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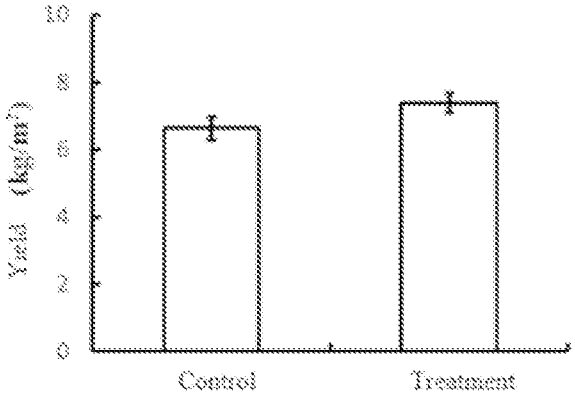
(54) **TOMATO CULTIVATION METHOD**

(57) Disclosed is a tomato cultivation method, which specifically comprises the following steps: (1) preparation of an organic fertilizer: uniformly mixing pre - treated soybeans and plant ash according to a mass ratio of 1:1 to obtain the organic fertilizer for later use; (2) land arrangement; (3) selection of a tomato variety and germination acceleration and seedling raising; (4) application of the organic fertilizer and field planting; and (5) field management and harvesting. The cultivation method of the present invention can obviously improve the yield and quality of tomato. The organic fertilizer of the present invention reduces application of chemical fertilizers, and greatly reduces influences of the excessive chemical fertilizers on the environment. The organic fertilizer of the present invention has simple preparation, convenient application and low application cost, and is beneficial for promotion and application.



TOMATO CULTIVATION METHOD

Technical Field

The present invention relates to the technical field of crop cultivation, in particular to a tomato cultivation method.

Background

Tomato (Latin name: *Lycopersicon esculentum Mill.*) is a thermophilic vegetable. An optimum temperature for plant growth is 20 - 25℃ and an optimum temperature for root growth is 20 - 22℃. Tomato is photophilous, with a light saturation point of 70000lux, and a suitable light intensity of 30000 - 50000lux. The tomato is hydrophytic and suitable for a soil humidity of 60% - 80% and an air humidity of 45% - 50% in general. The tomato grows well in fertile soil with good drainage and rich organic matters. An optimum pH of soil is pH 6 - 7.

In recent years, China has become the country with the largest protected cultivation area in the world. However, with rapid expansion of the protected cultivation area and increase of cultivation years, the problem of soil in protected agriculture has gradually emerged. Protected cultivation has changed the ecological environment of the soil, and there are even problems of soil salinization, acidification, hardening and nutrient imbalance, which seriously restrict sustainable development of protected agriculture. Problems of protected soil will make physical and chemical properties of the soil worse, thereby leading to nutrient imbalance in the soil and accumulation of a lot of salt in the soil.

In order to increase the yield of vegetables, vegetable farmers often increase the application amount of chemical fertilizers (especially nitrogen fertilizers). However, long - term and large - scale application of the chemical fertilizers will have a serious impact on ecosystem functions and the environment. At present, the annual loss of the nitrogen fertilizers applied in agriculture in China is about 174,000 tons, of which nearly 50% flows into water from farmlands. This problem not only affects an effective utilization rate of fertilizers and pollutes the environment, but also causes that the nitrate content in vegetables exceeds standards and affects the quality of the vegetables.

Therefore, how to prepare a green organic fertilizer to cultivate the tomato to improve the tomato quality is an urgent problem to be solved in production.

Summary

In view of this, the purpose of the present invention is to provide a tomato cultivation method to solve deficiencies in the prior art.

In order to achieve the above purpose, the present invention adopts the following technical solution:

A tomato cultivation method specifically comprises the following steps:

(1) preparation of an organic fertilizer

uniformly mixing pre - treated soybeans and plant ash according to a mass ratio of 1:1 to obtain the organic fertilizer for later use;

(2) land preparation

land preparation before tomato field planting: firstly, disinfecting soil, then conducting deep tillage of 30 cm for application of decomposed farm manure, levelling and thinning the land, and then making small high plots with 50 cm ditches between the plots;

(3) selection of a tomato variety and germination acceleration and seedling raising

selecting an excellent tomato variety (overwinter tomato in a solar greenhouse should be a cold - resistant variety), disinfecting seeds before sowing (coated seeds are not disinfected), then transferring the seeds to disinfected wet gauze, keeping the seeds moist and airy, and finally putting the seeds in an environment of 28°C for 2 days of germination acceleration till exposure of white root and germination; and transferring the germinated seeds to a seedling raising plug filled with a seedling raising substrate, sowing and then raising seedlings, and conducting field planting when there are four leaves and one growth point;

(4) application of the organic fertilizer and field planting

during field planting, furrowing, watering, and planting the seedlings on the small high plots with a spacing of 70 cm and a seedling spacing of 40 cm, digging a pit with a depth of 15 - 20 cm at a field planting place of tomato, applying the organic fertilizer of a volume equal to 10 - 20 soybeans, uniformly spreading the fertilizer in the pit, and finally putting the tomato seedlings for field planting;

(5) field management and harvesting

promoting roots and controlling seedlings before fruit setting after tomato seedling recovery; when a tomato plant grows to 45 - 50 cm, tying vines, pruning and branching, and topping at proper time; after pruning, picking when a lateral bud grows to 3 cm; without topdressing in a tomato seedling stage, flushing and applying the fertilizer with water in a fruit swelling stage; and 40 - 50 days after flowering, harvesting in time when fruits reach a mature stage.

Further, in the above step (1), specific operations of pre - treatment comprise: firstly, soaking soybean seeds for 6 - 18h (soaking time is selected according to different room temperatures, 6h in summer and 18h in winter), then boiling in boiling water for 10 min, and cooling to obtain soft rotten soybeans; or, grinding the soybeans to obtain soybean powder; or, conducting steam explosion treatment on the soybeans to obtain steam exploded soybeans.

The further technical solution has the beneficial effects that: in an early stage of planting, combined application of the soft rotten soybeans and the plant ash has a good effect, and fertility release is lasting; and in a middle planting stage and a fruit setting stage, combined application of the soybean powder or steam exploded soybeans and the plant ash has a good effect.

Further, in the above step (2), an fertilizer application amount of the decomposed farm manure is 5 - 8 m^3/ mu.

The further technical solution has the beneficial effects that: the decomposed farm manure refers to various organic fertilizers collected, accumulated and planted in rural areas, such as human excreta, stable manure, compost, green manure, mud manure, plant ash, etc., which are then decomposed at high temperature, and can generally supply crops with various nutrients and improve soil properties. There are many kinds of decomposed farm manure, with wide sources and large quantities. Local raw materials can be gotten and used easily, so the cost is relatively low. The decomposed farm manure has the characteristic of containing comprehensive nutrients. The manure not only contains nitrogen, phosphorus and potassium, but also contains calcium, magnesium, sulphur, iron and some trace elements. These nutrients are mostly in an organic state, which can hardly be directly absorbed and utilized by crops. Only through chemical and physical effects in soil and microbial fermentation and decomposition, the nutrients can be gradually released. Hence, fertilizer efficiency is lasting and stable. In addition, application of the decomposed farm manure is beneficial to promote formation of a soil aggregate structure, coordinate a ratio of air to water in the soil, loosen the soil, and enhance the capacity of water holding, heat preservation, air permeability and fertilizer conservation.

Furthermore, in the above step (2), the top width of the small high plots is 80 cm, bottom width is 100 cm and height is 10 cm.

The further technical solution has the beneficial effects that: through the arrangement of the small high plots, water accumulation in the field after watering can be effectively prevented. A surface layer of the soil becomes dry easily, and the relative humidity is low, so that diseases are not easy to occur. The soil layer can be thickened; air permeability of the soil can be improved; and root growth can be promoted. The solution not only ensures water needed for vegetable growth, but also keeps the soil surface dry and loose, creates environmental conditions for root growth, and also enhances air permeability and light transmission abilities of aboveground parts.

Further, in the above step (3), specific operations of disinfecting the seeds before sowing comprise: soaking the seeds in a sodium hypochlorite solution with a mass concentration of 2.5% for 10 min, and then washing the seeds with clean water of 5 times the volume of the seeds for more than 3 times.

The further technical solution has the beneficial effects that: through disinfection, the seed quality can be improved; seed germination and strong seedling growth can be promoted; and pests of the seeds can be prevented.

Further, in the above step (3), the seedling raising substrate comprises vermiculite of 30%, peat of 60% and decomposed chicken manure of 10% by mass percent.

The further technical solution has the beneficial effects that the seedling raising substrate selected by the present invention has rich nutrition and good root permeability, and is suitable for cultivating high - quality seedlings.

Further, in the above step (3), the temperature for seedling raising is 18 - 28℃, a photoperiod is 12h/12h, and illumination intensity is 600 μmol·m^{-2}·s^{-1}.

The further technical solution has the beneficial effects that strong seedlings can be cultivated through seedling raising.

Further, in the above step (5), specific operations of flushing and applying the fertilizer with water in the fruit swelling stage comprises: when a first fruit set, a second fruit set, a third fruit set and a fourth fruit set grow to the size of a walnut respectively and are swelling, flushing and applying the fertilizer with water, and topdressing 500 kg/ mu of the decomposed manure each time, and stopping topdressing 30 days before uprooting.

The further technical solution has the beneficial effects that the tomato fruits can grow fast and have good quality through scientific and reasonable fertilization.

According to the technical solutions, compared with the prior art, the present invention has the following beneficial effects:

1. The cultivation method of the present invention can significantly improve the yield and quality of the tomato;

2. The organic fertilizer of the present invention reduces application of chemical fertilizers, and greatly reduces influences of the excessive chemical fertilizers on the environment;

3. The organic fertilizer of the present invention has simple preparation, convenient application and low application cost, and is beneficial for promotion and application.

Description of Drawings

Fig. 1 is a histogram of tomato yields of a treatment group and a control group; and

Fig. 2 is a histogram of lycopene contents in tomatoes of a treatment group and a control group.

Detailed Description

The technical solutions in the embodiments of the present invention will be clearly and fully described below. Apparently, the described embodiments are merely part of the embodiments of the present invention, not all of the embodiments. Based on the embodiments in the present invention, all other embodiments obtained by those ordinary skilled in the art without contributing creative labour will belong to the protection scope of the present invention.

Embodiment 1

A tomato cultivation method specifically comprises the following steps:

(1) Preparation of an organic fertilizer

Firstly, soybean seeds are soaked for 6h, then boiled in boiling water for 10 min, and cooled to obtain soft rotten soybeans; and the soft rotten soybeans and plant ash are uniformly mixed

according to a mass ratio of 1:1, till the soybeans are coated by the plant ash preferably, to obtain the organic fertilizer for later use;

(2) Land preparation

Land preparation before tomato field planting: firstly, soil is disinfected; then deep tillage of 30 cm is conducted for application of decomposed farm manure of 5 m^3/mu, which is better for plant growth; and the land is levelled and thinned, and then made into small high plots with a top width of 80 cm, a bottom width of 100 cm, a height of 10 cm, and 50 cm grooves between the plots;

(3) Selection of a tomato variety and germination acceleration and seedling raising

An excellent tomato variety is selected, seeds are disinfected before sowing, the seeds are soaked in a sodium hypochlorite solution with a mass concentration of 2.5% for 10 min and then washed with clean water of 5 times the volume of the seeds for more than 3 times; then the seeds are transferred to disinfected wet gauze when there is no sodium hypochlorite solution; the seeds are kept moist and airy, and finally the seeds are put in an environment of 28°C for 2 days of germination acceleration till exposure of white root and germination; the germinated seeds are transferred to a seedling raising plug filled with a seedling raising substrate; the seedling raising substrate comprises vermiculite of 30%, peat of 60% and decomposed chicken manure of 10% by mass percent; after sowing, seedlings are raised in an environment with temperature of 18℃, photoperiod of 12h/12h, and illumination intensity of 600 $\mu mol \cdot m^{-2} \cdot s^{-1}$, and field planting is conducted when there are four leaves and one growth point;

(4) Application of the organic fertilizer and field planting

During field planting, furrowing, watering, and seedling planting are conducted on the small high plots with a spacing of 70 cm and a seedling spacing of 40 cm, a pit with a depth of 18 cm is dug at a field planting place of tomato, the organic fertilizer of a volume equal to 15 soybeans is applied (an excessive application amount will not only lead to increase of economic cost, but also affect normal growth of roots, which is unfavourable to tomatoes; when the amount is too little, the effect is not obvious, so that the fertilizer should be applied reasonably), the fertilizer is uniformly spread in the pit, and finally the tomato seedlings are put for field planting;

(5) Field management and harvesting

Roots are promoted and seedlings are controlled before fruit setting after tomato seedling recovery; when a tomato plant grows to 48 cm, vines are tied, pruning and branching are conducted, and topping is conducted at proper time; after pruning, picking is conducted when a lateral bud grows to 3 cm, wherein too early or too late removal retards growth and development of the plants and bud picking should not be conducted in rainy days to prevent infection of diseases; without topdressing in a tomato seedling stage, when a first fruit set, a second fruit set, a third fruit set and a fourth fruit set grow to the size of a walnut respectively and are swelling, the fertilizer can be flushed and applied with water, and topdressing of 500 kg/ mu of the decomposed manure is conducted each time, and topdressing is stopped 30 days before uprooting; and 45

days after flowering, harvesting is conducted in time when fruits reach a mature stage, namely when 3/4 of a fruit area has turned red or yellow, it is appropriate harvest time. Compared with spring tomatoes, summer and autumn tomatoes are faster in colouring, and easier to ripe and soften and deteriorate. Tomatoes that are close to sales should be harvested after the fruits turn red, and those which are transported far away should be harvested in a white mature stage or a colour changing stage.

Embodiment 2

A tomato cultivation method specifically comprises the following steps:

(1) Preparation of an organic fertilizer

Firstly, soybean seeds are ground to obtain soybean meal; and then the soybean meal and plant ash are uniformly mixed according to a mass ratio of 1:1, till the soybeans are coated by the plant ash preferably, to obtain the organic fertilizer for later use;

(2) Land preparation

Land preparation before tomato field planting: firstly, soil is disinfected; then deep tillage of 30 cm is conducted for application of decomposed farm manure of 6 m^3/mu, which is better for plant growth; and the land is levelled and thinned, and then made into small high plots with a top width of 80 cm, a bottom width of 100 cm, a height of 10 cm, and 50 cm grooves between the plots;

(3) Selection of a tomato variety and germination acceleration and seedling raising

An excellent tomato variety is selected, seeds are disinfected before sowing, the seeds are soaked in a sodium hypochlorite solution with a mass concentration of 2.5% for 10 min and then washed with clean water of 5 times the volume of the seeds for more than 3 times; then the seeds are transferred to disinfected wet gauze when there is no sodium hypochlorite solution; the seeds are kept moist and airy, and finally the seeds are put in an environment of 28°C for 2 days of germination acceleration till exposure of white root and germination; the germinated seeds are transferred to a seedling raising plug filled with a seedling raising substrate; the seedling raising substrate comprises vermiculite of 30%, peat of 60% and decomposed chicken manure of 10% by mass percent; after sowing, seedlings are raised in an environment with temperature of 22℃, photoperiod of 12h/12h, and illumination intensity of 600 $\mu mol \cdot m^{-2} \cdot s^{-1}$, and field planting is conducted when there are four leaves and one growth point;

(4) Application of the organic fertilizer and field planting

During field planting, furrowing, watering, and seedling planting are conducted on the small high plots with a spacing of 70 cm and a seedling spacing of 40 cm, a pit with a depth of 15 cm is dug at a field planting place of tomato, the organic fertilizer of a volume equal to 10 soybeans is applied (an excessive application amount will not only lead to increase of economic cost, but also affect normal growth of roots, which is unfavourable to tomatoes; when the amount is too little,

the effect is not obvious, so that the fertilizer should be applied reasonably), the fertilizer is uniformly spread in the pit, and finally the tomato seedlings are put for field planting;

(5) Field management and harvesting

Roots are promoted and seedlings are controlled before fruit setting after tomato seedling recovery; when a tomato plant grows to 45 cm, vines are tied, pruning and branching are conducted, and topping is conducted at proper time; after pruning, picking is conducted when a lateral bud grows to 3 cm, wherein too early or too late removal retards growth and development of the plants and bud picking should not be conducted in rainy days to prevent infection of diseases; without topdressing in a tomato seedling stage, when a first fruit set, a second fruit set, a third fruit set and a fourth fruit set grow to the size of a walnut respectively and are swelling, the fertilizer can be flushed and applied with water, and topdressing of 500 kg/ mu of the decomposed manure is conducted each time, and topdressing is stopped 30 days before uprooting; and 40 days after flowering, harvesting is conducted in time when fruits reach a mature stage, namely when 3/4 of a fruit area has turned red or yellow, it is appropriate harvest time. Compared with spring tomatoes, summer and autumn tomatoes are faster in colouring, and easier to ripe and soften and deteriorate. Tomatoes that are close to sales should be harvested after the fruits turn red, and those which are transported far away should be harvested in a white mature stage or a colour changing stage.

Embodiment 3

A tomato cultivation method specifically comprises the following steps:

(1) Preparation of an organic fertilizer

Firstly, soybean seeds are subjected to steam explosion treatment to obtain steam exploded soybeans; and then the steam exploded soybeans and plant ash are uniformly mixed according to a mass ratio of 1:1, till the soybeans are coated by the plant ash preferably, to obtain the organic fertilizer for later use;

(2) Land preparation

Land preparation before tomato field planting: firstly, soil is disinfected; then deep tillage of 30 cm is conducted for application of decomposed farm manure of 8 m^3/mu, which is better for plant growth; and the land is levelled and thinned, and then made into small high plots with a top width of 80 cm, a bottom width of 100 cm, a height of 10 cm, and 50 cm grooves between the plots;

(3) Selection of a tomato variety and germination acceleration and seedling raising

An excellent tomato variety is selected, seeds are disinfected before sowing, the seeds are soaked in a sodium hypochlorite solution with a mass concentration of 2.5% for 10 min and then washed with clean water of 5 times the volume of the seeds for more than 3 times; then the seeds are transferred to disinfected wet gauze when there is no sodium hypochlorite solution; the seeds are kept moist and airy, and finally the seeds are put in an environment of 28°C for 2 days of

germination acceleration till exposure of white root and germination; the germinated seeds are transferred to a seedling raising plug filled with a seedling raising substrate; the seedling raising substrate comprises vermiculite of 30%, peat of 60% and decomposed chicken manure of 10% by mass percent; after sowing, seedlings are raised in an environment with temperature of 28°C, photoperiod of 12h/12h, and illumination intensity of 600 $\mu mol \cdot m^{-2} \cdot s^{-1}$, and field planting is conducted when there are four leaves and one growth point;

(4) Application of the organic fertilizer and field planting

During field planting, furrowing, watering, and seedling planting are conducted on the small high plots with a spacing of 70 cm and a seedling spacing of 40 cm, a pit with a depth of 20 cm is dug at a field planting place of tomato, the organic fertilizer of a volume equal to 20 soybeans is applied (an excessive application amount will not only lead to increase of economic cost, but also affect normal growth of roots, which is unfavourable to tomatoes; when the amount is too little, the effect is not obvious, so that the fertilizer should be applied reasonably), the fertilizer is uniformly spread in the pit, and finally the tomato seedlings are put for field planting;

(5) Field management and harvesting

Roots are promoted and seedlings are controlled before fruit setting after tomato seedling recovery; when a tomato plant grows to 50 cm, vines are tied, pruning and branching are conducted, and topping is conducted at proper time; after pruning, picking is conducted when a lateral bud grows to 3 cm, wherein too early or too late removal retards growth and development of the plants and bud picking should not be conducted in rainy days to prevent infection of diseases; without topdressing in a tomato seedling stage, when a first fruit set, a second fruit set, a third fruit set and a fourth fruit set grow to the size of a walnut respectively and are swelling, the fertilizer can be flushed and applied with water, and topdressing of 500 kg/ mu of the decomposed manure is conducted each time, and topdressing is stopped 30 days before uprooting; and 50 days after flowering, harvesting is conducted in time when fruits reach a mature stage, namely when 3/4 of a fruit area has turned red or yellow, it is appropriate harvest time. Compared with spring tomatoes, summer and autumn tomatoes are faster in colouring, and easier to ripe and soften and deteriorate. Tomatoes that are close to sales should be harvested after the fruits turn red, and those which are transported far away should be harvested in a white mature stage or a colour changing stage.

Performance Test

Tomatoes cultivated according to the method of embodiment 1 are used as a treatment group, and tomatoes cultivated without application of the organic fertilizer of the present invention are used as a control group. After harvesting, the tomato yields per square meter of land are calculated separately, and the results are shown in Fig. 1. Lycopene contents in the tomatoes are measured separately, and the results are shown in Fig. 2.

Fig. 1 is a histogram of tomato yields of the treatment group and the control group. Fig. 2 is a histogram of lycopene contents in tomatoes of the treatment group and the control group. As shown in Fig. 1 and Fig. 2, compared with the control group, the tomato yield and lycopene content can be increased by 12.99% and 15.79% respectively by using the cultivation method of embodiment 1 of the present invention.

The above experiments prove that the cultivation method of the present invention can significantly improve the yield and quality of the tomatoes.

The above description of the disclosed embodiments enables those skilled in the art to realize or use the present invention. Many modifications to these embodiments will be apparent to those skilled in the art. The general principle defined herein can be realized in other embodiments without departing from the spirit or scope of the present invention. Therefore, the present invention will not be limited to these embodiments shown herein, but will conform to the widest scope consistent with the principle and novel features disclosed herein.

CONCLUSIES

1. Een werkwijze voor het telen van tomaten, die de volgende stappen omvat:

(1) bereiding van een organische meststof

het gelijkmatig mengen van voorbehandelde sojabonen en plantenas in een massaverhouding van 1:1 om de organische meststof voor later gebruik te verkrijgen

(2) voorbereiding van het land

voorbereiding van het land voorafgaand aan het planten van de tomaten: eerst ontsmetten van de grond, vervolgens het uitvoeren van een 30 cm diepe grondbewerking voor het opbrengen van verteerde stalmest, vervolgens het egaliseren en uitdunnen van het land, en vervolgens het maken van kleine hoge percelen gemaakt met greppels van 50 cm tussen de percelen;

(3) selectie van een tomatenras en versnelde kieming en opkweek van de zaailingen

selectie van een uitstekend tomatenras, ontsmetting van de zaden voorafgaand aan het zaaien, vervolgens overbrengen van de zaden op ontsmet nat gaas, het vochtig en luchtig houden van de zaden, en ten slotte het plaatsen van de zaden in een omgeving van 28°C gedurende 2 dagen van versnelde ontkieming tot witte wortel zichtbaar wordt en ontkieming plaatsvindt; en het overbrengen van de ontkiemde zaden naar een kiemplug gevuld met een substraat voor het opkweken van zaailingen, het zaaien en vervolgens opkweken van zaailingen, en het planten op het veld wanneer er vier bladeren en een groeipunt zijn;

(4) het aanbrengen van de organische meststof en het planten op het veld

tijdens het beplanten van het veld, ploegen, bewateren en planten van de zaailingen op de kleine hoge percelen met een tussenafstand van 70 cm en een zaailingafstand van 40 cm, het graven van een kuil graven met een diepte van 15 - 20 cm op een veldplantplaats van tomaat, het aanbrengen van organische meststof met een volume gelijk aan 10 - 20 sojabonen, het gelijkmatig in de kuil strooien van de meststof, en ten slotte het plaatsen van de zaailingen van tomaat voor het beplanten van het veld;

(5) veldbeheer en oogst

(6) het bevorderen van de wortels en het beheersen van de zaailingen voorafgaand aan de vruchtvorming na het herstellen van de tomatenzaailingen; wanneer een tomatenplant 45 - 50 cm is gegroeid, het vastbinden van de ranken, snoeien en vertakken en op het juiste moment toppen; na het snoeien plukken wanneer een zijknop 3 cm is gegroeid; zonder toppen in een tomatenzaailingstadium, spoelen en de meststof met water toedienen in een vruchtzwellingstadium; en 40 - 50 dagen na de bloei tijdig oogsten zodra de vruchten een rijp stadium hebben bereikt.

2. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (1), handelingen van voorbehandeling omvatten: ten eerste het gedurende 6 - 18 uur laten weken van sojazaden, vervolgens gedurende 10 min in kokend water koken, en koelen om zachte rotte sojabonen te verkrijgen;
of, het malen van de sojabonen om sojabonenpoeder te verkrijgen,
of het uitvoeren van een behandeling met stoomexplosie op de sojabonen om met stoom geëxplodeerde sojabonen te verkrijgen.

3. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (2) de hoeveelheid toegediende mest van de gecomposteerde boerderijmest 5 - 8 m^3/ mu is.

4. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (2) de breedte van de kleine hoge percelen aan de bovenzijde is 80 cm is, de breedte aan de onderzijde 100 cm is en de hoogte 10 cm bedraagt.

5. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (3) de handelingen voor het ontsmetten van de zaden voorafgaand het zaaien omvatten: het gedurende 10 min laten weken van de zaden in een natriumhypochlorietoplossing met een massaconcentratie van 2,5%, en vervolgens het meer dan drie keer wassen van de zaden met schoon water van 5 maal het volume van de zaden.

6. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (3) het substraat voor het opkweken van zaailingen in massa procent 30% vermiculiet, 60% turf en 10% ontsloten kippenmest omvat.

7. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (3) de temperatuur voor het opkweken van zaailingen 18 - 28°C is, een fotoperiode 12u/12u is, en de verlichtingsintensiteit 600 $\mu mol \cdot m^{-2} \cdot s^{-1}$ is.

8. De werkwijze voor het telen van tomaten volgens conclusie 1, waarbij in stap (5) de handelingen van het spoelen en het toedienen van de meststof met water in het zwelstadium van de vrucht omvatten: wanneer een eerste vruchtaanzet, een tweede vruchtaanzet, een derde vruchtaanzet en een vierde vruchtaanzet respectievelijk de grootte van een walnoot hebben bereikt en aan het zwellen zijn, het spoelen en het toedienen van de meststof met water, en het toedienen van telkens 500 kg/mest van de gecomposteerde mest, en het stoppen van het toedienen 30 dagen voor het ontwortelen.

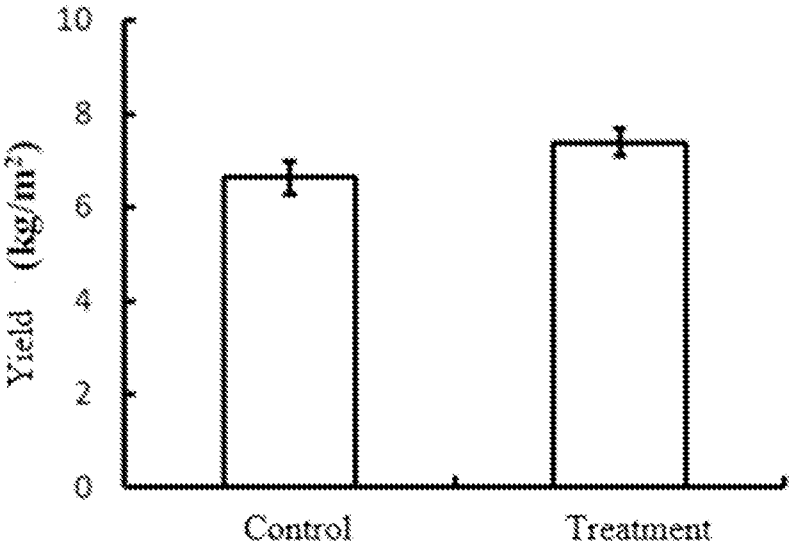

10
8
6
4
2
0
Yield (kg/m²)
Control
Treatment

Fig. 1

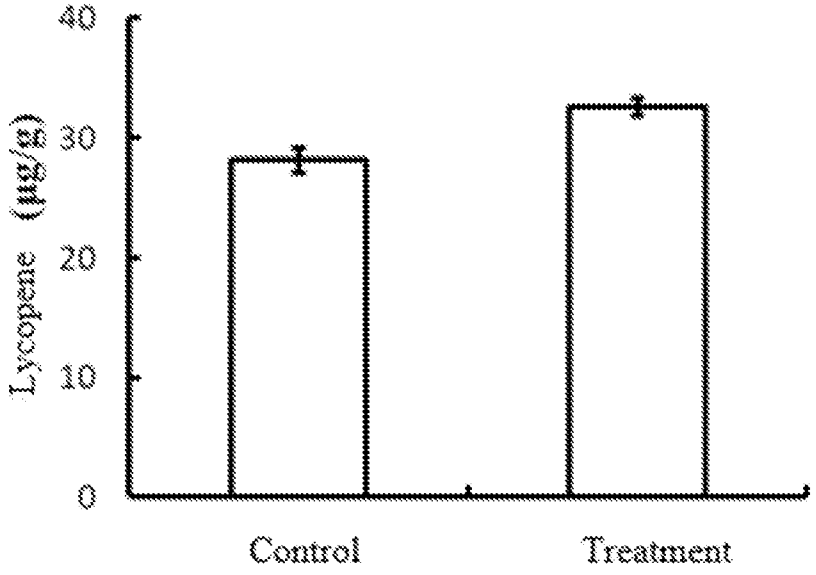

40
30
20
10
0
Lycopene (μg/g)
Control
Treatment

Fig. 2

Rijksdienst voor Ondernemend Nederland

RAPPORT BETREFFENDE HET ONDERZOEK NAAR DE STAND VAN DE TECHNIEK

Octrooiaanvrage 2030442

Classificatie van het onderwerp[1]: A01G22/05; A01B79/02; C05G1/00	Onderzochte gebieden van de techniek[1]: A01G; A01B; C05G
Computerbestanden: EPODOC, WPI	Omvang van het onderzoek: Volledig
Datum van de onderzochte conclusies: 6 januari 2022	Niet onderzochte conclusies: -

Van belang zijnde literatuur

Categorie[2]	Vermelding van literatuur met aanduiding, voor zover nodig, van speciaal van belang zijnde tekstgedeelten of figuren	Van belang voor conclusie(s)
X	CN 113711868 A (SHANDONG ACAD OF AGRICULTURAL SCIENCES) 30 november 2021 * gehele publicatie * - - - - -	1-8

Datum waarop het onderzoek werd voltooid: 6 februari 2023	De bevoegde ambtenaar: dr. W.A. Kanneworff **Octrooicentrum Nederland** **onderdeel van Rijksdienst voor Ondernemend Nederland**

1, 2 Zie toelichting volgend blad.

Toelichting:

[1] Classificatie gebieden van de techniek:
gedefinieerd volgens International Patent Classification (IPC).

[2] Categorie van de vermelde literatuur:

X: op zichzelf van bijzonder belang zijnde stand van de techniek

Y: in samenhang met andere geciteerde literatuur van bijzonder belang zijnde stand van de techniek

A: niet tot de categorie X of Y behorende van belang zijnde stand van de techniek

O: verwijzend naar niet op schrift gestelde stand van de techniek

P: literatuur gepubliceerd tussen voorrangs- en indieningsdatum

T: niet tijdig gepubliceerde literatuur over theorie of principe ten grondslag liggend aan de uitvinding

E: octrooiliteratuur gepubliceerd op of na de indienings-datum van de onderhavige aanvrage en waarvan de indieningsdatum of de voorrangsdatum ligt voor de indieningsdatum van de onderhavige aanvrage

D: in de aanvrage genoemd

L: om andere redenen vermelde literatuur

&: lid van dezelfde octrooifamilie; corresponderende literatuur

Rijksdienst voor Ondernemend Nederland

AANHANGSEL

Behorende bij het Rapport betreffende het Onderzoek naar de Stand van de Techniek

Octrooiaanvrage 2030442

Het aanhangsel bevat een opgave van elders gepubliceerde octrooiaanvragen of octrooien (zogenaamde leden van dezelfde octrooifamilie), die overeenkomen met octrooigeschriften genoemd in het rapport. De opgave is samengesteld aan de hand van gegevens uit het computerbestand van het Europees Octrooibureau per 6 februari 2023. De juistheid en volledigheid van deze opgave wordt noch door het Europees Octrooibureau, noch door Octrooicentrum Nederland gegarandeerd; de gegevens worden verstrekt voor informatiedoeleinden.

In het rapport genoemd octrooigeschrift		Datum van publicatie	Overeenkomende octrooigeschriften		Datum van publicatie
CN 113711868	A	30-11-2021	ZA 202110761	B	28-04-2022

Rijksdienst voor Ondernemend Nederland

SCHRIFTELIJKE OPINIE

Octrooiaanvrage 2030442

Indieningsdatum: 6 januari 2022	Voorrangsdatum:
Classificatie van het onderwerp[1]: A01G22/05; A01B79/02; C05G1/00	Aanvrager: Shandong Academy of Agricultural Sciences

Deze schriftelijke opinie bevat een toelichting op de volgende onderdelen:

☑ Onderdeel I	Basis van de schriftelijke opinie
☐ Onderdeel II	Voorrang
☐ Onderdeel III	Vaststelling nieuwheid, inventiviteit en industriële toepasbaarheid niet mogelijk
☐ Onderdeel IV	De aanvrage heeft betrekking op meer dan één uitvinding
☑ Onderdeel V	Gemotiveerde verklaring ten aanzien van nieuwheid, inventiviteit en industriële toepasbaarheid
☐ Onderdeel VI	Andere geciteerde documenten
☐ Onderdeel VII	Overige gebreken
☐ Onderdeel VIII	Overige opmerkingen

De bevoegde ambtenaar:
dr. W.A. Kanneworff

Octrooicentrum Nederland
onderdeel van Rijksdienst voor Ondernemend Nederland

1 Gedefinieerd volgens International Patent Classification (IPC).

Schriftelijke Opinie

Octrooiaanvrage 2030442

Onderdeel I Basis van de schriftelijke opinie

Deze schriftelijke opinie is opgesteld op basis van de op 6 januari 2022 ingediende conclusies.

Onderdeel V Gemotiveerde verklaring ten aanzien van nieuwheid, inventiviteit en industriële toepasbaarheid

1. Verklaring

Nieuwheid	Ja: conclusie(s)	-
	Nee: conclusie(s)	1-8
Inventiviteit	Ja: conclusie(s)	-
	Nee: conclusie(s)	-
Industriële toepasbaarheid	Ja: conclusie(s)	1-8
	Nee: conclusie(s)	-

2. Literatuur en toelichting

In het rapport betreffende het onderzoek naar de stand van de techniek wordt de volgende publicatie genoemd:

D1: CN 113711868 A (SHANDONG ACAD OF AGRICULTURAL SCIENCES) 30 november 2021

D1 openbaart de materie van de conclusies van de onderhavige octrooiaanvraag.
De conclusies zijn daarom niet nieuw ten opzichte van D1.