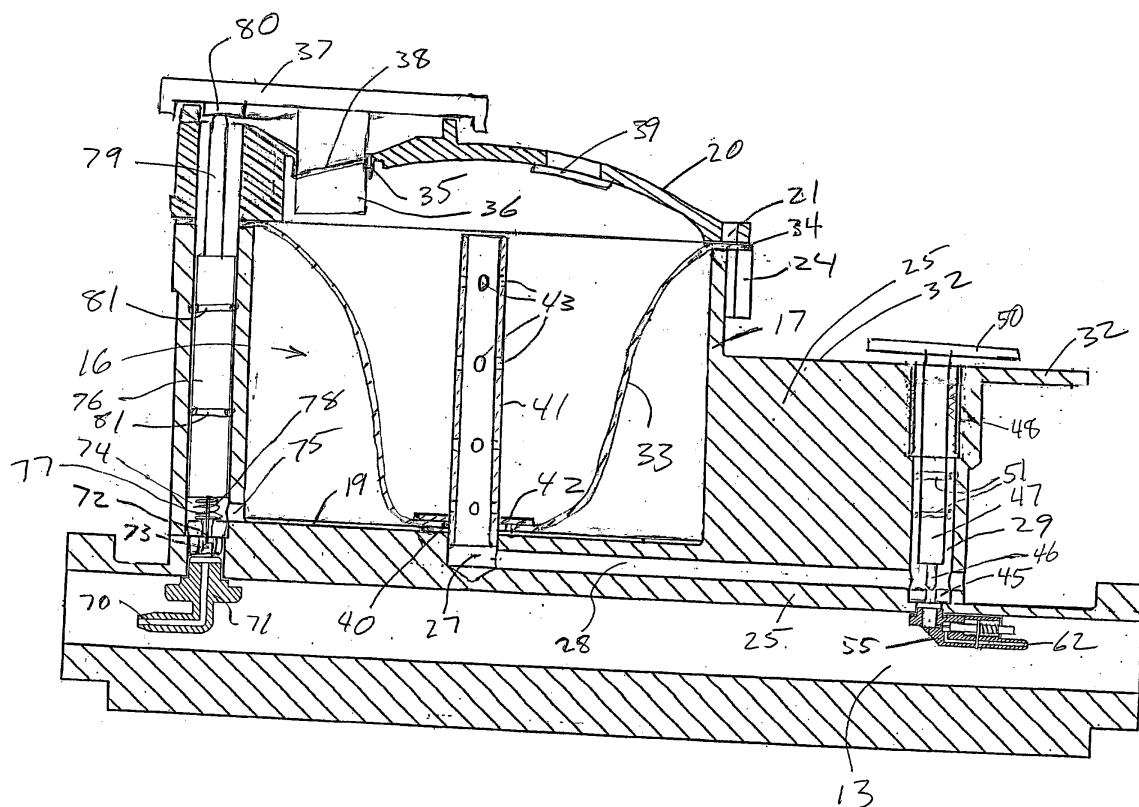
Family 28/100 - FAMPAT - ©Questel

Title

(US20040094208)

Apparatus for adding fertilizer to water in an underground sprinkling system and fertilizer therefor

Images



Publication numbers with kind code & date

US20040094208

A1 2004-05-20

US20040094208



Abstract

(US20040094208)

An apparatus for adding fertilizer to water flowing in an underground sprinkler system includes a pressure chamber with a bladder therein which holds liquid fertilizer. Water under line pressure surrounds the bladder in the chamber to pressurize the bladder and fertilizer therein. The pressurized liquid fertilizer flows from the bladder through a valve such as a needle valve which controls flow rate and through a valve such as a butterfly valve which opens to allow fertilizer flow when water flows through the line to which the fertilizer is to be added. With no flow of water, the valve is closed to prevent flow of fertilizer. The lid to the opening to the inside of the bladder used to fill the bladder with fertilizer is arranged to operate two valves. One controls flow of pressurized line water into the chamber to pressurize the bladder in the chamber when the lid is opened and the other opens a drain to depressurize the chamber when the lid is opened to allow fertilizer to be added to the bladder. A preferred fertilizer for use in the apparatus includes a bio-stimulant

Inventors

MARSDEN JAMES

SNOW A RAY

MANZANARES DAVID

MORTON DAVID

Latest standardized assignees - inventors removed

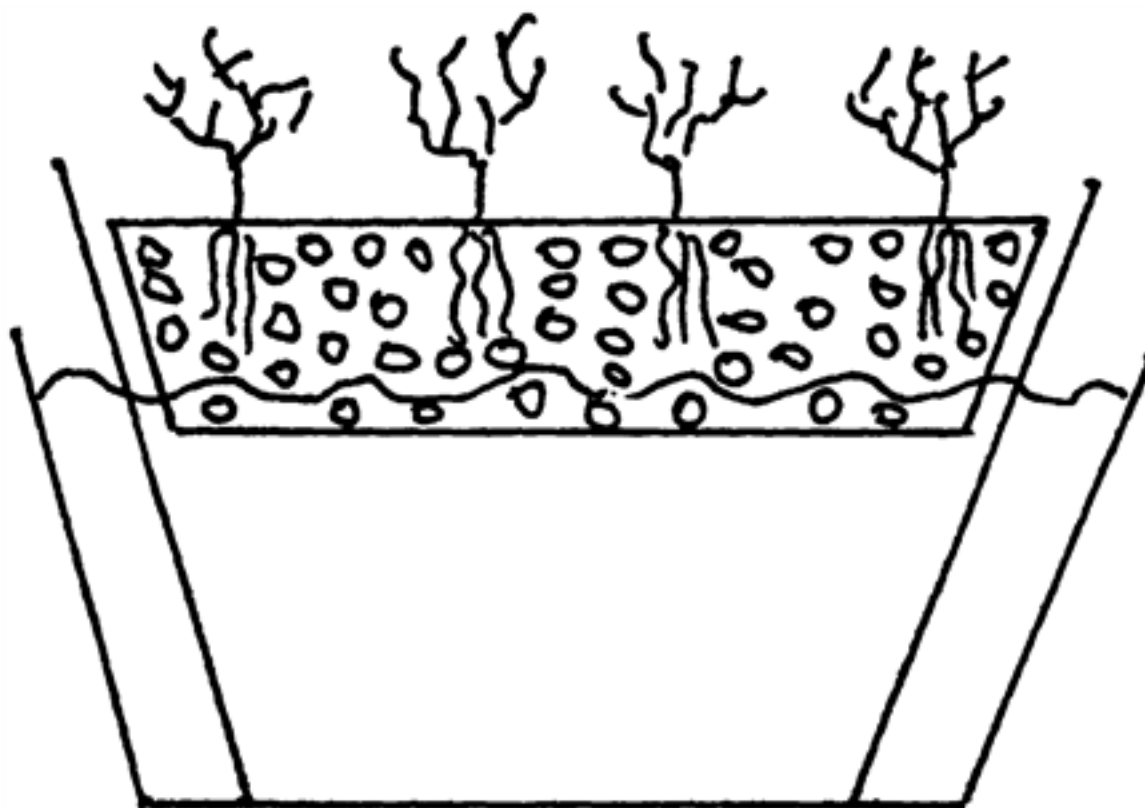
FERTILE EARTH SYSTEMS

Family 29/100 - FAMPAT - ©Questel

Title

(EP-949221)

Composition suitable as liquid fertilizer containing sulphur as potassium tetrathionate

Images**FIGUUR 1****Publication numbers with kind code & date**

DK0949221	T3	2004-10-25	DK-949221T
DE69917831	D1	2004-07-15	DE69917831
EP0949221	B1	2004-06-09	EP-949221
EP0949221	A1	1999-10-13	EP-949221
NL1008820	C2	1999-10-07	NL1008820

**Abstract**

(EP0949221)

The invention relates to a composition suitable as fertilizer, comprising elements of nitrogen, phosphorus, potassium, calcium, magnesium and sulphur, wherein the elements are present in high concentrations. Furthermore, the sulphur is present in the form of polythionic acid compound with the general formula $H_2S_nO_6$ or an ammonium, sodium, potassium, calcium or magnesium salt thereof.

Inventors

BOLHUIS HUGO H

Latest standardized assignees - inventors removed

BRENNTAG

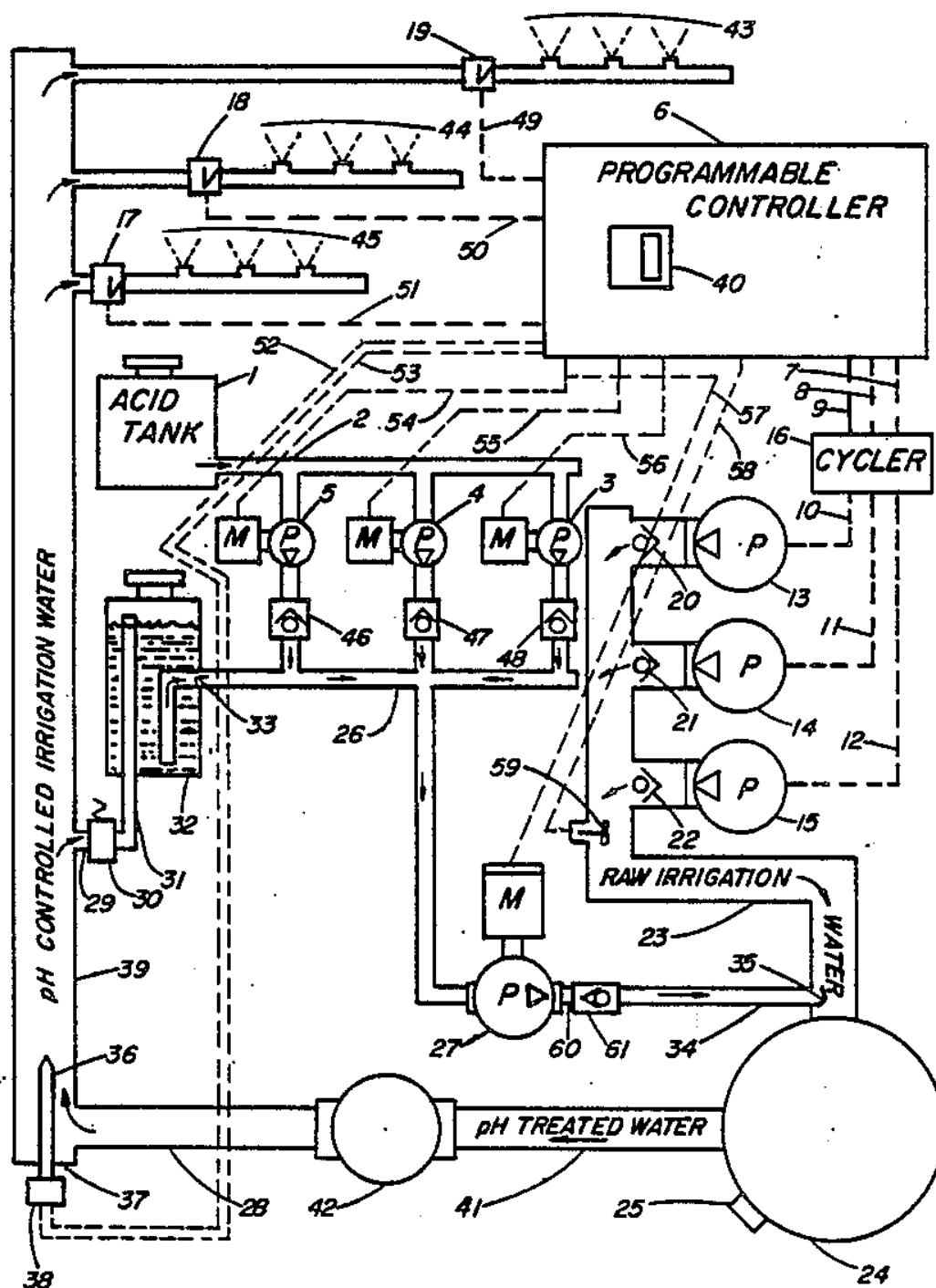
Family 30/100 - FAMPAT - ©Questel

Title

(US4867192)

Apparatus for controlling irrigation water pH for golf courses

Images



Publication numbers with kind code & date

US4867192

A 1989-09-19

US4867192



Abstract

(US4867192)

An automatically controlled irrigation water pH amendment system and apparatus associated with golf courses utilizing automatic irrigation systems to irrigate the various species of turf grasses used on fairways, tees, greens and other areas; being adapted to receive an operator pre-selected program of desired irrigation water pH value; to monitor the delivered pH value of the irrigation water and automatically blend into the irrigation water in the flow circuit between the discharge of the irrigation pump station pumps and the pH monitoring point the proper amount of chemical additive to amend-raise or lower the pH of the delivered irrigation water. The desideratum is a uniformly blended mixture of liquid acid or base chemical with irrigation water to maintain a solution of the water pH value desired by the operator to promote proper agronomic practice in the maintenance of the turf grasses. This objective has been found to be obtainable by causing the two liquids to be blended in the proper ratios through the use of an acid tank, pH sensing probe, sulfuric acid injector pumps, acid manifold, booster pump, flow velocity measuring device, and a solid-state electrical programmable controller; connected to the upstream and downstream ports of an ordinary pressure sustaining valve or differential pressure orifice device as used in the discharge line of a golf course pumping station.

Inventors

TERRELL B JOE

TERRELL STEVEN J

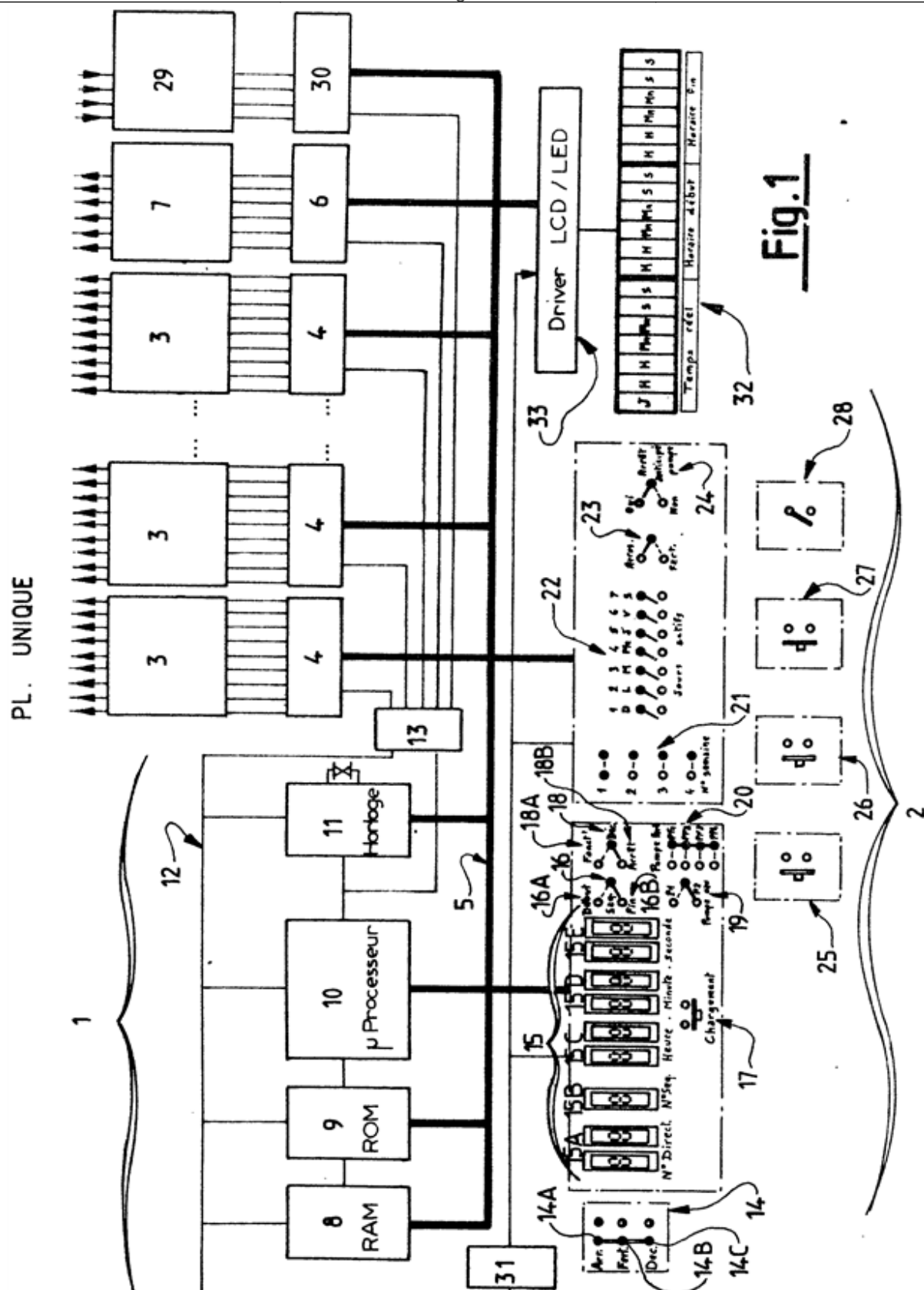
Family 31/100 - FAMPAT - ©Questel

Title

(FR2515839)

Programmable controller for water and fertiliser sprinkler system - comprises microprocessor with clock unit and selectors for time periods and operating modes

Images



Publication numbers with kind code & date

FR2515839

B1 1986-08-22

FR2515839

FR2515839

A1 1983-05-06

FR2515839

Abstract

(FR2515839)

The programming unit comprises a microprocessor with RAM and ROM coupled to it by a data bus. A clock unit gives day of work data down to seconds. A decoder enables an output channel to be selected to operate a partic. solenoid valve in a sprinkler system. An electronic unit enables programming time data to be set using coded rotary switches. A selector switch enables the operating or non operating times to be programmed. Further switches enable the days of the week to be

selected and to signal that these be active or non active days for sprinkling or fertilisation. Other selectors enable water pumps or fertiliser pumps to be selected for operation at the programmed times.

Inventors

FERROU

Latest standardized assignees - inventors removed

SEII

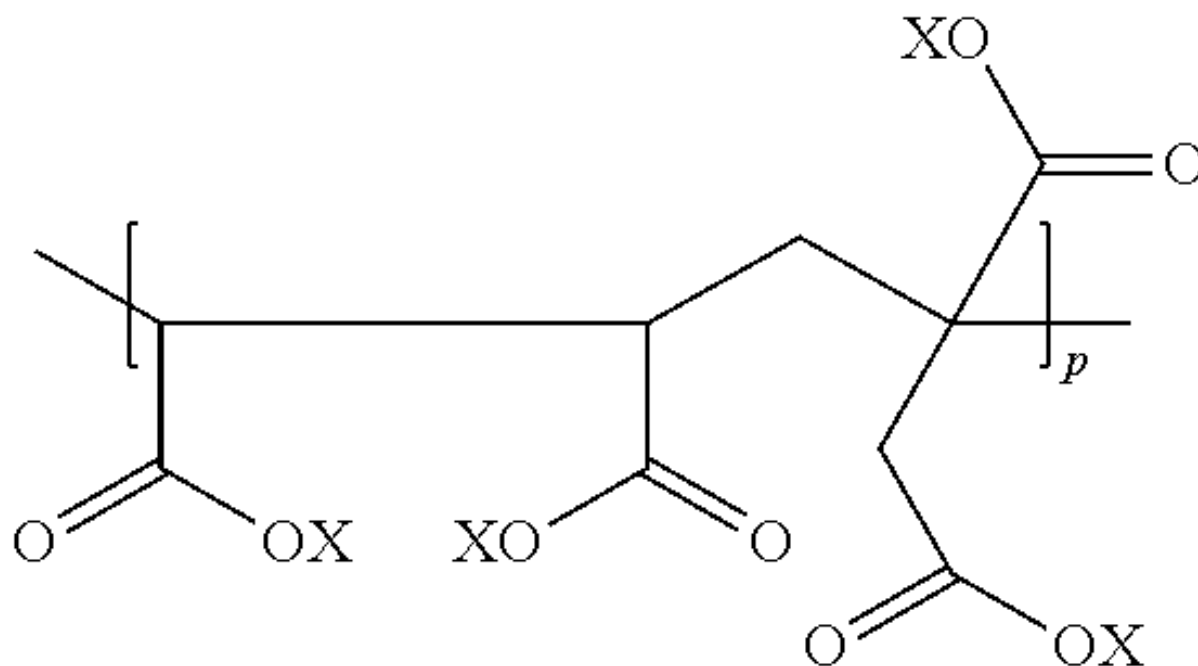
Family 32/100 - FAMPAT - ©Questel

Title

(EP2882281)

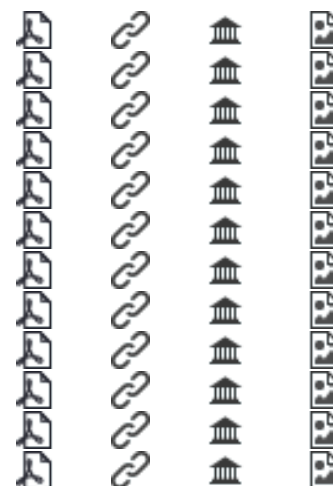
Method of reducing atmospheric ammonia in livestock and poultry confinement facilities

Images



Publication numbers with kind code & date

EP2882281	B1	2019-07-17	EP2882281
US9738565	B2	2017-08-22	US9738565
AU2013302987	B2	2017-06-29	AU2013302987
IN0996/CHENP/2015	A	2016-07-01	IN2015CN00996
EP2882281	A4	2016-06-15	EP2882281
US20150376075	A1	2015-12-31	US20150376075
US9145340	B2	2015-09-29	US9145340
EP2882281	A1	2015-06-17	EP2882281
AU2013302987	A1	2015-03-05	AU2013302987
CA2881643	A1	2014-02-20	CA2881643
WO2014/028335	A1	2014-02-20	WO201428335
US20140041431	A1	2014-02-13	US20140041431



Abstract

(EP2882281)

Methods are provided for the treatment of livestock or poultry confinement facilities equipped with manure collection zones (e.g., a manure pit or litter), in order to reduce and mitigate the effects of gaseous ammonia within the facility. The treatment involves application of an aqueous mixture including a partial calcium salt of a maleic-itaconic copolymer and a partial ammonium salt of a maleic-itaconic copolymer. Preferably, the amount of the partial calcium salt copolymer is greater than the amount of the partial ammonium salt copolymer. The treatment methods provide prompt and lasting reductions in gaseous ammonia within the confinement facility.

Inventors

SANDERS JOHN LARRY

Latest standardized assignees - inventors removed

VERDESIA LIFE SCIENCES

Family 33/100 - FAMPAT - ©Questel

Title

(EP-755369)

A suspension fertilizer suitable for irrigation fertilization, and a process for its preparation

Publication numbers with kind code & date

IL113308	B	1999-07-14	IL-113308
US5851260	A	1998-12-22	US5851260
HU215278	B	1998-11-30	HU-215278
FI98517	C	1997-07-10	FI--98517
HUT75838	A	1997-05-28	HU-T75838
FI98517	B	1997-03-27	FI--98517
EP0755369	A1	1997-01-29	EP-755369
HU9602803	D0	1996-11-28	HU9602803
NO964365	A	1996-10-14	NO9604365
NO964365	D0	1996-10-14	NO9604365
NO964365	L	1996-10-14	NO-964365
AU2260395	A	1995-11-10	AU9522603
CA2187621	A1	1995-10-26	CA2187621
WO95/28369	A1	1995-10-26	WO9528369
FI941759	A	1995-10-16	FI9401759
IL113308	A	1995-07-31	IL-113308
FI941759	A0	1994-04-15	FI9401759

**Abstract**

(EP0755369)

The invention relates to a stable aqueous fertilizer suspension suitable for drip irrigation, which suspension contains 5-55 % by weight water and 45-95 % by weight of one or several plant-nutrient containing substances, of which at least one contains water-insoluble solid particles, the particle size of the solid particles contained in the suspension being less than 50 μ m and the pH of the suspension being within the range 2-7. The invention also relates to a process for the preparation of this suspension.

Inventors

AEIJAELAE HANNU

AHLNAES THOMAS

Latest standardized assignees - inventors removed

KEMIRA GROWHOW

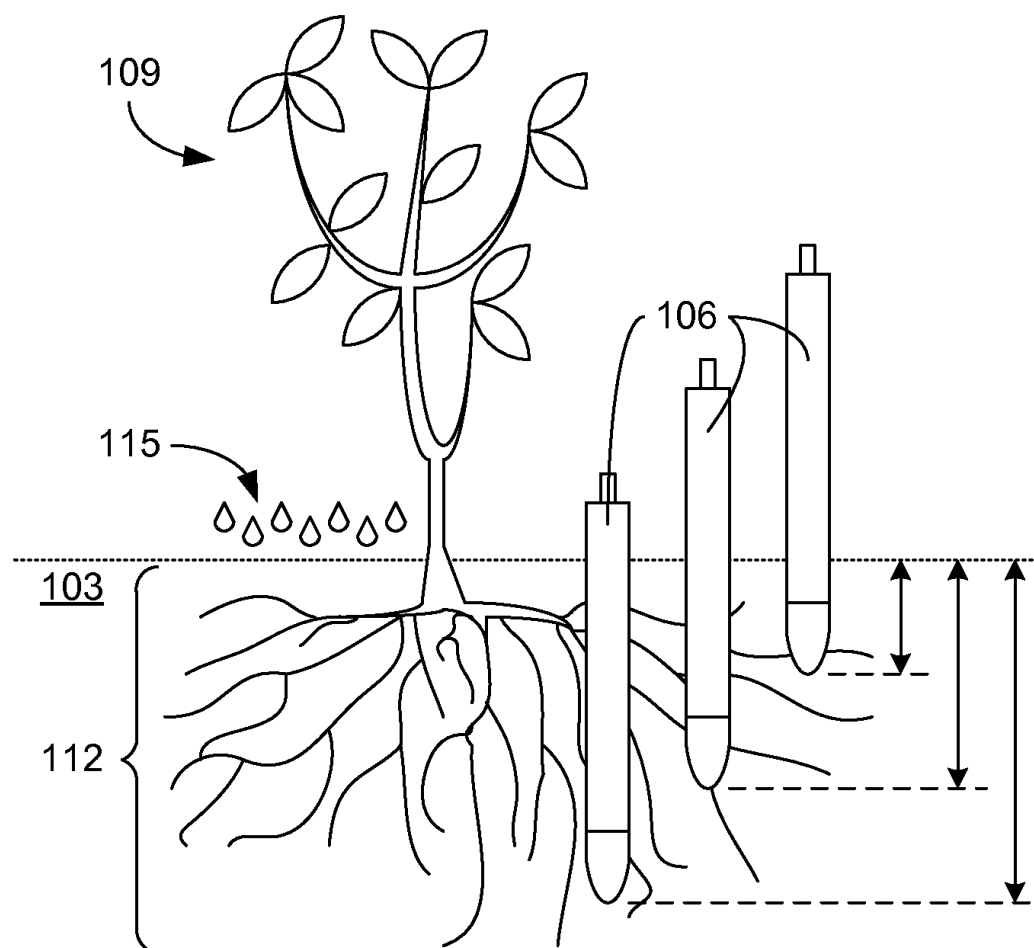
Family 34/100 - FAMPAT - ©Questel

Title

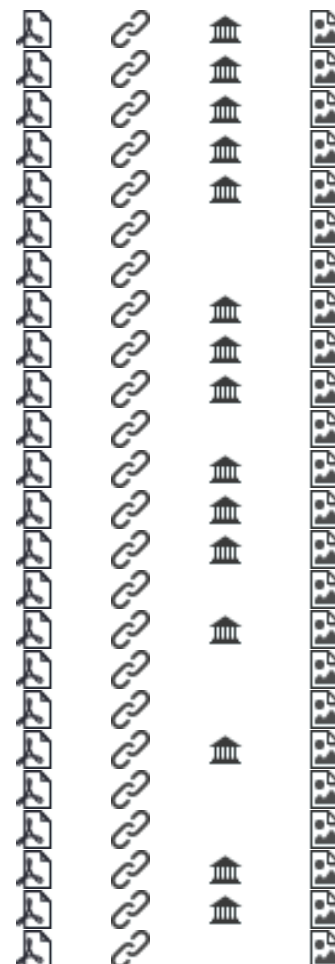
(EP2819498)

Monitoring and control of soil conditions

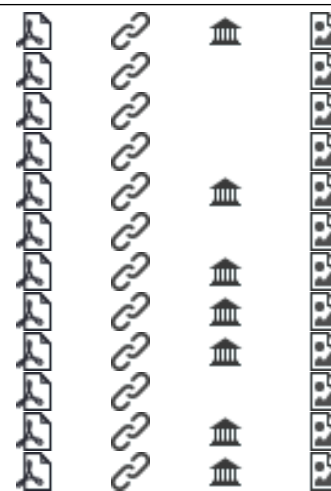
Images



NZ733756	A	2019-02-22	NZ-733756
AU2018247234	A1	2018-11-01	AU2018247234
CN108551828	A	2018-09-21	CN108551828
MA37359	B1	2018-06-29	MA--37359
CN104244697	B	2018-04-27	CN104244697B
MX354638	B	2018-03-14	MX-354638
HUE033126	T2	2017-11-28	HUE033126
NZ716585	A	2017-08-25	NZ-716585
NZ716586	A	2017-08-25	NZ-716586
AU2017208201	A1	2017-08-10	AU2017208201
PL2819498	T3	2017-07-31	PL2819498
ES2624985	T3	2017-07-18	ES2624985
AU2012372081	B2	2017-06-08	AU2012372081
PT2819498	T	2017-04-20	PT2819498T
RU2611146	C2	2017-02-21	RU2611146
EP2819498	B1	2017-02-15	EP2819498
ZA201405877	B	2016-06-29	ZA201405877
RU2014138934	A	2016-04-20	RU2014138934
NZ628171	A	2016-03-31	NZ-628171
ZA201505505	B	2016-03-30	ZA201505505
TN2014000331	A1	2015-12-21	TN2014000331
US20150301011	A1	2015-10-22	US20150301011
US20150301536	A1	2015-10-22	US20150301536
CL2014002275	A1	2015-04-10	CL201402275



MA20150097	A1	2015-03-31	MA20150097
CR20140402	A	2015-03-16	CR201400402
MX2014010309	A	2015-03-06	MX2014010309
CO7170183	A2	2015-01-28	CO7170183
EP2819498	A1	2015-01-07	EP2819498
DOP2014000196	A	2014-12-31	DO201400196
CN104244697	A	2014-12-24	CN104244697
IN2030/KOLNP/2014	A	2014-12-19	IN2014KN02030
BR112014021220	A1	2014-10-21	BR112014021220
AR089923	A1	2014-10-01	AR--89923
AU2012372081	A1	2014-08-21	AU2012372081
WO2013/128232	A1	2013-09-06	WO2013128232



Abstract

(EP2819498)

Various methods are provided for monitoring and control of soil conditions. In one example, among others, a method includes obtaining aqueous samples from suction probes (32) within a soil substrate and analyzing the aqueous samples to determine a chemical composition of the soil substrate. Amounts of an additive may be determined to adjust the chemical composition of the soil substrate. In another example, a method includes installing a suction probe within a soil substrate; drawing a vacuum to induce hydraulic conduction of aqueous solutions from the soil substrate; extracting an aqueous sample; and analyzing the aqueous sample to determine a chemical composition of the soil substrate. In another example, a method includes obtaining a composition of a fertilizer solution (FS) supplied to a soil substrate and a chemical composition within the soil substrate; determining nutrient utilization, and providing an amount of additive to produce a subsequent FS for supply.

Inventors

MARTINEZ ESTANISLAO MARTINEZ PH D

Latest standardized assignees - inventors removed

AGQ TECHNOLOGY

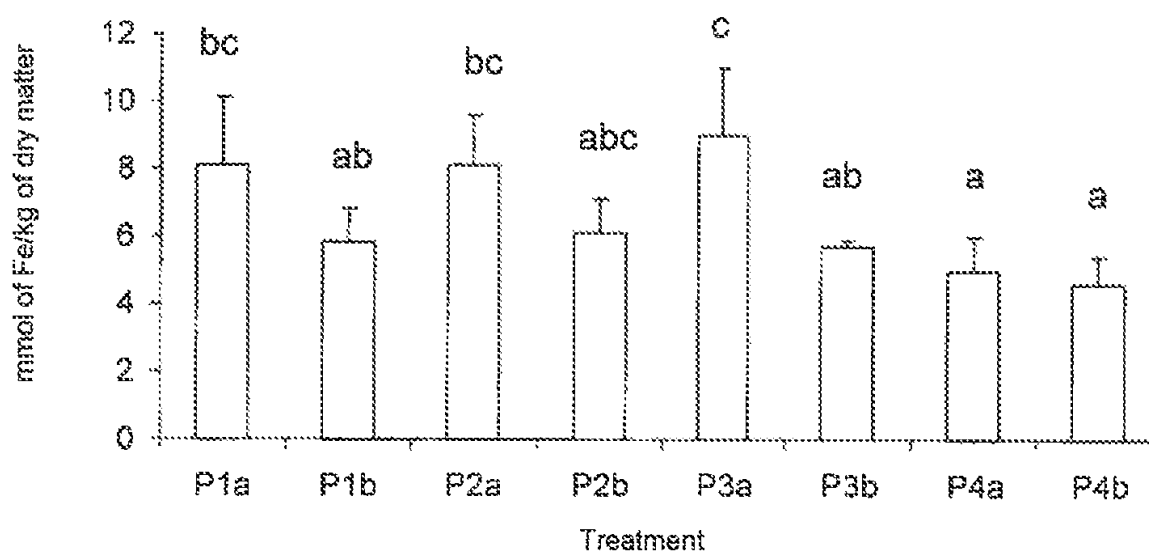
Family 35/100 - FAMPAT - ©Questel

Title

(EP2906049)

Process for the manufacturing of a nutritive composition comprising iron

Images



Publication numbers with kind code & date

EA031880

B1 2019-03-29

EA--31880



HUE037806	T2	2018-09-28	HUE037806				
PL3009005	T3	2018-07-31	PL3009005				
ES2669006	T3	2018-05-23	ES2669006				
PT3009005	T	2018-05-16	PT3009005T				
US20180118630	A1	2018-05-03	US20180118630				
SI2906049	T1	2018-04-30	SI2906049T				
NO2906049	T3	2018-04-21	NO2906049				
PL2906049	T3	2018-03-30	PL2906049				
EP3009005	B1	2018-02-28	EP3009005				
US9902658	B2	2018-02-27	US9902658				
ES2655196	T3	2018-02-19	ES2655196				
LT2906049	T	2018-01-25	LT2906049				
DK2906049	T3	2018-01-15	DK2906049T				
PT2906049	T	2018-01-10	PT2906049T				
IL238226	B	2017-11-30	IL-238226				
EP2906049	B1	2017-11-22	EP2906049				
BR112015007865	A2	2017-07-04	BR112015007865				
AU2016231562	B2	2017-06-29	AU2016231562				
BR112015007865	A1	2017-02-21	BR112015007865				
ZA201502605	B	2016-11-30	ZA201502605				
AU2013329809	B2	2016-10-27	AU2013329809				
AU2016231562	A1	2016-10-20	AU2016231562				
MA37984	A1	2016-09-30	MA--37984				
HK1210387	A1	2016-04-22	HK1210387				
EP3009005	A1	2016-04-20	EP3009005				
IN3337DEN2015	A	2015-10-23	IN2015DN03337				
MX2015004390	A	2015-10-09	MX2015004390				
US20150259258	A1	2015-09-17	US20150259258				
EP2906049	A1	2015-08-19	EP2906049				
EA201590608	A1	2015-07-30	EA201590608				
IL238226	A	2015-06-30	IL-238226				
AU2013329809	A1	2015-05-21	AU2013329809				
AP201508395	A0	2015-04-30	AP201508395				
CA2887448	A1	2014-04-17	CA2887448				
WO2014/056688	A1	2014-04-17	WO201456688				

Abstract

(EP2906049)

The present invention relates to an inorganic solid nutritive composition comprising at least one polyphosphate and at least one source of iron as micronutrient, wherein said composition is water-soluble and comprises an iron content of between 0.1% and 5% by weight of iron relative to the total weight of said solid composition.

Inventors

CAPPELLE PHILIPPE JACQUES MYRIAM

VERHELST KURT THIERRY S

Latest standardized assignees - inventors removed

PRAYON

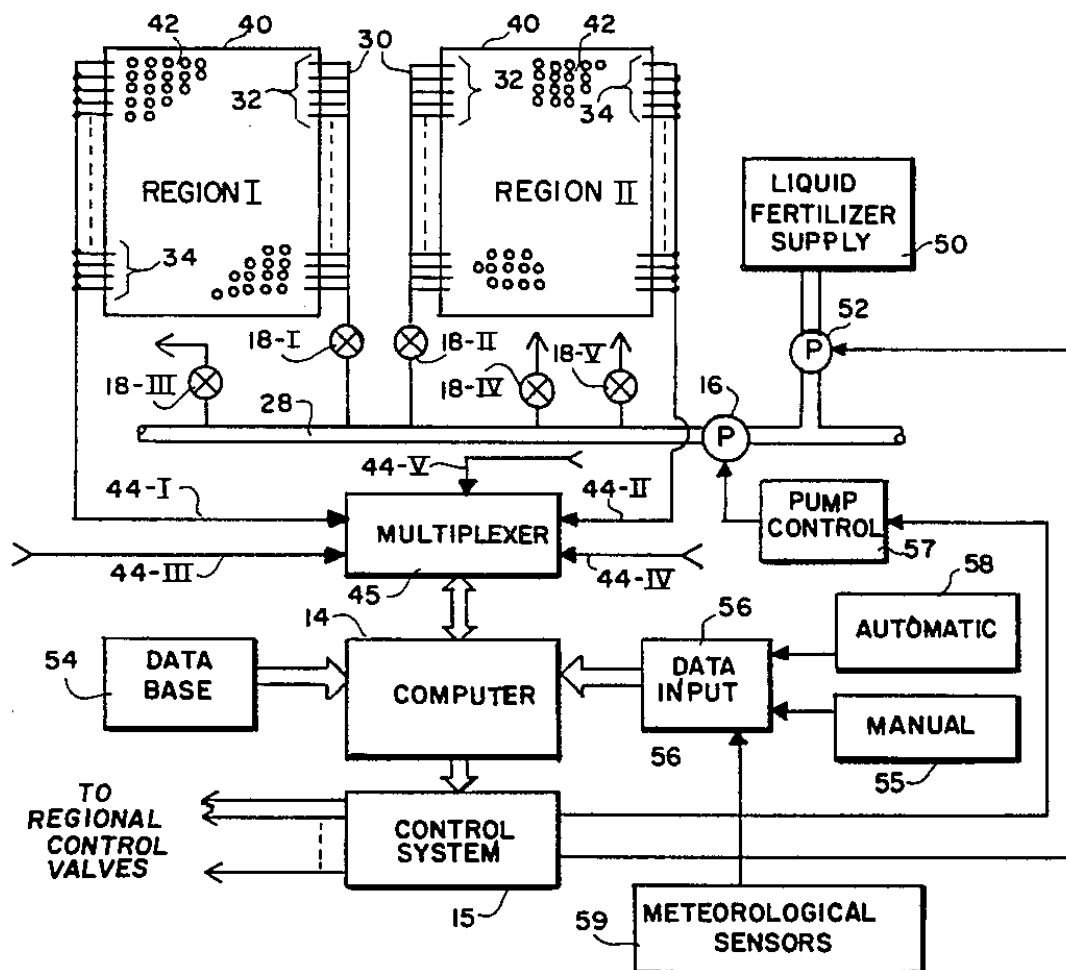
Family 36/100 - FAMPAT - ©Questel

Title

(US4545396)

System for optimum irrigating and fertilizing

Images



Publication numbers with kind code & date

US4545396

A 1985-10-08

US4545396



Abstract

(US4545396)

A system for groves, truck farms and the like for automatically irrigating and fertilizing in accordance with the requirements of the soil. A plurality of capacitance sensors are buried in the areas to be irrigated and fertilized. A computer periodically measures the equivalent capacitive reactance of each sensor to obtain an indication of soil moisture and the equivalent resistance of each sensor to obtain an indication of fertilizer levels in the soil. Water pumps and valves and liquid fertilizer pumps are controlled by the computer to operate only when the soil requires.

Inventors

MILLER RICHARD N

RAY K BRUCE

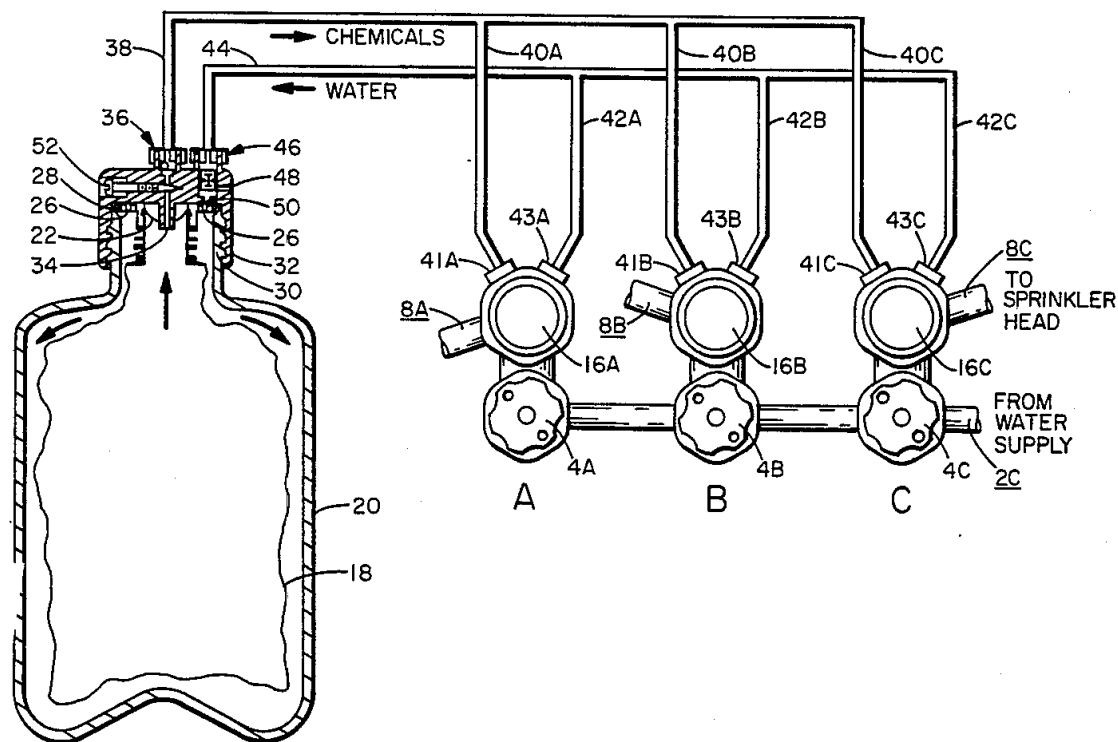
Family 37/100 - FAMPAT - ©Questel

Title

(US4635848)

Irrigation additive delivery system

Images



Publication numbers with kind code & date

US4635848

A 1987-01-13

US4635848



Abstract

(US4635848)

Apparatus and method of its use for delivering liquid additives to irrigation units which comprises an additive liquid source and means for injecting said additives. Injection means utilize the venturi effect to permit controlled delivery of additive to fluid bound for the sprinkler circuit. Check valves permit connection of one additive liquid source to a series of water supplies. A pressure relief valve having sliding members is also described.

Inventors

LITTLE CHARLES F

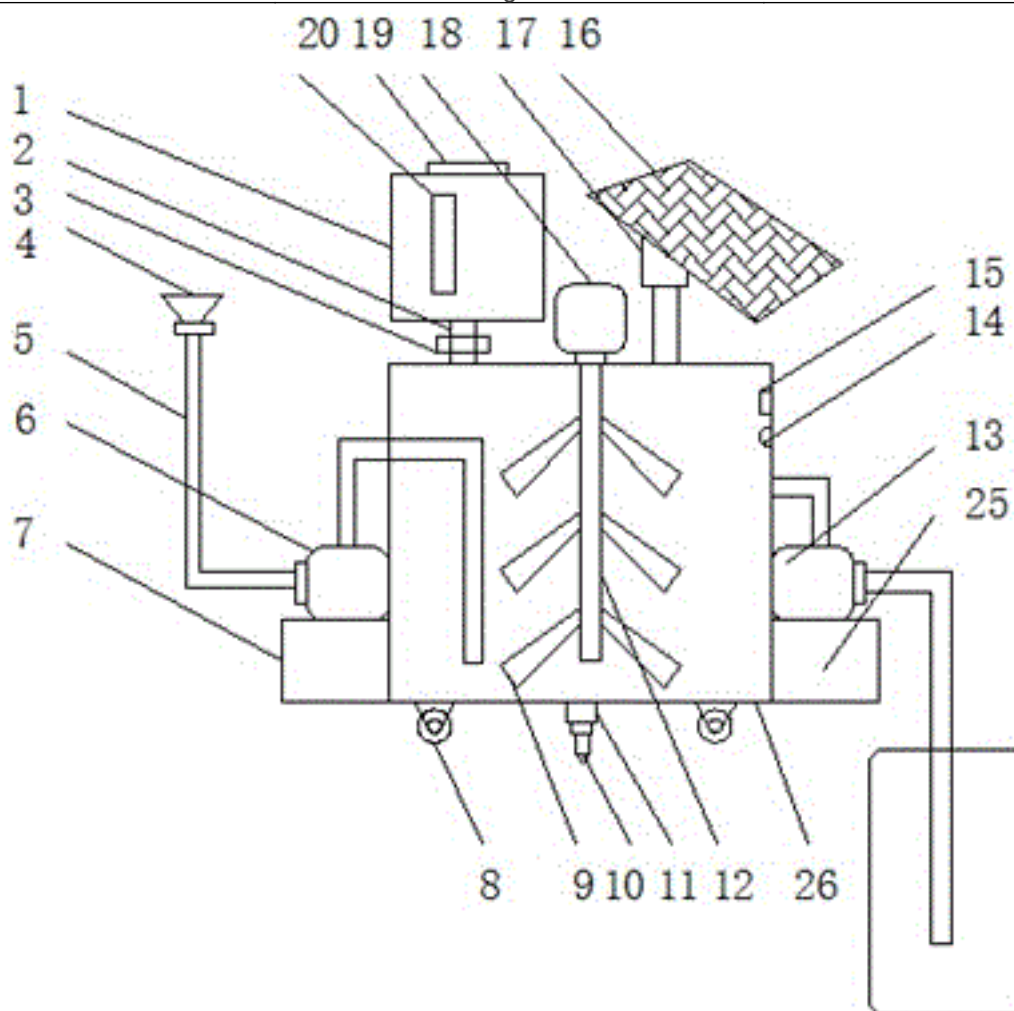
Family 38/100 - FAMPAT - ©Questel

Title

(CN205623617U)

Solar energy type farmland irrigation device

Images

**Publication numbers with kind code & date**

CN205623617

U

2016-10-12

CN205623617U

**Abstract**

(CN205623617)

The utility model discloses a solar energy type farmland irrigation device, including water tank, first water pump, (mixing) shaft, add fertile case, add fertile pipe, second water pump and rotary device, first supporting station is installed on the water tank right side, and first supporting station upside installs first water pump, first water pump leads to pipe and the well is connected, the motor is installed to the water tank upside, and the motor downside installs the (mixing) shaft, the stirring leaf is installed to the (mixing) shaft both sides, the water tank upside is installed and is added fertile pipe, just installs with fertile pipe upside to add the fertilizer case, with installing the solenoid valve on the fertile pipe, the second supporting station is installed in water tank left side, and second supporting station upside installs the second water pump, the water pipe is installed on second water pump right side, the water pipe is installed in second water pump left side, and the shower nozzle is installed to the water pipe upside. The utility model discloses a water tank internally mounted has the fertilizer concentration sensor, can measure the concentration of the interior fertilizer of water tank to realize accurate the fertilization.

Inventors

杜林傲

DU LINAO

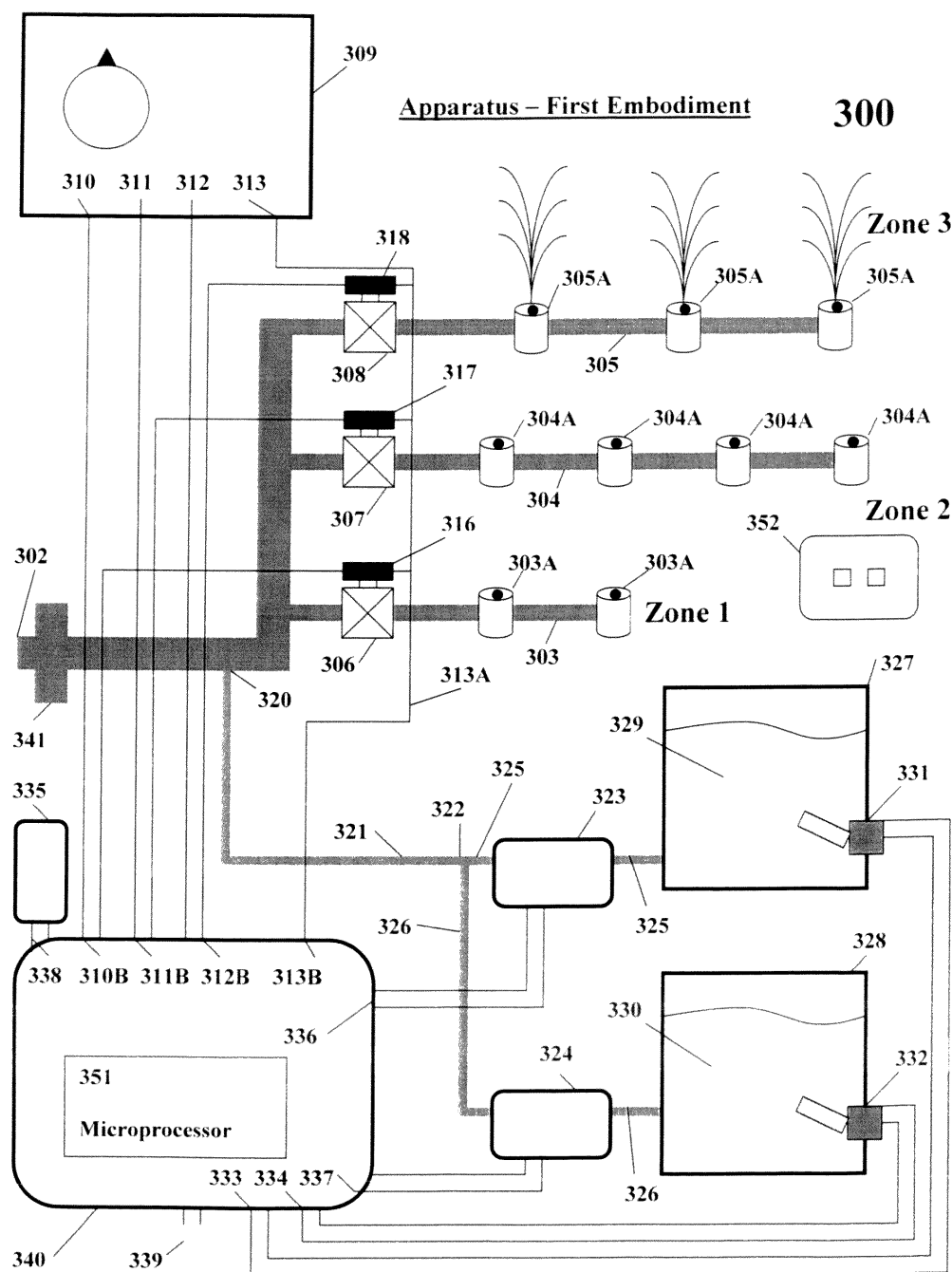
Family 39/100 - FAMPAT - ©Questel

Title

(US8434697)

Autonomous system for injecting additives into irrigation water

Images

**Publication numbers with kind code & date**

US8434697

B1 2013-05-07

US8434697

**Abstract**

(US8434697)

Injection apparatus for automatically applying pest control concentrates and fertilizers into an existing underground irrigation system. Apparatus uses an electronic control system programmed to activate one or more injection pumps and to also operate the zonal flow control solenoids contained in an existing underground or other type of irrigation system. Apparatus includes a single or plurality of storage reservoirs for storing one or more additives with piping to deliver these additives to the existing irrigation system.

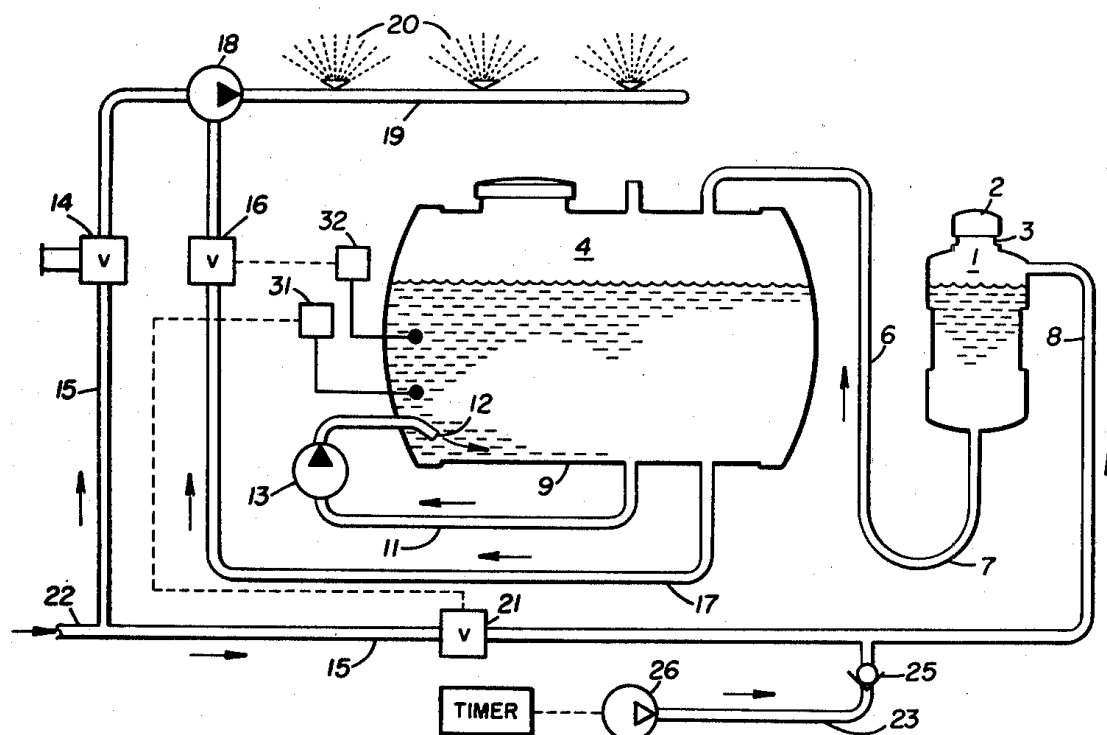
Inventors

OLT PETER

Title

(US4456176)

Apparatus for processing and dispensing fertilizer or insecticide

Images**Publication numbers with kind code & date**

US4456176

A

1984-06-26

US4456176

**Abstract**

(US4456176)

A fertilizer or insecticide storage tank is connected to the top of a solution tank. High pressure water fed into the top of the storage tank forces the chemical from the storage tank into the solution tank; a jet is pumped into the curved bottom of the solution tank at high pressure so that the jet travels upwardly and during the filling of the solution tank it agitates the solution; a drain valve is opened when the solution tank is completely filled, to drain the agitated solution through a pump under high pressure into an irrigation system; controls automatically close the drain valve until the chemical storage tank is empty, and automatically open an air pressure valve to the chemical storage tank for a set period through the chemical storage tank thereby to completely empty it; and when multiple chemical storage tanks are used, then to control through sensors the operation through another fertilizer storage tank as aforesaid whereby continual fertilizer operation can be automatically accomplished.

Inventors

AGIUS JOSEPH L

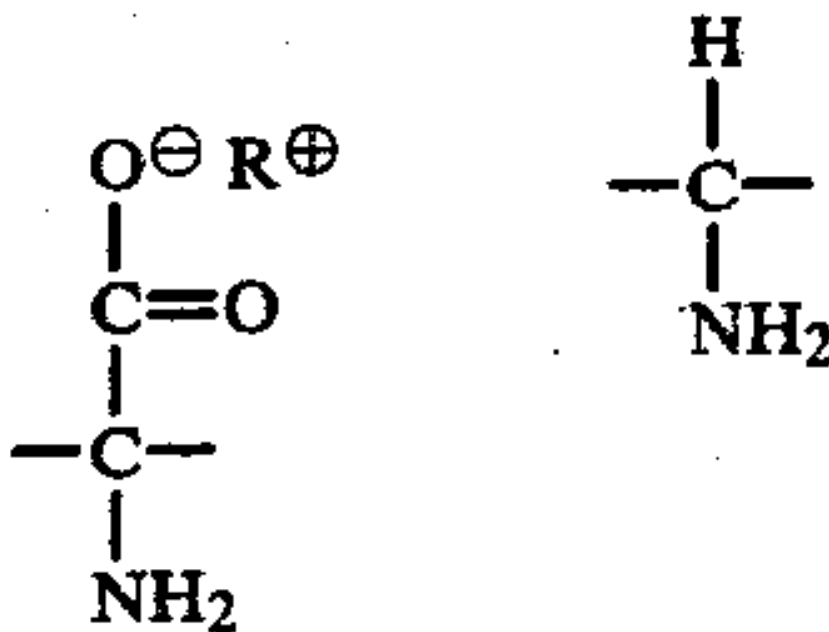
Family 41/100 - FAMPAT - ©Questel

Title

(EP---3587)

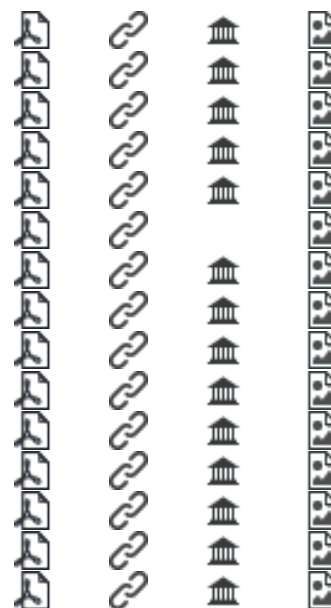
Agrochemicals based on stabilized azulomic acids

Images



Publication numbers with kind code & date

DE2963319	D1	1982-09-02	DE2963319
EP0003587	B1	1982-07-14	EP---3587
US4334905	A	1982-06-15	US4334905
CA1118223	A	1982-02-16	CA1118223
US4251255	A	1981-02-17	US4251255
ZA7900624	B	1980-03-26	ZA7900624
ES477703	A1	1979-12-01	ES-477703
JPS54117765	A	1979-09-12	JP54117765
BR7900895	A	1979-09-11	BR7900895
AU4413779	A	1979-08-23	AU7944137
EP0003587	A1	1979-08-22	EP---3587
DE2806097	A1	1979-08-16	DE2806097
DK59579	A	1979-08-15	DK7900595
IL56646	A	1979-05-31	IL--56646
PT69213	A	1979-03-01	PT--69213



Abstract

(EP0003587)

Azulmic acids, stabilized by condensation with carbonyl compounds, said modified azulmic acids containing from 0.5 to 55 percent by weight of ionic groups of the formula <IMAGE> in which R represents hydrogen, ammonium, one equivalent of a protonated or quaternized organic nitrogen base or of a sulphonium cation or one equivalent of a metal cation, and containing from 0.5 to 15 percent by weight of groups formed by decarboxylation reaction of the formula <IMAGE> and acid addition salts and complex compounds of these stabilized azulmic acids, and also mixed products of these stabilized azulmic acids with additives can be used as agrochemicals. The products are particularly useful as fertilizers and as soil improving agents.

(From US4251255 A)

Inventors

WAGNER, KUNO, DR.

NIGGEMANN, JOHANNES, DR.

layer of a substantially water insoluble metal salt formed in-situ from an organic acid having between 6 to 30 carbon atoms and a metal oxide or carbonate. Optionally, the coating layer contains micronutrients and inert materials. In a preferred embodiment, an additional layer of paraffin is added on the coating of metal salt of organic acid. The method is applicable for most of the known fertilizers. The method enables to vary the rate of fertilizer release and the release period time according to specific requirements.

Inventors

PIPKO, GRIGORI, DR.

MANOR, SHALOM, DR.

ZIV, MOSHE

Latest standardized assignees - inventors removed

HAIFA CHEMICALS

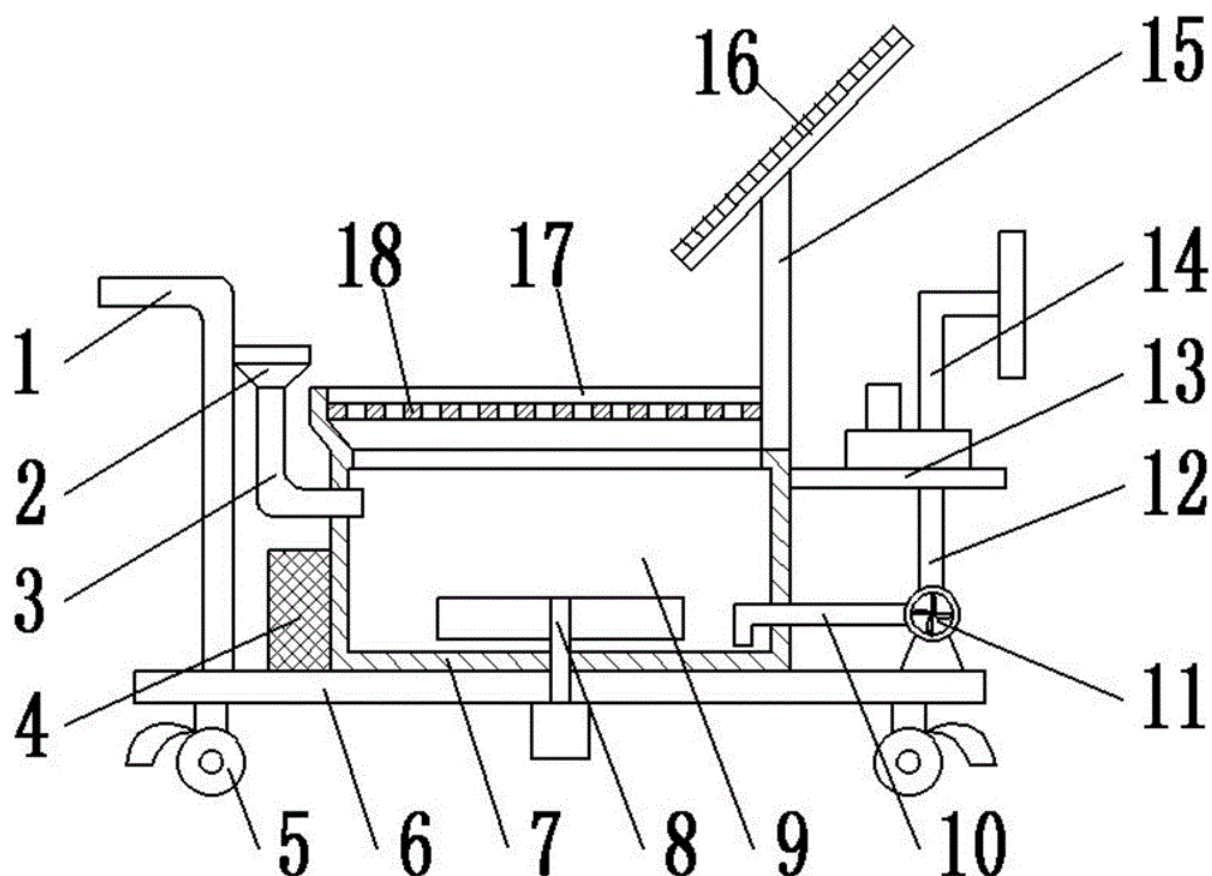
Family 43/100 - FAMPAT - ©Questel

Title

(CN205648584U)

Utilize solar energy power generation's convenient type irrigation device

Images



Publication numbers with kind code & date

[CN205648584](#)

U 2016-10-19

CN205648584U



Abstract

(CN205648584)

The utility model discloses an utilize solar energy power generation's convenient type irrigation device, including water storage box, bottom plate and sprinkler, the water storage box upper surface is provided with the retaining mouth, be provided with the filter on the retaining mouth, water storage box right side upper surface passes through support frame and solar cell panel fixed connection, it adds the pipe to be provided with the nutrient solution on the wall of water storage box left side, the water storage box bottom is provided with agitating unit, water storage box right side wall passes through the drinking -water pipe and is connected with the suction pump water inlet, suction pump delivery port and guide pipe connection, the honeycomb duct is connected with sprinkler, sprinkler is by transmission box, rotating electrical machines,

connecting pipe and spray and set constitute, the utility model discloses an area is sprayed in sprinkler expansion to drive through the rotating electrical machines is rotatory, make spray more even, the bottom plate lower surface is provided with the truckle, and facilitate device's removal is with fixed, the rainwater can be collected to the retaining mouth that the water storage box top set up, utilizes the rainwater to irrigate, plays water -saving purpose.

Inventors

刘小汉

薛峰

薛良波

LIU XIAOHAN

XUE FENG

XUE LIANGBO

Latest standardized assignees - inventors removed

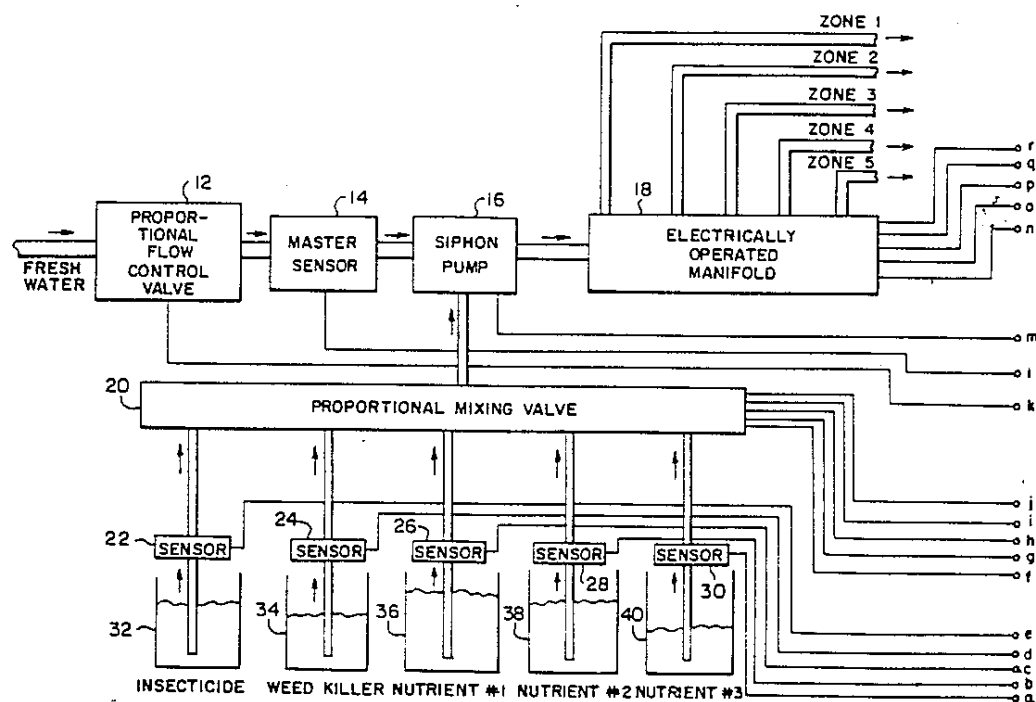
JIANGSU PRECISION WORK PUMP INDUSTRY

Family 44/100 - FAMPAT - ©Questel

Title

(US4895303)

Sprinkler system fertilization regulator

Images**Publication numbers with kind code & date**[US4895303](#)

A 1990-01-23

US4895303

**Abstract**

(US4895303)

A sprinkler system fertilization regulator is provided that automatically mixes a plurality of chemicals for the purpose of fertilization, weed control, or insect control. An electrically operated manifold distributes the chemical/water stream to each of the sprinkler zones provided. The output stream pressure is programmable, constant, and independent of the incoming fresh water pressure. Controls are provided for programming the relative percentage concentration of each of the constituent chemicals. Closed-loop fluid control systems are used throughout.

Inventors

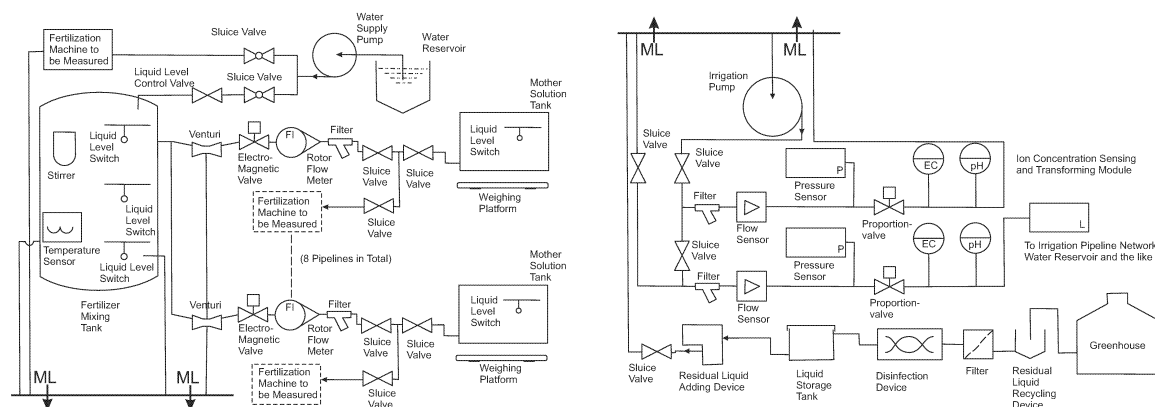
FREYVOGEL FRANK C

Family 45/100 - FAMPAT - ©Questel

Title

(WO2016176991)

Testing device for integrated irrigation and disinfection

Images**Publication numbers with kind code & date**

US10317326	B2	2019-06-11	US10317326
US20170115195	A1	2017-04-27	US20170115195
GB2542049	A	2017-03-08	GB2542049
GB201619686	D0	2017-01-04	GB201619686
CN104798522	B	2016-12-07	CN104798522B
WO2016/176991	A1	2016-11-10	WO2016176991
CN104798522	A	2015-07-29	CN104798522

**Abstract**

(WO2016/176991)

A testing device for integrated irrigation and disinfection, mainly comprising a centrifugal pump, pressure sensors (22, 29), flow sensors (21, 23), an ion concentration sensor, a control system, etc., and has comprehensive functions of fertigation, spray and drip irrigation load simulation, water and fertilizer parameter detection, fertilizer absorbing channel parameter detection, backflow channel parameter detection, etc.; furthermore, the detection of nutrient ion concentration information of a nutrient solution is combined effectively with the aspects of irrigation, dynamic preparation of a nutrient solution, disinfection of a nutrient solution, etc., therefore realizing a high-precision dynamic preparation of a nutrient solution and irrigation area load simulation, and satisfying the requirements on a test system during a research and development process of an irrigation and fertigation system. The testing device is applicable to the research on the techniques and the development of a system for precise irrigation and accurate preparation of a nutrient solution in the field of facility agriculture.

Inventors

ZUO ZHIYU
 QIN LIJUAN
 MAO HANPING
 ZHANG XIAODONG
 NI JIHENG
 LI QINGLIN
 LV TIANYUAN

Latest standardized assignees - inventors removed

JIANGSU UNIVERSITY

Family 46/100 - FAMPAT - ©Questel

Title

(US7695541)

Non-acidic, high calcium load aqueous fertilizer

Publication numbers with kind code & date[US7695541](#)

B1

2010-04-13

US7695541

**Abstract**

(US7695541)

A non-acidic, aqueous fertilizer suspension having a pH equal to or greater than 7 includes at least one water-insoluble calcium salt and at least one water-soluble calcium salt. The water-insoluble salt may be calcium carbonate, calcium phosphate tribasic, and calcium phosphate dibasic while the water soluble salt may be calcium acetate, calcium citrate, calcium chloride, calcium gluconate, calcium hydroxide, calcium lactate, calcium lignosulfate, and calcium iodate. The fertilizer suspension may include a multifunctional surfactant/dispersing agent/thickener, a multifunctional chelator/dispersant/stabilizer, a biocide and at least one plant nutrient selected from the group consisting of boron, copper, iron, magnesium, manganese, and zinc. In the fertilizer compositions, the total calcium salts comprise about 2% to about 70% by weight of the composition and the water-insoluble calcium salt comprises at least about 50% by weight of the total of the water-insoluble and water-soluble calcium salts.

Inventors

FRIZZELL RAYMOND B

LOOSEMORE MICHAEL J

Latest standardized assignees - inventors removed

TIGER INDUSTRIES

Family 47/100 - FAMPAT - ©Questel

Title

(US3796559)

Processes for introducing zinc micronutrients into liquid fertilizers

Publication numbers with kind code & date[US3796559](#)

A

1974-03-12

US3796559

**Abstract**

(US3796559)

Zinc particulate compositions precoated with alkyl amine, alkyl phosphine, salts of such amines and phosphines or mixtures thereof, when added to conventional liquid fertilizers, avoid lumping and caking which otherwise occurs when uncoated zinc compositions are added to liquid fertilizers.

Inventors

WINDGASSEN R

Latest standardized assignees - inventors removed

PLATTE CHEMICAL

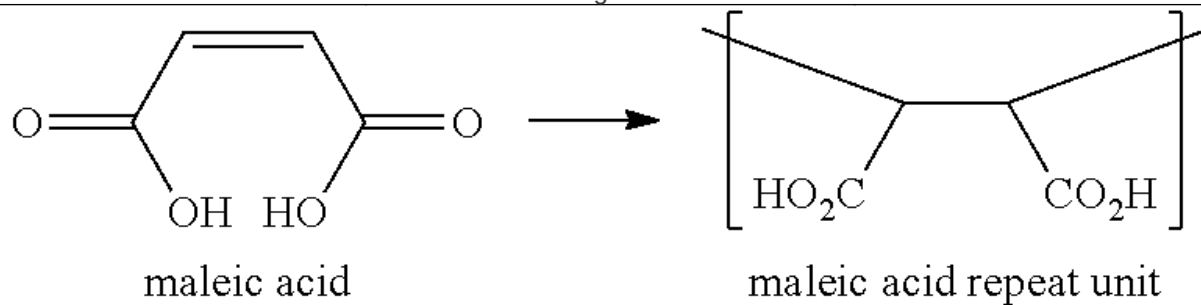
Family 48/100 - FAMPAT - ©Questel

Title

(WO2014190307)

Anhydrous ammonia supplemented with agricultural actives

Images

**Publication numbers with kind code & date**

US9359264	B2	2016-06-07	US9359264
US20150353434	A1	2015-12-10	US20150353434
US9139481	B2	2015-09-22	US9139481
US20140345344	A1	2014-11-27	US20140345344
WO2014/190307	A1	2014-11-27	WO2014190307

**Abstract**

(WO2014/190307)

Agriculturally useful compositions comprise individual quantities of anhydrous ammonia, ammonia solution, and one or more agricultural actives different than anhydrous ammonia. The compositions may include polyanionic polymers, fertilizers, and/or biocidal agents. Preferably, the compositions are created in pressurized tanks and are applied in the same fashion as anhydrous ammonia.

Inventors

SANDERS JOHN LARRY

Latest standardized assignees - inventors removed

VERDESIA LIFE SCIENCES

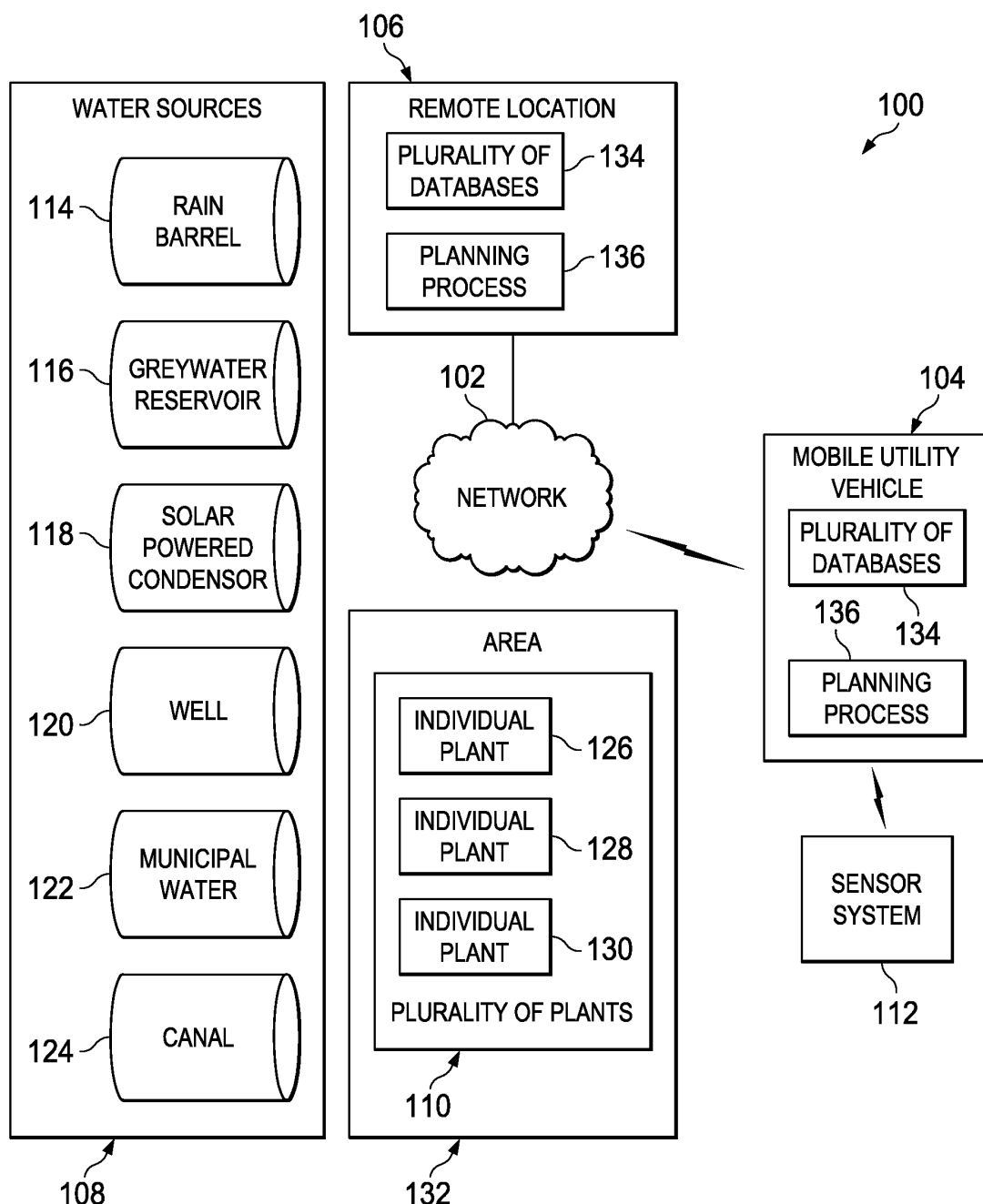
Family 49/100 - FAMPAT - ©Questel

Title

(US8150554)

Resource use management in yards and gardens

Images

**Publication numbers with kind code & date**

US8150554

B2 2012-04-03

US8150554

US20100268391

A1 2010-10-21

US20100268391

**Abstract**

(US20100268391)

Therefore, the illustrative embodiments provide a computer program product comprising a computer recordable media having computer usable program code. Resource needs are determined for each plant in a plurality of plants to form individual resource needs. Conditions are identified in an environment in which the plurality of plants are located by receiving input from a sensor system to form current conditions. A plurality of per plant prescriptions are calculated for the plurality of plants using the individual resource needs and the current conditions. The application of the resource is controlled from a mobile utility vehicle to each plant in the plurality of plants using the plurality of per plant prescriptions.

Inventors

ANDERSON NOEL WAYNE

Latest standardized assignees - inventors removed

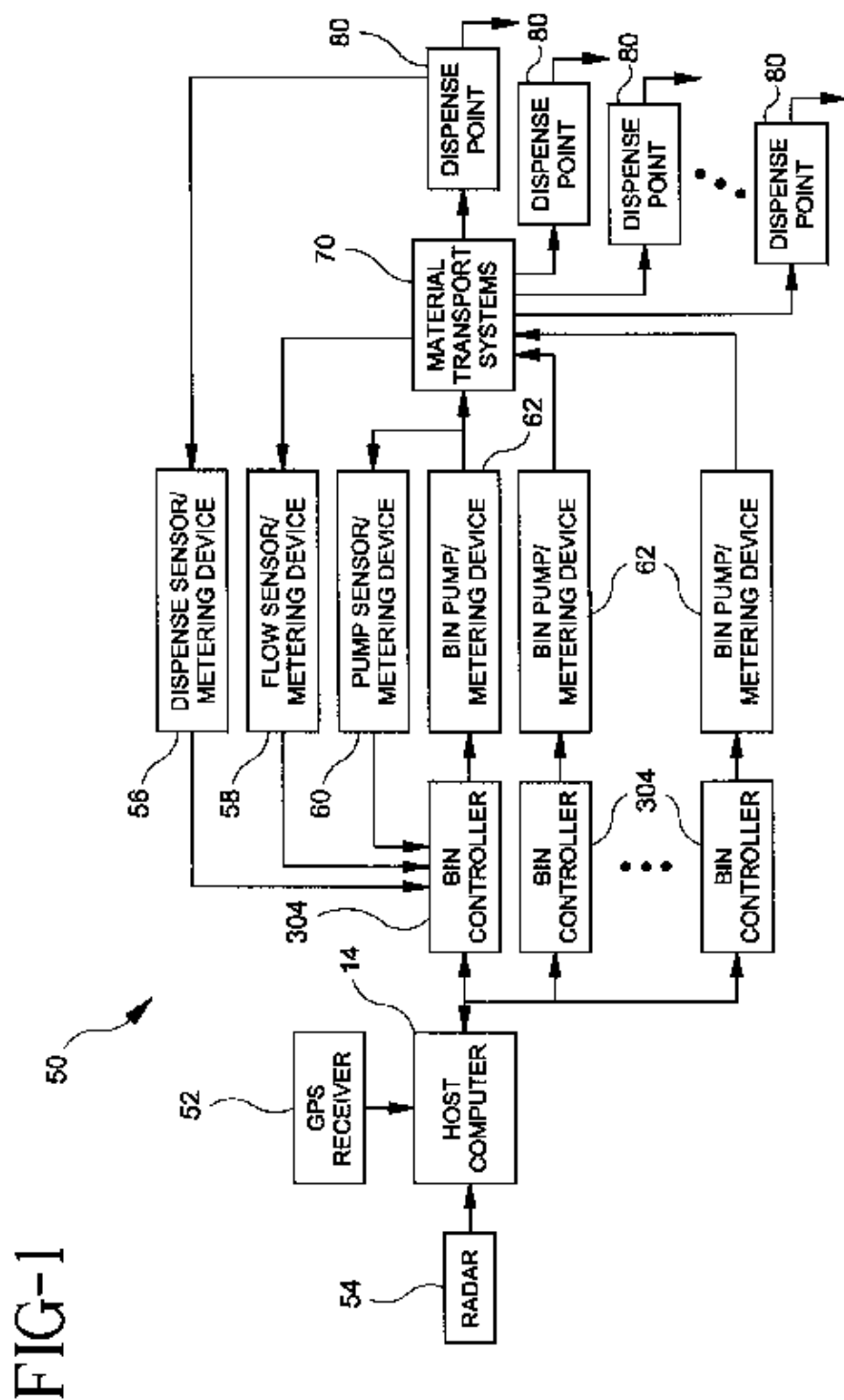
DEERE

Family 50/100 - FAMPAT - ©Questel

Title

(EP1023686)

Multi-variable rate dispensing system for agricultural machines

Images**Publication numbers with kind code & date**

DE69835895	T2	2007-03-29	DE69835895
DK1023686	T3	2007-01-08	DK1023686T
DE69835895	D1	2006-10-26	DE69835895
EP1023686	B1	2006-09-13	EP1023686
CA2302165	C	2005-03-15	CA2302165



EP1023686	A4	2004-06-30	EP1023686				
AU745356	B2	2002-03-21	AU-745356				
DE1023686	T1	2001-07-05	DE1023686T				
US6230091	B1	2001-05-08	US6230091				
BR9814056	A	2000-09-26	BR9814056				
US6122581	A	2000-09-19	US6122581				
EP1023686	A1	2000-08-02	EP1023686				
US5913915	A	1999-06-22	US5913915				
AU6743698	A	1999-04-23	AU9867436				
CA2302165	A1	1999-04-08	CA2302165				
WO99/17245	A1	1999-04-08	WO9917245				

Abstract

(EP1023686)

An improved mobile agricultural products application system (50) including a multi-variable rate dispensing system (80) particularly adaptable for use in site-specific farming, wherein selected discrete crop input delivery information unique to selected on-board crop input storage device (304), and/or crop input transport systems (70), and/or crop input dispensing points (80) is combined with anticipated field reference point data obtained with a machine positioning system (52, 54), e.g. "Dead Reckoning", GPS, and/or radar, and a computer (14), to direct independent functioning of selected on-board storage devices, material transport systems, crop input release mechanisms and/or dispensing point mechanisms to ensure stored crop inputs are released and combined to vary a prescription of delivered crop inputs in a direction substantially transverse to the direction of machine travel as the crop input applicator machine(s) travels over a predetermined geographic land area. The improved system (50) can selectively and exclusively accommodate precise application of seeds, or can optionally accommodate seed application in combination with other crop inputs.

Inventors

MCQUINN ALVIN E

Latest standardized assignees - inventors removed

CHEM EQUIPMENT

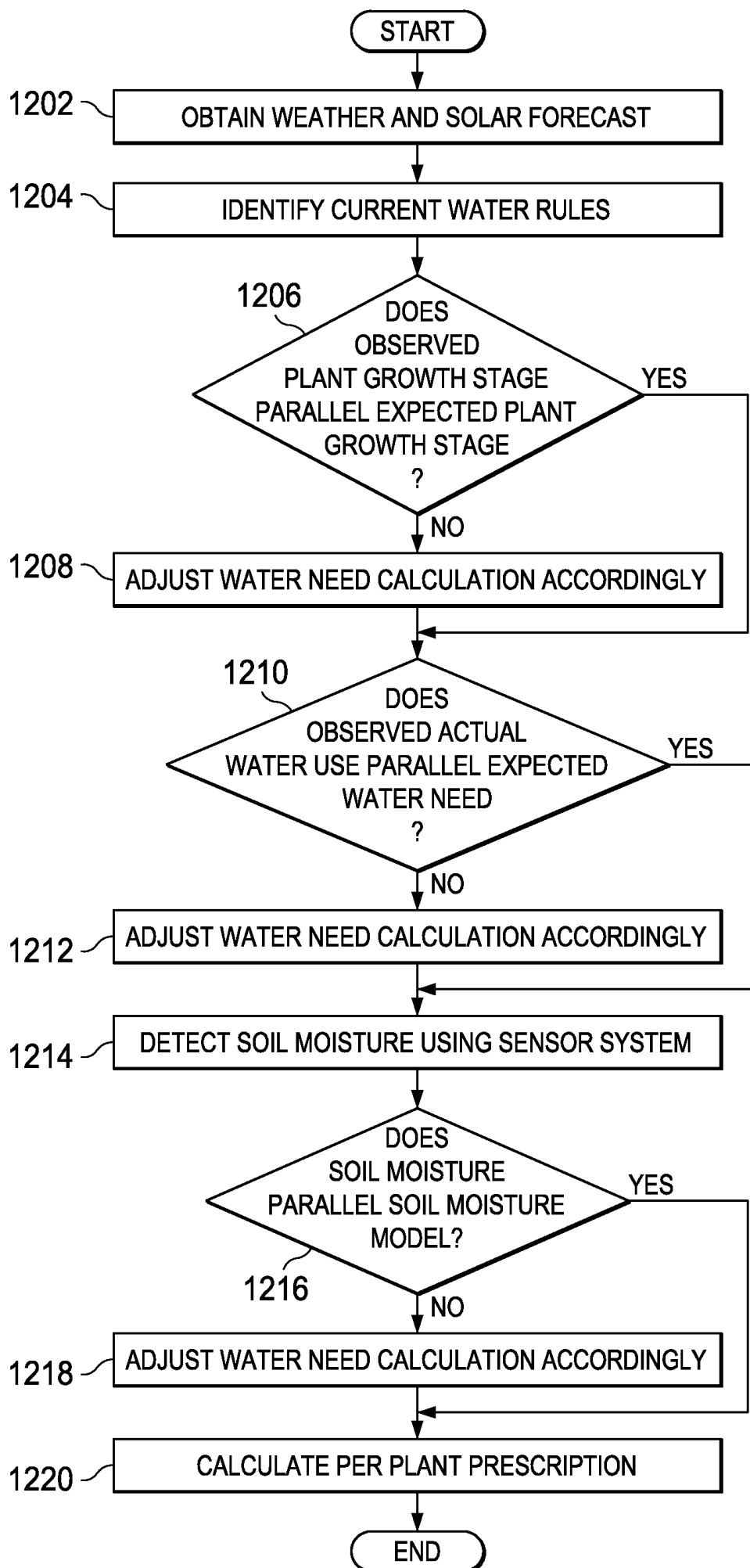
Family 51/100 - FAMPAT - ©Questel

Title

(EP2243353)

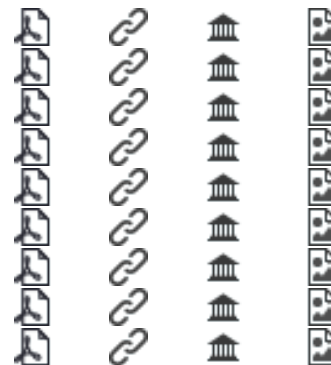
System and method for managing resource use

Images



Publication numbers with kind code & date

US9538714	B2	2017-01-10	US9538714
ES2410370	T3	2013-07-01	ES2410370
EP2243353	B1	2013-03-06	EP2243353
IN1269/MUM/2010	A	2012-08-10	IN2010MU01269
IL205120	A	2010-11-30	IL-205120
AU2010201509	A1	2010-11-04	AU2010201509
CN101872440	A	2010-10-27	CN101872440
EP2243353	A1	2010-10-27	EP2243353
US20100268562	A1	2010-10-21	US20100268562

**Abstract**

(EP2243353)

Therefore, the illustrative embodiments provide a computer implemented method and system for determining individual resource needs for each plant (126, 128, 130) in a plurality of plants (110). Current conditions are identified using a sensor (112) system. A plurality of per plant prescriptions are calculated for the plurality of plants (110) using the individual resource needs and the current conditions. A resource is obtained from a selected resource source (114, 116, 118, 120, 122, 124) in a number of resource sources (108). The resource is stored in a mobile utility vehicle (104) and applied from the mobile utility vehicle to each plant (126, 128, 130) in the plurality of plants (110) according to the plurality of per plant prescriptions.

Inventors

ANDERSON NOEL WAYNE

Latest standardized assignees - inventors removed

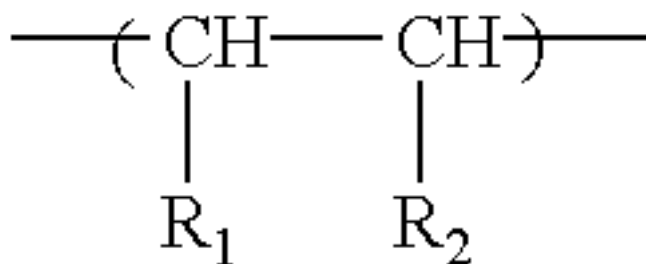
DEERE

Family 52/100 - FAMPAT - ©Questel

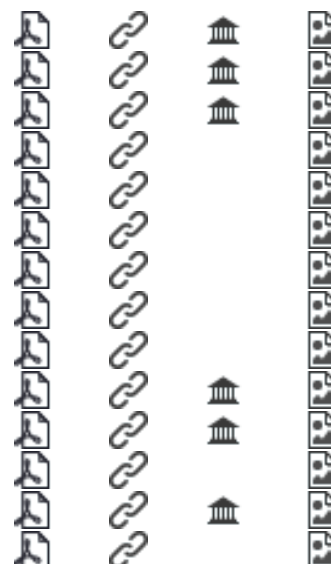
Title

(EP1282654)

Anionic vinyl/dicarboxylic acid polymers and uses thereof

Images**Publication numbers with kind code & date**

BRPI0110523	B8	2015-12-22	BR200110523
BR0110523	B1	2013-10-29	BR200110523
EP2415736	A2	2012-02-08	EP2415736
MX279937	B	2010-10-14	MX-279937
MX277332	B	2010-07-16	MX-277332
MX277333	B	2010-07-16	MX-277333
MX277334	B	2010-07-16	MX-277334
MX277335	B	2010-07-16	MX-277335
MX276344	B	2010-06-03	MX-276344
EP1282654	A4	2010-04-14	EP1282654
IL152576	B	2010-02-17	IL-152576
MX272785	B	2009-12-15	MX-272785
CA2407948	C	2009-11-17	CA2407948
PL203290	B1	2009-09-30	PL-203290



PL203290	B1	2009-09-30	PL-203290				
HK1059942	A1	2008-11-28	HK1059942				
TWI294429	B	2008-03-11	TWI294429				
CN100363393	C	2008-01-23	CN100363393C				
KR100779763	B1	2007-11-27	KR100779763				
RU2260604	C9	2007-04-27	RU2260604				
YU81302	A	2006-05-25	YU200200813				
UA74575	C2	2006-01-16	UA--74575				
RU2260604	C2	2005-09-20	RU2260604				
AU2001257507	B2	2005-05-19	AU2001257507				
NZ522409	A	2005-04-29	NZ-522409				
PL365451	A1	2005-01-10	PL2001365451				
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JP2004515561	A	2004-05-27	JP2004515561				
MXPA02010741	A	2004-05-17	MX2002PA010741				
ZA200208782	B	2003-11-25	ZA200208782				
CN1446232	A	2003-10-01	CN1446232				
HU0300633	A2	2003-07-28	HU200300633				
US6596831	B2	2003-07-22	US6596831				
KR20030061304	A	2003-07-18	KR20030061304				
IL152576	A	2003-05-29	IL-152576				
US6566477	B2	2003-05-20	US6566477				
US6525155	B2	2003-02-25	US6525155				
EP1282654	A2	2003-02-12	EP1282654				
US6518382	B2	2003-02-11	US6518382				
US6515090	B1	2003-02-04	US6515090				
US6515091	B2	2003-02-04	US6515091				
US6515092	B2	2003-02-04	US6515092				
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US20020161152	A1	2002-10-31	US20020161152				
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US20020077436	A1	2002-06-20	US20020077436				
US20020049291	A1	2002-04-25	US20020049291				
WO01/82869	A3	2002-03-14	WO200182869				
AU5750701	A	2001-11-12	AU200157507				
CA2407948	A1	2001-11-08	CA2407948				
WO01/82869	A2	2001-11-08	WO200182869				

Abstract

(EP1282654)

Biodegradable anionic polymers are disclosed which include recurring polymeric subunits preferably made up of vinylic and dicarboxylic monomers such as vinyl acetate or vinyl alcohol and maleic anhydride, itaconic anhydride or citraconic anhydride, or combinations thereof. Free radical polymerization is used in the synthesis of the polymers, which are then hydrolyzed to replace ester groups with alcohol groups. The polymers may be complexed with ions and/or mixed with fertilizers or seed to yield agriculturally useful compositions. The preferred products of the invention may be applied foliarly, to seeds, to fertilizer, or to the earth adjacent growing plants in order to enhance nutrient uptake by the plants.

Inventors

SANDERS JOHN LARRY

KIMMERLY JAMES MICHAEL

MAZO GRIGORY

Latest standardized assignees - inventors removed

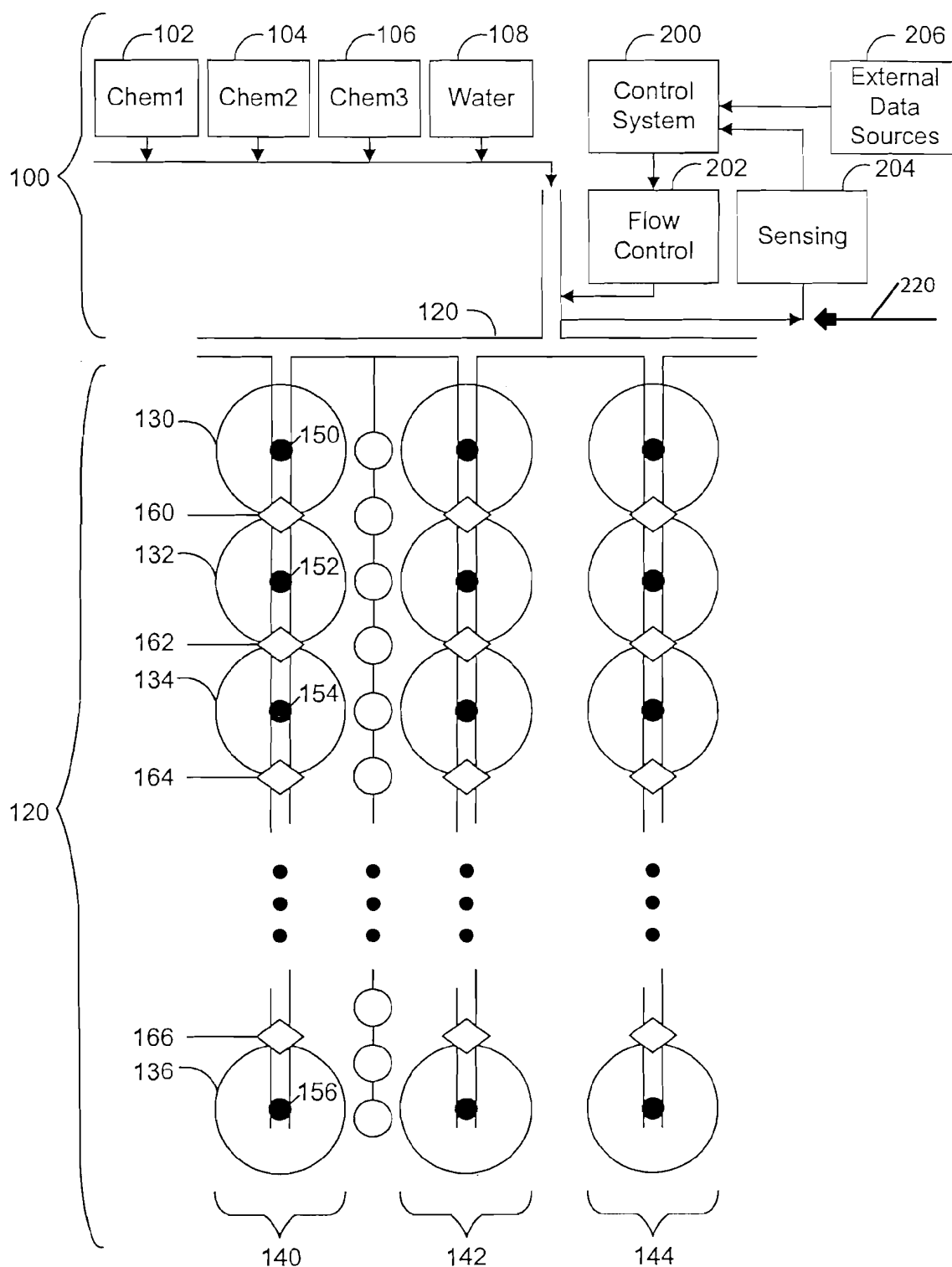
VERDESIAN LIFE SCIENCES

Family 53/100 - FAMPAT - ©Questel

Title

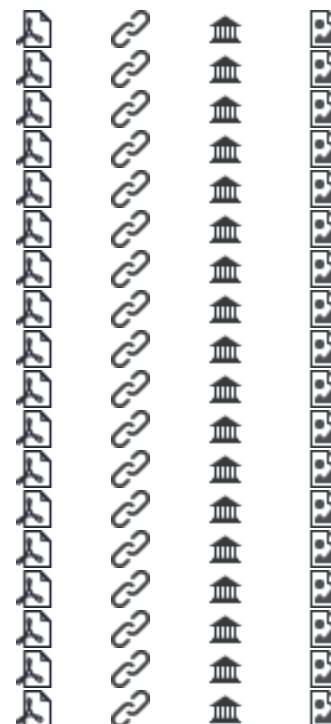
(EP1392101)

System for automated monitoring and maintenance of crops including computer control of irrigation and chemical delivery using multiple channel conduit

Images

Publication numbers with kind code & date

US10440896	B2	2019-10-15	US10440896
US20170295732	A1	2017-10-19	US20170295732
US9635815	B2	2017-05-02	US9635815
US20130318867	A1	2013-12-05	US20130318867
US8528834	B2	2013-09-10	US8528834
US20090105886	A1	2009-04-23	US20090105886
US7487925	B2	2009-02-10	US7487925
AU2002257354	B8	2008-08-14	AU2002257354
EP1392101	B1	2008-07-16	EP1392101
AU2002257354	B2	2008-04-17	AU2002257354
US6947810	B2	2005-09-20	US6947810
US20050072862	A1	2005-04-07	US20050072862
US6874707	B2	2005-04-05	US6874707
EP1392101	A2	2004-03-03	EP1392101
US20030177841	A1	2003-09-25	US20030177841
WO02/96189	A3	2003-06-26	WO200296189
US20020183935	A1	2002-12-05	US20020183935
WO02/96189	A2	2002-12-05	WO200296189

**Abstract**

(EP1392101)

A system (100) for automating the growing of crops, such as grapevines. Combinations of data from sensors (160, 162, 164, 166) local to a vineyard, and from optional remote stations and sensors, is combined with a control system to accurately control the dispensing of water and chemicals such as insecticides, disease prevention fungicides and fertilizers. The materials are dispensed through a multiple channel conduit which allows conflicting, or incompatible, types of materials to be transported through a common assembly. Sensors (160, 162, 164, 166) are attached to the conduit so that the placement of sensors (160, 162, 164, 166) can occur simultaneously with the laying of the conduit. This approach also ensures correct placement and spacing of the sensors (160, 162, 164, 166) with respect to each plant, or plant area, to be monitored and treated.

Inventors

SKINNER PAUL W

Latest standardized assignees - inventors removed

VINEYARD INVESTIGATIONS

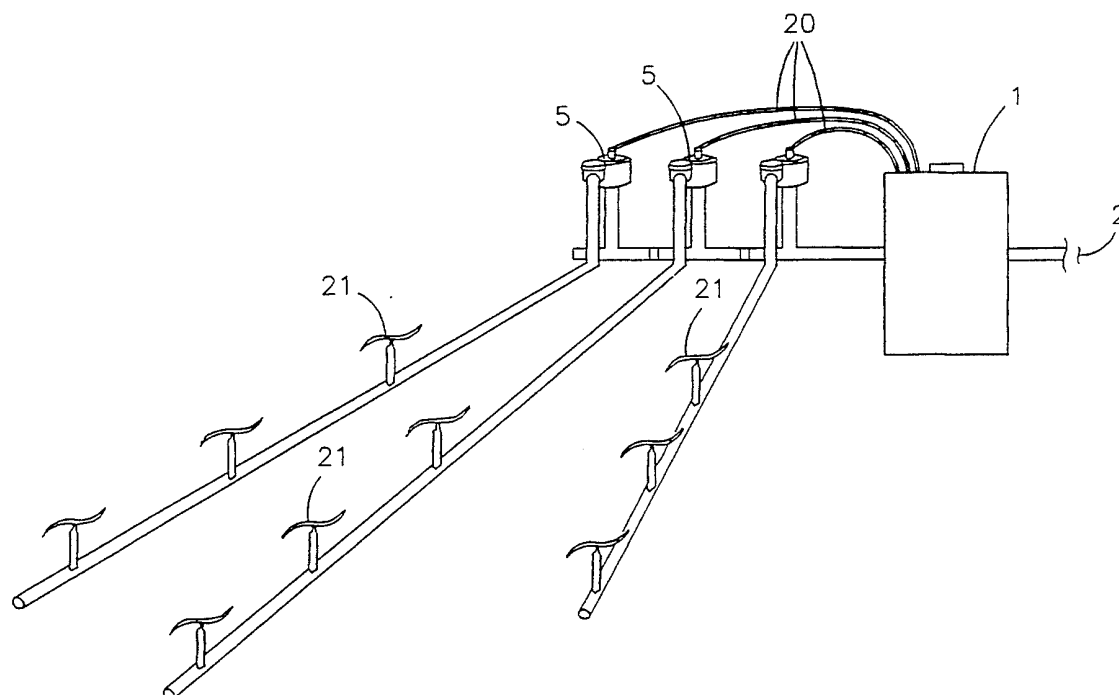
Family 54/100 - FAMPAT - ©Questel

Title

(US5366159)

Automatic lawn and garden feeding apparatus

Images

**Publication numbers with kind code & date**

US5366159 A 1994-11-22 US5366159

**Abstract**

(US5366159)

An automatic fertilizing apparatus which injects fertilizer directly into the waterstream of a sprinkler system. Each time the sprinkler system is activated, a predetermined amount of fertilizer is dispensed into the waterstream. The apparatus can be controlled to dispense fertilizer only thru sprinkler lines determined by the user.

Inventors

CHILDERS LANCE L

Family 55/100 - FAMPAT - ©Questel

Title

(WO200884495)

Novel agricultural composition

Publication numbers with kind code & date

AU2007343066	C1	2017-06-08	AU2007343066
IN282429	B	2017-04-14	IN-282429
CN101657395	B	2014-03-12	CN101657395B
MY149529	A	2013-09-13	MY-149529
VN0011462	B	2013-07-25	VN--11462B
KR101253264	B1	2013-04-10	KR101253264
NZ578325	A	2012-08-31	NZ-578325
US8241387	B2	2012-08-14	US8241387
AU2007343066	B2	2011-09-01	AU2007343066
CN101657395	A	2010-02-24	CN101657395
IN1296/MUMNP/2009	A	2010-01-08	IN2009MN01296
US20090308122	A1	2009-12-17	US20090308122
KR20090105935	A	2009-10-07	KR20090105935
WO2008/084495	A3	2008-10-02	WO200884495
AU2007343066	A1	2008-07-17	AU2007343066
WO2008/084495	A2	2008-07-17	WO200884495
IN0040/MUM/2007	A	2007-02-02	IN2007MU00040



Abstract

(WO2008/084495)

The invention relates to an agricultural composition wherein the composition comprises an effective amount of a sulphur active ingredient and at least one dispersing agent.

Inventors

SHAH DEEPAK PRANJIVANDAS

Latest standardized assignees - inventors removed

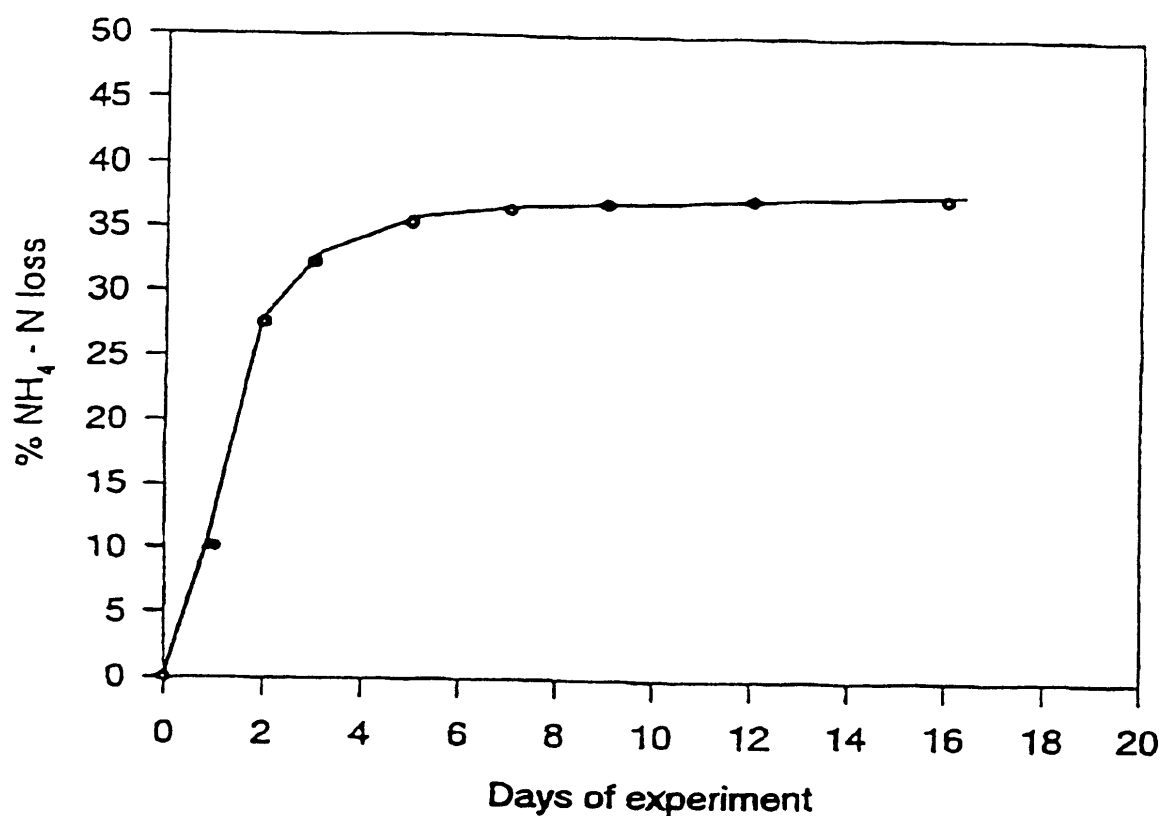
SHAH DEEPAK PRANJIVANDAS

Family 56/100 - FAMPAT - ©Questel

Title

(EP1373914)

Anionic polymers composed of dicarboxylic acids and uses thereof

Images**Cumulative NH_4 - N loss from urea****Publication numbers with kind code & date**

HU230430	B1	2016-06-28	HU-230430
PL206155	B1	2010-07-30	PL-206155
NO328421	B1	2010-02-15	NO-328421
IL157695	B	2009-09-22	IL-157695
KR100900371	B1	2009-06-02	KR100900371
CA2443486	C	2009-01-20	CA2443486
DE60223660	T2	2008-10-30	DE60223660
JP4156375	B2	2008-07-18	JP4156375
ES2295366	T3	2008-04-16	ES2295366
HK1061716	A1	2008-04-03	HK1061716
PT1373914	E	2008-02-14	PT1373914



PT1373914	E	2008-02-14	PT1373914				
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TWI291964	B	2008-01-01	TWI291964				
EP1373914	B1	2007-11-21	EP1373914				
UA80395	C2	2007-09-25	UA--80395				
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CN1280319	C	2006-10-18	CN1280319C				
AU2002306644	B2	2006-10-05	AU2002306644				
NZ528606	A	2006-03-31	NZ-528606				
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US20040234755	A1	2004-11-25	US20040234755				
US20040236052	A1	2004-11-25	US20040236052				
US20040226329	A1	2004-11-18	US20040226329				
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US20040226331	A1	2004-11-18	US20040226331				
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ZA200307451	B	2004-09-27	ZA200307451				
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EP1373914	A1	2004-01-02	EP1373914				
WO02/71086	A8	2003-11-13	WO200271086				
NO20033895	L	2003-10-22	NO20033895				
US20030194492	A1	2003-10-16	US20030194492				
US20030195315	A1	2003-10-16	US20030195315				
US20030181336	A1	2003-09-25	US20030181336				
US20030181614	A1	2003-09-25	US20030181614				
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US20030126901	A1	2003-07-10	US20030126901				
US20020165097	A1	2002-11-07	US20020165097				
CA2443486	A1	2002-09-12	CA2443486				
WO02/71086	A1	2002-09-12	WO200271086				

Abstract

(EP1373914)

Biodegradable anionic polymers are disclosed which include recurring polymeric subunits preferably made up of dicarboxylic monomers such as maleic anhydride, itaconic anhydride or citraconic anhydride. Free radical polymerization is used in the synthesis of the polymers. The polymers may be complexed with ions and/or mixed with fertilizers or seeds to

yield agriculturally useful compositions. The preferred products of the invention may be applied foliarly or to the earth adjacent growing plants in order to enhance nutrient uptake by the plants.

Inventors

SANDERS JOHN L

MAZO GRIGORY

MAZO JACOB

Latest standardized assignees - inventors removed

VERDESIA LIFE SCIENCES

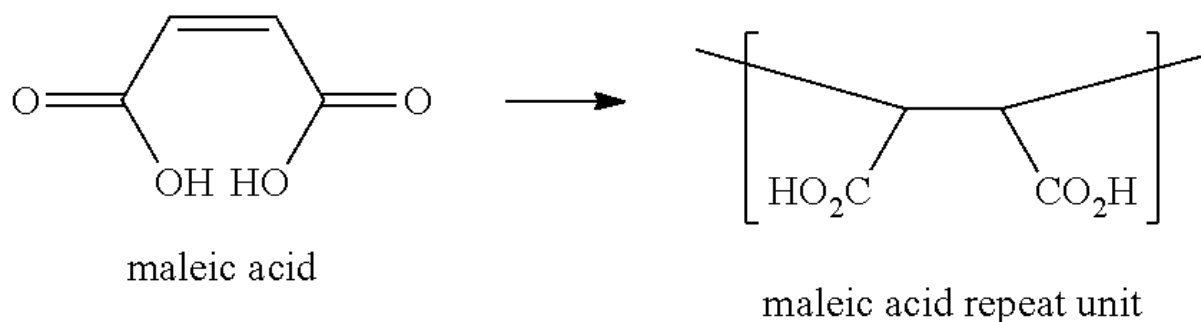
Family 57/100 - FAMPAT - ©Questel

Title

(EP3099167)

Adjuvants for plant growth regulators

Images



Publication numbers with kind code & date

EP3099167	A4	2017-09-06	EP3099167
EP3099167	A1	2016-12-07	EP3099167
US20160324149	A1	2016-11-10	US20160324149
BR112016016554	A1	2016-08-02	BR112016016554
CA2936788	A1	2015-08-06	CA2936788
WO2015/116716	A1	2015-08-06	WO2015116716



Abstract

(EP3099167)

Plant growth regulator compositions comprise an aqueous mixture of one or more plant growth regulators and one or more polyanionic polymers. The polymers contain at least about 80 mol percent of repeat units bearing at least one anionic functional group, the plant growth regulator being present at a level of up to about 6000 ppm. Preferably, the polymers contain respective amounts of maleic and itaconic repeat units.

Inventors

SANDERS JOHN LARRY

Latest standardized assignees - inventors removed

VERDESIA LIFE SCIENCES

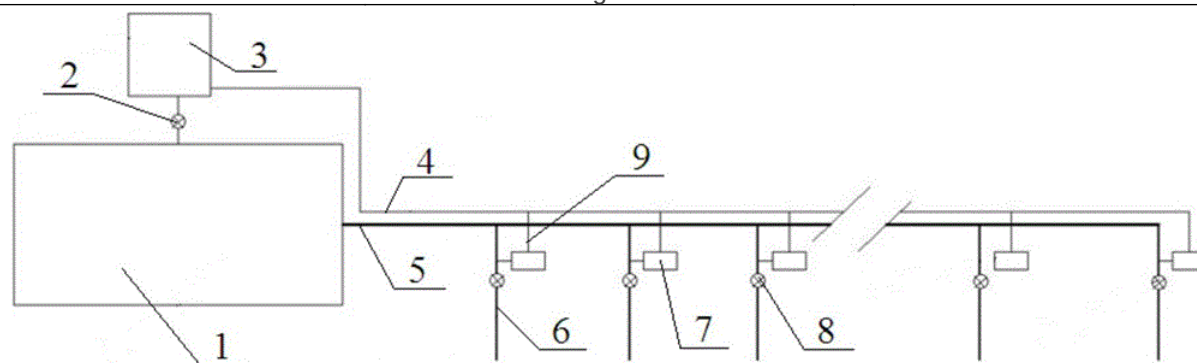
Family 58/100 - FAMPAT - ©Questel

Title

(CN104396417)

Big field micro-irrigation distributed type precise fertilizer-applying pesticide-applying device

Images



Publication numbers with kind code & date

CN104396417	B	2016-08-10	CN104396417B
CN104396417	A	2015-03-11	CN104396417



Abstract

(CN104396417)

A big field micro-irrigation distributed type precise fertilizer-applying pesticide-applying device is additionally provided with fertilizer-injection pesticide-injection systems and a fertilizer-supplying pesticide-supplying pipeline; an irrigation valve is additionally arranged on each branched water delivery pipe; a fertilizer-supplying pesticide-supplying system is communicated with a head system; the fertilizer-supplying pesticide-supplying pipeline comprises a total fertilizer-delivery pesticide-delivery pipe communicated with the fertilizer-supplying pesticide-supplying system, and branched fertilizer-delivery pesticide-delivery pipes communicated with the total fertilizer-delivery pesticide-delivery pipe; one end of each fertilizer-injection pesticide-injection system is communicated with the branched fertilizer-delivery pesticide-delivery pipe, and the other end of each fertilizer-injection pesticide-injection system is communicated with an inlet of each irrigation valve. With adopting of the mode of separate delivery of water, a fertilizer liquid and a pesticide liquid, the corresponding irrigation valves are opened according to the actual needs in the field irrigation, the fertilizer-injection pesticide-injection systems can inject the fertilizer liquid and the pesticide liquid together with water into the branched water delivery pipes, allows the fertilizer liquid, the drug liquid and water to be mixed into a whole and then be irrigated into a field, the practicability is strong, the cost is low, installation and operation are simple, and the problem of uneven fertilizer application of large-area farmland is effectively solved.

Inventors

康跃虎

KANG YUEHU

李晓彬

LI XIAOBIN

尹凤琴

YIN FENGQIN

蒋树芳

JIANG SHUFANG

郭少磊

GUO SHAOLEI

万书勤

WAN SHUQIN

Latest standardized assignees - inventors removed

INSTITUTE OF GEOGRAPHIC SCIENCES & NATURAL RESOURCES RESEARCH CAS

Family 59/100 - FAMPAT - ©Questel

Title

(EP2958877)

Fertiliser coating containing micronutrients

Images

0.3320kg

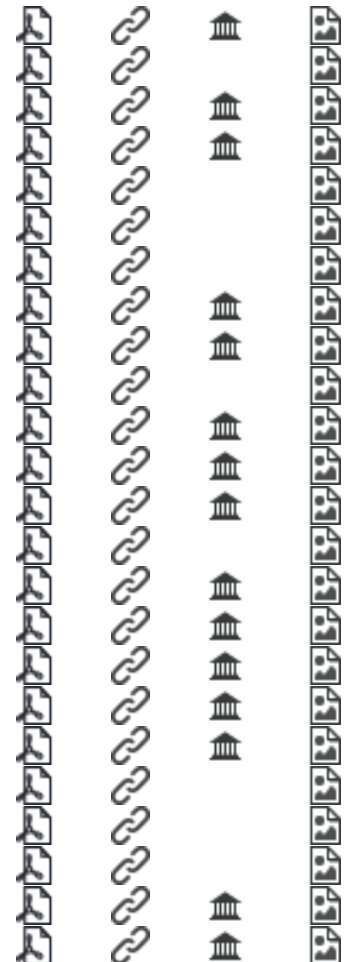
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0.0150kg

0.6230kg

1.0000kg

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PL2958877	T3	2019-01-31	PL2958877
RS57701	B1	2018-12-31	RS--57701
ZA201506584	B	2018-11-28	ZA201506584
AU2018256607	A1	2018-11-22	AU2018256607
US10118867	B2	2018-11-06	US10118867
SI2958877	T1	2018-10-30	SI2958877T
ES2687281	T3	2018-10-24	ES2687281
DK2958877	T3	2018-10-22	DK2958877T
PT2958877	T	2018-10-15	PT2958877T
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CL2015002290	A1	2016-02-19	CL201502290
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AP201508666	A0	2015-08-31	AP201508666				
AU2014220492	A1	2015-08-27	AU2014220492				
GB2513232	A	2014-10-22	GB2513232				
CA2901580	A1	2014-08-28	CA2901580				
WO2014/128468	A1	2014-08-28	WO2014128468				
GB201402971	D0	2014-04-09	GB201402971				
GB201302997	D0	2013-04-03	GB201302997				

Abstract

(EP2958877)

A single-step method for preparing a free-flowing, non-dusting micronutrient- coated particulate solid fertiliser material, the method comprising applying a single fluid onto particulate solid fertiliser material at ambient temperature without chemical reaction or chelation, said single fluid comprising a suspension of one or more micronutrient materials in an oil.

Inventors

WARD STUART CHARLES

BUTLER VICTORIA ANNE

OBRESTAD TORSTEIN

TANDE TERJE

Latest standardized assignees - inventors removed

YARA

Family 60/100 - FAMPAT - ©Questel

Title

(WO2018156189)

Multi-nutrient granular fertilizer compositions and methods of using the same

Images**Publication numbers with kind code & date**

US20200010382	A1	2020-01-09	US20200010382				
CL2019002418	A1	2020-01-03	CL201902418				
CL2019002420	A1	2020-01-03	CL201902420				
US10519072	B2	2019-12-31	US10519072				
PE20191553	A1	2019-10-24	PE155302019				
PE20191554	A1	2019-10-24	PE155402019				
CO2019009867	A2	2019-09-30	CO2019009867				

CO2019009870	A2	2019-09-30	CO2019009870				
BR112019017645	A1	2019-09-03	BR112019017645				
BR112019017664	A1	2019-09-03	BR112019017664				
AR111001	A1	2019-05-22	AR-111001				
AR110940	A1	2019-05-15	AR-110940				
CO2018002034	A1	2019-02-28	CO2018002034A1				
BR102018003628	A2	2018-12-04	BR102018003628				
BR102018003628	A1	2018-11-21	BR102018003628				
CA3054356	A1	2018-08-30	CA3054356				
CA3054408	A1	2018-08-30	CA3054408				
WO2018/156189	A1	2018-08-30	WO2018156189				
WO2018/156956	A1	2018-08-30	WO2018156956				
US20180237351	A1	2018-08-23	US20180237351				
US20180237355	A1	2018-08-23	US20180237355				
US20180237356	A1	2018-08-23	US20180237356				

Abstract

(WO2018/156189)

Granular fertilizer compositions are described herein that are capable of supplying a wide array of beneficial nutrient and compounds to soil for uptake by the root systems of plants. In preferred embodiments, the compositions provide a source of phosphorus, a source of nitrogen, a source of boron, a source of copper, a source of manganese, a source of zinc, and a source of sulfur in a single application, with highly efficient uptake by plants. The compositions generally comprise a mixture of two or three types of granules, each providing a supply of one or more nutrients. It has been discovered that the components of the three types of granules interact in a synergistic manner, such that problems associated with certain nutrients in soil are overcome, thereby providing a highly efficient multinutrient fertilizer.

Inventors

PRADA ITHAMAR

CAU PAULO CESAR

CASTELLANI MICHEL

Latest standardized assignees - inventors removed

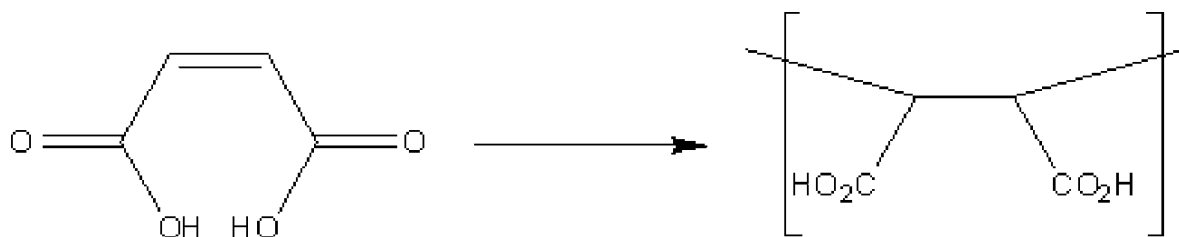
PRODUQUÍMICA INDÚSTRIA E COMÉRCIO

Family 61/100 - FAMPAT - ©Questel

Title

(WO201535031)

Polymer-boric acid compositions

Images**Publication numbers with kind code & date**

CA2923561	A1	2015-03-12	CA2923561				
WO2015/035031	A1	2015-03-12	WO201535031				

Abstract

(WO2015/035031)

Aqueous liquid formulations contain one or more anionic polymers, a high concentration of boron compounds, and a boron dispersant or solvent. The compositions are operable to maintain the boron content thereof in stable dispersion for at least

72 hours. The dispersant or solvent is selected from saturated aliphatic diols, glycols, hydroxyl-rich compounds, alcohols, and mixtures thereof. Preferred polymers include dicarboxylic repeat units and optional sulfonate repeat units. The formulations have heretofore unattainable high boron contents, and are useful in agricultural contexts.

Inventors

SANDERS JOHN LARRY

MAZO JACOB

MAZO GRIGORY

Latest standardized assignees - inventors removed

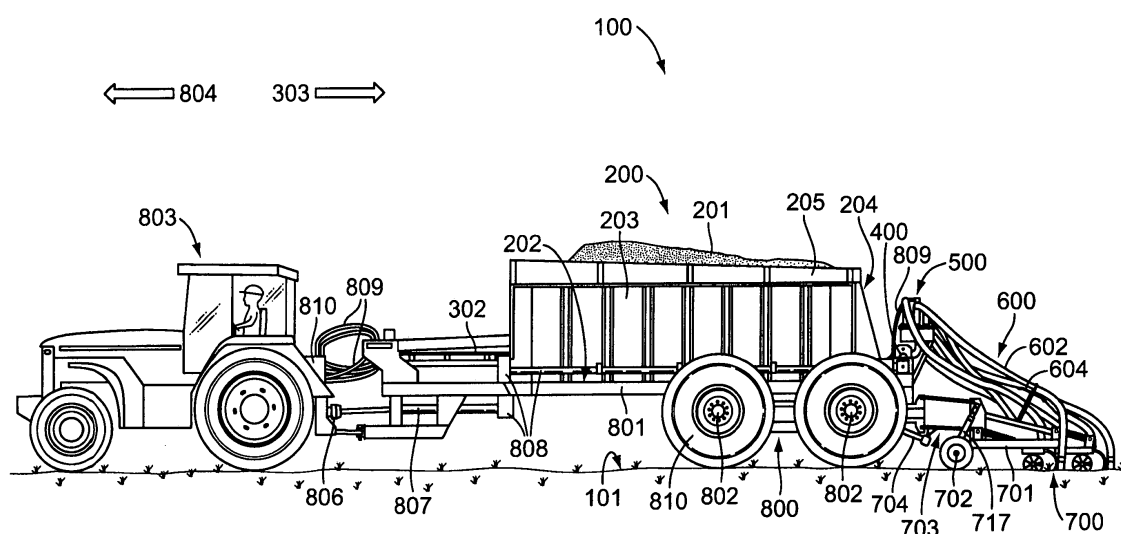
VERDESIA LIFE SCIENCES

Family 62/100 - FAMPAT - ©Questel

Title

(US7775168)

Apparatus and method for the injection of viscous fertilizer below the surface of the soil

Images**Publication numbers with kind code & date**

US8100067	B2	2012-01-24	US8100067
US20100313799	A1	2010-12-16	US20100313799
US7775168	B2	2010-08-17	US7775168
US20070245936	A1	2007-10-25	US20070245936

**Abstract**

(US20070245936)

The invention pertains to apparatus and methods for injecting viscous fertilizer, such as dewatered biosolids, below the surface of the soil. The invention also pertains to apparatus and methods for creating a continuous flow of viscous material and for dividing a flow of viscous material.

Inventors

SIDHWA PHIL

GOLDHAWK DAN

GROSE WALTER STEWART

GROSE GORDON RAYMOND

Latest standardized assignees - inventors removed

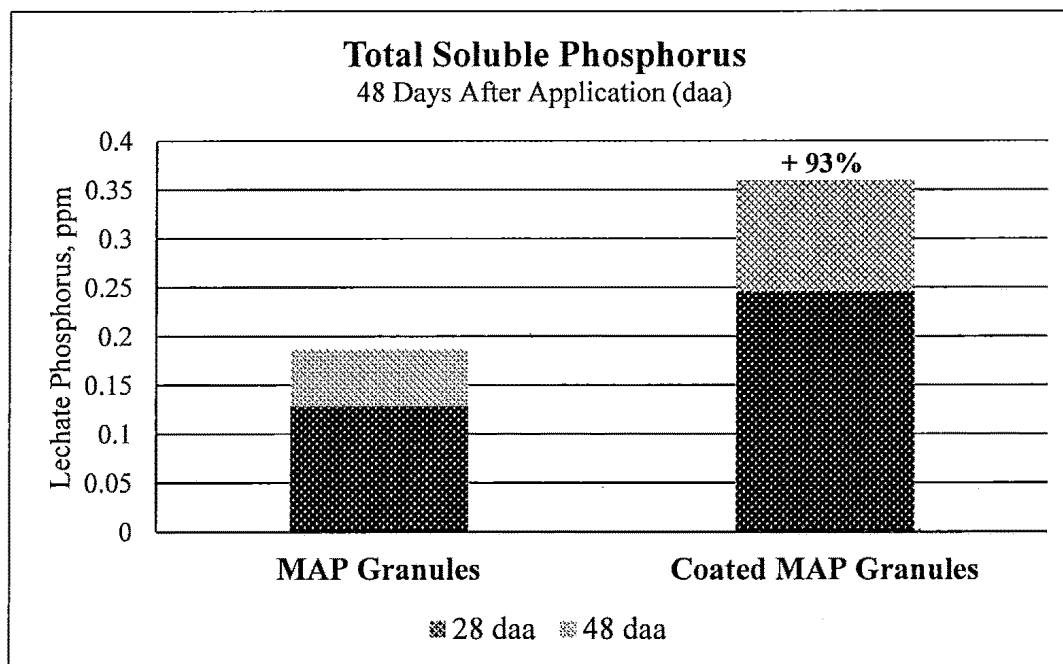
AMERICAN WATER WORKS

Family 63/100 - FAMPAT - ©Questel

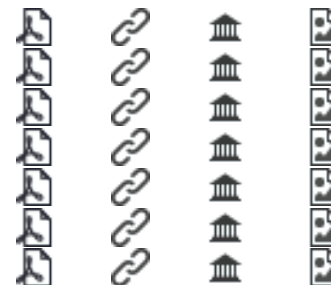
Title

(WO2016130695)

Coating for improved granular fertilizer efficiency

Images**Publication numbers with kind code & date**

US9938202	B2	2018-04-10	US9938202
US20170113978	A1	2017-04-27	US20170113978
US9540291	B2	2017-01-10	US9540291
WO2016/130695	A8	2016-09-29	WO2016130695
CA2976087	A1	2016-08-18	CA2976087
WO2016/130695	A1	2016-08-18	WO2016130695
US20160229763	A1	2016-08-11	US20160229763

**Abstract**

(WO2016/130695)

A fertilizer granule having a coating on at least of portion of a surface of the granule. The coating is made of one or more complexing agents and a coating agent of one or more of a fatty acid, fatty acid ester, organic oil mineral oil or combinations thereof. The coating may optionally include a surfactant and micronutrients. The coated fertilizer granules demonstrates a noted improvement in the utilization of the nutrients of plants and crops.

Inventors

WHEELER KORY J

YOUNG ROY M

HARMAN GREGG M

HILL MICHEAL W

Latest standardized assignees - inventors removed

LAND VIEW

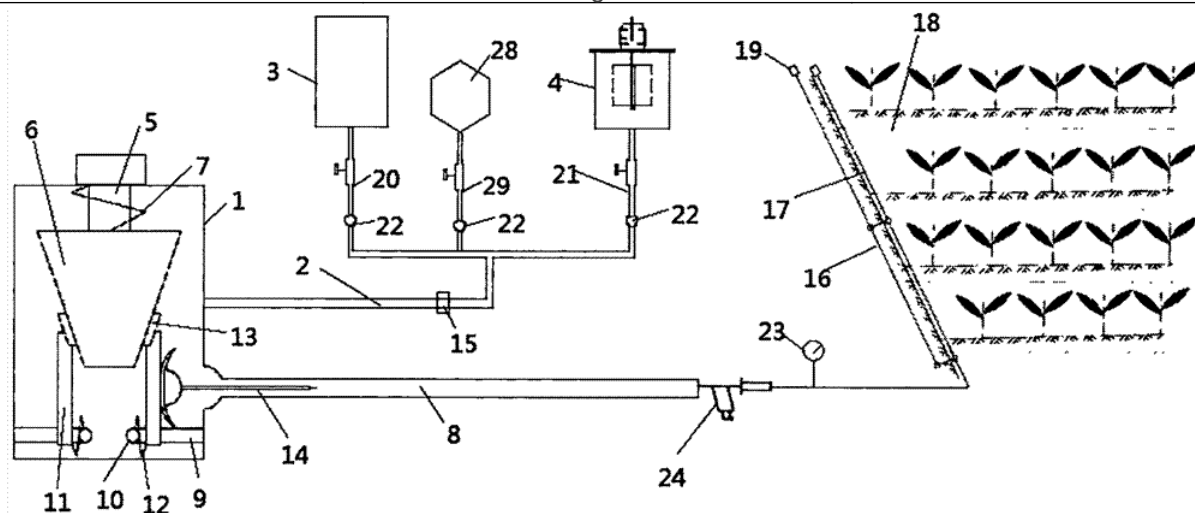
Family 64/100 - FAMPAT - ©Questel

Title

(CN109348817)

Corn planting drop irrigation device

Images



Publication numbers with kind code & date

CN109348817

A

2019-02-19

CN109348817



Abstract

(CN109348817)

The invention discloses a corn planting drop irrigation device. The corn planting drop irrigation device comprises a drum connected with an impounding reservoir, a dispensing instrument and a fertilizer preparing pool. An inserting rod is arranged on the drum, the lower portion of the inserting rod is connected with a circular truncated cone, a second spring is arranged between the circular truncated cone and the top face of the drum, and a drop irrigation pipe is arranged on the outer side of the drum. The inner side wall of the drum is connected with a supporting rod, the inner side of the supporting rod is connected with a ring, the supporting rod is sleeved with a first sliding block, and a first spring is connected between the first sliding block and the ring. The top of the first sliding block is fixedly connected with a second sliding block, the second sliding block and the side wall of the circular truncated cone are in sliding contact, the outer side of the first sliding block is connected with a first connecting block, and the first connecting block is connected with a hemispheroid. The outer side of the hemispheroid is connected with a dredging needle, and the dredging needle is movably inserted into the drop irrigation pipe. The drop irrigation pipe is communicated with a ground surface branch pipe, the ground surface branch pipe is communicated with an underground branch pipe, and the underground branch pipe is communicated with a drop irrigation zone. According to the corn planting drop irrigation device, irrigation and fertilization can be convening and faster after corn planting, labor force is saved, and water resources are saved.

Inventors

闫伟平

张丽华

王立春

边少锋

曹铁华

梁焯赫

谭国波

赵洪祥

孟祥盟

孙宁

陈宝玉

王洪君

李海

YAN WEIPING

ZHANG LIHUA

WANG LICHUN

BIAN SHAOFENG

CAO TIEHUA

LIANG XUANHE

TAN GUOBO

ZHAO HONGXIANG

MENG XIANGMENG

SUN NING

CHEN BAOYU

WANG HONGJUN

LI HAI

Latest standardized assignees - inventors removed

JILIN ACADEMY OF AGRICULTURAL SCIENCES

Family 65/100 - FAMPAT - ©Questel

Title

(US20010034304)

Manufacture and use of an deposition aid

Publication numbers with kind code & date

US6939555	B2	2005-09-06	US6939555
US20040211234	A1	2004-10-28	US20040211234
US20020108415	A1	2002-08-15	US20020108415
US20010034304	A1	2001-10-25	US20010034304

**Abstract**

(US20010034304)

A homogenous composition which contains at least one pesticide and at least one deposition or drift agent.

Inventors

VOLGAS GREG

ROBERTS JOHNNIE R

MACK ROBERT

Latest standardized assignees - inventors removed

HELENA HOLDING

HELENA AGRI ENTERPRISES

Family 66/100 - FAMPAT - ©Questel

Title

(EP1871727)

Sequestering agent for micronutrient fertilisers

Images

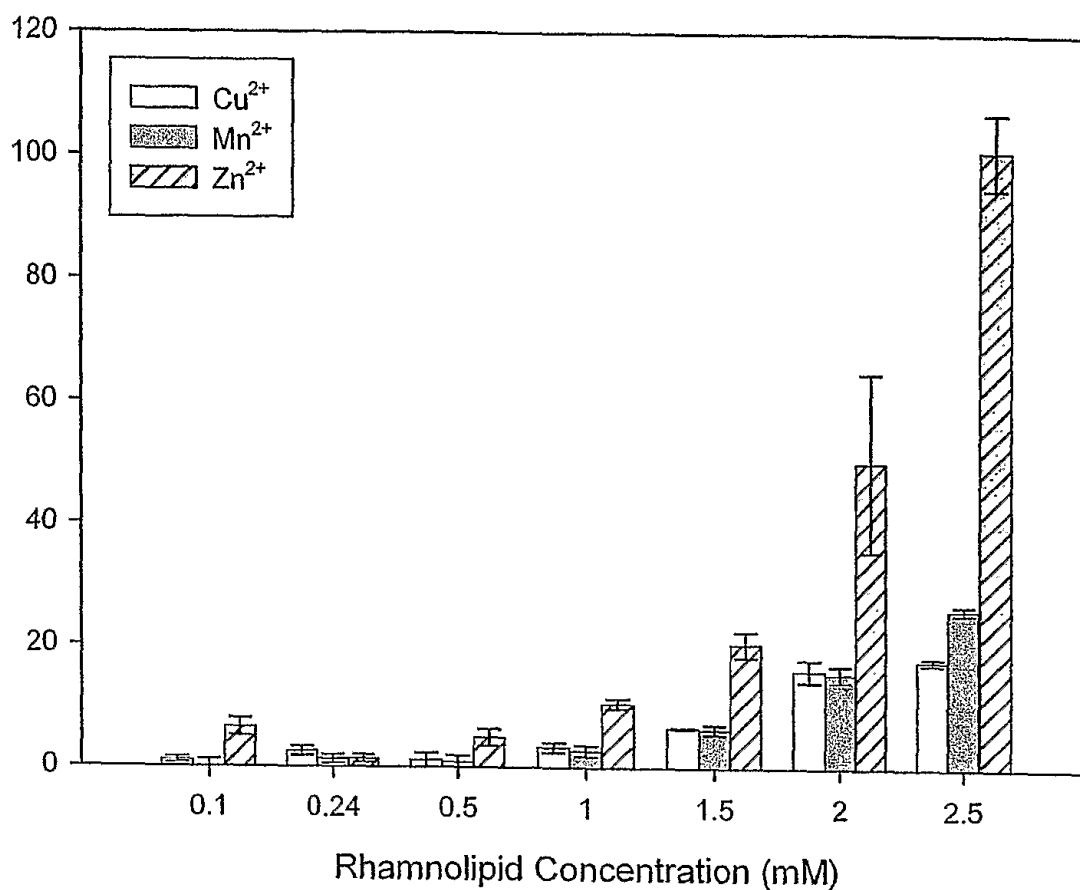
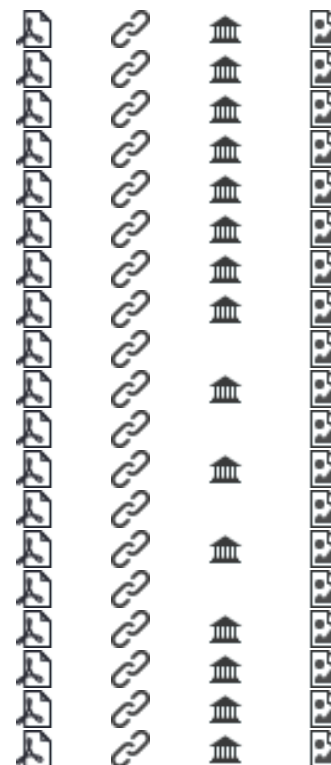


Fig 1

Publication numbers with kind code & date

US8217004	B2	2012-07-10	US8217004
CN101142154	B	2012-06-20	CN101142154B
CA2602756	C	2012-01-10	CA2602756
IN250010	B	2011-12-02	IN-250010
EP1871727	A4	2011-11-30	EP1871727
NZ561407	A	2011-02-25	NZ-561407
AU2006225072	B2	2010-09-09	AU2006225072
BRPI0608507	A2	2010-01-05	BR200608507
CR9411	A	2009-01-14	CR---9411
US20080293570	A1	2008-11-27	US20080293570
MX2007011367	A	2008-04-09	MX2007011367
CN101142154	A	2008-03-12	CN101142154
ECSP077813	A	2008-01-23	EC200707813
EP1871727	A1	2008-01-02	EP1871727
TR200707151	T2	2007-12-24	TR200707151
IN1536/MUMNP/2007	A	2007-11-23	IN2007MN01536
AU2006225072	A1	2006-09-21	AU2006225072
CA2602756	A1	2006-09-21	CA2602756
WO2006/096912	A1	2006-09-21	WO200696912



Abstract

(EP1871727)

According to the present invention, there is provided a method of sequestering micronutrients when used to provide the

micronutrients to a plant, which comprises applying to an area of the plant or soil/substrate surrounding the plant an effective amount of a plant fertiliser composition comprising a surfactant, such as general formula (III), that is capable of forming coordinate bonds with micronutrients.

Inventors

MCLAUGHLIN MIKE

STACEY SAMUEL

LOMBI ENZO

Latest standardized assignees - inventors removed

ADELAIDE RESEARCH & INNOVATION

CSIRO - COMMONWEALTH SCIENTIFIC & INDUSTRIAL RESEARCH ORGANISATION

Family 67/100 - FAMPAT - ©Questel

Title

(WO200238522)

Soil improving and fertilising composition

Images

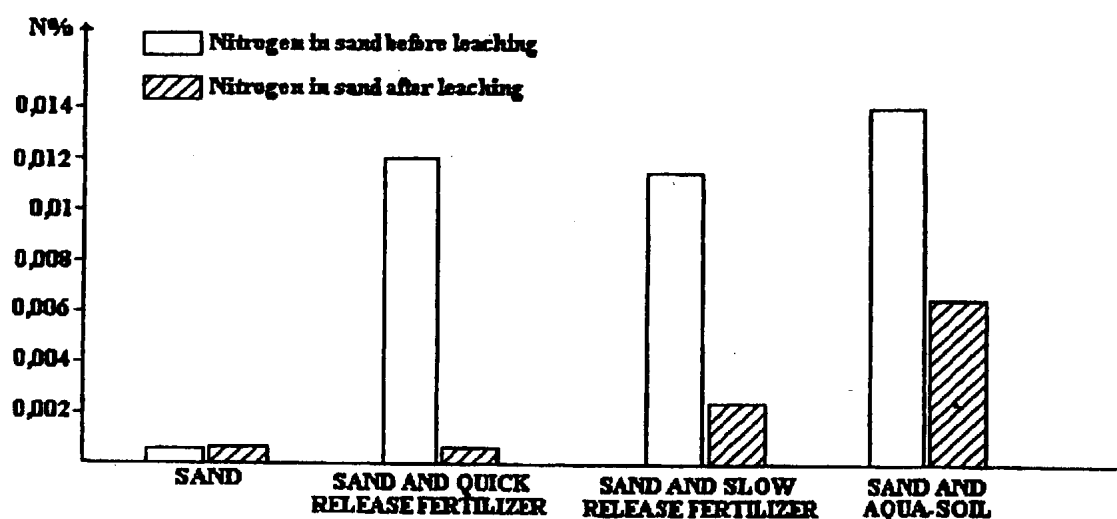
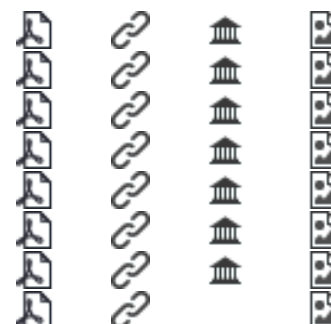


Figure 1

Publication numbers with kind code & date

US20030205072	A1	2003-11-06	US20030205072
WO02/38522	B1	2003-09-18	WO200238522
BR0115269	A	2003-08-12	BR200115269
WO02/38522	A3	2003-02-20	WO200238522
CN1353163	A	2002-06-12	CN1353163
AU1352102	A	2002-05-21	AU200213521
WO02/38522	A2	2002-05-16	WO200238522
ZA200108284	B	2001-11-14	ZA200108284



Abstract

(WO02/38522)

The invention provides a process for preparing a soil improving and fertilising composition from fertiliser and crosslinked copolymer, the process including imparting an electrical charge to at least one of said copolymer and the fertiliser and bringing said copolymer and fertiliser into intimate contact with each other. The fertiliser and crosslinked copolymer are believed to be mechanically fused to form the composition. The invention extends to a composition and to an agricultural or horticultural method using the composition.

Inventors

VAN DER MERWE PIETER GIDEO

Latest standardized assignees - inventors removed

AQUA SOIL

Family 68/100 - FAMPAT - ©Questel

Title

(EP-846408)

Method for treatment of waste material

Images

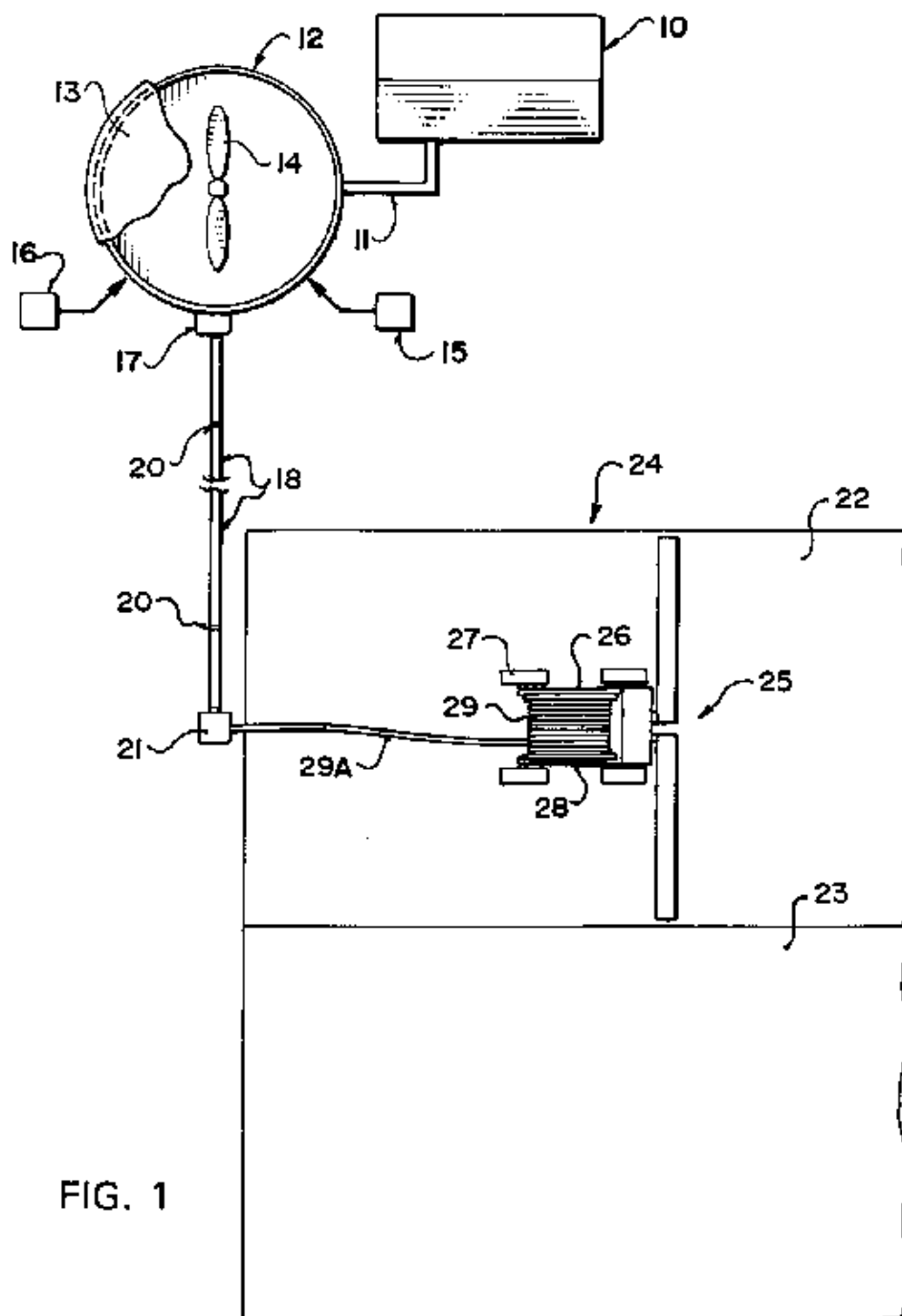
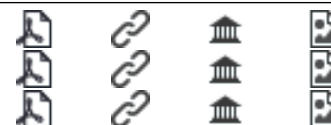


FIG. 1

EP0846408	B1	2002-08-21	EP-846408
US5907925	A	1999-06-01	US5907925
EP0846408	A1	1998-06-10	EP-846408

**Abstract**

(EP0846408)

A method of treating waste materials such as city sewage or animal manure which may contain toxic chemicals includes supplying the waste materials in slurry form using a dispensing machine in the field to a fibrous crop material so that the waste materials, water and toxic chemicals are taken up by the fibrous materials in the plant to avoid toxic materials collecting in the soil. The amount of phosphorous in the manure is measured at the spreading vehicle by measuring the density of the manure and the level of nitrogen is measured at the spreading vehicle by measuring NH₄ content. The volume of materials supplied to the field is controlled dependent upon the phosphorous level so as to avoid applying a level of phosphorous greater than permitted. The amount of nitrogen can be supplemented at the vehicle from a separate tank.

<IMAGE>

Inventors

GUYOT JEAN NOEL

Family 69/100 - FAMPAT - ©Questel

Title

(EP2906052)

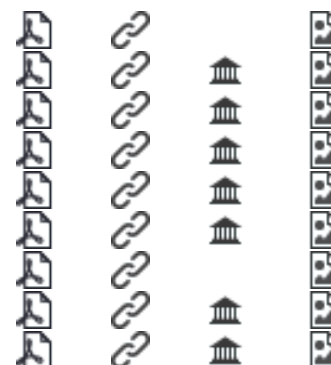
Nutritious inorganic iron composition

Images

	Solution nutritive	Valeurs cibles pour le milieu racinaire
Conductivité électrique (mS/cm)	2,5 - 3,5	2,70
PH	5,0 - 5,6	5 - 6
NH ₄ (mM)	1,7	0,1
K (mM)	10,8	8
Ca (mM)	5,4	6,5
Mg (mM)	1,9	3,0
NO ₃ (mM)	21,6	18
SO ₄ (mM)	1,9	3,5
P (mM)	1,7	1,25
Fe (M)	15	25
Mn (μM)	10	7,0
Zn (μM)	5,0	7,0
B (μM)	35	50
Cu (μM)	0,8	1,5
Mo (μM)	0,5	1,0

Publication numbers with kind code & date

MX366687	B	2019-07-19	MX-366687
BR112015007885	A2	2017-07-04	BR112015007885
EA027035	B1	2017-06-30	EA--27035
ES2609134	T3	2017-04-18	ES2609134
IL238069	B	2017-03-30	IL-238069
MA37988	B1	2017-01-31	MA--37988
ZA201502596	B	2016-11-30	ZA201502596
US9505664	B2	2016-11-29	US9505664
EP2906052	B1	2016-10-05	EP2906052



EP2906052	B1	2016-10-05	EP2906052				
IN3176/DELNP/2015	A	2016-08-31	IN2015DN03176				
AU2013329811	B2	2016-08-18	AU2013329811				
MA37988	A1	2016-05-31	MA--37988				
MX2015004441	A	2015-09-25	MX2015004441				
US20150251963	A1	2015-09-10	US20150251963				
EA201590584	A1	2015-08-31	EA201590584				
EP2906052	A1	2015-08-19	EP2906052				
IL238069	A	2015-05-31	IL-238069				
AU2013329811	A1	2015-05-07	AU2013329811				
AP201508370	A0	2015-04-30	AP201508370				
BR112015007885	A1	2015-04-22	BR112015007885				
CA2886193	A1	2014-04-17	CA2886193				
WO2014/056690	A1	2014-04-17	WO201456690				

Abstract

(EP2906052)

The present invention relates to an inorganic liquid nutritive composition comprising at least one aqueous phase, a polyphosphate and at least one source of iron as micronutrient, having a Ppoly/Fetotal molar ratio of between 5 and 50.

Inventors

CAPPELLE PHILIPPE JACQUES MYRIAM

VERHELST KURT THIERRY S

Latest standardized assignees - inventors removed

PRAYON

Family 70/100 - FAMPAT - ©Questel

Title

(US4701204)

Composite comprising a substrate coated with polymeric complexes

Publication numbers with kind code & date[US4701204](#) A 1987-10-20 US4701204**Abstract**

(US4701204)

A composite comprising a substrate and an elastomeric coating adhered to at least one surface of said substrate, said elastomeric coating having a thickness of about 1 to about 100 micrometers, wherein said elastomeric coating comprises an interpolymetric complex of a neutralized sulfonated polymer and an amine containing polymer, said neutralized sulfonated polymer having a sulfonate content of about 4 to about 200 meq. per 100 grams of said neutralized sulfonated polymer and said amine containing polymer containing basic nitrogen atoms wherein the basic nitrogen content ranges from about 4 to about 500 meq. per 100 grams of polymer.

Inventors

DUVDEVANI ILAN

MANALASTAS PACIFICO V

DRAKE EVELYN N

THALER WARREN A

Latest standardized assignees - inventors removed

EXXONMOBIL RESEARCH & ENGINEERING

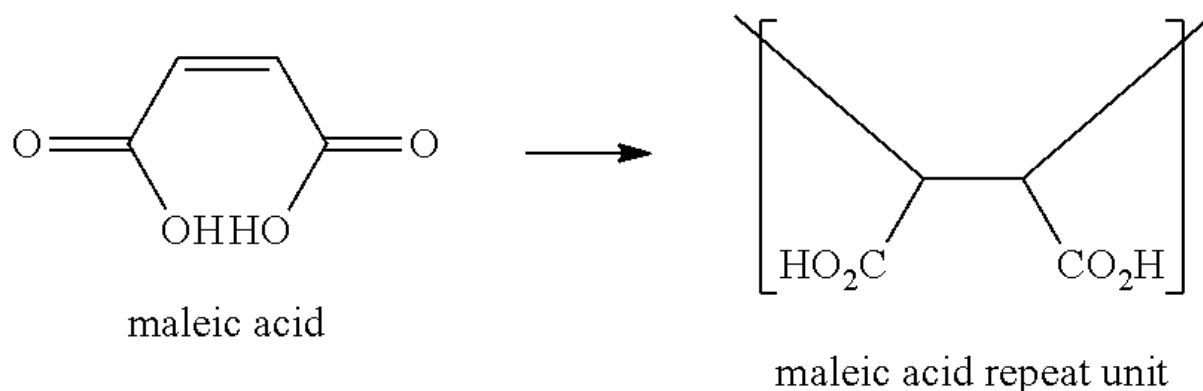
Family 71/100 - FAMPAT - ©Questel

Title

(US20160185678)

Polymer-boric acid compositions

Images



Publication numbers with kind code & date

US20160185678

A1 2016-06-30

US20160185678



Abstract

(US20160185678)

Aqueous liquid formulations contain one or more anionic polymers, a high concentration of boron compounds, and a boron dispersant or solvent. The compositions are operable to maintain the boron content thereof in stable dispersion for at least 72 hours. The dispersant or solvent is selected from saturated aliphatic diols, glycols, hydroxyl-rich compounds, alpha-hydroxy acids, and mixtures thereof. Preferred polymers include dicarboxylic repeat units and optional sulfonate repeat units. The formulations have heretofore unattainable high boron contents, and are useful in agricultural contexts.

Inventors

SANDERS JOHN LARRY

MAZO JACOB

MAZO GRIGORY

Latest standardized assignees - inventors removed

VERDESIAN LIFE SCIENCES

Family 72/100 - FAMPAT - ©Questel

Title

(WO201045687)

Fertiliser composition

Images

	粪肥	施可保 的量	加入 的水	注释	加入的水	注释
对照	100 g 粪肥	无	100 mL	三分钟后吸收 很少的水		
样品 1	99 g 粪肥	1 g	100 mL	三分钟后不能 吸水	50 mL	1.06 分钟内 完全吸收
样品 2	98 g 粪肥	2 g	100 mL	3.21 分钟后无 自由水	50 mL	41 秒后无自 由水
样品 3	95 g 粪肥	5 g	100 mL	1.26 分钟后无 自由水	干燥 40 小 时后 加水 100 mL	9秒后无自由 水
样品 4	92.5 粪肥	7.5 g	100 mL	1.08 分钟后无 自由水	干燥 40 小 时后 加水 100 mL	9秒后无自由 水

Publication numbers with kind code & date

AU2009307048

B2 2014-11-13

AU2009307048

US8562710

B2 2013-10-22

US8562710



US20110314882	A1	2011-12-29	US20110314882				
CN102264218	A	2011-11-30	CN102264218				
AU2009307048	A1	2010-04-29	AU2009307048				
WO2010/045687	A1	2010-04-29	WO201045687				

Abstract

(WO2010/045687)

This invention relates to a storage stable fertiliser composition in the form of pellets or granules comprising an organic fertiliser in admixture with a water absorbent polymer. This invention also relates to a process for producing a storage stable fertiliser composition, the process comprising: i) mixing an organic fertiliser and a water absorbent polymer to form a mixture; ii) pelletising or granulating the mixture; and iii) drying the pellets or granules for a time and under conditions sufficient to form a storage stable fertiliser composition.

Inventors

PALMER SCOTT ANDREW

SCOTT NICOLE JOANNE

WHITE JAMES MATTHEW

Latest standardized assignees - inventors removed

DULUXGROUP

Family 73/100 - FAMPAT - ©Questel

Title

(EP-954514)

Fertilizer compositions including chelated metal ions

Publication numbers with kind code & date

ES2531158	T3	2015-03-11	ES2531158			
EP0954514	B1	2014-12-31	EP-954514			
TH39451	B	2014-03-28	TH--39451B			
IN195530	B	2009-07-24	IN-195530			
CA2271477	C	2007-02-20	CA2271477			
CN1128774	C	2003-11-26	CN1128774C			
IL129920	B	2002-08-14	IL-129920			
EG21743	A	2002-02-27	EG--21743			
JP2001504430	A	2001-04-03	JP2001504430			
EP0954514	A4	2001-03-14	EP-954514			
AU724180	B2	2000-09-14	AU-724180			
AR010290	A1	2000-06-07	AR--10290			
NZ335748	A	2000-03-27	NZ-335748			
BR9713503	A	2000-02-29	BR9713503			
IL129920	A	2000-02-29	IL-129920			
CN1244852	A	2000-02-16	CN1244852			
US5997600	A	1999-12-07	US5997600			
EP0954514	A1	1999-11-10	EP-954514			
PE76099	A1	1999-08-18	PE9900760			
GT199700120	A	1999-05-07	GT199700120			
TH30051	A	1998-09-10	TH--30051			
AU5358998	A	1998-06-03	AU9853589			
CA2271477	A1	1998-05-22	CA2271477			
WO98/21166	A1	1998-05-22	WO9821166			

Abstract

(EP0954514)

The present invention is directed to fertilizer additives and compositions, and to methods for their preparation and

administration to plants. The fertilizer additives include chelated metal ions of the transition and alkaline earth metals. The chelated metal solutions are prepared by complexing metal cations using an organic acid and an organic amine. The fertilizer additives include a sufficient quantity of amine to maintain the pH above about 7.5 and preferably about 8-11. While the source of the metal ions may be any biologically acceptable metal salt, the metal oxides are preferred. The preferred chelating agents are citric acid and a difunctional amine. The preferred amines are 2-hydroxyethylamine, dimethylaminopropylamine and mixtures thereof. Additive solutions containing such chelated metals are stable at alkaline pH and are used to prepare clear, liquid fertilizer compositions for delivery of trace metals to plants.

Inventors

DEAN FRANK W

Latest standardized assignees - inventors removed

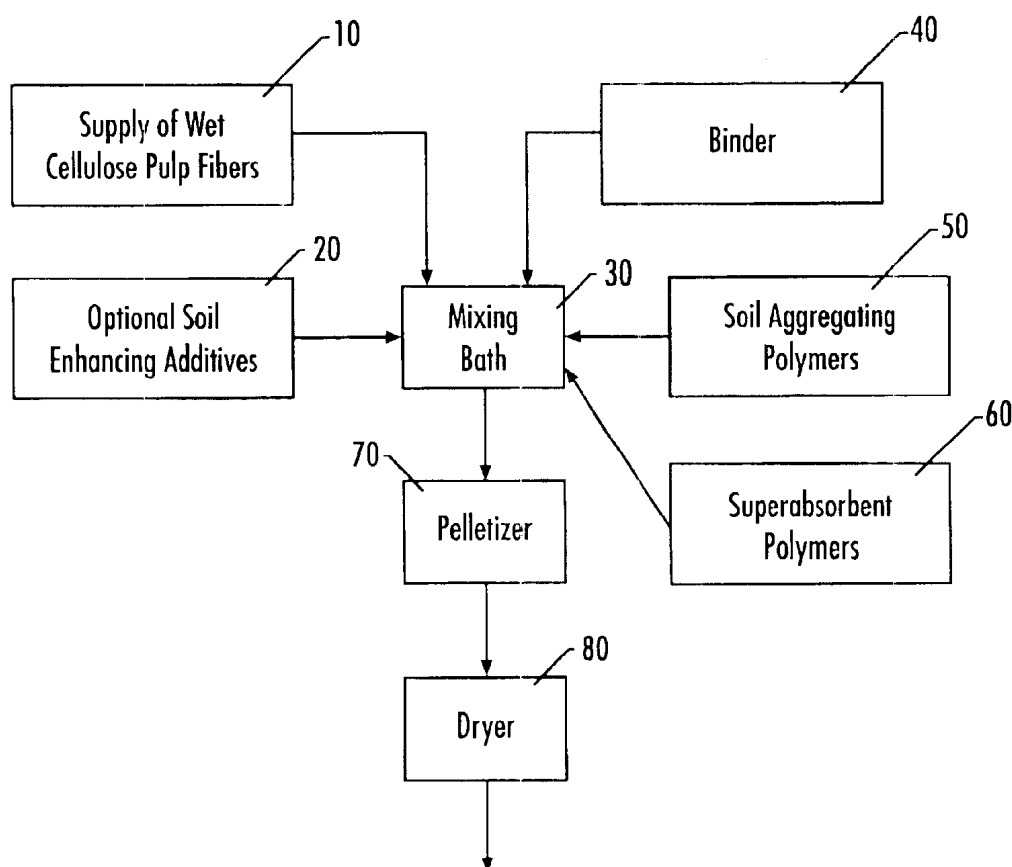
STOLLER ENTERPRISES

Family 74/100 - FAMPAT - ©Questel

Title

(US6855182)

Lignocellulose fiber composite with soil conditioners

Images**FIG. 1****Publication numbers with kind code & date**

US6855182

B2 2005-02-15

US6855182

US20040011102

A1 2004-01-22

US20040011102



Abstract

(US20040011102)

A pellet for use in conditioning soil made of a lignocellulose fiber matrix having up to 20% by weight of a soil conditioning material incorporated therein. The soil conditioning material comprises one or more synthetic soil conditioning polymers and, optionally, additional soil enhancing additives such as fertilizers, gypsum, and calcium salts. The preferred lignocellulose materials are pulp fibers with an alpha-cellulose purity of greater than about 75% by weight, with preferred lignin content of no higher than 10%. The soil conditioning polymers are preferably polyacrylamides (PAMs) or modified PAMs, but may be a combination of other soil conditioning polymers. The pellet is produced by dispersing the polymers into a bath of lignocellulose fibers. The dispersion is then formed into pellets with a pelletizing machine such that the polymer and other soil conditioning material is interspersed within the matrix formed by the pelletized lignocellulose.

Inventors

SEARS KARL D

Latest standardized assignees - inventors removed

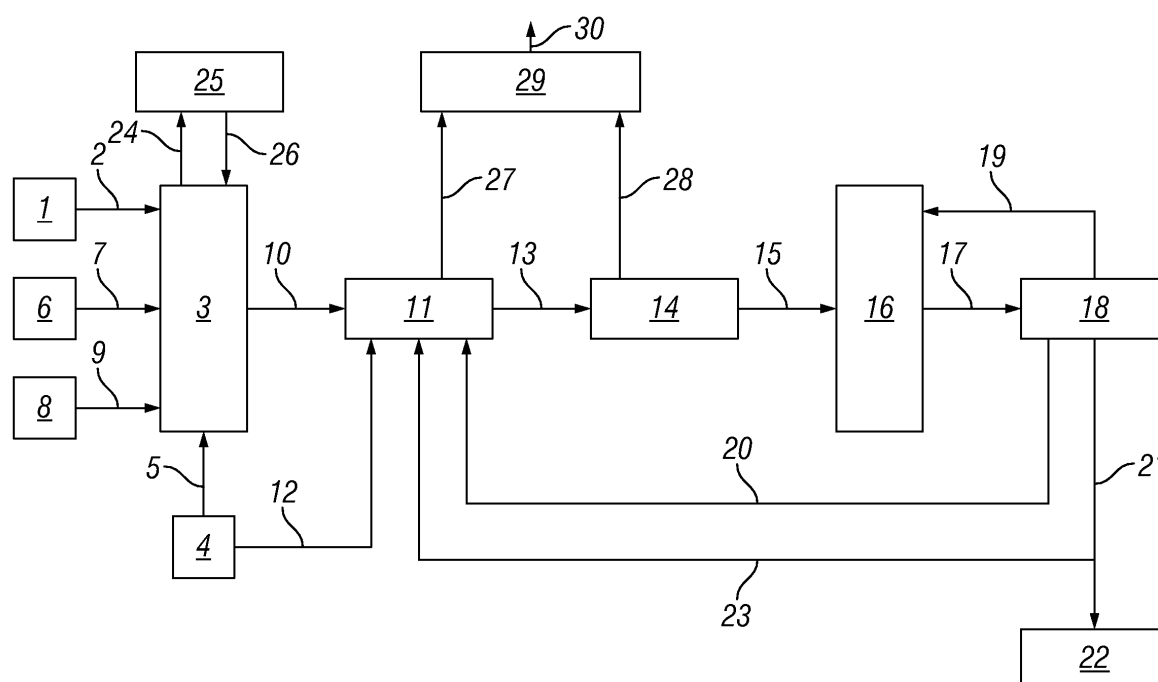
RAYONIER PERFORMANCE FIBERS

Family 75/100 - FAMPAT - ©Questel

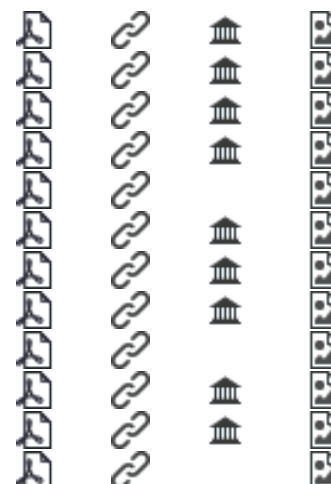
Title

(EP1560801)

A process for the manufacture of sulphur-containing ammonium phosphate fertilizers

Images**Publication numbers with kind code & date**

NO333835	B1	2013-09-30	NO-333835
BR0316161	B1	2012-07-10	BR200316161
CA2506093	C	2012-01-31	CA2506093
IL168573	B	2010-12-30	IL-168573
UA88258	C2	2009-10-12	UA--88258
US20090071213	A1	2009-03-19	US20090071213
US7470304	B2	2008-12-30	US7470304
IN218837	B	2008-05-23	IN-218837
VN0006672	B	2007-12-25	VN---6672B
ES2286500	T3	2007-12-01	ES2286500
DE60313883	T2	2007-10-18	DE60313883
EG23837	A	2007-10-03	EG--23837



EG23837	A	2007-10-03	EG--23837				
CN1329347	C	2007-08-01	CN1329347C				
DE60313883	D1	2007-06-28	DE60313883				
AT362466	T	2007-06-15	ATE362466				
NZ539781	A	2007-05-31	NZ-539781				
EP1560801	B1	2007-05-16	EP1560801				
TNSN05138	A1	2007-05-14	TN0500138				
IN0864/CHENP/2005	A	2007-03-30	IN2005CN00864				
EA007775	B1	2007-02-27	EA---7775				
OA12958	A	2006-10-13	OA--12958				
ZA200503503	B	2006-07-26	ZA200503503				
US20060144108	A1	2006-07-06	US20060144108				
EA200500807	A1	2006-02-24	EA200500807				
CN1711225	A	2005-12-21	CN1711225				
AU2003298285	B2	2005-12-01	AU2003298285				
MA27564	A1	2005-10-03	MA--27564				
BR0316161	A	2005-09-27	BR200316161				
EP1560801	A1	2005-08-10	EP1560801				
MXPA05005177	A	2005-07-22	MX2005PA005177				
NO20052848	L	2005-06-13	NO20052848				
AU2003298285	A1	2004-06-03	AU2003298285				
CA2506093	A1	2004-05-27	CA2506093				
WO2004/043878	A1	2004-05-27	WO200443878				

Abstract

(EP1560801)

The invention relates to a process for the manufacture of sulphur-containing fertilizers comprising the steps of: (a) mixing ammonia, phosphoric acid and water in a reactor unit to obtain an ammonium phosphate mixture;. (b) introducing the mixture obtained in step (a) into a granulator unit to obtain granules, wherein a liquid phase comprising elemental sulphur is brought into contact with ammonia, phosphoric acid and water in the reactor unit in step (a) or is introduced in the granulator unit in step (b). The invention further relates to sulphur-containing ammonium phosphate fertilizers, to the use of these sulphur-containing fertilizers to promote the growth of agricultural products and to the agricultural products thus-obtained.

Inventors

KEENAN KENNETH WILLIAM

KENNEDY WILLIAM PATRICK

Latest standardized assignees - inventors removed

SHELL

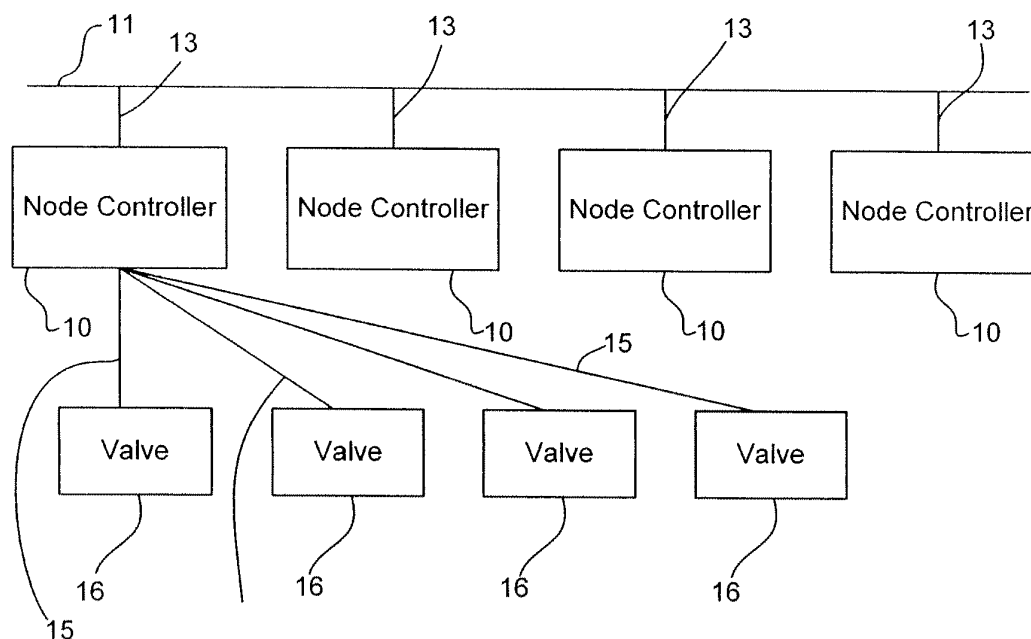
Family 76/100 - FAMPAT - ©Questel

Title

(US8739830)

Irrigation systems and methods

Images



Publication numbers with kind code & date

US8739830	B2	2014-06-03	US8739830
AU2009201923	B2	2013-10-17	AU2009201923
NZ568218	A	2010-11-26	NZ-568218
AU2009201923	A1	2009-11-26	AU2009201923
US20090277506	A1	2009-11-12	US20090277506



Abstract

(US20090277506)

An irrigation system includes a control arrangement which receives field information relating to an area to be irrigated and source information relating to one or more water sources which supply water to the irrigation system. The control arrangement optimizes an irrigation plan based on the field information and source information and then controls one or more irrigators in accordance with the plan. The control arrangement may pulse valves positioned on the irrigator on and off in order to control the amount of water applied to the land by individual outlets on the irrigator. Latching valves may be used.

Inventors

BRADBURY STUART FRANCIS
RICKETTS MICHAEL GEORGE

Latest standardized assignees - inventors removed

LINDSAY

Family 77/100 - FAMPAT - ©Questel

Title

(US20060150697)

Anionic polymers composed of dicarboxylic acids and uses thereof

Images

Cumulative NH_4 - N loss from urea

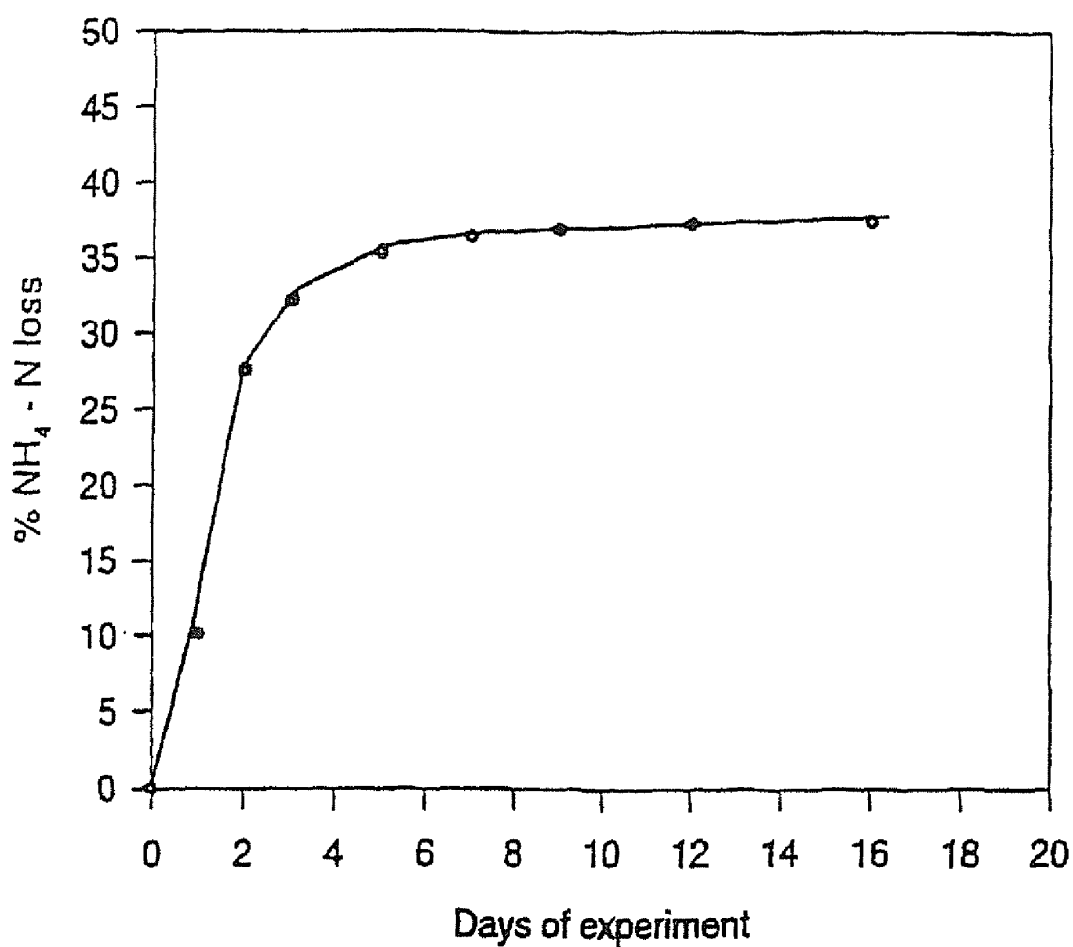


Fig. 1

Publication numbers with kind code & date

US8043995	B2	2011-10-25	US8043995
US20080248954	A1	2008-10-09	US20080248954
US20060150697	A1	2006-07-13	US20060150697



Abstract

(US20060150697)

Biodegradable anionic polymers are disclosed which include recurring polymeric subunits preferably made up of dicarboxylic monomers such as maleic anhydride, itaconic anhydride or citraconic anhydride. Free radical polymerization is used in the synthesis of the polymers. The polymers may be complexed with ions and/or mixed with fertilizers or seeds to yield agriculturally useful compositions. The preferred products of the invention may be applied foliarly or to the earth adjacent growing plants in order to enhance nutrient uptake by the plants.

Inventors

SANDERS JOHN L

MAZO GRIGORY

MAZO JACOB

Latest standardized assignees - inventors removed

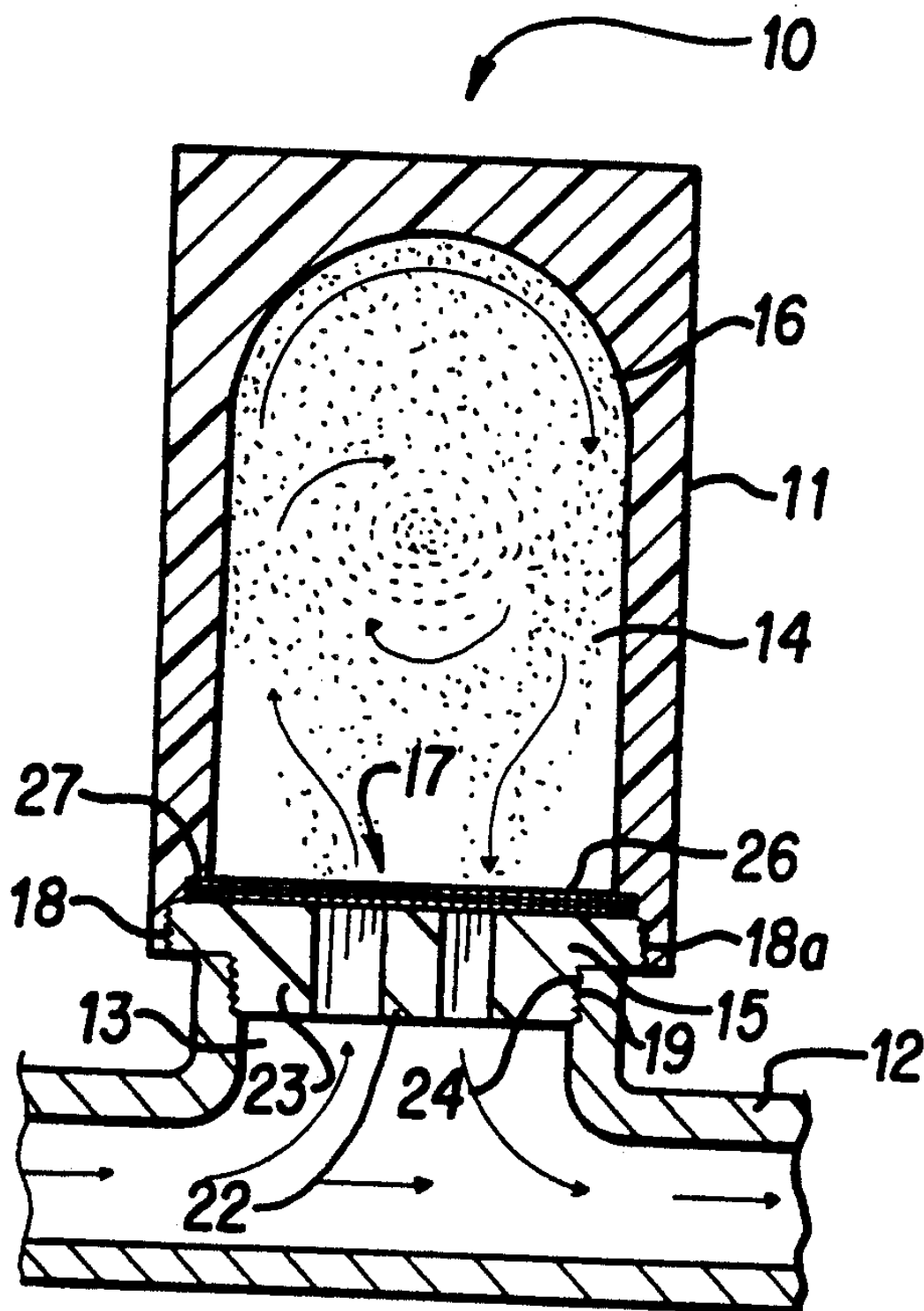
VERDESIAN LIFE SCIENCES

Family 78/100 - FAMPAT - ©Questel

Title

(US4995418)

Fertilizer sprinkler apparatus

Images

Abstract

(US4995418)

An apparatus for the doping of water with dissolved fertilizer for application to vegetation by a sprinkler system. The present invention provides an apparatus that can be either manufactured with or adapted to a sprinkler system to provide fertilizer to the water exiting a sprinkler system. The present invention contains no moving parts. It utilizes the characteristics of water and fluid flow to accomplish its purpose. The apparatus is designed to provide easy removal from the sprinkler system so that it may be refilled with the appropriate fertilizing agent.

Inventors

CERVOLA WILLIAM F

Family 79/100 - FAMPAT - ©Questel

Title

(CN1239438C)

Liquid fertilizer specially for water-saving irrigation and its prepn process

Publication numbers with kind code & date

CN1239438	C	2006-02-01	CN1239438C
CN1609072	A	2005-04-27	CN1609072

**Abstract**

(CN1609072)

The present invention discloses one kind of liquid fertilizer specially for water-saving irrigation and its preparation process. The fertilizer consists of potassium dihydrogen phosphate trihydrate 26-32 wt%, urea 12-18 wt%, potassium caproyl propionate aqua in 55-60 wt% concentration 12-13 wt%, potassium fluoride dihydrate 0-1 wt% and mixed acid 1-2 wt%, except water. The product is clear solution, may be mixed with water in any ratio, will not block the pipeline, contains several nutrients and has double fertilizer and pesticide functions.

Inventors

刘长有

LIU ZHANGYOU

卓泽凡

ZHUO ZEFAN

Latest standardized assignees - inventors removed

XI AN TONGZE INVESTMENT

Family 80/100 - FAMPAT - ©Questel

Title

(WO2014152994)

Fertilizer composition and method for preparing the same

Images

US9162932	B2	2015-10-20	US9162932				
CA2903816	A1	2014-09-25	CA2903816				
WO2014/152994	A1	2014-09-25	WO2014152994				
US20140260467	A1	2014-09-18	US20140260467				

Abstract

(WO2014/152994)

A method of producing a granulated and compacted fertilizer having incorporated micronutrients in which the granulated primary nutrient and micronutrients are mixed at smaller particle sizes before being compacted into a larger, easier to handle particle sizes.

Inventors

PEACOCK LAWRENCE ALAN

FROELICH DAN M

Latest standardized assignees - inventors removed

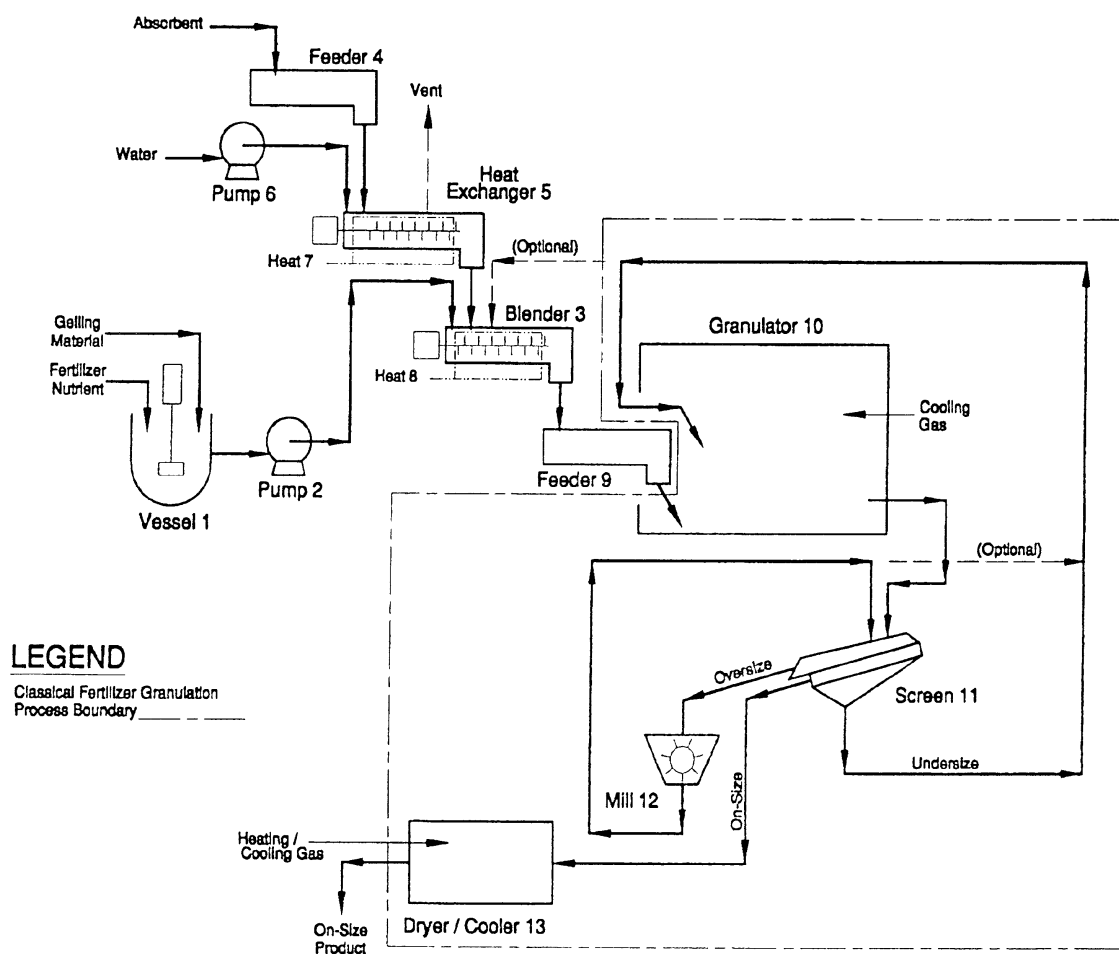
MOSAIC

Family 81/100 - FAMPAT - ©Questel

Title

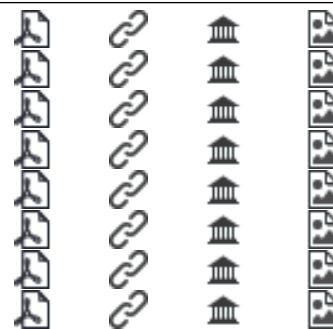
(EP1296555)

Controlled release agricultural products and processes for making same

Images**Publication numbers with kind code & date**

US20090258786	A1	2009-10-15	US20090258786				
AU785075	C	2007-07-12	AU-785075				
AU785075	B2	2006-09-14	AU-785075				
US20050107259	A1	2005-05-19	US20050107259				

US6890888	B2	2005-05-10	US6890888
EP1296555	A4	2004-04-28	EP1296555
EP1296555	A2	2003-04-02	EP1296555
US20020098983	A1	2002-07-25	US20020098983
WO02/02742	A3	2002-07-04	WO200202742
AU7028801	A	2002-01-14	AU200170288
CA2383712	A1	2002-01-10	CA2383712
WO02/02742	A2	2002-01-10	WO200202742



Abstract

(EP1296555)

A controlled release agricultural absorbent based product including particles of an absorbent material containing capillaries/voids between 10-200 microns in cross-sectional diameter which is impregnated in an amount of 40-95 % of the capillaries/voids volume with an agriculturally beneficial material selected from the group consisting of fertilizers, insecticides, herbicides and fungicides, being produced by a process shown in figure 1 including steps of: a) introducing water (6) to particles of absorbent material (4) to result in absorption of water within the absorbent material, b) heating the absorbent particles and water (5, 7) to transform the water within the absorbent particles to steam, c) introducing the heated absorbent particles to an agriculturally beneficial material in aqueous solution (1, 2) to essentially saturate the absorbent particles with the agriculturally beneficial material (3, 8), d) granulating the combination of agriculturally beneficial material and saturated absorbent particles to solidify and harden the mixture (9, 10, 11, 12), resulting in the agglomeration of absorbent particles into granules, and e) drying the granules (13).

Inventors

PURSELL TAYLOR

SHIRLEY ARTHUR R JR

COCHRAN KEITH D

HOLT TIMOTHY G

PEDEEN GREGORY S

Latest standardized assignees - inventors removed

PURSELL AGRI TECHNOLOGY

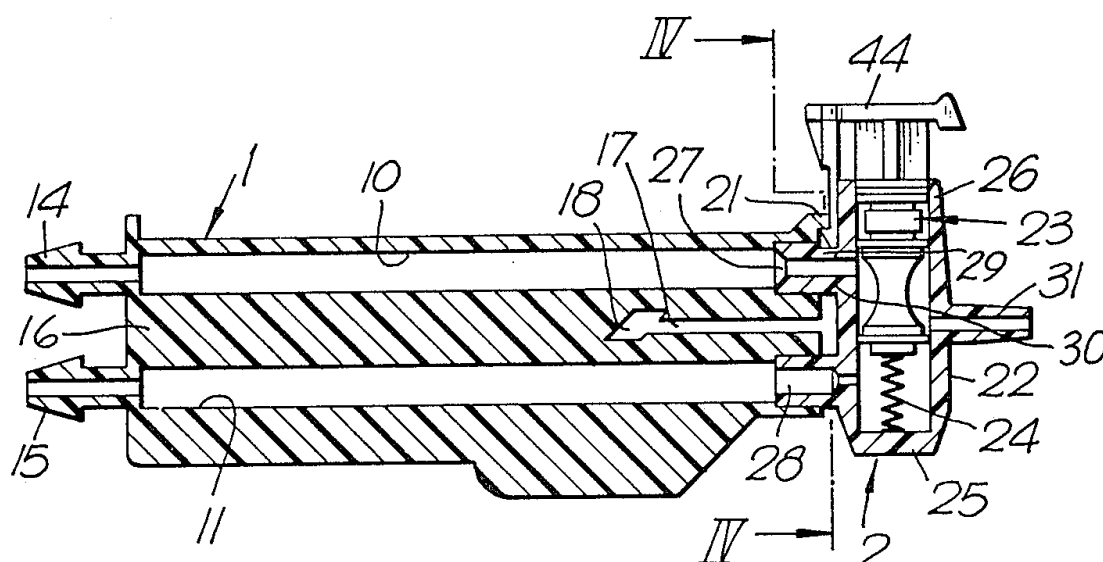
Family 82/100 - FAMPAT - ©Questel

Title

(US4526573)

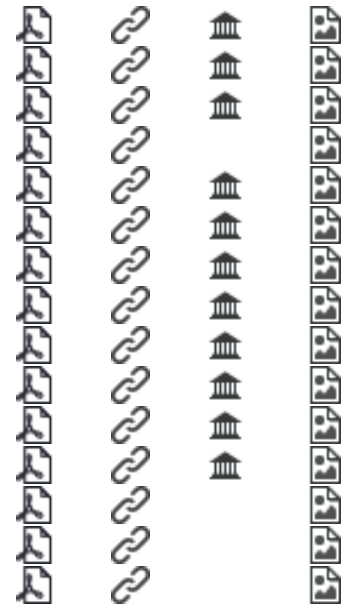
Suction-irrigation equipment with control valve

Images



Publication numbers with kind code & date

DE3309916	C2	1993-12-09	DE3309916
JP1722886	C	1992-12-24	JP1722886
JPH0411221	B2	1992-02-27	JP92011221
SE455374	B	1988-07-11	SE-455374
FR2523849	B1	1987-04-10	FR2523849
CH652036	A5	1985-10-31	CH-652036
US4526573	A	1985-07-02	US4526573
GB2117244	B	1985-03-27	GB2117244
DE3309916	A1	1984-03-15	DE3309916
JPS58177656	A	1983-10-18	JP58177656
GB2117244	A	1983-10-12	GB2117244
FR2523849	A1	1983-09-30	FR2523849
SE8301683	L	1983-09-30	SE8301683
GB8307433	D0	1983-04-27	GB8307433
SE8301683	D0	1983-03-28	SE8301683



Abstract

(US4526573)

A suction irrigator, particularly for surgical use, is made as two units of plastics material. One unit is formed by a handle having first and second parallel bores which are coupled respectively to a suction source and a source of irrigating fluid. The other unit comprises a valve assembly the housing of which is formed by injection moulding. The valve assembly has two inlet conduits which are inserted within respective bores in the handle, and an outlet conduit which can be connected to one or the other of the inlet conduits by displacing a valve member. The bores extend along tubular formations in the handle which are linked along most of their length by a land but which are separated by a slit close to the valve. On the handle there is a lip positioned to engage a resilient catch on the valve member and thereby limit its displacement.

Inventors

LESTER GRAHAM G

BRAND PETER J

DEANE GRAHAM

Latest standardized assignees - inventors removed

SMITHS INDUSTRIES

Family 83/100 - FAMPAT - ©Questel

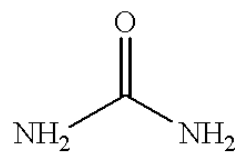
Title

(EP1311461)

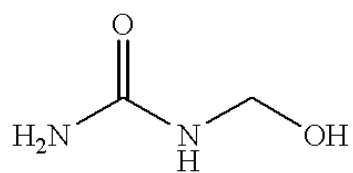
Controlled release urea-formaldehyde liquid fertilizer resins

Images

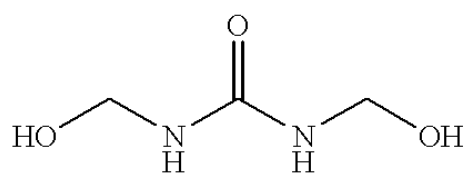
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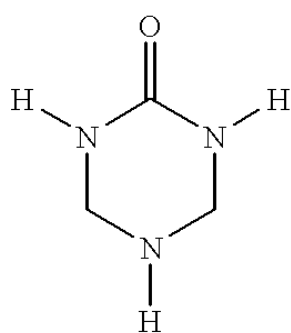
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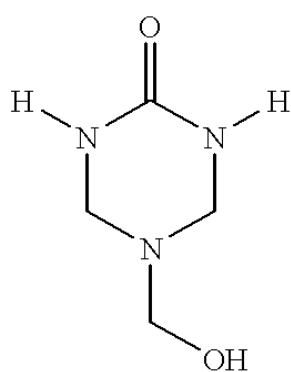
III



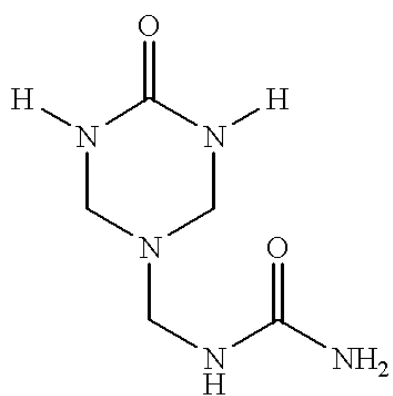
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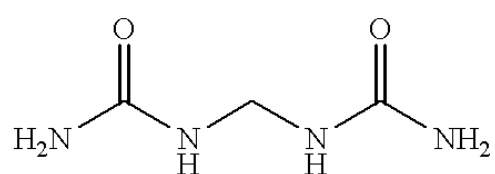
V



VI

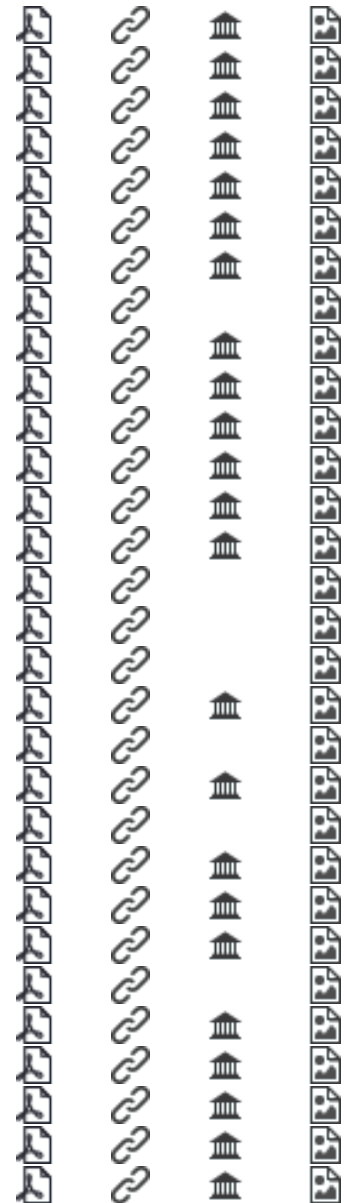


VII



Publication numbers with kind code & date

NO331525	B1	2012-01-23	NO-331525
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CA2419579	C	2009-12-22	CA2419579
ES2307638	T3	2008-12-01	ES2307638
DK1311461	T3	2008-10-06	DK1311461T
PT1311461	E	2008-09-17	PT1311461
DE60134478	D1	2008-07-31	DE60134478
AT398604	T	2008-07-15	ATE398604
EP1311461	B1	2008-06-18	EP1311461
JP3993513	B2	2007-08-03	JP3993513
IN207841	B	2007-06-29	IN-207841
IN0163/KOLNP/2003	A	2006-02-03	IN2003KN00163
AU2001279250	B2	2005-02-24	AU2001279250
JP2004506790	A	2004-03-04	JP2004506790
ZA200301164	B	2004-02-12	ZA200301164
CR6909	A	2003-12-04	CR---6909
MXPA03001589	A	2003-10-15	MX2003PA001589
US6632262	B2	2003-10-14	US6632262
AR030460	A1	2003-08-20	AR--30460
BR0113401	A	2003-07-08	BR200113401
KR20030040412	A	2003-05-22	KR20030040412
EP1311461	A2	2003-05-21	EP1311461
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NO20030691	L	2003-04-10	NO20030691
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WO02/16458	A3	2002-05-10	WO200216458
US20020043086	A1	2002-04-18	US20020043086
AU7925001	A	2002-03-04	AU200179250
CA2419579	A1	2002-02-28	CA2419579
WO02/16458	A2	2002-02-28	WO200216458



Abstract

(EP1311461)

A controlled release urea-formaldehyde liquid resin a nitrogen level or at least 28wt% and its method of manufacture. The controlled release urea-formaldehyde resin is useful as a fertilizer.

Inventors

GABRIELSON KURT D

Latest standardized assignees - inventors removed

Koch Agronomic Services

Family 84/100 - FAMPAT - ©Questel

Title

(US8034148)

Methods and compositions for soil amendments and organic waste management

Publication numbers with kind code & date

US8034148	B2	2011-10-11	US8034148
US20100024500	A1	2010-02-04	US20100024500



Abstract

(US20100024500)

The present invention relates to agriculture and waste management. In particular, compositions and methods relating to soil amendments and organic waste management are provided. In certain aspects, soil amendments, and methods of

making soil amendments, and methods for improving crop yields are provided.

Inventors

TYLER W L SKIP

Latest standardized assignees - inventors removed

HEART OF NATURE

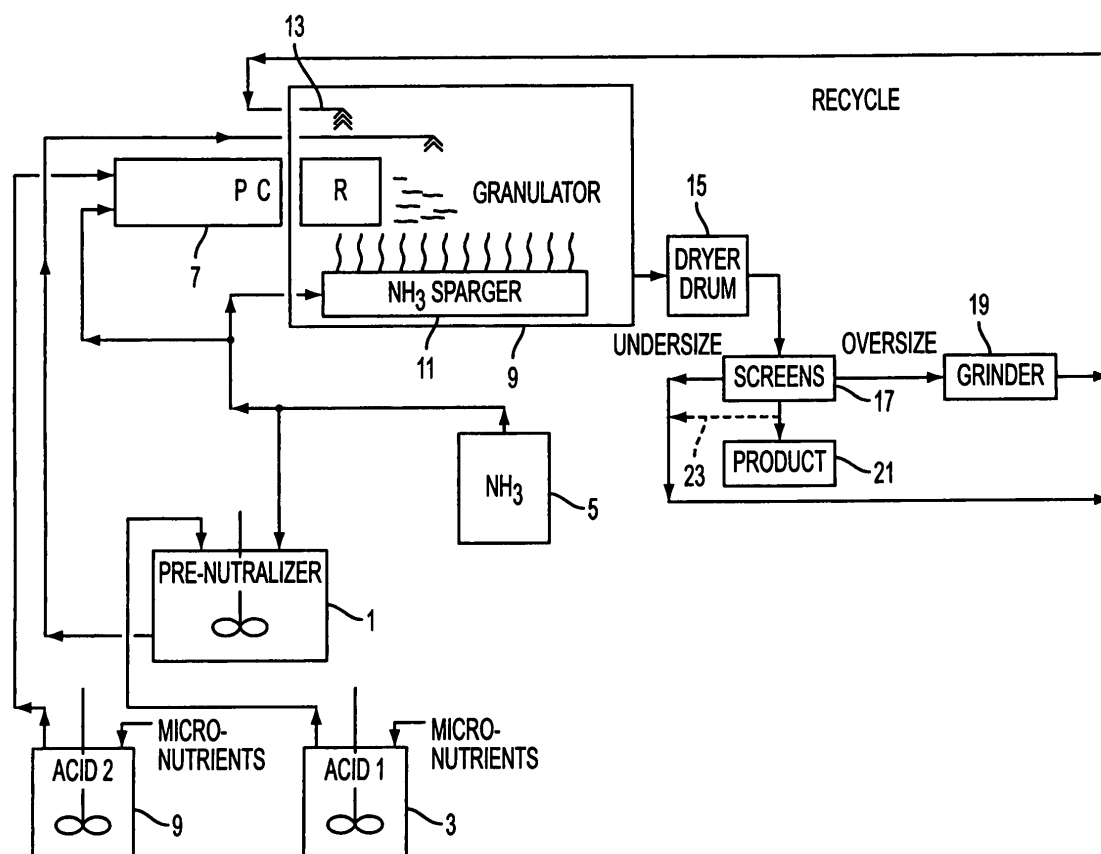
Family 85/100 - FAMPAT - ©Questel

Title

(EP1630150)

Method for producing a fertilizer with micronutrients

Images



Publication numbers with kind code & date

ES2536917	T3	2015-05-29	ES2536917
EP1630150	B1	2015-02-25	EP1630150
AU2005204339	B2	2011-05-26	AU2005204339
CA2516423	C	2011-04-19	CA2516423
RU2393136	C2	2010-06-27	RU2393136
IL170573	B	2010-06-16	IL-170573
HK1091805	A1	2010-03-19	HK1091805
EP1630150	A3	2009-12-09	EP1630150
CN100542995	C	2009-09-23	CN100542995C
US7497891	B2	2009-03-03	US7497891
RU2005127225	A	2007-03-10	RU2005127225
CN1789206	A	2006-06-21	CN1789206
ZA200506786	B	2006-05-31	ZA200506786
MA27870	A1	2006-05-02	MA--27870
AU2005204339	A1	2006-03-16	AU2005204339
US20060042338	A1	2006-03-02	US20060042338



US20060042338

A1

2006-03-02

US20060042338



EP1630150

A2

2006-03-01

EP1630150



CA2516423

A1

2006-02-28

CA2516423

**Abstract**

(EP1630150)

According to a method of producing a phosphate fertilizer, a first portion of the phosphate is produced in a pipe cross reactor, and a second portion of the phosphate is produced in a pre-neutralizer. Both the first and second portions of the phosphate are supplied to a granulator. Ammonia is added to the granulator to react with the first and second portions of the phosphate. To produce the first portion of the phosphate, a micronutrient is added to phosphoric acid to produce an enriched acid, and the enriched acid and ammonia are added to the pipe cross reactor where they are allowed to react to produce ammonium phosphate.

Inventors

PEACOCK LAWRENCE ALAN

Latest standardized assignees - inventors removed

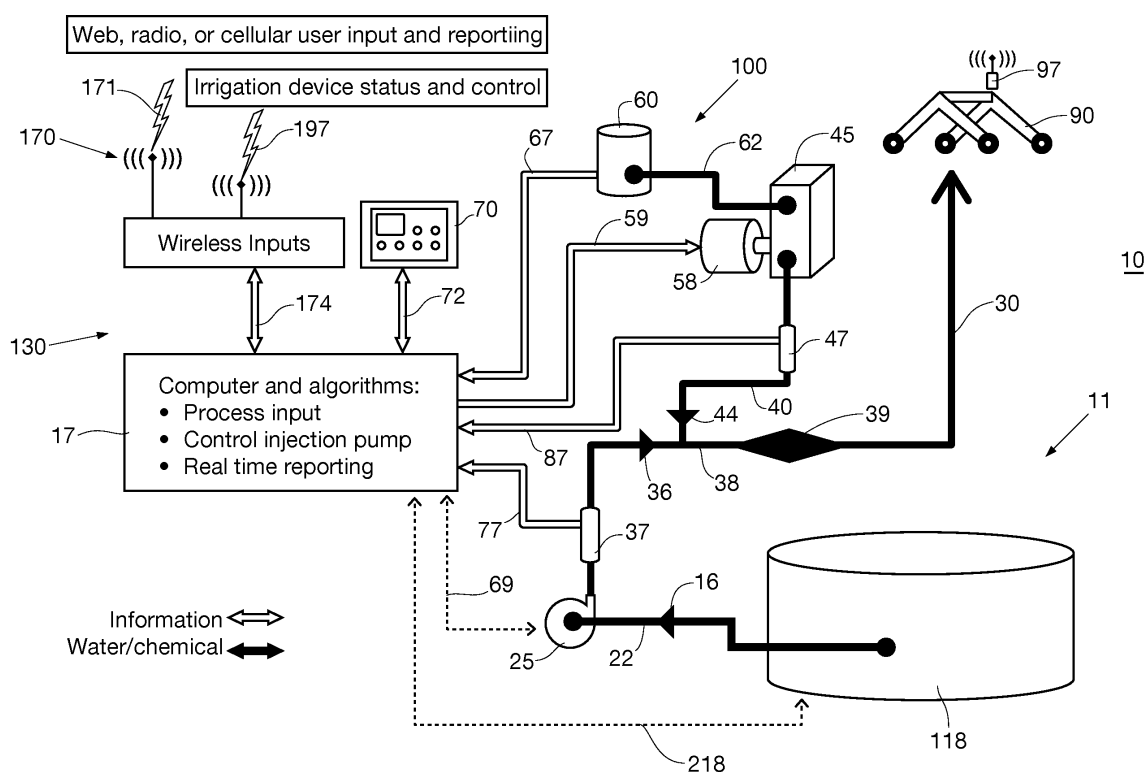
MOSAIC

Family 86/100 - FAMPAT - ©Questel

Title

(EP2854511)

Continuously calibrating chemigation injection unit

Images**Publication numbers with kind code & date**

BR112014029080

A2

2017-06-27

BR112014029080



EP2854511

A4

2016-02-10

EP2854511



US20150134129

A1

2015-05-14

US20150134129



EP2854511

A1

2015-04-08

EP2854511



BR112014029080

A1

2015-03-24

BR112014029080



AR091137

A1

2015-01-14

AR--91137



AU2013266703

A1

2014-11-27

AU2013266703



[CA2872812](#)

A1 2013-11-28

CA2872812

[WO2013/176975](#)

A1 2013-11-28

WO2013176975

**Abstract**

(EP2854511)

This invention relates to a method and means to control an irrigation system and an apparatus for chemical input. A chemical injection apparatus interfaces with the irrigation system in an automated way to control the application of fertilizers, nutrients, pesticides, plant growth regulators and modifying agents, water conditioners, soil conditioners and additives, and water. More particularly this invention teaches a method and device for remotely operating a continuously-calibrating chemical dispensing device of a chemigation unit, and the equipment associated with data acquisition, control and injection equipment.

Inventors

KIDDER DANIEL WARDEN

Latest standardized assignees - inventors removed

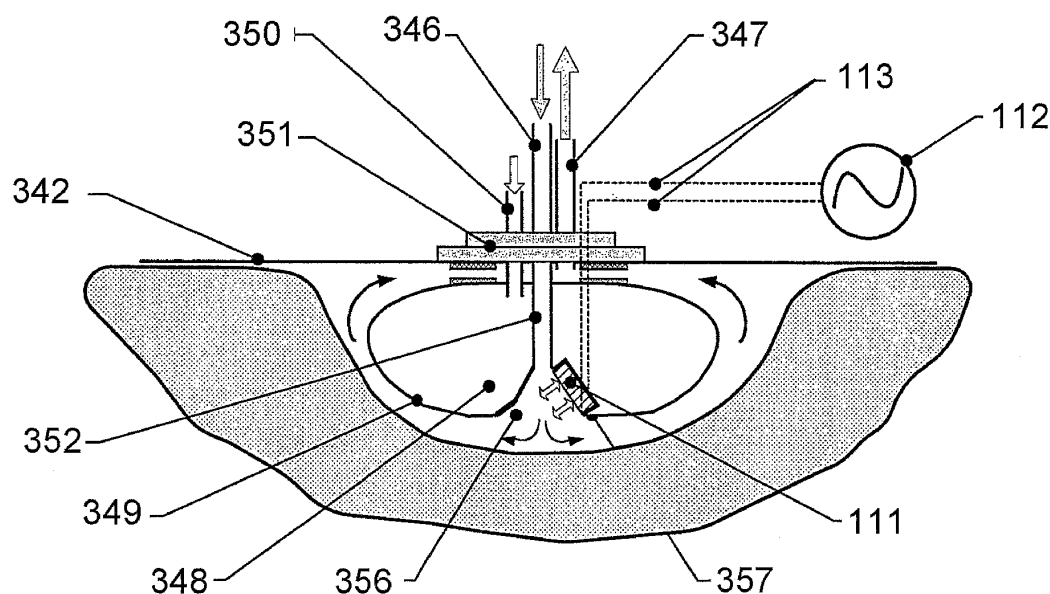
SYNGENTA PARTICIPATIONS

Family 87/100 - FAMPAT - ©Questel

Title

(EP3167916)

Wound treating apparatus and method

Images**Publication numbers with kind code & date**[US20190015648](#)

A1 2019-01-17

US20190015648

[US10035006](#)

B2 2018-07-31

US10035006

[CN104127920](#)

B 2018-05-08

CN104127920B

[ES2623548](#)

T3 2017-07-11

ES2623548

[EP3167916](#)

A1 2017-05-17

EP3167916

[EP1874375](#)

B1 2017-02-15

EP1874375

[CA2606245](#)

C 2015-12-08

CA2606245

[US20150335917](#)

A1 2015-11-26

US20150335917

[US9044579](#)

B2 2015-06-02

US9044579

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A 2014-11-05

CN104127920



CN104127920	A	2014-11-05	CN104127920				
AU2006238957	B2	2012-08-30	AU2006238957				
JP4964869	B2	2012-04-06	JP4964869				
US20090306580	A1	2009-12-10	US20090306580				
ZA200709198	B	2009-03-25	ZA200709198				
JP2008538960	A	2008-11-13	JP2008538960				
CN101208114	A	2008-06-25	CN101208114				
EP1874375	A2	2008-01-09	EP1874375				
KR20070122545	A	2007-12-31	KR20070122545				
WO2006/114638	A3	2007-03-08	WO2006114638				
AU2006238957	A1	2006-11-02	AU2006238957				
CA2606245	A1	2006-11-02	CA2606245				
WO2006/114638	A2	2006-11-02	WO2006114638				
GB0508531	D0	2005-06-01	GB200508531				

Abstract

(EP3167916)

An apparatus for cleansing wounds in which irrigant fluid from a reservoir connected to a conformable wound dressing and wound exudate from the dressing are moved by a device (which may be a single pump or two pumps) for moving fluid through a flow path which passes through the dressing and a means for providing simultaneous aspiration and irrigation of the wound. The apparatus also comprises means to apply high frequency vibrational energy, e.g. ultrasound, to the wound bed. The former removes materials deleterious to wound healing, while distributing materials that are beneficial in promoting wound healing over the wound bed. The latter promotes healing. The dressing and a method of treatment using the apparatus.

Inventors

LEE-WEBB JULIAN

NICOLINI DEREK

HARTWELL EDWARD YERBURY

BLOTT PATRICK LEWIS

Latest standardized assignees - inventors removed

SMITH & NEPHEW

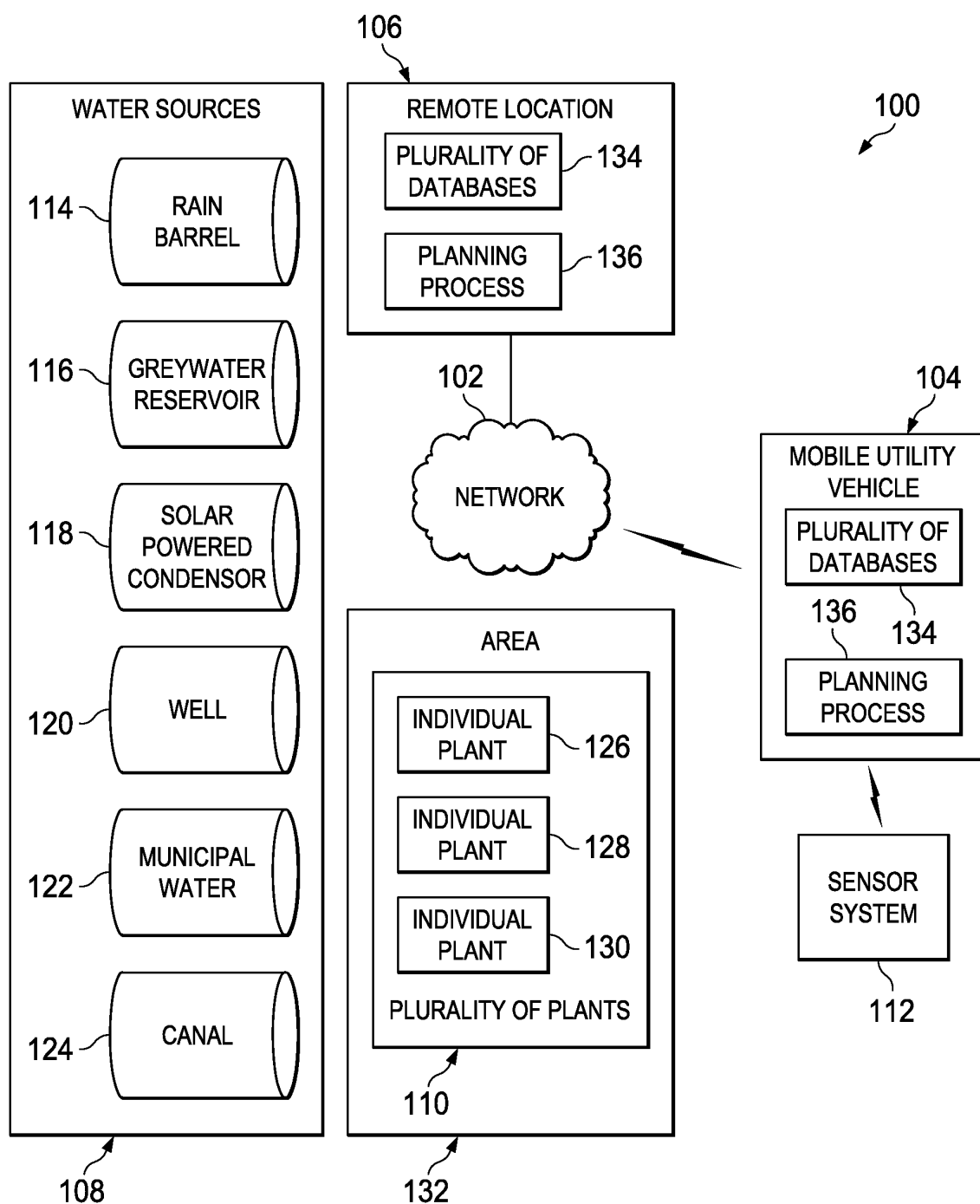
Family 88/100 - FAMPAT - ©Questel

Title

(EP2244217)

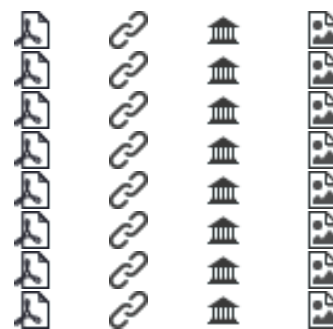
A method for providing an application to plants

Images



Publication numbers with kind code & date

US8437879	B2	2013-05-07	US8437879
IN1267/MUM/2010	A	2012-08-10	IN2010MU01267
US8224494	B2	2012-07-17	US8224494
IL205121	A	2010-12-30	IL-205121
AU2010201510	A1	2010-11-04	AU2010201510
CN101869047	A	2010-10-27	CN101869047
EP2244217	A1	2010-10-27	EP2244217
US20100268390	A1	2010-10-21	US20100268390



Abstract

(EP2244217)

Therefore, the illustrative embodiments provide a computer implemented method and system for providing an application of a resource to plants (126, 128, 130). A plurality of per plant prescriptions for a plurality of plants (110) are received and a source (114, 116, 118, 120, 122, 124) is selected to fulfill the plurality of per plant prescriptions to form a selected source (114, 116, 118, 120, 122, 124). Movement of a mobile utility vehicle (104) is controlled to the selected source (114, 116,

118, 120, 122, 124), the resource is obtained, and movement of the mobile utility vehicle 104 is controlled to each plant (126, 128, 130) in the plurality of plants (110). The resource is applied from the mobile utility vehicle (104) to each plant (126, 128, 130) according to the per plant prescription.

Inventors

ANDERSON NOEL WAYNE

Latest standardized assignees - inventors removed

DEERE

Family 89/100 - FAMPAT - ©Questel

Title

(US5578486)

Recombinant microbial fertilizer and methods for its production

Images

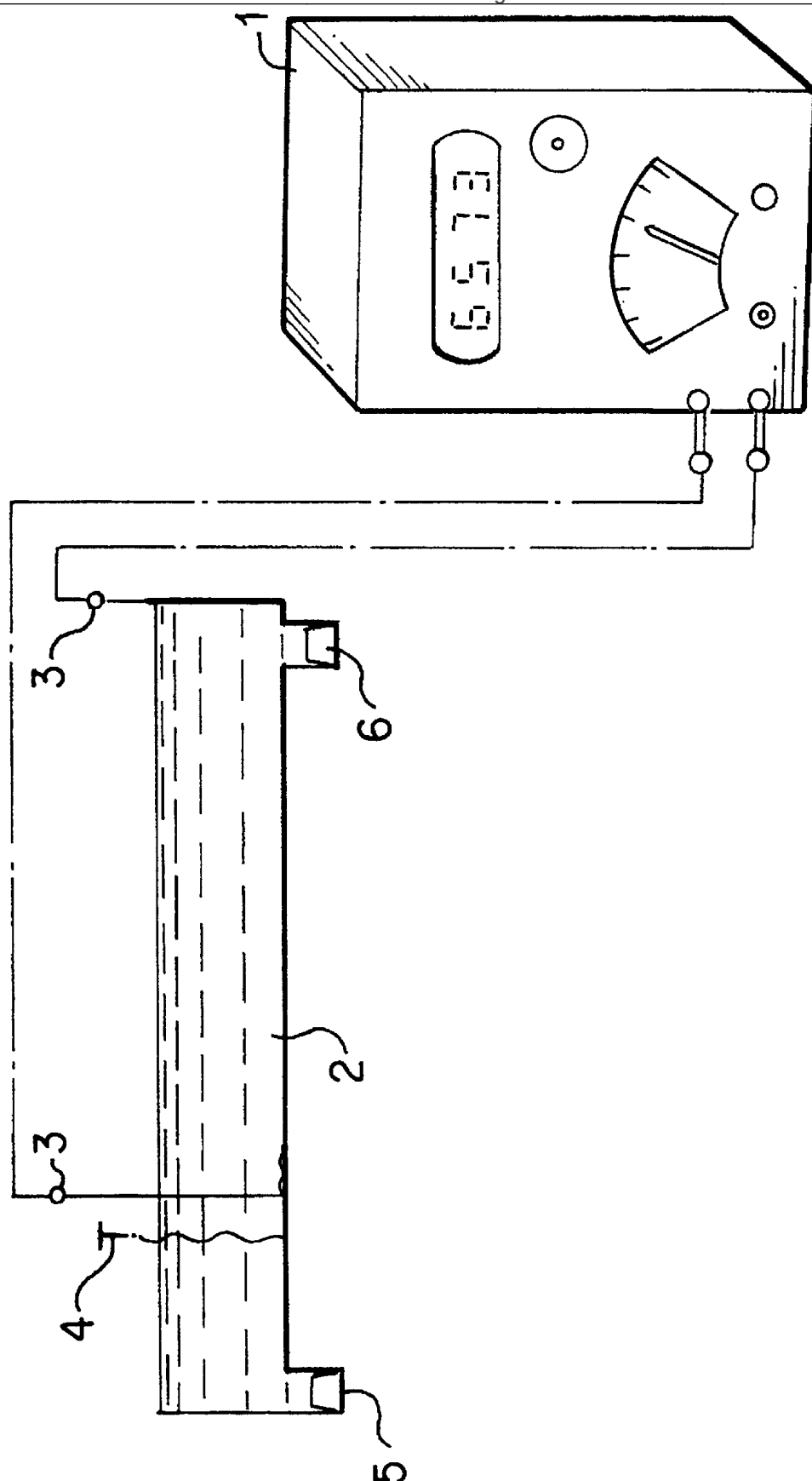


FIG. 1

Publication numbers with kind code & date

US5578486

A 1996-11-26

US5578486

**Abstract**

(US5578486)

A microbial fertilizer that constitutes a symbiotic association of several recombinant microbial species is described. The fertilizer contains four streptomyces strains and two yeast strains. The streptomyces strains include a nitrogen fixing strain, a phosphorus decomposer, a potassium decomposer and a coal waste decomposer. The yeast strains produce growth

factors and energy required by the streptomyces.

Inventors

ZHANG LING Y

Latest standardized assignees - inventors removed

INTERNATIONAL TLB RESEARCH INSTITUTE

MAB LIFE SCIENCES INTERNATIONAL

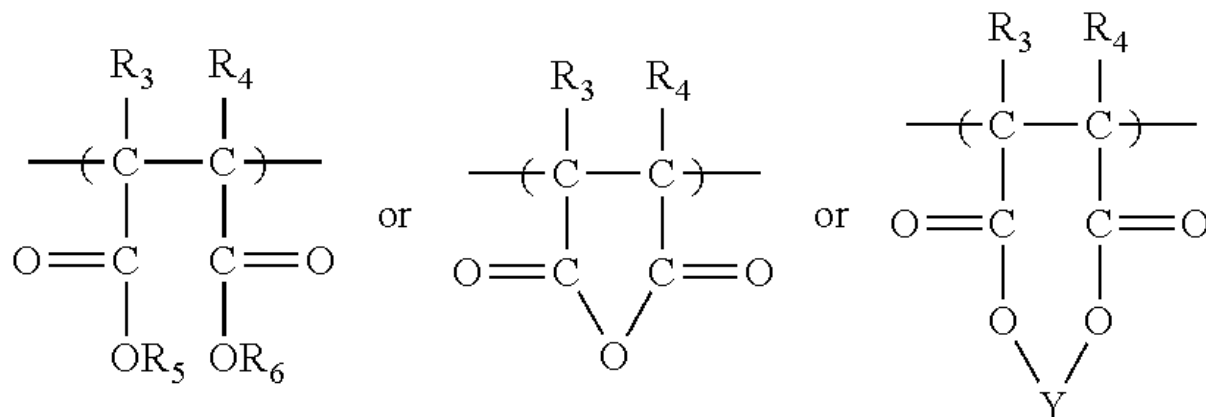
Family 90/100 - FAMPAT - ©Questel

Title

(EP3078650)

Seed product comprising seed coated with polyanionic polymer

Images



Publication numbers with kind code & date

EP3058811	B1	2020-02-12	EP3058811
EP3075241	B1	2020-01-08	EP3075241
EP3039046	B1	2019-11-27	EP3039046
US10377680	B2	2019-08-13	US10377680
JP6458037	B2	2019-01-23	JP6458037
US10173941	B2	2019-01-08	US10173941
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EP3078650	A1	2016-10-12	EP3078650
CL2016000425	A1	2016-10-07	CL2016000425
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VN48515	A	2016-09-26	VN--48515
US20160272553	A1	2016-09-22	US20160272553
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EP3059218	A1	2016-08-24	EP3059218
CN105873966	A	2016-08-17	CN105873966



CN105873966	A	2016-08-17	CN105873966				
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US20160177004	A1	2016-06-23	US20160177004				
KR20160062020	A	2016-06-01	KR20160062020				
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BR112016004287	A1	2016-03-08	BR112016004287				
TW201522390	A	2015-06-16	TW201522390				
WO2015/031521	A4	2015-04-16	WO201531521				
CA2922221	A1	2015-03-05	CA2922221				
WO2015/031521	A1	2015-03-05	WO201531521				

Abstract

(EP3078650)

A seed product comprises an agricultural seed coated with a polymer composition. The polymer composition includes an anionic polymer comprising at least four repeat units distributed along the length of the polymer chain, the repeat units including at least one each of a maleic, itaconic, and sulfonate repeat unit.

Inventors

SANDERS JOHN LARRY

MAZO JACOB

MAZO GRIGORY

Latest standardized assignees - inventors removed

VERDESIAN LIFE SCIENCES

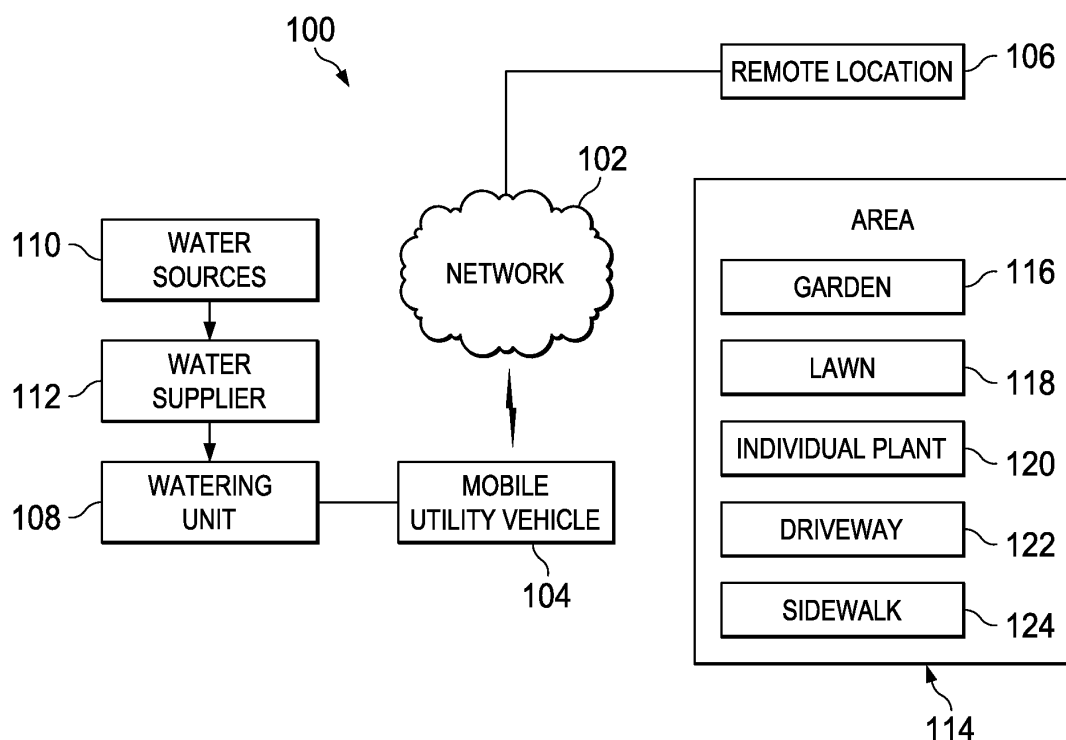
Family 91/100 - FAMPAT - ©Questel

Title

(EP2243352)

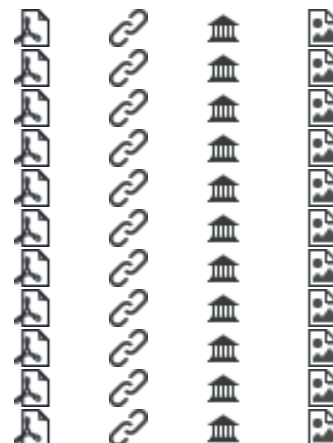
Robotic watering unit

Images



Publication numbers with kind code & date

ES2411919	T3	2013-07-09	ES2411919
EP2243352	B1	2013-03-06	EP2243352
US8322072	B2	2012-12-04	US8322072
IN1268/MUM/2010	A	2012-08-10	IN2010MU01268
US20110301755	A1	2011-12-08	US20110301755
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AU2010201508	A1	2010-11-04	AU2010201508
CN101869046	A	2010-10-27	CN101869046
EP2243352	A1	2010-10-27	EP2243352
US20100263275	A1	2010-10-21	US20100263275



Abstract

(EP2243352)

The different illustrative embodiments provide a method and system for watering plants. A map of an area (114) is received and a determination is made using a processing unit as to whether the area (114) needs water. If the area (114) needs water, current constraints are identified and a determination is made using the processing system as to whether the current constraints allow for watering. If the current constraints allow for watering, a watering solution application plan is generated using the processing system, and the watering solution application plan is executed using a mobile utility vehicle (104).

Inventors

ANDERSON NOEL WAYNE

Latest standardized assignees - inventors removed

DEERE

Family 92/100 - FAMPAT - ©Questel

Title

(CN106810359)

Zinc-enriched kiwifruit nutrient injection

Images

氨基酸	10-15
硫酸锌	0.5-5
植物生长素	1-3
活性钙	0.5-2
螯合钾	1-3
水溶性磷	2-5
水溶性钼	0.1-1
植物多糖	0.1-0.5
溶剂	100-1000;

Publication numbers with kind code & date

[CN106810359](#)

A 2017-06-09

CN106810359



Abstract

(CN106810359)

The invention discloses a zinc-enriched kiwifruit nutrient injection which is prepared from, by weight, 10-15 parts of amino acid, 0.5-5 parts of zinc sulfate, 1-3 parts of phytohormone, 0.5-2 parts of active calcium, 1-3 parts of chelated potassium, 2-5 parts of water-soluble phosphorus, 0.1-1 part of water-soluble molybdenum, 0.1-0.5 part of plant polysaccharide and 100-1000 parts of solvent. An injection mode is adopted for nutrient supply, so that the problem that conventional root and foliage fertilizing is low in absorbing rate is solved, conversion and absorption of zinc are facilitated, fertilizer consumption is

lowered, and the problem of soil hardening is solved; the zinc-enriched kiwifruit nutrient injection is low in application cost and free of environment pollution.

Inventors

尚圣杰

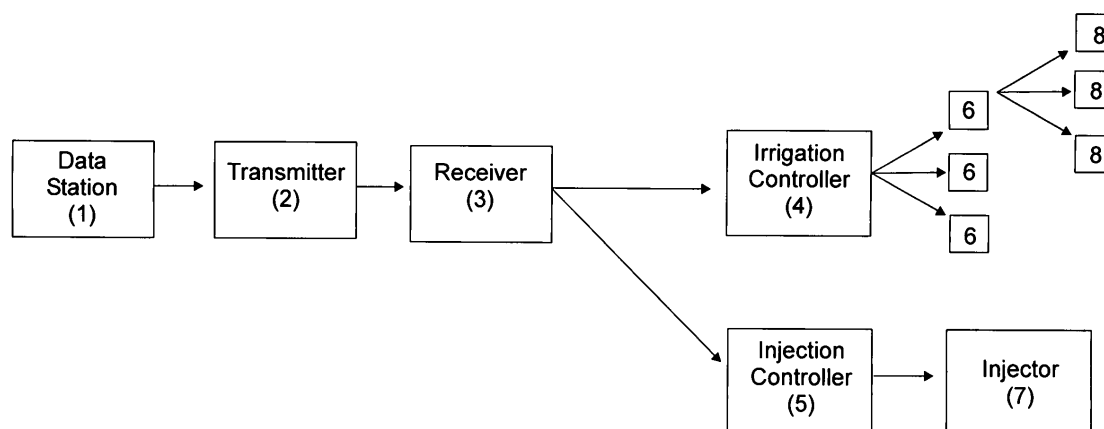
SHANG SHENGJIE

Family 93/100 - FAMPAT - ©Questel

Title

(US20070185621)

System and method for controlling injection into an irrigation system

Images**Publication numbers with kind code & date**[US20070185621](#)

A1 2007-08-09

US20070185621

**Abstract**

(US20070185621)

A system and method for controlling irrigation injection for controlling irrigation injection including the transmission of an irrigation injection data signal including an injection instruction. The injection instruction may be calculated from various irrigation data including, but not limited to, landscape zone, sun radiation, root depth, soil condition, irrigation efficiency, slope, evapotranspiration data, historical weather data, projected weather data, and any combinations thereof. The system and method may further include the monitoring of irrigation flow of water.

Inventors

GILMORE DAN

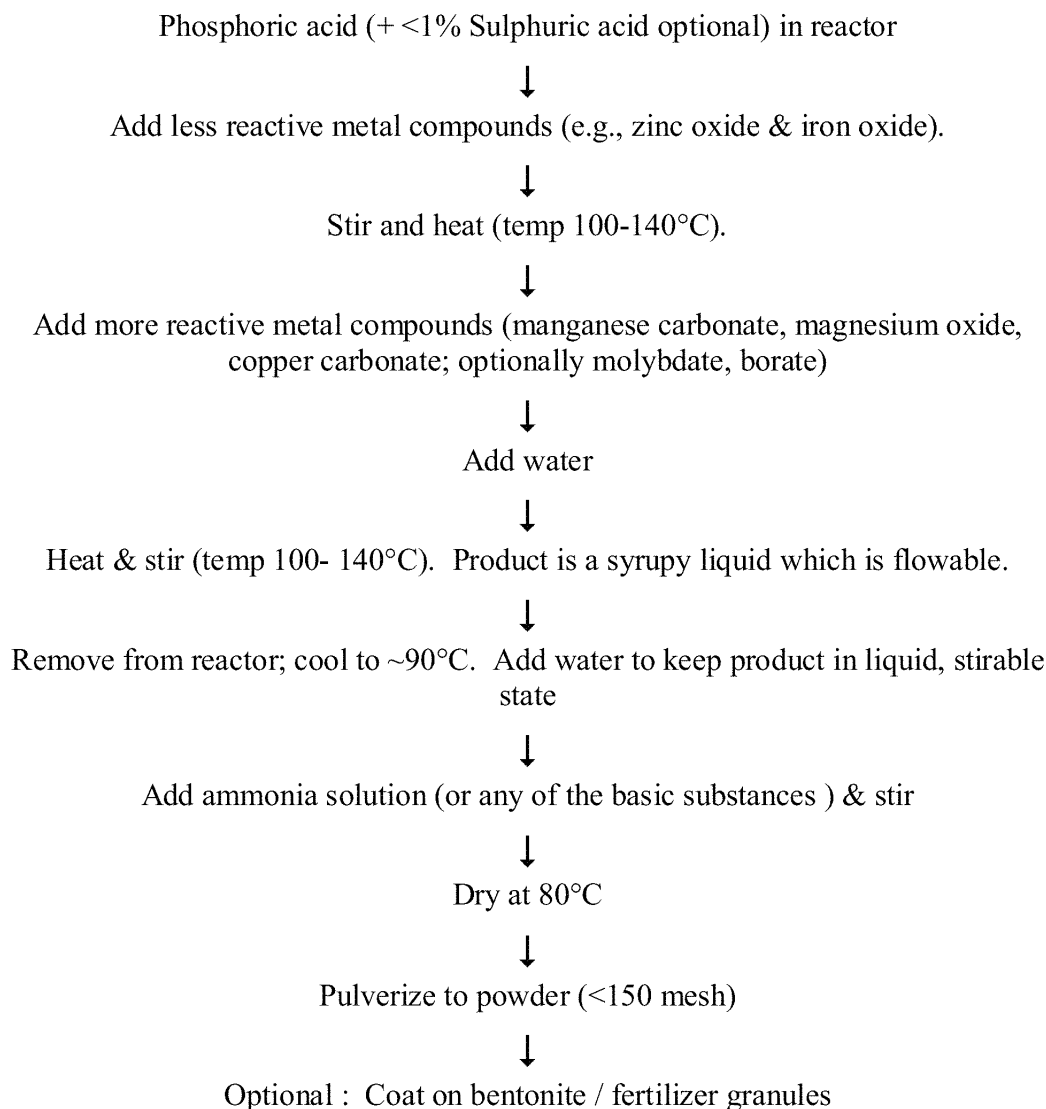
Family 94/100 - FAMPAT - ©Questel

Title

(US9181137)

Micronutrient fertilizers and methods of making and using the same

Images



Publication numbers with kind code & date

US10239797	B2	2019-03-26	US10239797
US20160272549	A1	2016-09-22	US20160272549
US9181137	B2	2015-11-10	US9181137
US20100240533	A1	2010-09-23	US20100240533



Abstract

(US20100240533)

A water insoluble micronutrient fertilizer, methods of producing, and methods of using the same are provided. The fertilizer may comprise at least one first micronutrient selected from the group consisting of chromium, cobalt, copper, iron, manganese, and zinc; a polyphosphate; and optionally at least one second micronutrient selected from the group consisting of boron, chlorine, iodine, molybdenum or selenium. The fertilizer compounds are preferably water insoluble, dilute acid soluble, and free-flowing powders.

Inventors

VARADACHARI CHANDRIKA

Latest standardized assignees - inventors removed

AGTEC INNOVATIONS

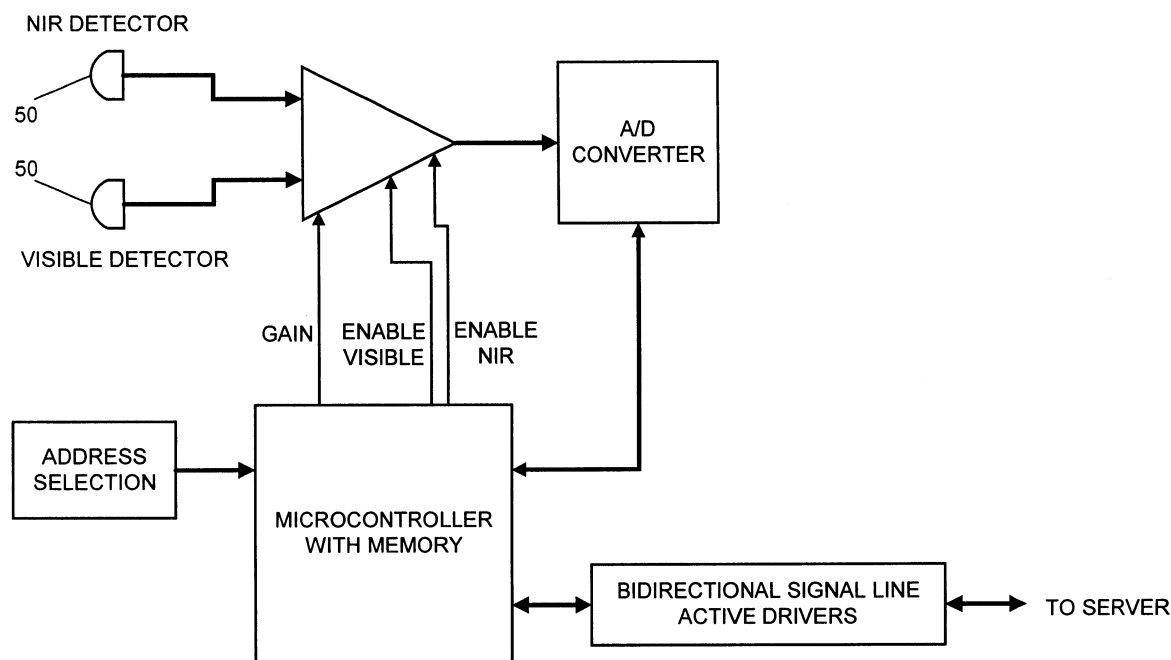
Family 95/100 - FAMPAT - ©Questel

Title

(US6393927)

Method and apparatus for real-time determination and application of nitrogen fertilizer using rapid, non-destructive crop canopy measurements

Images



Publication numbers with kind code & date

US6393927

B1 2002-05-28

US6393927



Abstract

(US6393927)

A method and apparatus for the real time determination and application of optimum amounts of nitrogen fertilizer to corn and other arable crops such as cotton, sugar beats, wheat, etc. by the use of rapid, non-destructive sensors and various fertilizer application methods. In a first embodiment, optical reflectance measurements of the crop canopy and a reference strip at the fertilizer response plateau are taken by sensors carried by a center pivot irrigation system. A sensor controller receives, stores and analyzes the sensor data as well as position data received from a center pivot controller. The sensor controller then sends commands to the center pivot controller to order fertilizer application, as necessary, through the irrigation system. A second embodiment of the invention utilizes a tractor drawn fertilizer applicator with the sensors mounted on the application booms. As in the first embodiment, a sensor controller receives, stores and analyzes reference strip and crop canopy reflectance data and sends commands to the tractor fertilizer controller to order fertilizer application. This second embodiment may also utilize the Global Positioning System to provide tractor position for storage along with crop data for later use and comparison.

Inventors

BIGGS GREGORY L

BLACKMER TRACEY M

DEMETRIADES-SHAH TANVIR H

HOLLAND KYLE H

SCHEPERS JAMES S

WURM JOHN HENRY

Latest standardized assignees - inventors removed

US DEPARTMENT OF AGRICULTURE

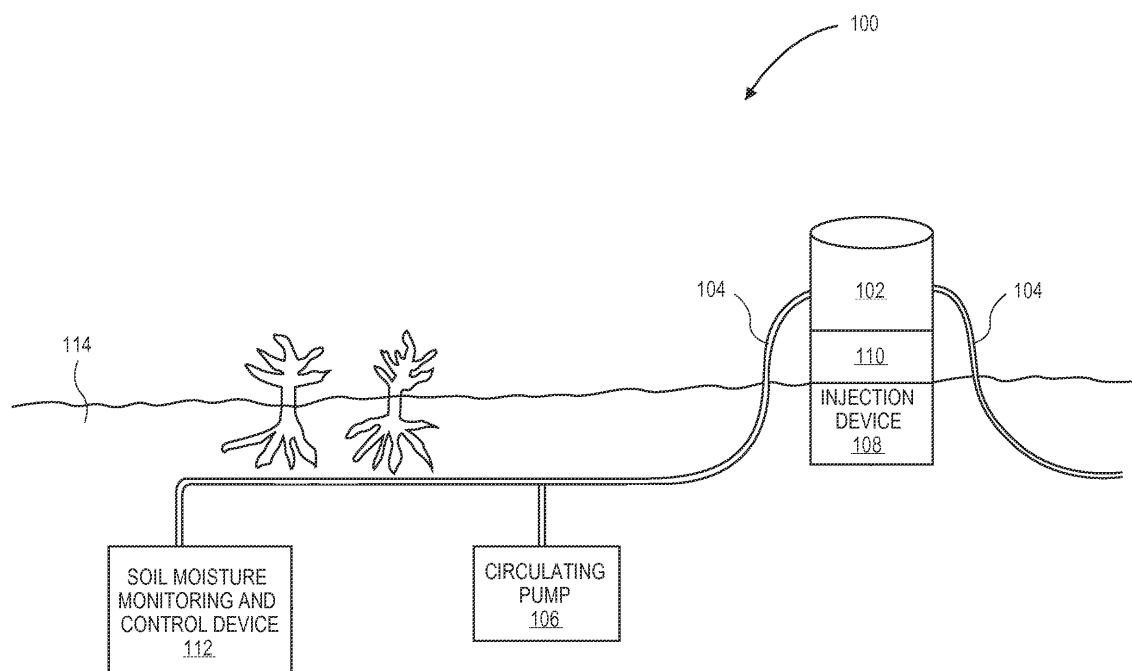
Family 96/100 - FAMPAT - ©Questel

Title

(EP2884834)

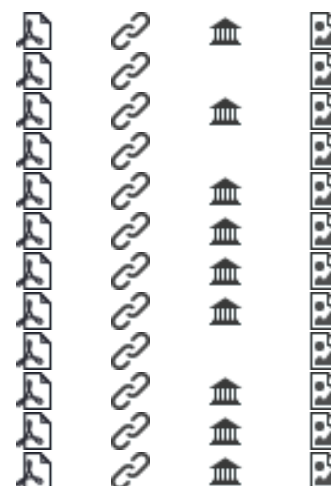
Controlled on-demand irrigation system

Images



Publication numbers with kind code & date

BR112015003493	A2	2017-07-04	BR112015003493
RU2015108996	A	2016-10-10	RU2015108996
EP2884834	A4	2016-05-11	EP2884834
MX2015002132	A	2015-12-08	MX2015002132
EP2884834	A1	2015-06-24	EP2884834
CN104703465	A	2015-06-10	CN104703465
BR112015003493	A1	2015-03-31	BR112015003493
AU2013302566	A1	2015-03-05	AU2013302566
AP201508295	A0	2015-02-28	AP201508295
CA2884316	A1	2014-02-20	CA2884316
US20140047766	A1	2014-02-20	US20140047766
WO2014/028708	A1	2014-02-20	WO201428708



Abstract

(EP2884834)

The present disclosure is directed to a controlled on-demand irrigation system. In an implementation, the on-demand irrigation system includes a control device configured to control supply of an aqueous solution and semi-porous supply lines. The semi-porous supply lines have a porosity characteristic configured to be altered when acted upon by a surfactant root exudates to permit a flow of the aqueous solution therethrough. The control device is configured to cause injection of the aqueous solution upon a determination that an amount of aqueous solution within the semi-porous supply lines is below an aqueous solution threshold.

Inventors

LARUE JACOB L

MALSAM CRAIG S

Latest standardized assignees - inventors removed

VALMONT INDUSTRIES

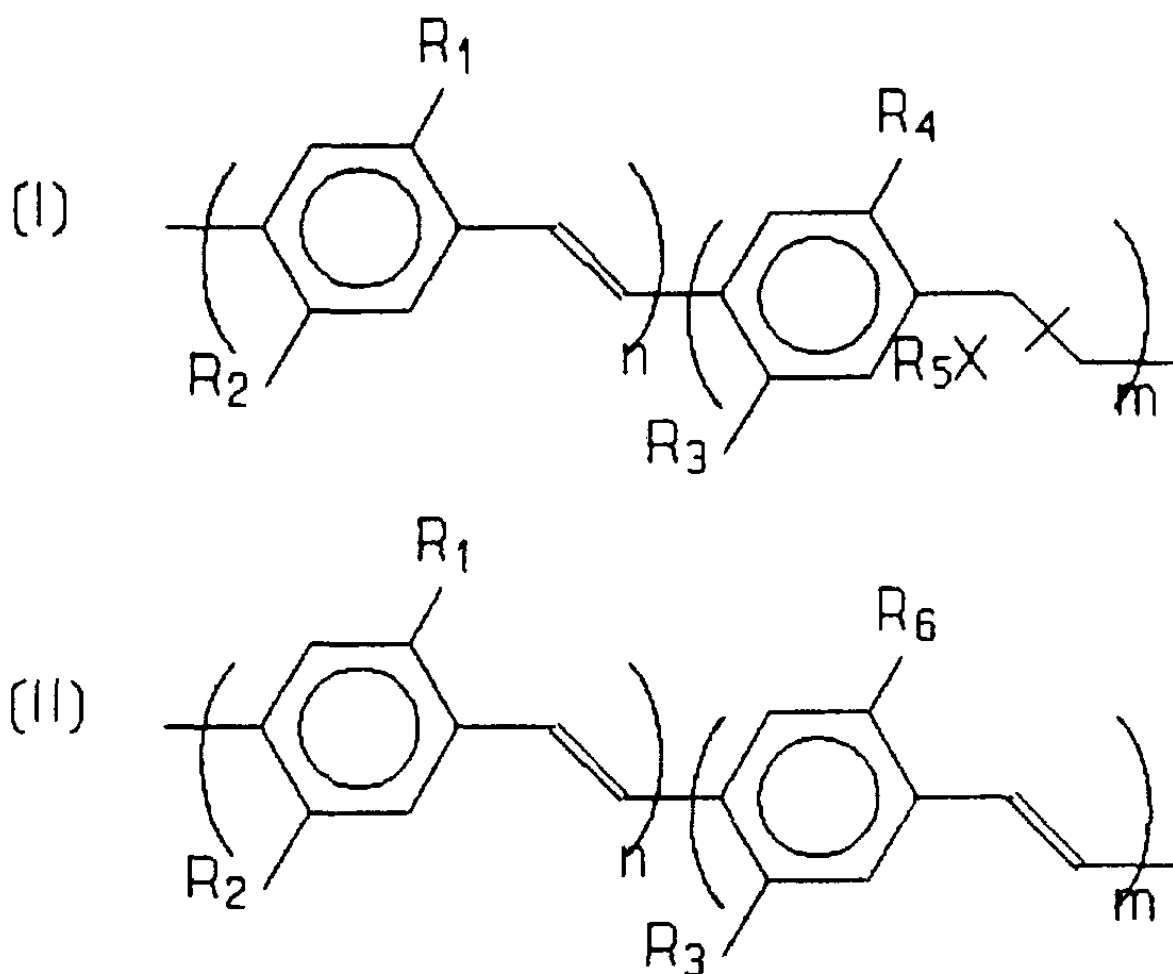
Family 97/100 - FAMPAT - ©Questel

Title

(EP-912463)

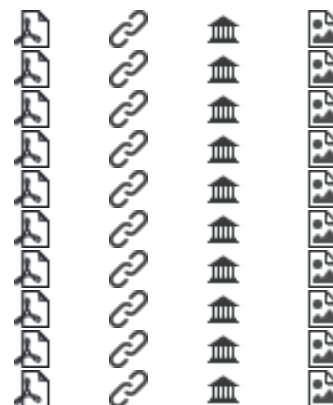
Neutral metal alkanoate micronutrient solutions and method of manufacturing same

Images



Publication numbers with kind code & date

CA2260001	C	2003-12-30	CA2260001
EP0912463	A4	2001-08-29	EP-912463
AU719278	B2	2000-05-04	AU-719278
BR9710314	A	1999-08-17	BR9710314
EP0912463	A1	1999-05-06	EP-912463
US5759226	A	1998-06-02	US5759226
AU2544597	A	1998-02-09	AU9725445
CA2260001	A1	1998-01-22	CA2260001
WO98/02398	A1	1998-01-22	WO9802398
US5681366	A	1997-10-28	US5681366



Abstract

(EP0912463)

A substantially neutral metal alkanoate solution suitable for application of the constituent micronutrient metal to agricultural crops or acreage where such crops are to be grown, is disclosed. Alkanoates having from 2 to 6 carbon atoms are preferred, with acetates most preferred. Metals selected from the group consisting of boron, calcium, copper, iron, magnesium, manganese, molybdenum, potassium, sodium and zinc are preferred, with zinc particularly preferred. The compositions of the present invention remain soluble at and below freezing temperatures for extending periods, and exhibit a high degree of miscibility in fertilizers. A method of manufacturing the compositions of the present invention is disclosed, in which a metal oxide is dispersed in water, ammonia is added to the dispersion, and acid is added to the basic dispersion to solubilize and substantially neutralize the dispersion and create an aqueous micronutrient solution.

Inventors

HEROLD ANTHONY E

HAUSMANN JAMES L

Latest standardized assignees - inventors removed

PLATTE CHEMICAL

Family 98/100 - FAMPAT - ©Questel

Title

(US5927603)

Closed loop control system, sensing apparatus and fluid application system for a precision irrigation device

Images

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 "The Steering Wheel for Your Irrigation", EnviroSCAN, advertisement by Sentek PTY LTD, Adelaide, South Australia.
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Abstract

(US5927603)

An automatic irrigation system includes a movable irrigation device having a fluid delivery nozzle and a fluid manifold positioned along the mobile irrigation device and adapted to receive irrigation fluid from a supply source. The system includes a detector of moisture present within an agricultural field including an output on which signals representing the detected moisture level are placed. The system also includes an electronic storage device having an addressing and reproduction unit that can selectively address and reproduce a plurality of stored command signals. The system also includes first electronic circuitry coupled to the storage device and including an input for command control signals reproduced from the storage device. The electronic circuitry applies the reproduced command control signal to cause the detector to detect moisture from a plurality of different locations within an agricultural field. A second electronic circuitry compares the detected moisture level at each location within the agricultural field with the reproduced command control signals to ascertain whether the moisture level matches the moisture level indicated by the command control signals. One of the first and the second electronic circuitry produces signals for controlling the fluid nozzle in response to the feedback signal from the detector to impart a desired application of irrigation fluid to the agricultural field. Another embodiment includes a sprinkler for an irrigation system having a fluid nozzle and a fluid flow sensor for detecting fluid flow from the nozzle.

Inventors

MCNABB GERALD J

Latest standardized assignees - inventors removed

SIMPLOT

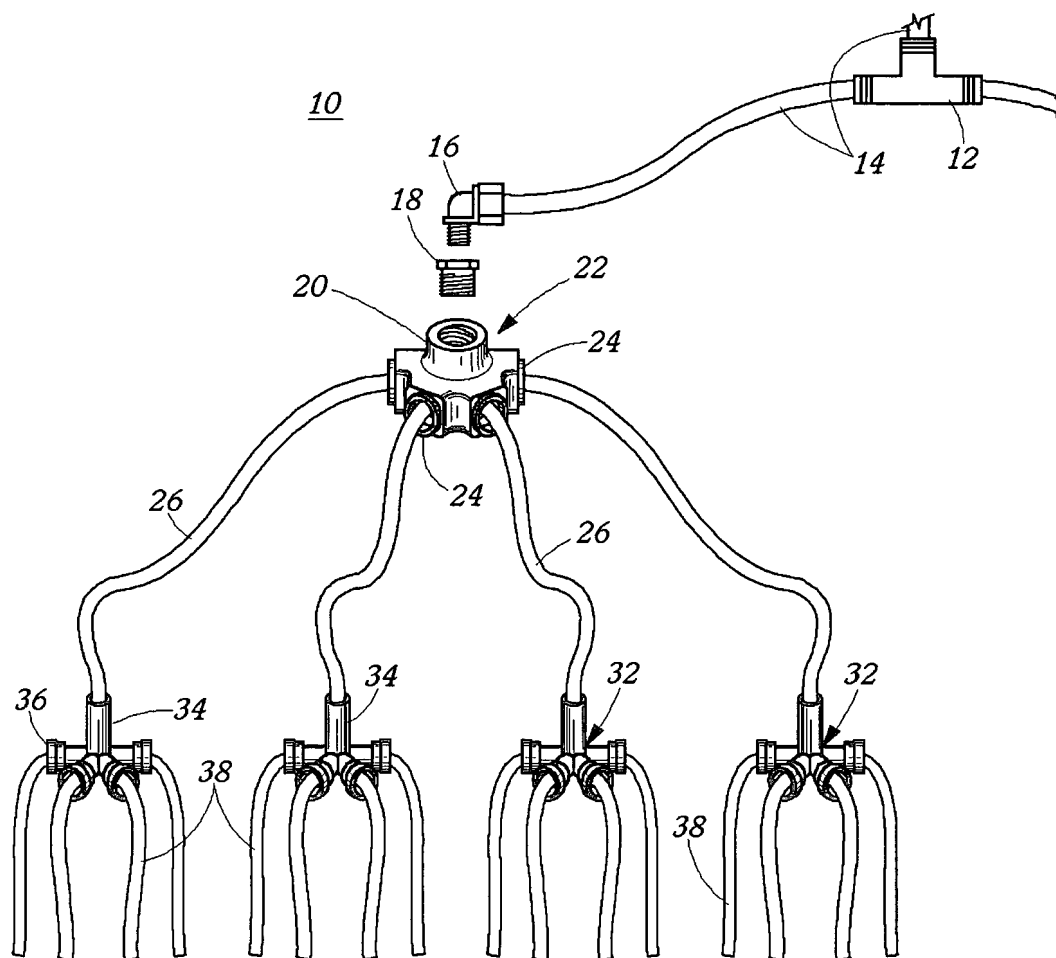
Family 99/100 - FAMPAT - ©Questel

Title

(US7063276)

System for uniform dispersal of agricultural chemicals

Images

**Publication numbers with kind code & date**

US7063276

B2 2006-06-20

US7063276

US20050211802

A1 2005-09-29

US20050211802

**Abstract**

(US20050211802)

A system for uniformly dispensing agricultural chemicals in soil comprises a holding reservoir for the liquid agrichemicals, at least one multi-port uniform dispersing manifold or splitter, and a number of dispensing delivery tubes for dispensing the chemicals proximate openings or slits in the soil during various functions such as planting. The liquid agricultural chemicals, within the system, flow, under pressure, from the reservoir to the exit orifice of each delivery conduit. The multi-port, uniform liquid dispersing manifold passively equally and uniformly, divides the incoming fluid stream to provide separate, but substantially equal, divided fluid streams exiting the manifold to individual delivery conduits. The fluid stream flowing through the fluid inlet of the manifold, under pressure, impinges a planar surface, disposed at one end of the manifold inlet, substantially perpendicular to the fluid flow and proximate the manifold exits, such that the fluid stream is radially dispersed and uniformly divided among the exit ports of the manifold. Advantageously, the fluid exit ports which are radially disposed about the fluid inlet have a longitudinal axis substantially perpendicular to the fluid flow in the fluid inlet causing the direction of the exit a flow to be substantially perpendicular to the fluid flow in the fluid inlet.

Inventors

NEWTON GARY D

Latest standardized assignees - inventors removed

AGRI INJECT

Family 100/100 - FAMPAT - ©Questel

Title

(EP2168990)

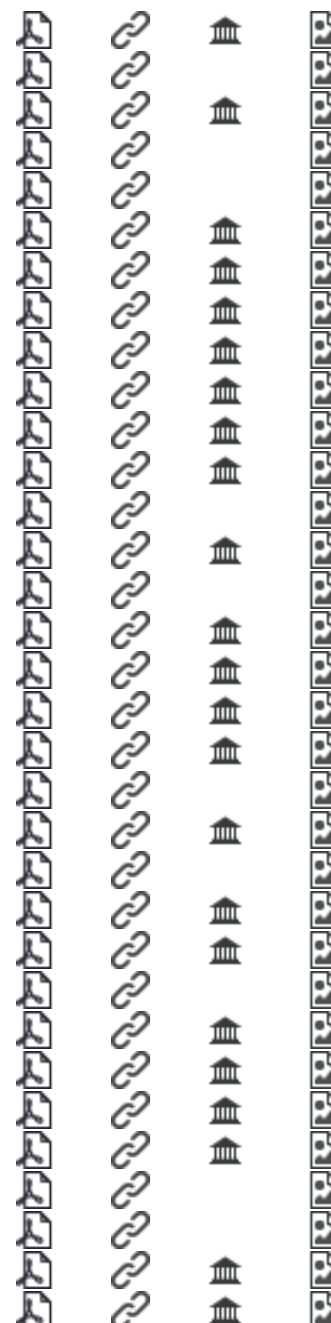
Water-swellable hybrid material with inorganic additives and process for its preparation

Images



Publication numbers with kind code & date

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DE102005021221	A1	2006-11-09	DE102005021221				

Abstract

(EP2168990)

Water swellable hybrid material, useful e.g. in agriculture and gardening, comprises structurally crosslinked polymer matrix and bound inorganic particulate solid

Water swellable hybrid material comprises a structurally crosslinked polymer matrix and bound inorganic particulate solid. The hybrid material has a time-dependent swelling behavior corresponding to an uptake of water of at least 7.5 times related to weight of the hybrid material within one hour. Independent claims are included for: (1) preparing water swellable hybrid material which comprises providing a reaction mixture comprising at least a polymerizable component and at least one solvent, where the pH of the reaction mixture is less than 7, mixing the reaction mixture with inorganic solid particulate, adding at least a crosslinker, initiating polymerization and controlling the polymerization reaction, so that the volume of the reaction mixture increases; (2) the hybrid material obtained by the process, and (3) a soil auxiliary material comprising the hybrid material and at least a material such as ground, humus, sand and/or turf.

Inventors

BENTLAGE WULF

PEPPMOELLER REINMAR

KUNSTMANN JUERGEN

ZINDEL OLIVER

Latest standardized assignees - inventors removed

GEOHUMUS INTERNATIONAL RESEARCH & DEVELOPMENT GM