

Search query (3): [SP]: method and composition for agricultural potassium fertigation an agricultural potassium-fertigation method for emitter-irrigation potassium fertigation feeds a potassium-nutrient feedstock comprised of potassium formate and water to an active emitter-irrigation system continuously, or substantially continuously, at low levels, during the entire time, or substantially the entire time, that irrigation water is sufficiently flowing through the irrigation system during a prolonged term.

Results: 37

Search history

- Search 1: [SP]: Un dosificador (1) de fertilizantes de riego que permite inyectar nutrientes y micronutrientes a un sistema de riego caracterizado por Un tubo de inyección (3), Un grupo de válvulas (4), Un tubo de succión (2). Un dispositivo tubular reductor de flujo (5) (Results 0)
- Search 2: [SP]: A dispenser 1 of irrigation fertilizers that allows injecting nutrients and micronutrients into an irrigation system characterized by An injection tube (3), A group of valves (4), A suction tube (2). A tubular flow reducing device (5) (Results 130)
- Search 3: [SP]: method and composition for agricultural potassium fertigation an agricultural potassium-fertigation method for emitter-irrigation potassium fertigation feeds a potassium-nutrient feedstock comprised of potassium formate and water to an active emitter-irrigation system continuously, or substantially continuously, at low levels, during the entire time, or substantially the entire time, that irrigation water is sufficiently flowing through the irrigation system during a prolonged term. (Results 37)

1) Family number: 21935059 (US2969280A)

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Title:	PROCESS AND APPARATUS FOR PRODUCING COOLED AQUEOUS AMMONIUM PHOSPHATE FERTILIZER			
Priority:	US19560594469 19560628			
Family:	Publication number	Publication date	Application number	Application date
	US2969280 A	19610124	US19560594469	19560628
Probable Assignee:	PHILLIPS PETROLEUM CO			
Assignee(s):(std):	PHILLIPS PETROLEUM CO			
Assignee(s):	PHILLIPS PETROLEUM COMPANY			
Inventor(s):(std):	PECK ALVIN W			
International class (IPC 8-9):	C05B7/00 (Advanced/Invention); C05B7/00 (Core/Invention)			
International class (IPC 1-7):	C05B7/00			
CPC:	C05B7/00			
European class:	C05B7/00 C05B7/00+G3/00PS			
US class:	422/107 422/109 422/225 423/313 71/1 71/41			

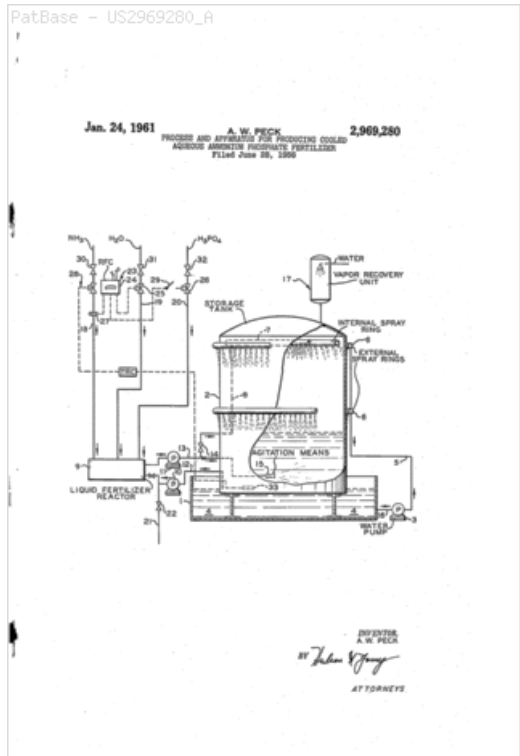
[Classification Explorer](#)

Cited documents: US2890937 A, US2859105 A, US2857262 A, US2707676 A, US2450095 A, US2332527 A, US2037706 A, US1817232 A,

Forward Citations: US8721759, US8721758, US8690984, US8690983, US8690982, US8628598, US8568506, US5618440, US4157958, US3482945, US3130033, US3081150, US10233128,

Abstract:

(Claim 1) A process for producing a cooled aqueous ammonium phosphate fertilizer comprising separately introducing liquid ammonia, water and phosphoric acid in a first zone and therein mixing these materials whereby the produced aqueous ammonium phosphate becomes heated to a higher temperature than the temperature of the ammonia, water and phosphoric acid prior to mixing, dividing this heated aqueous ammonium phosphate into two portions, flowing one portion down the inner wall of 35 a second zone, flowing cooling water down the outer wall of said second zone in indirect heat exchange with the downflowing aqueous ammonium phosphate whereby the downflowing aqueous ammonium phosphate becomes cooled to a temperature intermediate the temperature 40 of the original ammonia, water and phosphoric acid and said higher temperature, injecting the other portion of said heated aqueous ammonium phosphate into the cooled aqueous ammonium phosphate in said second zone thereby agitating same, further cooling the agitated contents 45 of said second zone by indirect heat exchange with a body of cooling water through the bottom of said second zone, passing a portion of the further cooled, agitated liquid contents of said second zone into said first zone to minimize said higher temperature, regulating the rate 50 of introduction of liquid ammonia into said first zone in response to temperature of the liquid contents of said second zone, regulating the rates of introduction of water and of phosphoric acid into said first, zone in predetermined ratios with respect to the introduction of said 55 ammonia into said first zone, and withdrawing the remainder of the further cooled, agitated liquid contents of said second zone as product.



2) Family number: 62910107 (US2016200636A)

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Title: PLANT GROWTH-PROMOTING RHIZOBACTERIA INFUSED FERTILIZER

Priority: US20150101252P 20150108 US20150169519P 20150601 US20150849537 20150909
US20160990488 20160107 WO2016US22386 20160314 WO2016US23424 20160321

Family:	Publication number	Publication date	Application number	Application date
	AU2016269996 AA	20171214	AU20160269996	20160314
	AU2016269996 BB	20200102	AU20160269996	20160314
	AU2016270005 AA	20171214	AU20160270005	20160321
	AU2016270005 AH	20171221	AU20160270005	20160321
	CA2985519 AA	20171108	CA20162985519	20160314
	CA2985522 AA	20171108	CA20162985522	20160321
	MX2017015506 A1	20180815	MX20170015506	20160321
	MX2017015513 A1	20180815	MX20170015513	20160314
	US2016200636 AA	20160714	US20160990488	20160107
	US2016347675 AA	20161201	US20150849537	20150909
	US9771306 BB	20170926	US20150849537	20150909
	US10059633 BB	20180828	US20160990488	20160107
	WO16195770 A1	20161208	WO2016US22386	20160314
	WO16195779 A1	20161208	WO2016US23424	20160321
	WO16195779 A8	20171207	WO2016US23424	20160321

Probable Assignee: NACHURS ALPINE SOLUTIONS CORP

Assignee(s):(std): BAME GREGORY A ; NACHURS ALPINE SOLUTION CORP ; NACHURS ALPINE SOLUTIONS ; NACHURS ALPINE SOLUTIONS CORP ; ROACH TOMMY

Inventor(s):(std): BAME GREGORY A ; ROACH TOMMY ; BAME GREG ; TOMMY ROACH ; GREGORY A BAME ; BAME GREGORY

Agent(s): WRAYS PTY LTD; RICHES MCKENZIE AND HERBERT LLP; JOAN; LAW OFFICE OF J L SIMUNIC; SIMUNIC JOAN L; SIMUNIC JOAN ET AL; SIMUNIC JOAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): A01C23/02 A01N59/26 A01N63/00 C05B1/04 C05B17/00 C05B7/00 C05C1/00 C05C11/00 C05C9/00 C05D1/00 C05D5/00 C05D9/02 C05F11/00 C05F11/08 C05G3/00 (Advanced/Invention); C05F3/00 (Advanced/Non-invention)

CPC: C05F11/08 C05D9/02 C05D5/00 C05C9/00 C05B1/04 C05B7/00 C05B17/00 C05C1/00 C05C11/00 C05D1/00 C05F3/00 C05F11/00 Y02A40/205 Y02P20/145 Y02P60/214

US class: 1/1 71/27 71/6

[Classification Explorer](#)

Cited documents: WO15199541 A1, US9161489 BA, US8545591 BB, US8475558 BB, US8091275 BB, US8029593 BB, US7442224 BB, US7044994 BB, US6311426 BA, US6228806 BA, US5814123 A, US5034045 A, US3956464 A, US3711269 A, US3663198 A, US3547615 A, US2016304407 AA, US2015239788 AA, US2015007626 AA, US2014352376 AA, US2012255334 AA, US2011082040 AA, US2005172858 AA, US2005119124 AA, US2005022570 AA, US2004035162 AA, US2003167811 AA, US2002053229 AA, SU1708804 A1, AU2007231893 AA,

Forward Citations: US2018258001, US2018244589, US2017101349, US10508060, US10233128, CN106748326, CN105016900,

Abstract:

The present invention is a plant fertilizer product comprising at least one organic potassium source and at least one bacillus strain of rhizobacteria.

3) Family number: 67014111 (US2019322596A)

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Title: METHOD OF PRODUCING A MONOAMMONIUM PHOSPHATE CONTAINING FERTILIZER SOLUTION

Priority: ZA20160001801 20160315 WO2016B53649 20160620

Family:	Publication number	Publication date	Application number	Application date
	AR106427 AA	20180117	AR2016P102453	20160810
	AU2016397288 AA	20180927	AU20160397288	20160620
	BR112018067310 A2	20181226	BR20181167310	20160620
	CA3016964 AA	20180906	CA20163016964	20160620
	CL2018002609 A1	20190125	CL20180002609	20180912
	CN108779040 A	20181109	CN201680083603	20160620
	EA201892013 A1	20190430	EA20180092013	20160620
	EP3429981 A1	20190123	EP20160732343	20160620
	IL261555 A0	20181031	IL20160261555	20160620
	IN201817034541 A	20181228	IN201817034541	20180913
	PE19272018 A1	20181213	PE20180001810	20160620
	PE20181927 A1	20181213	PE20180001810	20160620
	US2019322596 AA	20191024	US20160082429	20160620
	WO17158406 A1	20170921	WO2016B53649	20160620
	ZA201701313 A	20180829	ZA20170001313	20160620

Probable Assignee: LIQUIGRO HOLDINGS PROPRIETARY LTD

Assignee(s):(std): BOTHA GERHARDUS TREDoux ; LIQUIGRO HOLDINGS PROPRIETARY LTD ; LIQUIGRO HOLDINGS PTY LTD

Inventor(s):(std): BOTHA GERHARDUS TREDoux ; BOTHA GERHARDUS ; GERHARDUS TREDoux BOTHA

Agent(s): GRIFFITH HACK; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; ESTUDIO CLARKE MODET AND CO CHILE LIMITADA; ROBERTS MICHAEL AUSTIN; SPOOR AND FISHER ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): A01C21/00 C01B C01B25/28 C05B C05B7/00 C05G3/00 (Advanced/Invention); C05B (Subclass/Invention)

International class (IPC 1-7): C01B25/28 C05B7/00

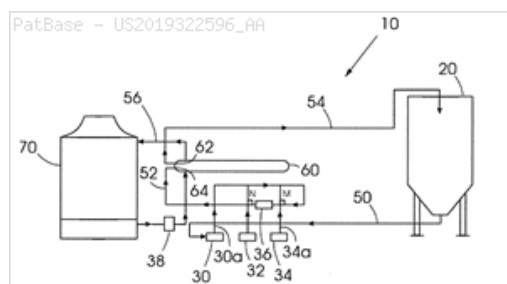
CPC: A01C21/00 C01B25/28 C05B7/00 C05G5/23

[Classification Explorer](#)

Cited documents: US8568506 BA, US4610853 A, US3484192 A, US3459499 A, US3011875 A, EP1992217 A1, EP0161704 A2,

Abstract:

The present invention provides for a method for producing an aqueous monoammonium phosphate containing fertilizer solution. The method provides for means to control the temperature of a reaction zone as measured at a reagent entry point and a product exit point. The pH of the reaction is monitored and the reaction is terminated when the reaction mixture has reached a pH of between about 5.5 and about 7.5. The invention further provides for a method of treating crops with a monoammonium phosphate solution having a pH of between 6 and 7.

**4) Family number: 21021151** (US2038316A)

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Title: PROCESS OF TREATING WATER

Priority: US19350038535 19350830

Family:	Publication number	Publication date	Application number	Application date
	US2038316 A	19360421	US19350038535	19350830

Probable Assignee: SHELL DEV

Assignee(s):(std): SHELL DEV

Assignee(s): SHELL DEVELOPMENT CO ; SHELL DEVELOPMENT COMPANY

Inventor(s):(std): LUDWIG ROSENSTEIN

Inventor(s): ROSENSTEIN LUDWIG

International class (IPC 8-9): C02F5/08 (Advanced/Invention); C02F5/08 (Core/Invention)

International class (IPC 1-7): C01B25/44 C02B5/04

CPC: C02F5/086

European class: C02F5/08E

US class: 210/697 252/175 405/36 71/1 71/21 71/23 71/34 71/35 71/51

[Classification Explorer](#)

Forward Citations: WO14020190, US8568506, US8058211, US7994101, US4452548, US2924578, US2874035, US2784530, US2781612, US2685151, US2011190173, US2009156432, US2008139414, US2007287641, US10233128, DE976831, DE967894,

Abstract:

I claim as my invention: 1. Process of retarding the precipitation of calcium carbonate from natural waters comprising adding to said water a soluble meta phosphate In amounts not exceeding one part per million of water whereby upon the addition of alkali to sald water preclptitation of calcium carbonate ls prevented. ~ 2. In a process of supplying increased amounts of fertlllzer to soils by means of irrigation water the step of adding a calcium carbonate preclptitation retardant to said water in amounts only sullflclent to prevent the preclptitation of calcium carbonate upon the subsequent addition of ammonia to said water. 3. In 9. process of supplying increased amounts of fertilizer to soils by means of irrigation water the step ol' adding meta phosphate to Bald water in amo\nta_only sulllcient-to prevent the precipitation ot calcium carbonate upon the sub- sequent addition of ammonia to said water. _ 4. In a process of supplying increased amounts of fertilizer to soils by means pf irrigation water, the steps of adding sodium metaphosphate to a lllowing stream of water containing calcium compound In less than the stoichiometric amount required to react with said calcium compound, thereafter passing ammonia into said water and supplying said -treated water to the soil. 5, A. process for inhibiting natural waters against the precipitation of calcium carbonate upon the addition of alkali consisting In adding to said water a soluble metaphosphate in substantially less than stoichiometric amounts. 6. Process for supplying increased amounts of fertilizer to soils by means of Irrlgatlon water comprising adding a calcium carbonate _precipitation retardant to water In an amount sumcient to prevent the precipitation of calcium carbonate from said water upon the subsequent addition of ammonia, adding ammonia to said water, thereafter supplying said treated water to the soil. ` 'L Process for supplying increased amounts ol' fertilizer to soils by means ol' irrigation water comprising adding a soluble phosphate to sald` water in amounts sumcient to prevent the precipitation of calcium carbonate from said water upon the subsequent addition of ammonia, addi.ng'a.m.monIa to said water, thereafter supply- ing said treated water to the soil. ` 8. Process for supplying increased amounts of fertilizer to soils by means `ot irrigation water comprising adding S. soluble ,meta phosphate to water in amounts sunlcient to prevent the pre- clptitation of calcium carbonate upon the subsequent addition of ammonia, adding ammonia to said water thereafter supplying said treated water to the soil. 9. Process for supplying increased amounts of fertilizer to soils by means ot irrigation water comprising adding 9, member of the group consisting of ammonium meta phosphate, sodium meta phosphate, potassium meta phosphate and meta phosphoric acid to water in amounts sur- llclent to prevent the precipitation of calcium carbonate upon the subsequent addition of ammonia, adding ammonia to said water thereafter supplying said treated water to the soil.

5) Family number: 55023168 (US8568506B)

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Title: METHOD AND SYSTEM FOR AGRICULTURAL FERTIGATION

Priority: US20080056151P 20080527 US20080283448 20080912 US20110136032 20110721
US20110317006 20111006 US20120385736 20120305 US20120573987 20121018
US20130694809 20130108 US20130815298 20130219 US20130950648 20130725
US20130972686 20130821 US20140243210 20140402 US20140243184 20140402
US20140243249 20140402 US20140564510 20141209

Family:	Publication number	Publication date	Application number	Application date
	US8568506 BA	20131029	US20110136032	20110721
	US8628598 BA	20140114	US20110317006	20111006
	US8690982 BA	20140408	US20130815298	20130219
	US8690983 BA	20140408	US20130694809	20130108
	US8690984 BA	20140408	US20130972686	20130821
	US8721758 BA	20140513	US20120385736	20120305
	US8721759 BA	20140513	US20130950648	20130725
	US8979969 BA	20150317	US20140243210	20140402
	US8986417 BA	20150324	US20140243184	20140402
	US8986418 BA	20150324	US20140243249	20140402
	US9148993 BA	20151006	US20140564510	20141209

Probable Assignee: MILLER DEBORAH L

Assignee(s):(std): MILLER DEBORAH L ; MILLER JOHN C

Inventor(s):(std): MILLER JOHN C ; MILLER DEBORAH L

Agent(s): LAW OFFICE OF JOAN I NOREK; JOAN I

International class (IPC 8-9): A01C21/00 A01C23/00 A01C23/04 A01G1/00 A01G25/00 A01G25/02 A01G7/00 B01J10/00 B01J14/00 B05B3/00 C05B15/00 C05B17/00 C05B17/02 C05B7/00 C05C1/00 C05C11/00 C05C13/00 C05C3/00 C05C5/00 C05C5/02 C05C5/04 C05C9/00 C05D1/00 C05D9/00 C05D9/02 E02B13/00 (Advanced/Invention)

CPC: C05C5/00 C05C5/04 C05C5/02 C05B17/00 C05C3/00 C05D1/00 C05B17/02 A01G7/00 A01G25/02 Y02P60/214 E02B13/00 C05C1/00 C05C9/00 C05C11/00 C05D9/00 A01G22/00 A01C23/042 C05G5/20 C05G5/23 A01G25/00 C05B7/00

US class: 1/1 239/727 422/129 71/28 71/29 71/30 71/31 71/33 71/34 71/35 71/36 71/54 71/58 71/59 71/60 71/61 71/63

[Classification Explorer](#)

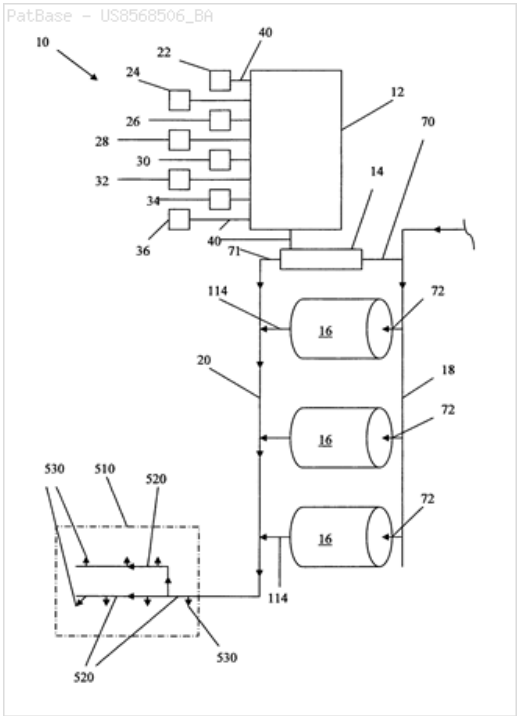
Cited documents: US8821646 BA, US8721758 BA, US8568506 BA, US7325756 BA, US7207503 BA, US5678771 A, US5246164 A, US4969947 A, US4917304 A, US4878614 A, US4337786 A, US4145208 A, US4133671 A, US3888652 A, US3578432 A, US3332767 A, US3326232 A, US2969280 A, US2163065 A, US2088869 A, US2038316 A, US2009249848 AA,

Forward Citations: WO19157444, WO17158406, WO16202803, US9944569, US9932255, US9856179, US9474215, US9439345, US9161489, US9148993, US9004374, US8986418, US8986417, US8979969, US2016185673, US2016073578, US10271474, US10233128, US10117378, US10035949, US10010031, CN105850536, CN105815131, CN104725097,

Abstract:

An agricultural fertigation method includes the in situ manufacture of one or more fertilizers within the irrigation 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 fed to the irrigation system main line or a side-arm reactor efficiently implements the method.



6) Family number: 41439181 (US7325756B)

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Title:

Priority:

Family:

Probable Assignee:

Assignee(s):(std):

Inventor(s):(std):

Agent(s):

International class IPC 8-9):

CPC:

European class:

US class:

Classification Explorer

Cited documents:

Forward Citations:

ROLL-SPRINKLER IRRIGATION SYSTEM

US20060469933 20060905

Publication number	Publication date	Application number	Application date
 US7325756 BA	20080205	US20060469933	20060905

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GIORGIS GETACHEW W

LUCAS AND MERCANTI LLP

B05B1/14 B05B3/18 B05B7/26 (Advanced/Invention);
B05B1/14 B05B3/00 B05B7/24 (Core/Invention)

A01G25/09 Y02A40/237

A01G25/09

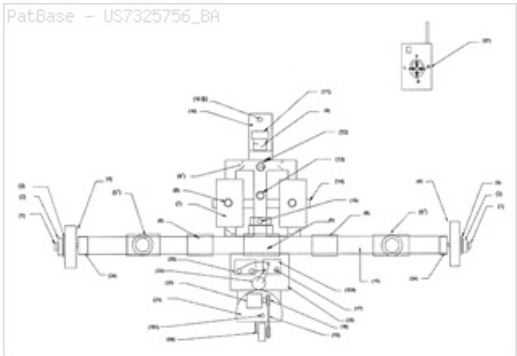
239/304 239/310 239/550 239/726 239/727 239/732 239/735 239/737

[Classification Explorer](#)

US6131832 A, US5908163 A, US4930706 A, US4638948 A, US4580726 A, US4200236 A, US4095746 A, US4022382 A, US375021 A, US3202362 A, US2712960 A, US2692163 A, US2005205698 AA,

USD640348, US9615497, US9248458, US8568506, US2015237791, US2011093398, US2010016561, US10548260, US10506755, US10485153, US10477760, US10477752, US10444774, US10433472, US10271474, US10251333, US10238024, US10233128, FR3029809, EP3031533, CN103362096,

Abstract:
A roll-sprinkler system comprises with horizontal water conducting pipe portions as the supporting means for multiple wheels. The pipes conducting liquid to the sprinkler heads for irrigations have an opening adaptor allowing the system to connect with standard garden hose. The multi head sprinklers are mounted vertically to the horizontal pipes which are linked with wheels for easy displacing of the system during irrigation. The system may further comprise chemical tanks and valves controlling the tanks for adding chemicals into the irrigating water. The system may also be foldable or separable in two or three sections for shipping and storage. The system may further comprise a directional driving wheel, which is powered and can be programmed by an IC chip or controlled by a remote controller.



Probable Assignee: SHELL DEV
Assignee(s):(std): SHELL DEV
Assignee(s): SHELL DEVELOPMENT CO ; SHELL DEVELOPMENT COMPANY
Inventor(s):(std): LUDWIG ROSENSTEIN
Inventor(s): ROSENSTEIN LUDWIG
International class (IPC 8-9): C05B17/00 (Advanced/Invention); C05B17/00 (Core/Invention)
International class (IPC 1-7): C05B17/00
CPC: C05B17/00
European class: C05B17/00
US class: 405/39 71/1 71/33
[Classification Explorer](#)
Forward Citations: US9856179, US9474215, US9161489, US9148993, US8986418, US8986417, US8979969, US8721759, US8721758, US8690984, US8690983, US8690982, US8628598, US8568506, US2947269, US2016185673, US2016168042, US10233128, US10173940,

9) Family number: 1322188 (US4145208A)

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Title: METHOD AND COMPOSITION FOR IMPROVING THE FUNCTIONING OF DRIP IRRIGATION SYSTEMS
Priority: IL19770051248 19770112 IL19770051248 19770112

Family:	Publication number	Publication date	Application number	Application date
	 AU197731609 A1	19790621	AU19770031609	19771215
	 AU508917 B2	19800403	AU19770031609	19771215
	 DE2729417 A1	19780713	DE19772729417	19770629
	 ES465509 A1	19780916	ES19770465509	19771228
	 FR2377150 A1	19780811	FR19780000831	19780112
	 FR2377150 B3	19801017	FR19780000831	19780112
	 GB1564479 A	19800410	GB19770052206	19771215
	 IL51248 A0	19770331	IL19770051248	19770112
	 IL51248 A1	19810227	IL19770051248	19770112
	 US4145208 A	19790320	US19770860900	19771215
	 ZA7707483 A	19781025	ZA19770007483	19771215

Probable Assignee: FERTILIZERS AND CHEMICALS LTD
Assignee(s):(std): FERTILIZERS AND CHEMICALS LTD
Assignee(s): FERTILIZERS ET CHEMICALS LTD ; FERTILIZERS AND CHEM LTD ; ARIE GULKO ; DAHIA S GREIDINGER
Inventor(s):(std): GULKI A ; GREIDINGER D S ; GULKO ARIE DR ; GREIDINGER GEB KATZ DAHLIA S D ; GULKO ARIE ; GREIDINGER DAHLIA S ; GREIDINGER D ; GULKO A
Inventor(s): S ; DS GREIDINGER ; DAHIA S GREIDINGER ; ARIE GULKO ; GULKO A AND GRETZINGER D S ; A GULKI ; D S GREIDINGER
Agent(s): HA; GRIFFITH HACK; SIMON LAVIE
International class (IPC 8-9): A01G25/02 C05B7/00 (Advanced/Invention); A01G25/02 C05B7/00 (Core/Invention)
International class (IPC 1-7): A01C21/00 A01C23/00 A01C23/02 A01C23/04 A01G25/00 A01G25/02 A01G25/16 C05B1/06 C05B15/00 C05B9/00 C05C9/00 C05G1/00
CPC: A01G25/02 C05B7/00 Y02A40/237
European class: A01G25/02B C05B7/00
US class: 71/28 71/29
[Classification Explorer](#)

Cited documents: US2855286 A, US1200806 A, GB816573 A, GB807107 A, GB335600 A, GB191418536 A,
Forward Citations: WO16202803, WO03059845, US9944569, US9039901, US8568506, US7572371, US5997602, US4500335, US2008277352, US2008149548, US10233128, ES2336999, CN103416145,

Abstract:
The present invention relates to a method for improving the smooth functioning of drip irrigation utilizing some nitrogen-based compositions.

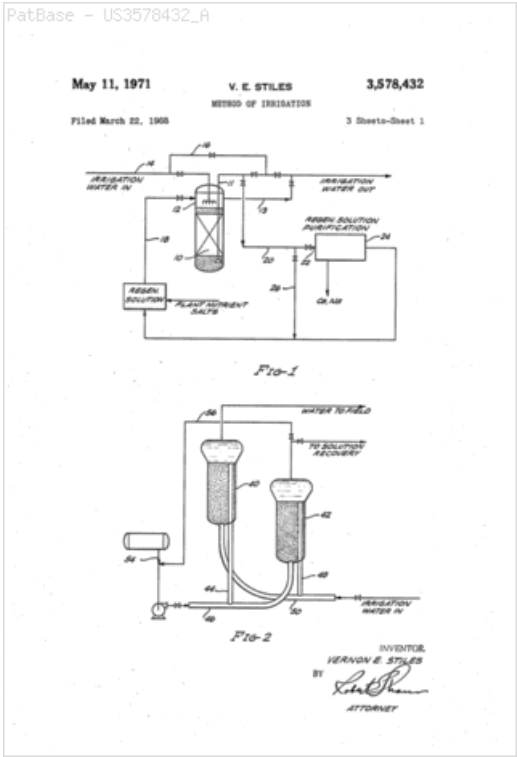
10) Family number: 952190 (US3578432A)

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Title:	METHOD OF IRRIGATION			
Priority:	US19680715208 19680322			
Family:	Publication number	Publication date	Application number	Application date
	 US3578432 A	19710511	US19680715208	19680322
Probable Assignee:	VERNON E STILES			
Assignee(s):(std):	VERNON E STILES			
Inventor(s):(std):	STILES VERNON E			
Inventor(s):	VERNON E STILES			
International class (IPC 8-9):	A01C23/04 C05D9/00 (Advanced/Invention); A01C23/00 C05D9/00 (Core/Invention)			

International class A01G25/00
(IPC 1-7):
CPC: A01C23/042 C05D9/00
European class: 12D25F6E5D A01C23/04B C05D9/00
US class: 210/687 71/1 71/33 71/57 71/63
[Classification Explorer](#)
Forward Citations: WO06101881, US8568506, US8192633, US8091653, US4331538, US3849991, US2010147767, US2010051556, US2009065259, US2008128366, US10233128, FR2494680,

Abstract:
ABSTRACT OF THE DISCLOSURE Irrigation water is contacted with ion exchange resins charged with ions of plant nutrients, e.g., ammonium, nitrate, sulfate, potassium, to replace the ions of the salts contained in the irrigation water with ions of nutrient value. This treatment obviates the difficulties encountered in arid and semi-arid areas with irrigation water containing a high content of dissolved salts which otherwise tend to accumulate in the soil to phytotoxic levels. In a typical embodiment, a column of mixed anion and cation exchange resins charged with nitrate and ammonium, respectively, and having a size of about 1.5 feet in diameter and about 10 feet in length is used to treat irrigation water having a total of about 300 p.p.m. hardness at a liquid hourly space velocity of about 50 liquid volumes per volume per hour. This bed within a four-hour period treats a sufficient quantity of water to irrigate one acre one inch in depth and results in the addition of about 210 parts per million of ammonium nitrate to the irrigation water. When this is practiced over a year's irrigation involving approximately 3 acre feet of water per acre of irrigated land, the amount of nitrogen supplied is from about 400 to 850 pounds nitrogen, ample to supply all of the nutrient requirements of the plants. DESCRIPTION OF THE INVENTION



11) Family number: 3409206 (US4917304A)

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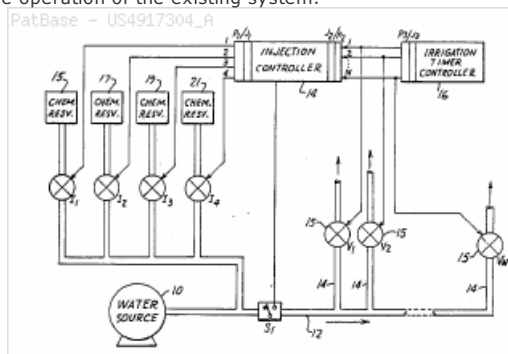
Title: Automatic controller for injection of additives into irrigation water
Priority: US19860948369 19861231 US19880290879 19881221
Family:

Publication number	Publication date	Application number	Application date
US4917304 A	19900417	US19880290879	19881221

Probable Assignee: AVANTI MANUFACTURING CO
Assignee(s):(std): AVANTI MANUFACTURING CO ; AVANTI MFG CO
Inventor(s):(std): MAZZEI ANGELO L ; WEARIN JIM ; FIGGS JOSEPH E
International class A01C23/04 F17D3/12 (Advanced/Invention);
(IPC 8-9): A01C23/00 F17D3/00 (Core/Invention)
International class A01C23/04
(IPC 1-7):
CPC: A01C23/042 F17D3/12
European class: A01C23/04B F17D3/12
US class: 239/304 239/64 239/69 239/70 239/727
[Classification Explorer](#)
Cited documents: US4708162 A, US4635848 A, US4626984 A, US4545396 A, US4456176 A, US4121767 A, US4015366 A, US2905117 A, SU406518 T, FR2515839 A1,
Forward Citations: WO15061570, WO03045130, WO0189289, US9820431, US9678512, US9615506, US9008848, US9004374, US8919366, US8851111, US8568506, US8565925, US8434697, US7850401, US7264177, US6973885, US6575714, US6314979, US6272790, US6240336, US6148839, US5943815, US5911362, US5897600, US5884205, US5816502, US5759286, US5741090, US5678771, US5629863, US5421514, US5227068, US5193744, US5135174, US5076767, US5022585, US2016128270, US2016073578, US2016011603, US2014174546, US2013233940, US2011077784, US2007185621, US2006027676, US2005236498, US2005223955, US2004074921, US2004049978, US2004044527, US10517206, US10492357, US10470356, US10440878, US10356975, US10271474, US10251337, US10233128, US10117378, US10058023, FR2915902, EP3060036, EP1515082, EP1455567, CN106171228,

Abstract:

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.

**12) Family number: 59577251** (CN104725097A)

© PatBase

Title: METHOD FOR PRODUCING FULL WATER-SOLUBLE MAGNESIUM POTASSIUM AMMONIUM NITRATE BY VIRTUE OF STEEL BELT GRANULATION

Priority: CN201510123046 20150320

Family:	Publication number	Publication date	Application number	Application date
	■ CN104725097 A	20150624	CN201510123046	20150320
	■ CN104725097 B	20170926	CN201510123046	20150320

Probable Assignee: LU YONGKUAN

Assignee(s):(std): LU YONGKUAN

Assignee(s): ROAD YONGKUAN

Inventor(s):(std): LU YONGKUAN

International class C05G1/00 (Advanced/Invention)

(IPC 8-9):

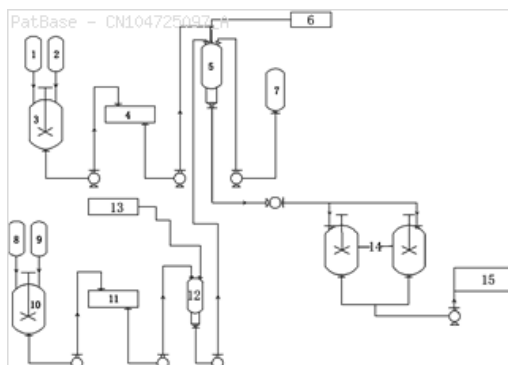
CPC: C05C1/00

[Classification Explorer](#)

Cited documents: US8568506 BA, RU2230718 C1, CN104086235 A, CN103864470 A, CN103232269 A,

Abstract:

The invention relates to a production method of a fertilizer, and in particular discloses a method for producing full water-soluble magnesium potassium ammonium nitrate by virtue of steel belt granulation, aiming at solving the technical problems of poor stability of quality and high cracking possibility in an existing potassium-magnesium fertilizer process in which a potassium fertilizer and a magnesium fertilizer are simply mixed. The key point of the method disclosed by the invention is as follows: the optimum proportion of synthesizing magnesium potassium ammonium nitrate from potassium nitrate, magnesium nitrate and ammonium nitrate is discovered; firstly, magnesium nitrate and ammonium nitrate are mixed in a special proportion to synthesize magnesium ammonium nitrate, and on the basis, the addition of potassium ammonium is further determined, so that the prepared magnesium calcium nitrate fertilizer can be used for thoroughly solving the phenomenon of cracking, and is uniform in content and diverse in nutrient type. The synergic effect of the potassium fertilizer and the magnesium fertilizer is utilized to the greatest extent. The magnesium potassium nitrate produced by the invention is in the shape of a hemispherical sheet which can form a clear and transparent solution when dissolved in water and can solve the problems of high cracking possibility and instable quality; and compared with a single fertilizer, the fertilizer is diverse in nutrient type, is package-saving and is more convenient for farmers in use.

**13) Family number: 43569254** (US2009249848A)

© PatBase

Title: FERTILIZER STOCK AND METHOD FOR TRANSFORMING IRRIGATION WATER TO A COMPOUND FERTILIZER

Priority: US20050213572 20050826 US20090485819 20090616

Family:	Publication number	Publication date	Application number	Application date
	■ US2009249848 AA	20091008	US20090485819	20090616

Probable Assignee:

Assignee(s):(std):

Assignee(s):

Inventor(s):(std):

Agent(s):

International class (IPC 8-9):

CPC:

European class:

US class:

NUTRIDYNE LLC

PETERS ROBERT ; PETERS ROBERT B

NUTRIDYNE LLC

PETERS ROBERT ; PETERS ROBERT B

VERMETTE AND CO; DENIS

C05D3/00 C05D9/02 (Advanced/Invention);
C05D3/00 C05D9/00 (Core/Invention)

C05G5/23

C05G3/00B10F

71/1 71/54

[Classification Explorer](#)

Cited documents:

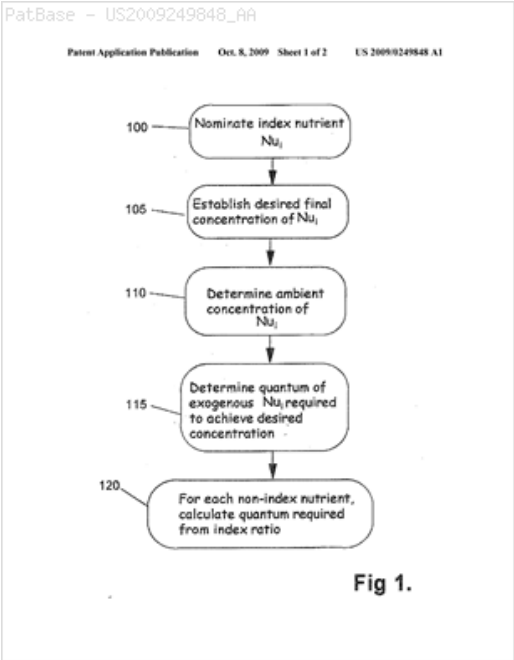
US6878179 BB, US6874277 BB, US6858058 BB, US6838504 BA, US6749659 BA, US6549851 BB, US6318023 BA, US6312493 BA, US6309440 BA, US6241795 BA, US6206946 BA, US5997602 A, US5958104 A, US5862628 A, US5797976 A, US5768128 A, US5731265 A, US5668719 A, US5652196 A, US5549729 A, US5494498 A, US5476528 A, US5454850 A, US5454849 A, US5435823 A, US5435821 A, US5395418 A, US5354726 A, US5171349 A, US5135174 A, US5114459 A, US5112379 A, US4704160 A, US4545396 A, US4500335 A, US4447253 A, US4328025 A, US4240818 A, US4177052 A, US3993466 A, US3592386 A, US3330290 A, US2983075 A, US2756544 A, US2005138978 AA, US2005126238 AA, US2004069032 AA, US2003167811 AA, US1864947 A,

Forward Citations:

US9073795, US8568506, US10233128,

Abstract:

The present invention provides 1) a convenient and novel method for supplementing irrigation water to produce a compound fertilizer that takes into account ambient concentrations of one or more of the nutrients in the irrigation water; 2) a convenient and novel method of prescribing the constituents of compound fertilizers based on predetermined ratios between a desired final concentration of an index nutrient and a desired concentration of at least one non-index nutrient; and, 3) a convenient and novel method of formulating compound fertilizers by providing a graduated series of stocks that accommodate wide variation in ambient concentrations of an index nutrient in local irrigation waters.



14) Family number: 61842362 (US2016068451A)

© PatBase

Title:

Priority:

Family:

GRANULAR HUMATE FOR SPRAY APPLICATION AND PROCESS OF MAKING SAME

US20140045791P 20140904

US20150845757 20150904

US20170694340 20170901

Publication number

Publication date

Application number

Application date

US2016068451 AA

20160310

US20150845757

20150904

US2017362138 AA

20171221

US20170694340

20170901

US9850179 BB

20171226

US20150845757

20150904

US9944569 BB

20180417

US20170694340

20170901

Probable Assignee:

Assignee(s):(std):

Inventor(s):(std):

Agent(s):

International class (IPC 8-9):

CPC:

US class:

ANDERSONS INC

ANDERSONS INC

ULIVETO JOHN ; TAYLOR CHRIS ; DEARTH ERIC

BLUE FILAMENT LAW PLLC; AVERY N

C05F11/02 C05G3/00 (Advanced/Invention)

C05F11/02 C05G3/20 C05G5/12

1/1 71/24

[Classification Explorer](#)

Cited documents:

US9139485 BB, US8636822 BA, US8628598 BA, US8435321 BB, US7867947 BA, US6878179 BB, US6783567 BA, US6251826 BA, US5698001 A, US5663425 A, US5538530 A, US5354350 A, US5034045 A, US5026416 A, US4743287 A, US4502868 A, US4319041 A, US4145208 A, US4069034 A, US3770411

PatBase PDF Export - Page: 10 20/02/2020

A, US3617237 A, US3544296 A, US3352902 A, US3307934 A, US3111404 A, US2015152017 AA, US2013227998 AA, US2012047974 AA, US2011190124 AA, US2011077155 AA, US2010251790 AA, US2008221314 AA, US2005039509 AA, US2003101785 AA, RU2191798 C1, KR20020025006 A, CN2481715 Y, CN103214303 A, CN103121871 A, CN102001898 A,

Forward Citations: WO19040460, WO18156266, US9988318, US2016102024,

Abstract:

A granularized sulfonated humate powder material is provided that includes a sulfonated cationic humate composed of at least one of humic acid, fulvic acid, or a combination thereof in the form of granules of from 0.1 to 6 millimeters in size. The humate powder material is water soluble with limited dusting and the ability to form a concentrated solution for application. A process of formulating the sulfonated potassium humate powder in granular form includes a lignin or lignosulfonate being metered into a powder of sulfonated potassium humate to allow for granulation without a solubilizing the powder by matching a lignin particle size to a particle sizing of said powder. The lignin or lignosulfonate and the powder are mixed into the granular form with a granule size of 0.1 to 6 millimeters.

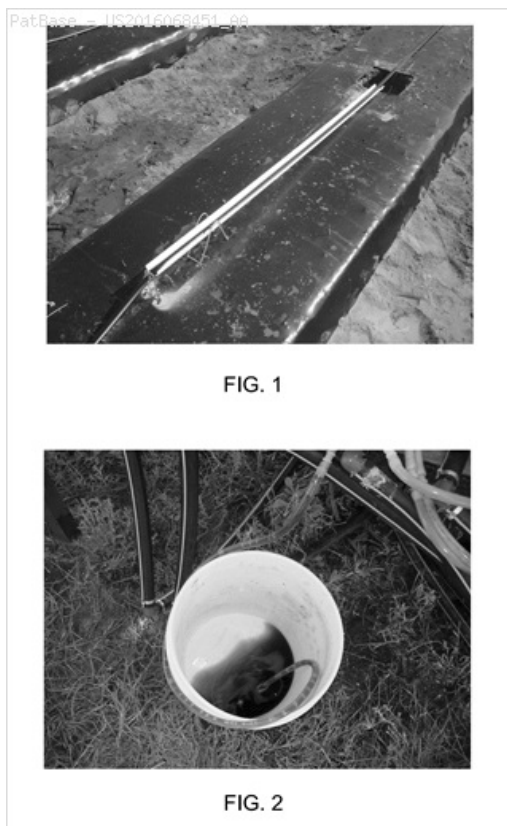


FIG. 1

FIG. 2

15) Family number: 1146401 (US3888652A)

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Title: IRRIGATION ENGINE EXHAUST CONVERSION TO OBTAIN FERTILIZING SOLUTION

Priority: US19730364656 19730529

Family:	Publication number	Publication date	Application number	Application date
	US3888652 A	19750610	US19730364656	19730529

Probable Assignee: INST GAS TECHNOLOGY

Assignee(s):(std): INST GAS TECHNOLOGY

Assignee(s): INSTITUTE OF GAS TECHNOLOGY ; OF GAS TECHNOLOGY INST

Inventor(s):(std): CUMMINGHAM S J ; ROSENBERG ROBERT E ; YIE GENE G

International class (IPC 8-9): A01C21/00 A01C23/04 A01G25/09 (Advanced/Invention); A01C21/00 A01C23/00 A01G25/00 (Core/Invention)

International class (IPC 1-7): A01C23/04 H03H1/00

CPC: Y10S71/903 A01G25/09 A01C21/00 A01C23/04

European class: A01C21/00 A01C23/04 A01G25/09

US class: 71/54 71/61 71/610 71/64.1 71/903

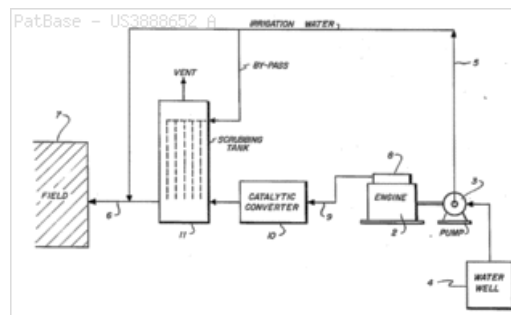
[Classification Explorer](#)

Cited documents: US3810361 A, US3337989 A, US2943419 A, US2936548 A, US2152473 A, US2088869 A, US2020824 A, US1083703 A,

Forward Citations: WO06130965, WO06130965, US8967059, US8721759, US8721758, US8690984, US8690983, US8690982, US8628598, US8573143, US8568506, US8061283, US7735437, US4435201, US4427434, US4297123, US4256967, US4247321, US4133671, US4010897, US2012118211, US2010024408, US2009304450, US10233128, EP3081065,

Abstract:

A method and apparatus for fertilizing crop areas by dispensing aqueous ammonia solutions from irrigation engines by utilizing the body of water which moves through the engine-driven pumps. The ammonia is formed in place by catalytically converting nitrogen oxide emissions present in the engine exhaust. The ammonia is thereafter dissolved in the body of water which moves through the irrigation pump driven by the engine. 8 Claims, 1 Drawing Figure



16) Family number: 13272404 (US5678771A)

© PatBase

Title: Chemical distribution system

Priority: US19960634933 19960419

Family:	Publication number	Publication date	Application number	Application date
	US5678771 A	19971021	US19960634933	19960419

Probable Assignee: VALMONT IND

Assignee(s):(std): VALMONT IND ; VALMONT INDUSTRIES

Assignee(s): VALMONT INDUSTRIES INC

Inventor(s):(std): CHAPMAN JOHN A

International class
(IPC 8-9): A01G25/09 (Advanced/Invention);
A01G25/00 (Core/Invention)

International class
(IPC 1-7): B05B3/00

CPC: A01G25/092

European class: A01G25/09B

US class: 239/727 239/99

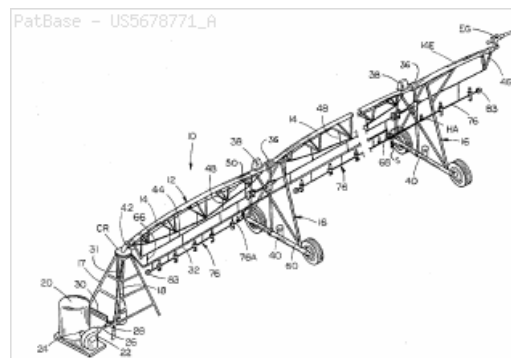
[Classification Explorer](#)

Cited documents: US5348226 A, US5299413 A, US5279068 A, US5255857 A, US5246164 A, US5222324 A, US5074468 A, US5048755 A, US4961531 A, US4917304 A, US4795099 A, US4763836 A, US4662563 A, US4507910 A, US4397421 A, US4396149 A, US4277026 A, US4186880 A, US4176791 A, US4015366 A, US3991939 A, US3777573 A,

Forward Citations: WO9854952, WO17182933, WO07071264, WO0234033, WO0226026, US9743596, US8924030, US8849468, US8849467, US8568506, US8210445, US8087201, US7883035, US7461798, US7395769, US7309035, US6820828, US6168048, US6085999, US6045066, US6045065, US6042031, US6039273, US6036122, US6029914, US6007004, US5979793, US2017156273, US2016324084, US2016157445, US2016157444, US2013018509, US2011220743, US2011094101, US2010072304, US2010032495, US2009192654, US2007185621, US2006289676, US2006086295, US10299445, US10285343, US10264740, US10251348, US10233128, AU765287,

Abstract:

A chemical distribution system for use with a mobile irrigation system comprising a liquid chemical supply line vertically adjustably supported on the irrigation system and which is in operative communication with a pressurized source of liquid chemical. A liquid chemical distribution line is positioned beneath the chemical supply line between each pair of the drive towers for the irrigation system and which is in fluid communication with a remotely controlled, electrically operated solenoid valve which is in fluid communication with a chemical supply line. A plurality of spaced-apart emitter valves, having a sprinkler associated therewith, are provided on each of the distribution lines with the associated solenoid valve being operated by a control for activating selective distribution lines whereby liquid chemical may be applied to preselected portions of the area over which the irrigation system moves. An adjustable hydraulic accumulator is associated with each of the emitter valves to meter the amount of liquid chemicals being applied to the field.



17) Family number: 22986408 (US3332767A)

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Title: PROCESS FOR THE CONVERSION OF SEA WATER FOR IRRIGATION PURPOSES

Priority: US19640336074 19640106

Family:	Publication number	Publication date	Application number	Application date
	US3332767 A	19670725	US19640336074	19640106

Probable Assignee: HEINS SIDNEY M

Assignee(s):(std): HEINS SIDNEY M
Inventor(s):(std): HEINS SIDNEY M
International class (IPC 8-9): C02F1/00 C05C3/00 (Advanced/Invention);
C02F1/00 C05C3/00 (Core/Invention)
International class (IPC 1-7): C02B1/18
CPC: C02F1/5236 C02F2103/08 C05C3/00
European class: C02F1/52F C05C3/00 M02F103/08
US class: 210/642 423/395 423/470 423/499.4 423/548 71/1 71/59 71/60 71/61

[Classification Explorer](#)

Cited documents: US3232703 A, US3042606 A, US2934419 A, US1955031 A,
Forward Citations: US8568506, US6180012, US6180012, US2007023359, US10233128,

Abstract:

(Claim 1) 1. In a salt displacement process for the large-scale conversion of raw sea water to irri,-ation use, the steps which comprise combining with the sea water ammonium nitrate in an amount sufficient to convert a major portion of the chloride content of the sea water to a nitrate content for rendering the resulting liquid innocuous to plant life, and recovering the resulting liquid.

18) Family number: 63833486 (US2016304407A)

© PatBase

Title: SOYBEAN STARTER FERTILIZER FOR IN-FURROW APPLICATION
Priority: US20150147454P 20150414 US20150947183 20151120 WO2016US24917 20160330
Family:

Publication number	Publication date	Application number	Application date
AU2016247847 AA	20171026	AU20160247847	20160330
CA2981645 AA	20171002	CA20162981645	20160330
MX2017013200 A1	20180619	MX20170013200	20160330
US2016304407 AA	20161020	US20150947183	20151120
WO16167961 A1	20161020	WO2016US24917	20160330

Probable Assignee: NACHURS ALPINE SOLUTIONS CORP
Assignee(s):(std): BAME GREGORY A ; NACHURS ALPINE SOLUTIONS CORP
Inventor(s):(std): BAME GREGORY ; BAME GREGORY A ; GREGORY A BAME
Agent(s): WRAYS PTY LTD; RICHES MCKENZIE AND HERBERT LLP; SIMUNIC JOAN
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): C05B17/00 C05B7/00 (Advanced/Invention)

CPC: C05B7/00 C05C9/00 C05D1/00

US class: 1/1 71/16

[Classification Explorer](#)

Cited documents: WO14082138 A1, US8461079 BA, US4175943 A, US3912490 A, US2770538 A, US2015007626 AA,

Forward Citations: US9771306, US2018258001, US2018244589, US2016347675, US10508060, US10233128, AU2016269996,

Abstract:

The present development is a composition for a liquid soybean starter fertilizer that can be applied as an in-furrow application. The fertilizer composition includes potassium hydroxide and a potassium carboxylate, and the concentration of potassium oxide (K2O) derived from potassium hydroxide relative to the concentration of K2O derived from the potassium carboxylate source is preferably less than 1.2.

19) Family number: 61798536 (US2016060576A)

© PatBase

Title: FLUORO-INORGANICS FOR INHIBITING OR REMOVING SILICA OR METAL SILICATE DEPOSITS
Priority: US20140469323 20140826 US20150206658P 20150818 US20150206669P 20150818
AU20150308923 20150827 WO2015US47065 20150827 US20160237920 20160816
US20160238002 20160816 WO2016US47498 20160818 AU20190271980 20191127

Publication number	Publication date	Application number	Application date
AR105725 AA	20171101	AR2016P102520	20160817
AR105726 AA	20171101	AR2016P102521	20160817
AU2015308923 AA	20170316	AU20150308923	20150827
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US2016060576 AA	20160303	US20140469323	20140826
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US2017051198 AA	20170223	US20160238002	20160816
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US10035949 BB	20180731	US20160238002	20160816
WO16033259 A1	20160303	WO2015US47065	20150827
WO17031103 A1	20170223	WO2016US47143	20160816
WO17031282 A1	20170223	WO2016US47498	20160818

Probable Assignee: ECOLAB USA INC

Assignee(s):(std): ECOLAB INC ; ECOLAB USA INC

Assignee(s): GILL JABIR S ; GILL JASBIR ; SOMMESE ANTHONY ; MILLER THOMAS ; RODMAN DAVID ; SOMMESE ANTHONY G ; MILLER THOMAS M ; HOOTS JOHN E ; WEBERSKI MICHAEL PATRICK JR ; GODFREY MARTIN RAY ; BATTON CAROL B

Inventor(s):(std): CAROL B BATTON ; ANTHONY G SOMMESE ; MICHAEL PATRICK WEBERSKI JR ; MARTIN RAY GODFREY ; JOHN E HOOTS ; JABIR S GILL ; THOMAS M MILLER ; DAVID RODMAN ; HOOTS JHON E ; GODREY MARTIN RAY ; MILLER THOMAS M ; BATTON CAROL B ; HOOTS JOHN E ; SOMMESE ANTHONY G ; WEBERSKI MICHAEL PATRICK JR ; GODFREY MARTIN RAY ; GILL JABIR S ; RODMAN DAVID ; GILL JASBIR S ; GILL JASBIR ; MILLER THOMAS ; SOMMESE ANTHONY ; WEBERSKI JR MICHAEL PATRICK

Inventor(s): WEBERSKI JR ; GILL JASBIR SINGH ; JASBIR GILL ; ANTHONY SOMMESE ; THOMAS MILLER ; 1 SOMMESE ANTHONY G ; 2 GILL JABIR S ; 3 MILLER THOMAS M ; 4 RODMAN DAVID ; 5 BATTON CAROL B ; 6 HOOTS JOHN E ; 7 WEBERSKI MICHAEL PATRICK JR ; 8 GODFREY MARTIN RAY

Agent(s): PIZZEYS PATENT AND TRADE MARK ATTORNEYS PTY LTD; BORDEN LADNER GERVAIS LLP; GODEMEYER BLUM LENZE PATENTANWALTE PARTNERSCHAFT MBB WERKPATENT; MAROLITA SETIATI; YKI PATENT ATTORNEYS; YKI INTELLECTUAL PROPERTY ATTORNEYS; SENNIGER POWERS LLP; CARLSEN BENJAMIN; DEMASTER ERIC E

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): B01D19/04 C02F1/66 C02F5/00 C02F5/08 C09K8/05 C09K8/52 C09K8/528 C09K8/54 C09K8/58 C09K8/584 C09K8/72 C09K8/74 C09K8/76 C09K8/86 C11D1/66 C11D11/00 C11D3/00 C11D3/04 C11D3/06 C11D3/16 C11D3/26 C11D3/32 C23F11/04 C23F11/14 C23F11/18 C23F14/02 C23G1/02 C23G1/16 C9K8/528 E21B37/00 E21B37/06 E21B41/02 E21B43/22 E21B43/25 E21B43/26 E21B43/27 (Advanced/Invention); E21B43/26 (Advanced/Non-invention)

CPC: C11D3/0026 C11D11/0041 C11D3/04 C11D3/06 C11D3/323 C11D3/162 C11D1/722 C11D3/046 C11D3/08 C11D3/124 C11D3/30 C11D3/3707 C11D3/373 E21B43/26 C09K8/528 C09K8/72 C02F1/66 C02F5/12 C02F2103/023 C02F2103/10 C02F2103/365 C02F2303/08 C02F2303/22 C02F2305/04 C09K8/52 C09K8/58 C23F11/04 C23F11/14 C23F14/02 C09K8/54 C09K2208/32

US class: 1/1 166/307 507/244 510/109

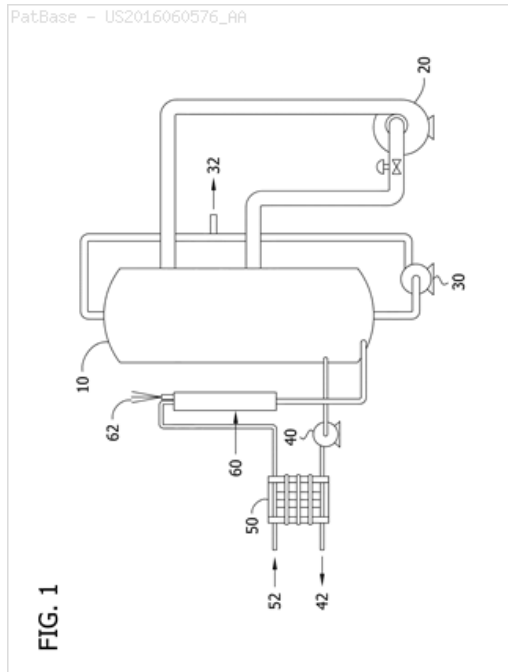
[Classification Explorer](#)

Cited documents: WO9516006 A1, WO16029089 A1, WO15126397 A1, WO14004697 A2, WO12127183 A1, WO12059714 A1, WO09121893 A1, WO09093196 A1, WO09069060 A1, WO09061487 A1, WO06013319 A1, WO04094557 A1, WO0170922 A1, WO0032711 A1, WO0032711, US9562188 BB, US9404067 BB, US9103038 BB, US8986418 BA, US8796195 BB, US8758520 BB, US8598094 BB, US8398781 BB, US8389453 BB, US8252122 BB, US8093197 BB, US8034253 BB, US7828908 BA, US7731803 BB, US7658805 BB, US7029553 BA, US6815404 BB, US5571447 A, US4949743 A, US4479543 A, US3889753 A, US2016272879 AA, US2016264844 AA, US2016060576 AA, US2015307788 AA, US2015005204 AA, US2014296113 AA, US2014128294 AA, US2013192639 AA, US2013178405 AA, US2013178405, US2012325485 AA, US2012291818 AA, US2012097392 AA, US2012097392, US2011079392 AA, US2009235730 AA, US2009233819 AA, US2009233819, US2009176689 AA, US2008207470 AA, US2008076840 AA, US2006079424 AA, US2005211274 AA, US2005181966 AA, US2004033919 AA, US10035949 BB, RU2109805 C1, JP9206733, JP5631516 B1, JP2013166093, JP2009185286, JP2007289817,

Forward Citations: WO19204415, WO18104796, WO18023048, WO17031103, US9932255, US2017051194, US10329674, US10280521, US10035949,

Abstract:

The present invention generally relates to methods for removing silica or silicate deposits comprising contacting a cleaning composition with a surface in contact with a liquid containing silica or silicates, wherein the cleaning composition comprises a salt of a nitrogen base having a fluoro inorganic anion. In particular, these methods for removing silica or silicate deposits can be used in steam generators, evaporators, heat exchangers, and the like that are used in produced water plant unit operations.

**20) Family number: 70301549** (US10010031B)

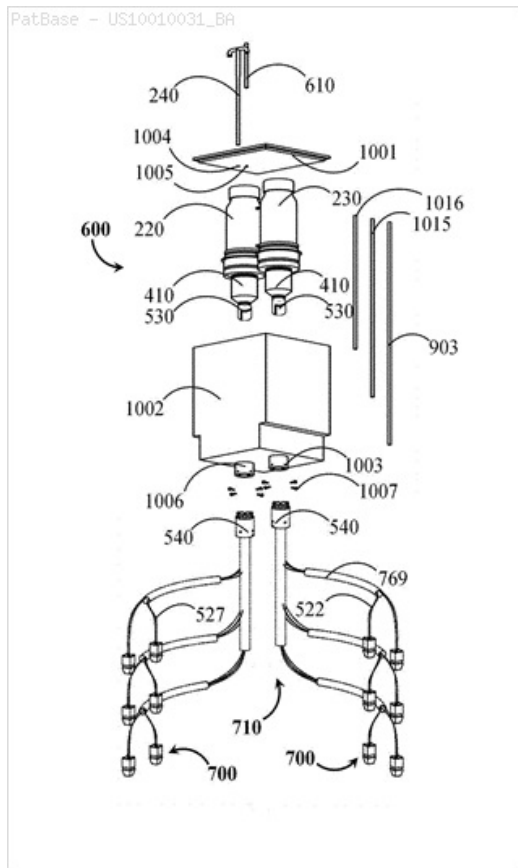
© PatBase

Title: MULTIFUNCTIONAL UNDERGROUND IRRIGATION SYSTEM**Priority:** US20170605919 20170525

Family:	Publication number	Publication date	Application number	Application date
	US10010031 BA	20180703	US20170605919	20170525

Probable Assignee: LI RUI**Assignee(s):(std):** LI RUI ; LIU TIAN LI DAVID ; LIU XUE WU**Inventor(s):(std):** LIU XUE WU ; LIU TIAN LI DAVID ; LI RUI**International class**
(IPC 8-9): A01G25/06 (Advanced/Invention);
A01G25/16 A01G29/00 G06K19/06 (Advanced/Non-invention)**CPC:** A01G25/06 A01G29/00 G06K19/06028 A01G25/16 A01G27/006[Classification Explorer](#)**Cited documents:** US9629313 BA, US9485923 BB, US8986418 BA, US8986417 BA, US8979969 BA, US8786407 BB, US8644166 BB, US8381437 BB, US8132362 BB, US7809475 BB, US6540436 BB, US6443367 BA, US6138408 A, US5996279 A, US5938372 A, US5761846 A, US5443544 A, US4384288 A, US4003408 A, US3713148 A, US2017305804 AA, US2017223912 AA, US2017223910 AA, US2011174706 AA, US2008097653 AA, US2007220808 AA, US2003196375 AA, CN201928762 U, CN102986507 A,**Forward Citations:** US2018245967, US10444060,**Abstract:**

A multifunctional underground irrigation system comprises of an underground irrigation, fertilization and respiration (UIFR) device with three types of air/pressure releasing structures, an universal unique label and label reader, three irrigation monitoring indicators, various sample collecting channels and measurement devices, a movable monitoring device, a water supply system, and a data center. The water containers, water drip controlling device, water flow rate controlling device, AAB device and AWPAE devices constitute the irrigation device for field plants or potted plants culture. The combination of the wireless technologies with various sensors in one of three indicators enables the underground irrigation to be visible, hearable, viewable and remotely controllable at real time and real-location manner for precision management of plant cultivation. The movable device provides a way to monitor the water supply system and to calibrate data obtained from UIFR devices. All devices in the system are repairable and replaceable.



21) Family number: 65136573 (US2018244589A)

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Title: FERTILIZER WITH ORGANIC POTASSIUM SALTS

Priority: US20150213742P 20150903 US20150215541P 20150908 US20160753116 20160902
 WO2016US50121 20160902 US20160753123 20160908 WO2016US50802 20160908
 US20180503566 20180215 US20190503566 20190704

Family:	Publication number	Publication date	Application number	Application date
	AU2016318075 AA	20180315	AU20160318075	20160902
	AU2016321239 AA	20180315	AU20160321239	20160908
	CA2996187 AA	20180220	CA20162996187	20160908
	CA2996204 AA	20180220	CA20162996204	20160902
	MX2018002648 A1	20181219	MX20180002648	20160902
	MX2018002837 A1	20180912	MX20180002837	20160908
	US2018244589 AA	20180830	US20160753116	20160902
	US2018258001 AA	20180913	US20160753123	20160908
	US10508060 BA	20191217	US20190503566	20190704
	WO17040938 A1	20170309	WO2016US50121	20160902
	WO17044644 A1	20170316	WO2016US50802	20160908

Probable Assignee: NACHURS ALPINE SOLUTIONS CORP

Assignee(s):(std): BAME GREGORY A ; NACHURS ALPINE SOLUTIONS CORP ; ROACH TOMMY

Inventor(s):(std): BAME GREGORY A ; ROACH TOMMY ; BAME GREGORY ; TOMMY ROACH ; GREGORY A BAME

Agent(s): WRAYS PTY LTD; RICHES MCKENZIE AND HERBERT LLP; LAW OFFICE OF J L SIMUNIC; SIMUNIC J L; SIMUNIC JOAN

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): C01B25/30 C05B11/10 C05B15/00 C05B17/00 C05B17/02 C05B7/00 C05C1/00 C05C11/00 C05C3/00 C05C9/00 C05D1/00 C05D1/02 C05D9/00 C05D9/02 C05F1/00 C05F11/00 C05F11/08 C05G3/00 C07F1/06 (Advanced/Invention)

CPC: C05D1/00 C05B11/10 C05C1/00 C05C3/00 C05C11/00 C05D1/02 C05F1/002 C05F11/00 C05G3/00 C05B7/00 C05B17/00 C05C3/005 C05C9/00 C05D1/005 C05D9/00 C05D9/02 C05F11/08 C07F1/06 C05B17/02

US class: 1/1 71/29 71/6

[Classification Explorer](#)

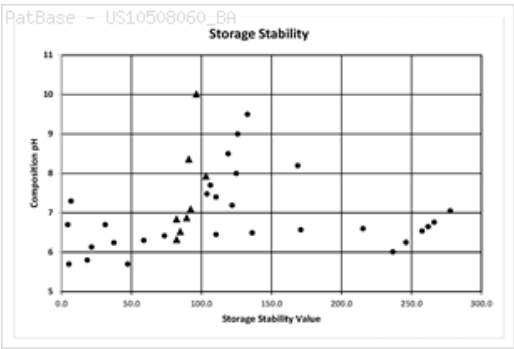
Cited documents: US9771306 BB, US9474215 BA, US8002870 BB, US2017156337 AA, US2016347675 AA, US2016304407 AA, US2016185673 AA, US2015239788 AA, US2014274719 AA, US2008257000 AA, US2007051149 AA, US2005197252 AA, US2004035162 AA, AU2014101391 AD,

Forward Citations: WO18164999, US10182572, IT201700105450, CN107188728,

Abstract:

The present invention provides a new fertilizer comprising a nitrogen source, a phosphate source, and an organic potassium source selected from the group consisting of potassium acetate, potassium formate, potassium citrate, potassium succinate,

potassium propionate, animal manure, and combinations thereof. The fertilizer has a neutral to slightly alkaline pH, relatively lower salt index and potentially lower phytotoxicity damage compared to other sources of potassium for fertilizer products. The fertilizer composition may further comprise additives such as sulfur, zinc, boron, calcium, manganese, iron, copper, cobalt, magnesium, or a combination thereof.



22) Family number: 60595574 (US2016185673A)

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Title: METHOD AND COMPOSITION FOR AGRICULTURAL POTASSIUM-PLUS FERTIGATION

Priority: US20140564594 20141209 US20150833484 20150824 US20160059731 20160303
US20170826449 20171129

Family:

Publication number	Publication date	Application number	Application date
US2016185673 AA	20160630	US20160059731	20160303
US9161489 BA	20151020	US20140564594	20141209
US9474215 BA	20161025	US20150833484	20150824
US9856179 BB	20180102	US20160059731	20160303
US10233128 BA	20190319	US20170826449	20171129

Probable Assignee: MILLER DEBORAH L

Assignee(s):(std): MILLER DEBORAH L ; MILLER JOHN C

Inventor(s):(std): MILLER DEBORAH L ; MILLER JOHN C

Agent(s): JOAN I; LAW OFFICE OF JOAN I NOREK; CENTRAL CALIFORNIA IP GROUP PC; ANDREW D; FORTNEY ANDREW D

International class (IPC 8-9): A01C21/00 A01C23/02 A01C23/04 A01G1/00 A01G25/00 C05B17/00 C05B7/00 C05C9/00 C05D1/00 C05F11/00 C05G3/00 (Advanced/Invention)

CPC: C05F11/00 C05C9/00 C05B7/00 C05B17/00 C05G5/23 A01C23/042 A01G25/00 C05D1/00

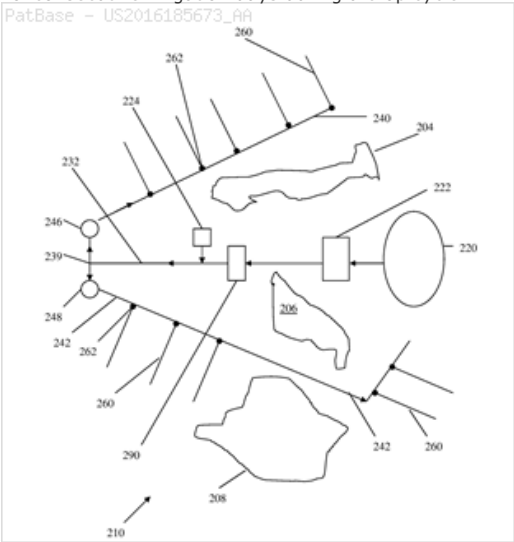
US class: 1/1 239/10 47/58.1SC 71/28 71/29

[Classification Explorer](#)

Cited documents: US9474215 BA, US9161489 BA, US9148993 BA, US8821646 BA, US8568506 BA, US7325756 BA, US7207503 BA, US5678771 A, US5246164 A, US4969947 A, US4917304 A, US4878614 A, US4337786 A, US4145208 A, US4133671 A, US3888652 A, US3578432 A, US3332767 A, US3326232 A, US2969280 A, US2163065 A, US2088869 A, US2038316 A, US2016347675 AA, US2016304407 AA, US2016200636 AA, US2009249848 AA,

Forward Citations: US9856179, US9771306, US9474215, US9439345, US2018258001, US2018244589, US2016185673, US10508060, US10271474, US10233128, US10117378,

Abstract:
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.



23) Family number: 22945584 (US3326232A)

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Title: FERTILIZER APPLICATION AND APPARATUS THEREFOR

Priority: US19660546443 19660429

Family:	Publication number	Publication date	Application number	Application date
	 US3326232 A	19670620	US19660546443	19660429

Probable Assignee: NEIKIRK DAVID W

Assignee(s):(std): NEIKIRK DAVID W ; STAMPS OTIS C

Inventor(s):(std): NEIKIRK DAVID W ; STAMPS OTIS C

International class (IPC 8-9): A01C23/04 (Advanced/Invention);
A01C23/00 (Core/Invention)

International class (IPC 1-7): A01C23/04

CPC: A01C23/042 Y10T137/86163

European class: A01C23/04B

US class: 137/565.33 239/124 239/310 239/727 239/728 251/207

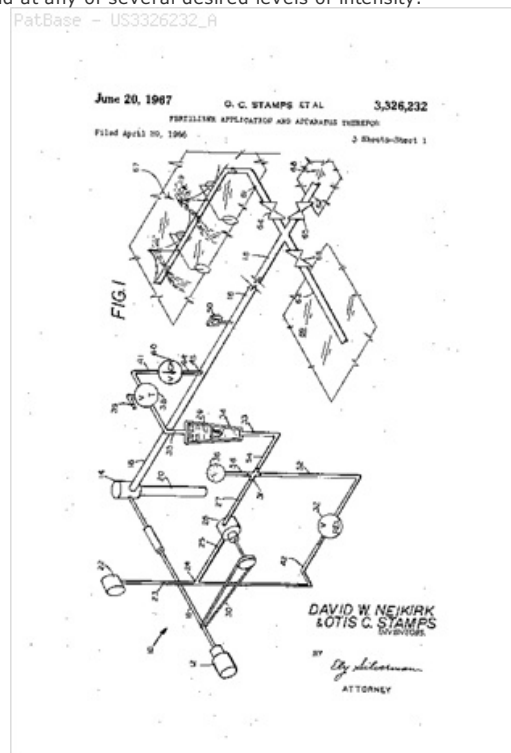
[Classification Explorer](#)

Cited documents: US3115896 A, US3071162 A, US3042059 A, US2920640 A, US2893643 A, US2184346 A, DE1045703 B,

Forward Citations: WO18176113, WO17182933, USRE37732, USRE31838, US9743596, US9179612, US9086154, US8568506, US7771504, US6820828, US6230982, US5586728, US5191919, US5082183, US4878614, US4869285, US4768712, US4729514, US4660775, US4612783, US4337786, US4130128, US3784100, US3703990, US3464626, US2014299808, US2014110498, US10233128,

Abstract:

ABSTRACT OF THE DISCLOSURE This invention teaches a reliable and practical process and a reliable and inexpensive apparatus for applying chemical fertilizers to farmland during the application of well water thereto by a particularly arranged metered high pressure pump system in combination with an irrigation apparatus. This process provides for applying the liquid fertilizer to the land at a substantially constant weight of fertilizer per unit area of the land at any of several desired levels of intensity.



24) Family number: 58965589 (US9004374B)

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Title: IRRIGATION METHOD USING THIXOTROPIC MATERIALS

Priority: US20110509880P 20110720 US20110545493P 20111010 US20120670199P 20120711
US20120553374 20120719 US20130936407 20130708

Family:	Publication number	Publication date	Application number	Application date
	 US9004374 BA	20150414	US20130936407	20130708

Probable Assignee: PATHWAY BIOLOGIC LLC

Assignee(s):(std): GANS STEPHEN

Assignee(s): PATHWAY BIOLOGIC LLC

Inventor(s):(std): GANS STEPHEN

International class (IPC 8-9): A01C23/04 C05B3/00 (Advanced/Invention);
C05F11/08 (Advanced/Non-invention)

CPC: A01C23/042 C05F11/08

US class: 239/10 239/727 71/6

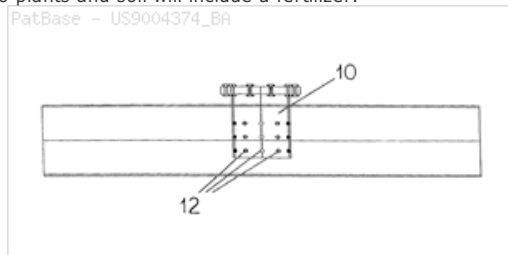
[Classification Explorer](#)

Cited documents: US8628598 BA, US8568506 BA, US6471741 BA, US5246164 A, US4917304 A, US3464626 A, US2799569 A, US2012255334 AA, US2012036906 AA, US2011160058 AA, US2010062944 AA, US2009238907 AA, US2009031775 AA, US2006243009 AA, US2003066322 AA,

Forward Citations: US2016073578, US10117378, ITUB20160483, CN104823588,

Abstract:

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.



25) Family number: 8586622 (US4337786A)

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Title: VARIABLE RATE FERTILIZER INJECTION SYSTEM

Priority: US19800162085 19800623

Family:	Publication number	Publication date	Application number	Application date
	US4337786 A	19820706	US19800162085	19800623

Probable Assignee: VALMONT IND

Assignee(s):(std): VALMONT IND ; VALMONT INDUSTRIES

Assignee(s): VALMONT INDUSTRIES INC ; VALMONT IND INC

Inventor(s):(std): MYERS RICHARD G ; STUCKEY JAMES P

International class A01C23/04 B01F15/04 G05D11/13 (Advanced/Invention);
(IPC 8-9): A01C23/00 B01F15/04 G05D11/00 (Core/Invention)

International class G05D11/13

(IPC 1-7):

CPC: A01C23/042 B01F15/0412 G05D11/132 Y10T137/0329 Y10T137/2514 Y10T137/2531 Y10T137/8208

European class: A01C23/04B B01F15/04G G05D11/13B2

US class: 137/101.21 137/3 137/552.7 137/98

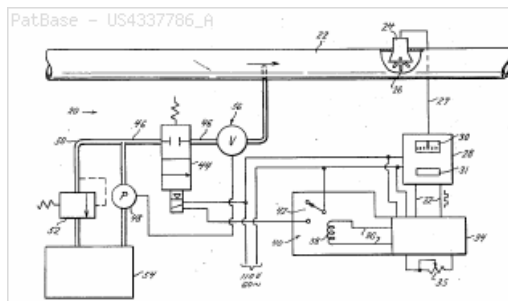
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Cited documents: US4121767 A, US4007755 A, US3806037 A, US3770198 A, US3669357 A, US3455321 A, US3375976 A, US3335671 A, US3326232 A, US2726895 A,

Forward Citations: WO10078579, US9283584, US8740177, US8568506, US8294292, US8091575, US7369230, US6129104, US5878772, US5746241, US5575584, US5143257, US5109347, US4554939, US2010170961, US2009095351, US2008277000, US2007185621, US2007138319, US2006108455, US10473494, US10271474, US10233128, GB2499383, FR2606968, FR2586307, EP2661411, EP2426568, CN105103760, CN105103760, CN103518594, CH703784,

Abstract:

A variable rate injection system includes a paddle wheel flowmeter which produces a pulse train proportional to the amount of liquid flowing through an irrigation line. An accumulator circuit totalizes the pulse train and produces a triggering pulse to a flow control timer after a predetermined amount of fluid has passed through the irrigation line. The triggering pulse activates an adjustable time delay output on the flow control timer and its timed contact closure electrically operates a solenoid valve in an injection line. A constant displacement injection pump maintains an additive under pressure in the injection line and the solenoid valve, when opened, permits flow of the additive through the injection line and into the irrigation line. When the solenoid is closed, a pressure relief valve and relief line permit return of the additive to a reservoir. A safety shutdown includes a flow sensor mounted in the injection line between the normally closed solenoid and the main irrigation line. This flow sensor incorporates a SPDT (Single Pole Double Throw) switch which is used to reset one or two delay timers as the sensed condition alternates between flow and no flow. Should the flow sensor fail to detect a change from flow to no flow, or vice versa, within a specified time limit, one of the two timers will time out, triggering a relay and shutting down the fertilizer pump, the pivot system, and the water supply.



26) Family number: 64544646 (US2017001894A)

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Title: METAL SILICATE AND ORGANIC DEPOSIT INHIBITOR/DISPERSANT FOR THERMAL RECOVERY OPERATIONS OF HYDROCARBON FUELS

Priority: US20150187216P 20150630 US20160196779 20160629 WO2016US40056 20160629

Family:	Publication number	Publication date	Application number	Application date
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AR105183 AA	20170913	AR2016P101960	20160629
CA2990634 AA	20171221	CA20162990634	20160629
EP3317387 A1	20180509	EP20160818667	20160629
EP3317387 A4	20190501	EP20160818667	20160629
US2017001894 AA	20170105	US20160196779	20160629
US9932255 BB	20180403	US20160196779	20160629
WO17004177 A1	20170105	WO2016US40056	20160629

Probable Assignee: ECOLAB USA INC

Assignee(s):(std): ECOLAB USA INC

Assignee(s): HOOTS JOHN E ; KEIZER TIMOTHY S ; MAHARAJH EDWARD ; SOMMESE ANTHONY G

Inventor(s):(std): KEIZER TIMOTHY S ; SOMMESE ANTHONY G ; HOOTS JOHN E ; MAHARAJH EDWARD

Agent(s): BORDEN LADNER GERVAIS LLP; GODEMEYER BLUM LENZE PATENTANWAELTE PARTNERSCHAFT MBB WERKPATENT; SENNIGER POWERS LLP; HENDRICKSON JANET S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): C02F5/10 C02F5/14 C11D11/00 C11D3/18 C11D3/37 C11D3/43 C11D7/26 C11D7/36 C11D7/50 C11D9/24 F28G9/00 (Advanced/Invention); C02F101/10 C02F103/10 (Advanced/Non-invention)

CPC: C02F5/14 C02F5/10 C11D7/263 C11D7/5027 C11D11/0041 C02F2101/10 C02F2103/10 C02F2303/10 C11D3/3703 C11D3/3707 Y02W10/30

US class: 1/1 510/109

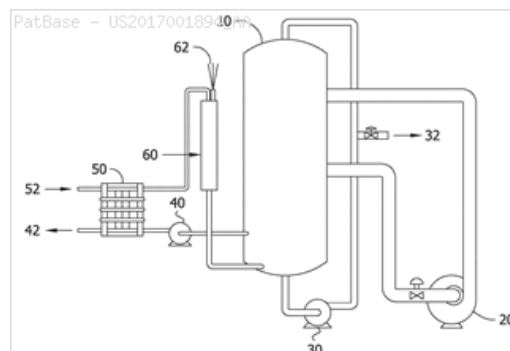
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Cited documents: WO9516006 A1, WO16029089 A1, WO14004697 A2, WO12059714 A1, WO09121893 A1, WO09061487 A1, WO06013319 A1, WO0170922 A1, WO0032711 A1, US9562188 BB, US9103038 BB, US8986418 BA, US8796195 BB, US8758520 BB, US8598094 BB, US8398781 BB, US8389453 BB, US8252122 BB, US8093197 BB, US8034253 BB, US7828908 BA, US7658805 BB, US7029553 BA, US6815404 BB, US5747619 A, US4949743 A, US2016272879 AA, US2016264844 AA, US2016060576 AA, US2015307788 AA, US2015005204 AA, US2014128294 AA, US2013291898 AA, US2013192639 AA, US2013178405 AA, US2012325485 AA, US2012291818 AA, US2012097392 AA, US2011079392 AA, US2009235730 AA, US2009233819 AA, US2009176689 AA, US2008076840 AA, US2006079424 AA, US2006046945 AA, US2005211274 AA, US2005181966 AA, US2004033919 AA, RU2109805 C1,

Forward Citations: WO19204415,

Abstract:

The present invention generally relates to methods for removing an organic deposit or for inhibiting deposition of deposit-forming comprising contacting a cleaning composition or an anti-coking composition with a surface. The surface can have an organic deposit or be susceptible to forming an organic deposit and the surface can be in contact with a liquid containing organics. The liquid can be produced from a thermal recovery system, and the surface can be an internal surface of a piece of steam-generating or vapor-generating equipment.



27) Family number: 3230647 (US4878614A)

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Title: Programmable fertilizer application system

Priority: US19880227707 19880803 US19890426055 19891024

Family:

Publication number	Publication date	Application number	Application date
US4878614 A	19891107	US19880227707	19880803
US4993634 A	19910219	US19890426055	19891024

Probable Assignee: HACH CO

Assignee(s):(std): HACH CO ; HACH COMPANY

Inventor(s):(std): HACH CLIFFORD C ; GAWLIK KEITH M

International class (IPC 8-9): A01C23/04 A01G25/09 G05D11/13 (Advanced/Invention); A01C23/00 A01G25/00 G05D11/00 (Core/Invention)

International class (IPC 1-7): A01C23/04 A01G25/09

CPC: A01C23/042 A01G25/092 G05D11/132

European class: A01C23/04B A01G25/09B G05D11/13B2

US class: 239/10 239/727 239/728

[Classification Explorer](#)

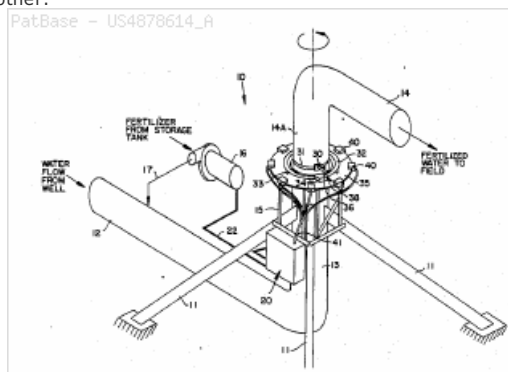
Cited documents: US4878614 A, US4630773 A, US4397421 A, US4277026 A, US4067497 A, US4063569 A, US4033508 A, US3901442 A, US3844481 A, US3703990 A, US3680778 A, US3669353 A, US3648930 A, US3464626 A, US3410490 A, US3326232 A, US2726895 A, SU1337002 T, GB2026826 A1,

Forward Citations: WO10081998, WO09158671, WO09158671, USRE35100, US9952161, US9250064, US9119355,

US8879071, US8568506, US8462350, US7206078, US6817551, US6755362, US6606542, US6434258, US6266432, US6236907, US6138928, US6115481, US5484106, US5453924, US5255857, US5246164, US5220876, US4993634, US2017245423, US2012253530, US2009321535, US2008046130, US2007138319, US2006244974, US2006108455, US2005231733, US2005156609, US2004093912, US2004026544, US2003066912, US10499558, US10251336, US10233128, ITMI20081341, FR2940883, EP0431744, EP0431744, CN108812236, CN108575244, CN107396815, AU2012236860,

Abstract:

A system for programming and controlling the rate at which an agricultural chemical (e.g. fertilizer) is supplied to the water in an agricultural irrigation system. In one embodiment the system is combined with a center pivot irrigation system having a vertical water feed pipe, a horizontal boom, and a chemical supply connected to the feed pipe. A rotation sensor determines the degree of rotation of the boom and a controller controls the amount of chemical supplied to the feed pipe. The system enables the amount of chemical applied to be varied from one section of a field to another.



28) Family number: 74153688 (US2019246558A)

© PatBase

Title: APPARATUS FOR AUTOMATED FERTILIZATION AND/OR IRRIGATION, AND METHODS OF MAKING AND USING THE SAME

Priority: US20180892882 20180209 US20190352614 20190313

Family:

Publication number	Publication date	Application number	Application date
US2019246558 AA	20190815	US20190352614	20190313
US10271474 BA	20190430	US20180892882	20180209
WO19157444 A1	20190815	WO2019US17508	20190211

Probable Assignee: CHOW JASON G

Assignee(s):(std): MILLER DEBORAH L ; MILLER JOHN C ; PENCZAK JOHN ; CHOW JASON G

Assignee(s): DEERPOINT GROUP INC ; MILLER JOHN C MILLER AND DEBORAH L

Inventor(s):(std): MILLER JOHN C ; MILLER DEBORAH L ; PENCZAK JOHN ; CHOW JASON G ; CHOW JASON ; MILLER DEBORAH ; MILLER JOHN

Agent(s): FORTNEY ANDREW D; CENTRAL CALIFORNIA IP GROUP PC; FORTNEY ANDREW D ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

International class (IPC 8-9): A01C21/00 A01C23/00 A01G25/16 (Advanced/Invention)

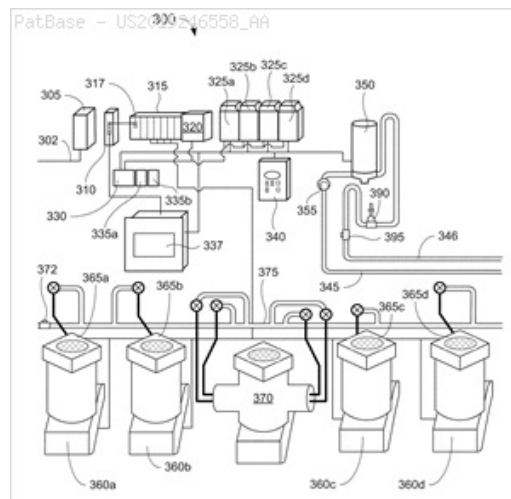
CPC: A01C21/00 A01C23/007 A01C23/042 A01C21/005 A01C21/007 A01C23/008 A01G25/165 A01G25/06

[Classification Explorer](#)

Cited documents: US9820431 BB, US9161489 BA, US9148993 BA, US8986418 BA, US8986417 BA, US8979969 BA, US8821646 BA, US8721759 BA, US8721758 BA, US8690984 BA, US8690983 BA, US8690982 BA, US8628598 BA, US8568506 BA, US8565925 BB, US8434697 BA, US7325756 BA, US6314979 BA, US5227068 A, US5135174 A, US4917304 A, US4337786 A, US2905117 A,

Abstract:

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.



29) Family number: 64458688 (US2018148385A)

© PatBase

Title: METHOD AND DEVICE FOR USING A NUTRITIVE INORGANIC IRON COMPOSITION
Priority: BE20150005363 20150615 WO2016EP63639 20160614
Family:

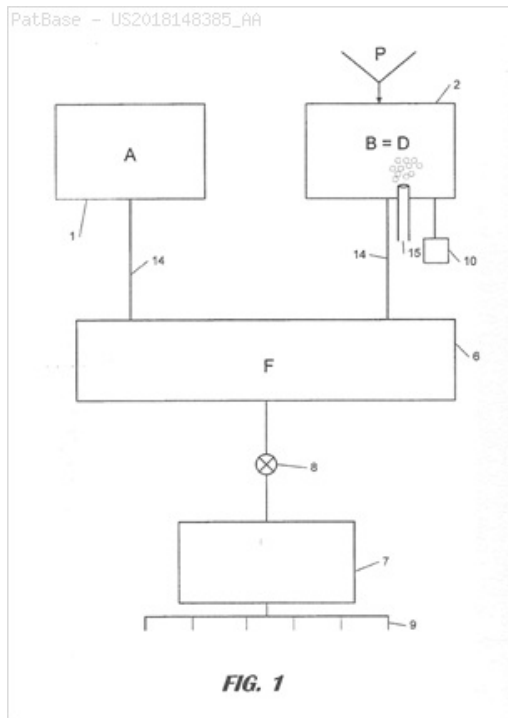
Publication number	Publication date	Application number	Application date
AU2016278781 AA	20180104	AU20160278781	20160614
BR112017026134 A2	20180828	BR20171126134	20160614
CA2987911 AA	20171130	CA20162987911	20160614
EA201792436 A1	20180531	EA20170092436	20160614
EP3307697 A1	20180418	EP20160732987	20160614
IL256012 A0	20180131	IL20160256012	20160614
IN201717043241 A	20171229	IN201717043241	20171201
MX2017015677 A1	20180619	MX20170015677	20160614
US2018148385 AA	20180531	US20160579544	20160614
WO16202803 A1	20161222	WO2016EP63639	20160614

Probable Assignee: PRAYON SA
Assignee(s):(std): DIDDEREN ISABELLE ; PRAYON ; PRAYON SA ; VERHELST KURT THIERRY ; PRAYON S A ; CAPELLE PHILIPPE JACQUES
Assignee(s): CAPELLE PHILIPPE JACQUES
Inventor(s):(std): DIDDEREN ISABELLE ; VERHELST KURT THIERRY ; CAPELLE PHILIPPE JACQUES ; PHILIPPE JACQUES CAPELLE ; KURT THIERRY VERHELST ; ISABELLE DID DEREN ; ISABELLE DIDDEREN ; CAPELLE PHILIPPE JACQUES
Agent(s): GRIFFITH HACK; ROBIC; GEVERS PATENTS
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW
International class (IPC 8-9): A01C23/04 C05B C05B13/04 C05B13/06 C05B7/00 C05D9/00 C05D9/02 C05G1/00 C05G5/00 (Advanced/Invention); C05B (Subclass/Invention)
International class (IPC 1-7): A01C23/04 C05B13/04 C05B13/06 C05D9/02
CPC: C05B13/04 C05B7/00 C05D9/02 A01C23/042 C05B13/06
US class: 1/1 71/34

[Classification Explorer](#)

Cited documents: WO9528369 A1, WO14056688 A1, US8690982 BA, DE2729417 A1,

Abstract:
Plant fertirrigation method comprising the formation of a series of mother solutions, the feeding of each of the mother solutions into a dilution system in order to form a fertirrigation solution, the supply to a fertirrigation device by means of a transfer device, supplying said fertirrigation device with said fertirrigation solution, and an addition of iron and of at least one polyphosphate.

**30) Family number: 9306737 (US5246164A)**

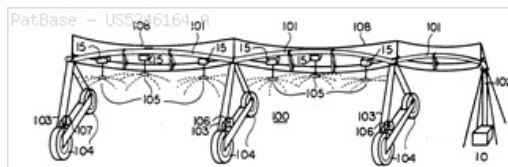
© PatBase

Title:	METHOD AND APPARATUS FOR VARIABLE APPLICATION OF IRRIGATION WATER AND CHEMICALS																																			
Priority:	US19910808513 19911216		CA19932179502 19930707																																	
Family:	<table><thead><tr><th>Publication number</th><th>Publication date</th><th>Application number</th><th>Application date</th></tr></thead><tbody><tr><td> AU199347711 A1</td><td>19950206</td><td>AU19930047711</td><td>19930707</td></tr><tr><td> AU4771193 A1</td><td>19950206</td><td>AU19930047711</td><td>19930707</td></tr><tr><td> AU689444 B2</td><td>19980402</td><td>AU19930047711</td><td>19930707</td></tr><tr><td> CA2179502 AA</td><td>19960619</td><td>CA19932179502</td><td>19930707</td></tr><tr><td> EP0721296 A1</td><td>19960717</td><td>EP19930918162</td><td>19930707</td></tr><tr><td>  US5246164 A</td><td>19930921</td><td>US19910808513</td><td>19911216</td></tr><tr><td> WO9501719 A1</td><td>19950119</td><td>WO1993US06419</td><td>19930707</td></tr></tbody></table>				Publication number	Publication date	Application number	Application date	 AU199347711 A1	19950206	AU19930047711	19930707	 AU4771193 A1	19950206	AU19930047711	19930707	 AU689444 B2	19980402	AU19930047711	19930707	 CA2179502 AA	19960619	CA19932179502	19930707	 EP0721296 A1	19960717	EP19930918162	19930707	  US5246164 A	19930921	US19910808513	19911216	 WO9501719 A1	19950119	WO1993US06419	19930707
Publication number	Publication date	Application number	Application date																																	
 AU199347711 A1	19950206	AU19930047711	19930707																																	
 AU4771193 A1	19950206	AU19930047711	19930707																																	
 AU689444 B2	19980402	AU19930047711	19930707																																	
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  US5246164 A	19930921	US19910808513	19911216																																	
 WO9501719 A1	19950119	WO1993US06419	19930707																																	
Probable Assignee:	IDAHO RES FOUND																																			
Assignee(s):(std):	IDAHO RES FOUND ; MCCANN IAN R ; STARK JEFFREY C ; STARK JEFFERY C																																			
Assignee(s):	OF IDAHO A NON PROFIT CORP UNIV ; OF IDAHO UNIV ; IDAHO RESEARCH FOUNDATION INC ; IDAHO UNIV ; IDAHO UNIV OF																																			
Inventor(s):(std):	STARK JEFFREY C ; STARK JEFFERY C ; MCCANN IAN R																																			
Inventor(s):	IAN R MCCANN ; JEFFERY C STARK																																			
Agent(s):	FISHER ADAMS KELLY; FISHER ADAMS KELLY PTY LTD; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; LAMBERT ANTHONY R																																			
Designated states:	AT AU BB BE BF BG BJ BR CA CF CG CH CI CM CZ DE DK ES FI FR GA GB GN GR HU IE IT JP KP KR LK LU MC MG ML MN MR MW NE NL NO PL PT RO RU SD SE SK SN TD TG US																																			
International class (IPC 8-9):	A01B79/00 A01G25/09 A01G25/16 (Advanced/Invention); A01B79/00 A01G25/00 A01G25/16 (Core/Invention)																																			
International class (IPC 1-7):	A01C23/04 A01G25/09 A01G25/16 B05B17/00																																			
CPC:	Y02A40/222 A01B79/005 A01G25/09 A01G25/092 A01G25/16																																			
European class:	A01B79/00P A01G25/09 A01G25/09B A01G25/16																																			
US class:	239/11 239/170 239/727 239/729 239/73																																			
Classification Explorer																																				
Cited documents:	US5050771 A, US4993634 A, US4878614 A, US4763836 A, US4729514 A, US4662563 A, US4630773 A, US4209131 A, US4015366 A, US3901442 A, EP0202847 A2,																																			
Forward Citations:	WO9939567, WO9728692, WO19191035, WO18095800, WO18001893, WO17182933, WO17167868, WO13191738, WO12135105, WO12135105, WO12021687, WO12021687, WO09100476, WO06062426, WO04112459, WO04112459, WO0234033, WO0226026, WO0049866, WO0015987, USRE47101, US9933778, US9886016, US9795094, US9743596, US9697483, US9697482, US9693511, US9684879, US9668432, US9626636, US9622398, US9619764, US9619763, US9619762, US9619761, US9619760, US9607276, US9582778, US9459628, US9436920, US9412081, US9363956, US9301459, US9265204, US9165271, US9119355, US9004374, US8849468, US8849467, US8777707, US8739830, US8584968, US8568506, US8489437, US8437498, US8412419, US8359142, US8295979, US8285460, US8024074, US7440901, US6990459, US6889922, US6820828, US6705553, US6606542, US6529615, US6512992, US6431475, US6337971, US6308902, US6293429, US6240336, US6236907, US6230091, US6178253, US6160902, US6138928, US6064943, US6062496, US6045066, US6029914, US6007004, US5950921, US5927603, US5884224, US5839659, US5785246, US5772114, US5757640, US5748466, US5740031, US5699244, US5678771, US5566069, US2018325048, US2017359974, US2017332565, US2017156273, US2017105370, US2016330901, US2016324084, US2016157444, US2015351309, US2013153673, US2013018509, US2012048960, US2011220233, US2011166715, US2011166701, US2010092241, US2010032495, US2010032493, US2009277506, US2009166451, US2009150000, US2002107582, US10531616, US10517237, US10485190, US10477784, US10440905, US10433502, US10299445,																																			

US10285343, US10251348, US10241488, US10233128, US10120393, US10070597, RU2615573, FR2820948, FR2820947, EP3326461, EP3262935, EP3262934, EP2916647, EP2704552, EP2704552, EP2603700, EP2603069, EP0917816, CN106612867, CN106612867, CN106031906, CN106031906, CN105724194, CN105724194, CN105284550, CN105052692, CN104756833, CN104429828, CN104023520, CN104023520, CN103798217, CN103798217, CN103749246, CN103314833, CN103299882, CN103299882, CN102668949, AU699456, AU680133, AT413065, AT408938,

Abstract:

Disclosed are a method and apparatus (10) for cataloging or dividing a given field, under irrigation by an irrigation system (100), into a plurality of zones which can be monitored for irrigation water and chemical requirements and then, delivering by way of the irrigation system, the appropriate amount of irrigation water and/or chemicals to each zone as so defined. Each of the sprinkler assemblies (105) is independently controlled by a solenoid operated valve (16), responsive to a control module (15). The control modules (15), in turn, are electronically interconnected with a data acquisition and control unit (12) which is capable of sending to the control modules (15) coded signals for either activating the sprinkler head (105) or deactivating each individual sprinkler head (105). A microprocessor (11) is provided which is programmed to determine the current position of each independent sprinkler assembly (105), to generate maps from field data or digital images, and to test for map positions which correspond to the current sprinkler positions and return the water or chemical application requirements as portrayed on the map. The microprocessor (11) then sends this information to the data acquisition and control system (12), which in turn sends these signals to the various control modules (15).



31) Family number: 21124747 (US2088869A)

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Title: ART OF IRRIGATING AND FERTILIZING SOIL

Priority: US19360060131 19360121

Family:	Publication number	Publication date	Application number	Application date
	US2088869 A	19370803	US19360060131	19360121

Probable Assignee: HENDERSON PORTER HERBERT

Assignee(s):(std): HENDERSON PORTER HERBERT

Inventor(s):(std): HENDERSON PORTER HERBERT

Inventor(s): PORTER HERBERT HENDERSON

International class C05C11/00 (Advanced/Invention);
(IPC 8-9): C05C11/00 (Core/Invention)

International class C05C11/00
(IPC 1-7):

CPC: C05C11/00

European class: C05C11/00

US class: 405/36 47/58.1R 71/1 71/39 71/54 71/58

[Classification Explorer](#)

Forward Citations: US8568506, US7162834, US6848212, US5385596, US4435201, US4427434, US3888652, US3005288, US2947112, US2936548, US2781612, US2005178057, US2003041515, US10233128,

Abstract:

1. The method of irrising which @omPrisea storing wateryemployins energy of _the stored water for generating electricity, employing the electricity for eiecrolyzing water to produce hydrogen, combining the hydrogen with nitrogen to' Droduce amknunla. oxidilzins' the ammonia to nitrogen oxide and passing the PTDQHGCs lnsso water from the storage to form nitric acid, and moving the treated water fm- irrigation by energy ol' the `BUOTBUB head, while controlling the mmm uf uisiic acid thus supplied accoxding `bo the needs ok plants and soil. » ' , f

32) Family number: 57274806 (US8821646B)

© PatBase

Title: COMPOSITIONS AND METHODS FOR CLEANING AND PREVENTING PLUGGING IN MICRO-IRRIGATION SYSTEMS

Priority: US20060342905 20060130 US20080313174 20081118 US20120385477 20120222
US20140311718 20140623 US20180029501 20180706

Family:	Publication number	Publication date	Application number	Application date
	US8821646 BA	20140902	US20080313174	20081118
	US9439345 BA	20160913	US20120385477	20120222
	US10046369 BA	20180814	US20140311718	20140623
	US10493499 BA	20191203	US20180029501	20180706

Probable Assignee: MILLER DEBORAH L

Assignee(s):(std): MILLER DEBORAH L ; MILLER JOHN C

Inventor(s):(std): MILLER JOHN C ; MILLER DEBORAH L

Agent(s): LAW OFFICE OF JOAN I NOREK; JOAN I; FORTNEY ANDREW D; CENTRAL CALIFORNIA IP GROUP PC

International class A01C23/04 A01G29/00 B08B3/08 B08B9/032 C02F5/12 C02F5/14 C08F120/06 C11D3/20
(IPC 8-9): C11D7/50 (Advanced/Invention)

CPC: A01C23/042 C05B15/00 A01G29/00 A01G25/00 B08B9/00 B08B9/027 C11D7/265 C11D11/0041 C11D7/5009 B08B3/08 C05G5/20

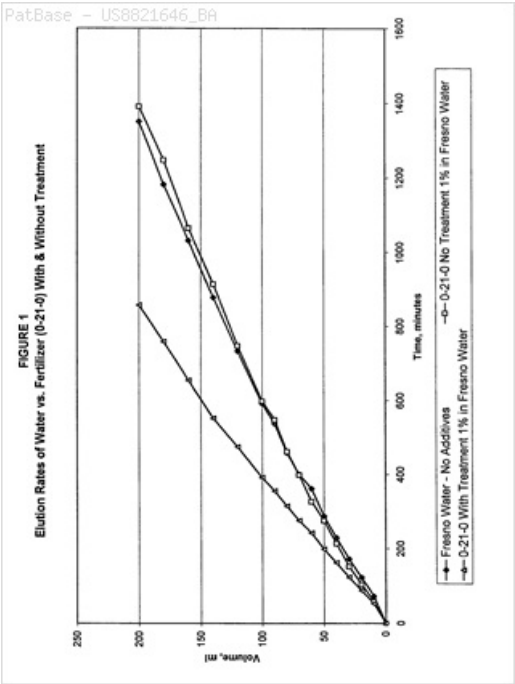
US class: 1/1 134/22.12 134/22.14 510/109 71/32

[Classification Explorer](#)

Cited documents: US9161489 BA, US9148993 BA, US8821646 BA, US7708799 BB, US6706666 BB, US6312493 BA, US3721269 A, US2013034613 AA, US2007257127 AA, US2005022570 AA, US2004250582 AA, US2004035162 AA, US2004033923 AA, US2001029240 AA, JP2004217919 A2, CA2005970 AA,

Forward Citations: US9474215, US9161489, US9148993, US2016073578, US2016009606, US10493499, US10271474, US10233128, US10117378, US10053394, EP3337327,

Abstract:
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.



33) Family number: 63226873 (CN105850536A) © PatBase

Title: MOUTAINOUS AND SEMI-MOUNTAINOUS AREA RIVER-LAKE NEARSHORE VEGETABLE FIELD TAIL WATER NETWORK TERRACED EFFICIENT RECYCLING FACILITY

Priority: CN201610207884 20160406

Family:

Publication number	Publication date	Application number	Application date
■ CN105850536 A	20160817	CN201610207884	20160406
■ CN105850536 B	20180925	CN201610207884	20160406

Probable Assignee: INST OF AGRICULTURAL ENV AND RESOURCES YUNNAN ACAD OF AGRICULTURAL SCIENCES

Assignee(s):(std): INST OF AGRICULTURAL ENV AND RESOURCES YUNNAN ACAD OF AGRICULTURAL SCIENCES

Assignee(s): OF AGRICULTURAL ENVIRONMENT AND RESOURCES YUNNAN ACADEMY OF AGRICULTURAL SCIENCES INST ; YUNNAN ACADEMY OF AGRICULTURAL SCIENCES INST OF ENVIRONMENT AND RESOURCES

Inventor(s):(std): LEI BAKUN ; ZHANG DAN ; LU YAO ; DUAN ZONGYAN ; LIU HONGBIN ; CHEN ANQIANG ; MAO YANTING ; WANG HONGYUAN ; FU BIN ; HU WANLI

International class (IPC 8-9): A01C23/04 A01G7/00 E02B11/00 E02B13/00 E02B13/02 (Advanced/Invention)

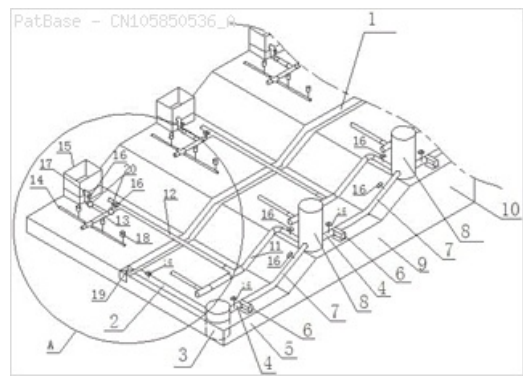
CPC: Y02P60/214 A01G7/00 A01C23/04 E02B11/00 E02B13/00 E02B13/02

[Classification Explorer](#)

Cited documents: US9148993 BA, US9148993 B1, DE3445357 A1, CN204185332 U, CN103597926 A, CN102979064 A, CN102124932 A, CN101953250 A,

Forward Citations: CN106508508,

Abstract:
The invention discloses a mountainous and semi-mountainous area river-lake nearshore vegetable field tail water network terraced efficient recycling facility which mainly comprises a vegetable field irrigation and drainage canal, a water storage pool, irrigation pools, water pumps, irrigation devices and a water, fertilizer and pesticide filling pool. The water storage pool is arranged on the first-step land, and connected with the vegetable field irrigation and drainage canal through a water diversion pipe; the irrigation pools are arranged from second-step land to highest-step land respectively, and the irrigation pools on every two adjacent step lands are connected through a water outlet pipe, one water pump and a water lifting pipe in sequence. Each irrigation pool is connected with one irrigation device. Vegetable land tail water with high-concentration nitrogen and phosphorus is intercepted and prevented from being directly drained into water bodies of rivers and lakes, the chemical fertilizer application amount is reduced, network terraced redistribution recycling of farmland tail water can be achieved in the area space, the hydraulic gradient of the mountainous and semi-mountainous area is utilized according to local conditions to carry out farmland tail water gravity irrigation, vegetable field farmland non-point source pollution is reduced, and river-lake water environment safety is protected.



34) Family number: 34397902 (US7207503B)

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Title: CHEMICAL DISPENSING MEANS FOR A TRAVELLING LAWN SPRINKLER

Priority: US20050061805 20050221

Family:	Publication number	Publication date	Application number	Application date
	US7207503 BA	20070424	US20050061805	20050221

Probable Assignee: MAHLMAN TERRY E

Assignee(s):(std): MAHLMAN TERRY E ; STENGEL TERRY J

Inventor(s):(std): MAHLMAN TERRY E ; STENGEL TERRY J

Agent(s): THOMTE MAZOUR AND NIEBERGALL; DENNIS L

International class
(IPC 8-9): B05B3/18 (Advanced/Invention);
B05B3/00 (Core/Invention)

CPC: A01C23/042 A01G25/09

European class: A01C23/04B A01G25/09

US class: 239/310 239/315 239/722 239/723 239/727 239/747 239/748 239/750

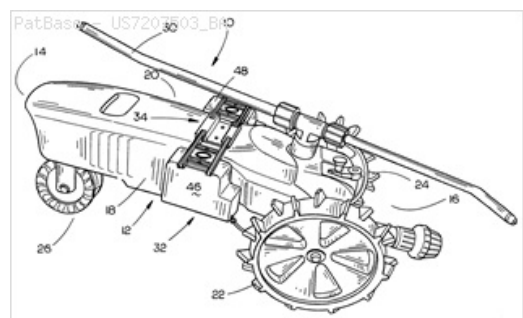
[Classification Explorer](#)

Cited documents: USD443915 S1, USD391625 S1, USD151118 S1, US6267303 BA, US6161779 A, US5950928 A, US5927603 A, US5741090 A, US5549248 A, US5419494 A, US5413280 A, US5178181 A, US5096123 A, US5076497 A, US4908190 A, US4832263 A, US4648558 A, US4059229 A, US3430859 A, US3260464 A, US3123362 A, US3081038 A, US2883116 A, US2293796 A, US2006108376 AA, US2002056365 AA, US2002023576 AA, US1767072 A,

Forward Citations: WO12092482, USD640348, US9717190, US9061296, US8568506, US8434698, US2011093398, US2006090793, US10233128,

Abstract:

A chemical dispenser which is selectively removably mounted on a travelling lawn sprinkler. The chemical dispenser dispenses liquid chemical into the water being sprinkled onto the lawn by the water distributor as the self-propelled travelling lawn sprinkler propels itself across a lawn.



35) Family number: 7246978 (US4133671A)

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Title: METHOD AND APPARATUS FOR ENHANCING FERTILIZING CHARACTERISTICS OF IRRIGATION WATER

Priority: US19770786198 19770411

Family:	Publication number	Publication date	Application number	Application date
	US4133671 A	19790109	US19780888840	19780322

Probable Assignee: FUEL INC

Assignee(s):(std): FUEL INC

Inventor(s):(std): MIKEL MERLE E

International class
(IPC 8-9): C05C11/00 (Advanced/Invention);
F02B3/06 (Advanced/Non-invention);
C05C11/00 (Core/Invention);
F02B3/00 (Core/Non-invention)

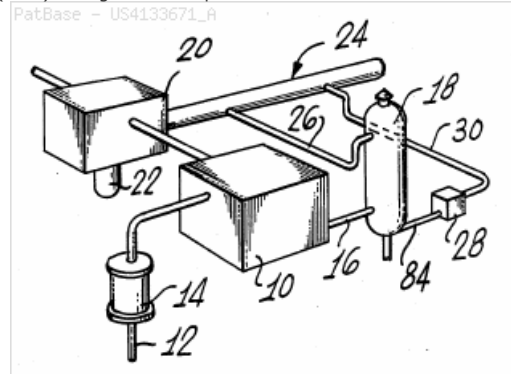
International class
(IPC 1-7): C05C11/00

CPC: C05C11/00 F02B3/06 Y10S71/903

European class: C05C11/00 R02B3/06
US class: 423/194 423/351 423/405 71/54 71/64.08 71/903
[Classification Explorer](#)
Cited documents: US3888652 A, US3370914 A, US2936548 A,
Forward Citations: WO06130965, WO04039479, USRE35857, US9919269, US9737849, US9067837, US8967059, US8821818, US8573143, US8568506, US8061283, US7487927, US6447437, US5294212, US4297123, US4247321, US2014260472, US2012118211, US2009304450, US2006010947, US10486105, US10251336, US10233128, EP3081065, AU2006255444,

Abstract:

A method and apparatus for enhancing fertilizing characteristics of irrigation water by adding carbon dioxide and nitrogenous compounds, derived from exhaust gases, to irrigation water so as to produce a fertilizing solution which promotes crop growth. The method comprises scrubbing exhaust gases derived from a natural gas, liquified petroleum or diesel engines by utilizing direct contact with water and thereafter injecting the treated enriched water into a standard supply of irrigation water. The engine is operated so as to provide the greatest amount of carbon dioxide, and (NOx) nitrogen oxides practical.



36) Family number: 4330979 (US4969947A)

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Title: ONE-STEP METHOD OF COATING NUTRIENT PARTICLES
Priority: US19880180831 19880412 CA19890596538 19890412
Family:

Publication number	Publication date	Application number	Application date
CA1333338 A1	19941206	CA19890596538	19890412
US4969947 A	19901113	US19880180831	19880412

Probable Assignee: AGRIMUM POLYMER COATINGS CORP
Assignee(s):(std): MELAMINE CHEMICALS INC
Assignee(s): MOORE WILLIAM P ; RLC TECHNOLOGIES LLC ; AGRIMUM POLYMER COATINGS CORP
Inventor(s):(std): MOORE WILLIAM P
Agent(s): FINLAYSON AND SINGLEHURST
International class (IPC 8-9): C05G3/00 C08G18/32 (Advanced/Invention); C05G3/00 C08G18/00 (Core/Invention)
International class (IPC 1-7): C05C13/00 C05C9/00 C05G3/00
CPC: C08G18/3206 C08G18/3278 C05G5/37
European class: C05G3/00B2G C08G18/32A2 C08G18/32C3
US class: 71/28 71/29 71/30 71/64.11 71/64.12
[Classification Explorer](#)

Cited documents: US4804403 A,
Forward Citations: WO9829359, WO11071909, WO03074447, WO03074447, WO0164049, US9878959, US9856179, US9474215, US9161489, US9148993, US8920829, US8883914, US8178161, US7682656, US7416785, US6987082, US6682751, US6617412, US6537611, US6503288, US6391454, US6364925, US6358296, US6231895, US6165550, US6152981, US6001147, US5803946, US5560768, US5547486, US5399186, US5374292, US5211985, US2016185673, US2010233332, US2010233325, US2010186470, US2007231369, US2007191538, US2007169527, US2006115586, US2006064907, US2006032282, US2005276905, US2004016276, US2003070462, US10233128, EP1784373, EP1302455, EP0948474, EP0730565, EP0730565, EP0399567, EP0399567, DE102004024075, CN103819292, CN103819292,

Abstract:

A one-step method of preparing coated particulate plant nutrients wherein a polyfunctional coupling agent is applied to a mobile mass of plant nutrient particles containing functional groups which are chemically reactive with the functional groups of the coupling agent, while simultaneously applying a second reactive material containing functional groups also reactive with the functional groups of the coupling agent, maintaining the mobile mass at a temperature between 30 DEG C. and 300 DEG C. until a strong, water-insoluble particle. The product of the one-step method is a controlled-release plant nutrient having excellent attrition resistance.

37) Family number: 63080993 (CN105815131A)

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Title: NETWORK LADDERING EFFICIENT RECYCLING METHOD FOR TAIL WATER OF OFF-SHORE VEGETABLE PLOTS IN MOUNTAINOUS AREA, MID-MOUNTAINOUS AREA, RIVER AND LAKE
Priority: CN201610208296 20160406
Family:

Publication number	Publication date	Application number	Application date
CN105815131 A	20160803	CN201610208296	20160406

Probable Assignee: INST OF AGRICULTURAL ENV AND RESOURCES YUNNAN ACAD OF AGRICULTURAL SCIENCES

Assignee(s):(std): INST OF AGRICULTURAL ENV AND RESOURCES YUNNAN ACAD OF AGRICULTURAL SCIENCES

Assignee(s): OF AGRICULTURAL ENVIRONMENT AND RESOURCES YUNNAN ACADEMY OF AGRICULTURAL SCIENCES
INST ; YUNNAN ACADEMY OF AGRICULTURAL SCIENCES INST OF ENVIRONMENT AND RESOURCES

Inventor(s):(std): CHEN ANQIANG ; DUAN ZONGYAN ; FU BIN ; HU WANLI ; LEI BAOKUN ; LIU HONGBIN ; LU YAO ; MAO YANTING ; WANG HONGYUAN ; ZHANG DAN

International class (IPC 8-9): A01C23/04 A01G7/00 E02B11/00 E02B13/00 E02B13/02 (Advanced/Invention)

CPC: Y02P60/214 A01G7/00 A01C23/04 E02B11/00 E02B13/00 E02B13/02

[Classification Explorer](#)

Cited documents: US9148993 BA, US9148993 B1, DE3445357 A1, CN204185332 U, CN103597926 A, CN102979064 A, CN102124932 A, CN101953250 A,

Forward Citations: RU2650230,

Abstract:
The invention discloses a network laddering efficient recycling method for tail water of off-shore vegetable plots in a mountainous area, a mid-mountainous area, a river and a lake. The method comprises the following steps: utilizing a network laddering efficient recycling facility for tail water of off-shore vegetable plots in the mountainous area, the mid-mountainous area, the river and the lake to perform network laddering efficient recycling on the tail water of off-shore vegetable plots in the mountainous area, the mid-mountainous area, the river and the lake; in the period of high-concentration emission of nitrogen and phosphorus of the tail water of the vegetable plots, performing spraying irrigation on 300mu vegetable plots by using tail water of the vegetable plots in the irrigation tank in the facility and the water fertilizer solution prepared in the water fertilizer filling tank. 0.96 ten thousand m³/season tail water of the vegetable plots can be utilized; 0.24 ten thousand m³/season irrigation water can be saved; the dosages of the chemical fertilizers N, P₂O₅ and K₂O are respectively reduced by 13.8 kg/mu/season, 2.4kg/mu/season and 3.5 kg/mu/season; the removal rates of nitrogen and phosphorus in the farmland tail water flowing into the river and lake are respectively 45 percent and 52 percent; 3.47 kg/hm² nitrogen pollutant and 0.59 kg/hm² phosphorus pollutant discharged into the river and lake are reduced annually.

