METHOD OF CULTIVATING FRUIT VEGETABLE PLANT AND TOMATO FRUIT

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a method of cultivating a fruit vegetable plant and a tomato fruit.

2. Description of the Related Art

[0002] In cultivation of fruit and vegetable plants, control of a temperature condition in a cultivation environment is important from a viewpoint of improving quality of crops and year-round cultivation, and various temperature control methods have been suggested. For example, in JP5603669B, there is suggested a method of controlling a temperature condition of a plant by disposing a plurality of tubes in the vicinity of a plant within a predetermined range in a vertical direction in a greenhouse, and causing a heating fluid or a cooling fluid to flow in the plurality of tubes.

[0003] However, since a growth of plants cultivated in a greenhouse, a quantity and a quality of crops, and the like are affected by the climate and the weather, in recent years, an artificial light type plant factory that cultivates plants such as vegetables using an artificial light source such as LEDs (Light Emitting Diodes).

Cultivation of plants in the artificial light type plant factory is not affected by the climate and the weather, and a problem of labor shortage can be solved. Therefore, it is possible to cultivate plants throughout a year under certain conditions.

[0004] JP6444611B suggests a method of cultivating a plant in an artificial light type plant factory, which controls an irradiation light and a carbon dioxide concentration to promote the growth of the plant.

SUMMARY OF THE INVENTION

[0005] By the way, plants cultivated in most plant factories in Japan are leafy vegetable plants such as lettuce, and the cultivation method suggested in JP6444611B mainly cultivates leafy vegetable plants. On the other hand, a method of cultivating a fruit vegetable plant in a plant factory has not yet been established, and a method of cultivating a fruit vegetable plant, which is suitable for cultivation in a plant factory and by which a high-quality harvested product

(fruit) such as tomato can be harvested is required.

Embodiments of the present disclosure provide a method of cultivating a fruit vegetable plant, which is suitable for cultivation in a plant factory and by which a high-quality fruit can be harvested, and a tomato fruit which is harvested by the method of cultivating a fruit vegetable plant.

[0006] According to an aspect of the present disclosure, there is provided a method of cultivating a fruit vegetable plant, the method including: cultivating at least two parts of a plurality of ground parts generated from one plant seedling of the fruit vegetable plant in different environments, wherein the plurality of ground parts of the fruit vegetable plant comprises a main branch and a side branch, the main branch and at least one side branch are cultivated in different environments, wherein a light period temperature in the fruit enlargement promoting environment is different from a light period temperature in the photosynthesis promoting environment, and the light period temperature in the fruit enlargement promoting environment is 15°C to 25°C, and the light period temperature in the photosynthesis promoting environment is 25°C to 30°C.

[0007] In an embodiment of the above aspect, the different environments differ in one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow.

[0008]

[0009] In an embodiment of the above aspect, the different environments include a fruit growth promoting environment at least including a fruit enlargement promoting environment, and a photosynthesis promoting environment, in the fruit enlargement promoting environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for promoting fruit growth of the fruit vegetable plant, and in the photosynthesis promoting environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for promoting photosynthesis of the fruit vegetable plant.

[0010] In an embodiment of the above aspect, a part of the fruit vegetable plant cultivated in the fruit growth promoting environment or the photosynthesis promoting environment is accommodated in an accommodation portion.

[0011]

[0012] In an embodiment of the above aspect, the plurality of ground parts of the fruit vegetable plant have two or more side branches, at least two of the main branches and the side branches are cultivated in the photosynthesis promoting environment, and in the photosynthesis promoting environment, a light-dark cycle of light irradiation is controlled, and at least one of the main branch or the side branch is allowed to stay in the light period.

[0013] In an embodiment of the above aspect, the plurality of ground parts of the fruit vegetable plant have two or more side branches, and at least two of the main branches and the side branches are cultivated in the fruit growth promoting environment.

[0014] In an embodiment of the above aspect, in the photosynthesis promoting environment, an area of a leaf contained in at least one of the main branch or the side branch is adjusted.

[0015] In an embodiment of the above aspect, in the photosynthesis promoting environment, flower buds contained in at least one of the main branch or the side branch are removed.

[0016] In an embodiment of the above aspect, the fruit growth promoting environment further includes at least one of a flowering promoting environment or a fruit ripening environment, in the flowering promoting environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for promoting flowering of the fruit vegetable plant, and in the fruit ripening environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for ripening of a fruit of the fruit vegetable plant.

[0017] In an embodiment of the above aspect, parts of the fruit vegetable plant cultivated in the fruit enlargement promoting environment, the flowering promoting environment, and the fruit ripening environment are accommodated in different accommodation portions.

[0018] In an embodiment of the above aspect, an artificial light irradiation device is used as a light source.

[0019] In an embodiment of the above aspect, the fruit vegetable plant is a Solanaceae family plant.

[0020] In an embodiment of the above aspect, the fruit vegetable plant is a tomato.

[0021] Disclosed herein is a tomato fruit obtained by the above aspect of cultivating a fruit vegetable plant.

[0022] In an embodiment of the above aspect, the tomato fruit contains 15 mg/100 g or more of lycopene and has a Brix sugar content of 5% by mass or more.

[0023] Embodiments of the present disclosure provide a method of cultivating a fruit vegetable plant which is suitable for cultivation in a plant factory and by which a high-quality fruit can be harvested, and a tomato fruit which is harvested by the method of cultivating a fruit vegetable plant.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] Fig. 1 is a schematic diagram for explaining an example of a fruit vegetable plant.

Figs. 2A to 2C are schematic diagrams for explaining an example of a method of cultivating a fruit vegetable plant of the present disclosure.

Figs. 3A to 3C are schematic diagrams for explaining another example of the method of cultivating a fruit vegetable plant of the present disclosure.

Figs. 4A to 4C are schematic diagrams for explaining another example of the method of cultivating a fruit vegetable plant of the present disclosure.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0025] Hereinafter, embodiments for carrying out the present disclosure will be described in detail. However, the present invention is not limited to the following embodiments. In the following embodiments, the components are not essential unless otherwise specified. The same applies to numerical values and ranges thereof, and does not limit the present disclosure.

[0026] In the present disclosure, the “ground part” means a part other than a root part generated from a plant seedling.

In the present disclosure, the “fruit vegetable plant” means a plant of which harvested product is a fruit.

In the present disclosure, the “side branch” means a branch having extended lateral buds generated from leaves of the main branch or a base of a stem, and a state of a plant having one or more side branches is referred to as a plurality of tailoring, one having one side branch is referred to as two tailoring, and one having two side branches is referred to as three

CLAIMS

1. A method of cultivating a fruit vegetable plant, the method comprising:

cultivating at least two parts of a plurality of ground parts generated from one plant seedling of the fruit vegetable plant in different environments,

wherein the plurality of ground parts of the fruit vegetable plant comprises a main branch and a side branch,

the main branch and at least one side branch are cultivated in different environments,

wherein a light period temperature in the fruit enlargement promoting environment is different from a light period temperature in the photosynthesis promoting environment, and

the light period temperature in the fruit enlargement promoting environment is 15°C to 25°C, and the light period temperature in the photosynthesis promoting environment is 25°C to 30°C.

2. The method of cultivating a fruit vegetable plant according to claim 1,

wherein the different environments differ in one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow.

3. The method of cultivating a fruit vegetable plant according to claim 1 or 2,

wherein the different environments comprise a fruit growth promoting environment at least including a fruit enlargement promoting environment, and a photosynthesis promoting environment,

in the fruit enlargement promoting environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for promoting fruit growth of the fruit vegetable plant, and

in the photosynthesis promoting environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for promoting photosynthesis of the fruit vegetable plant.

4. The method of cultivating a fruit vegetable plant according to claim 3,

wherein a part of the fruit vegetable plant cultivated in the fruit growth promoting environment or the photosynthesis promoting environment is accommodated in an accommodation portion.

5. The method of cultivating a fruit vegetable plant according to claim 3 or 4,

wherein the plurality of ground parts of the fruit vegetable plant comprise two or more side branches,

at least two of the main branches and the side branches are cultivated in the photosynthesis promoting environment, and

in the photosynthesis promoting environment, a light-dark cycle of light irradiation is controlled, and at least one of the main branch or the side branch is allowed to stay in the light period.

6. The method of cultivating a fruit vegetable plant according to any one of claims 3 to 5,

wherein the plurality of ground parts of the fruit vegetable plant comprise two or more side branches,

at least two of the main branches and the side branches are cultivated in the fruit growth promoting environment.

7. The method of cultivating a fruit vegetable plant according to any one of claims 3 to 6,

wherein in the photosynthesis promoting environment, an area of a leaf comprised in at least one of the main branch or the side branch is adjusted.

8. The method of cultivating a fruit vegetable plant according to any one of claims 3 to 7,

wherein in the photosynthesis promoting environment, flower buds comprised in at least one of the main branch or the side branch are removed.

9. The method of cultivating a fruit vegetable plant according to any one of claims 3 to 8,

wherein the fruit growth promoting environment further includes at least one of a flowering promoting environment or a fruit ripening environment,

in the flowering promoting environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for promoting flowering of the fruit vegetable plant, and

in the fruit ripening environment, one or more conditions selected from temperature, relative humidity, light, carbon dioxide concentration, and air flow are set as conditions suitable for ripening of a fruit of the fruit vegetable plant.

10. The method of cultivating a fruit vegetable plant according to claim 9,

wherein parts of the fruit vegetable plant cultivated in the fruit enlargement promoting environment, the flowering promoting environment, and the fruit ripening environment are accommodated in different accommodation portions.

11. The method of cultivating a fruit vegetable plant according to any one of claims 1 to 10,

wherein an artificial light irradiation device is used as a light source.

12. The method of cultivating a fruit vegetable plant according to any one of claims 1 11,

wherein the fruit vegetable plant is a Solanaceae family plant.

13. The method of cultivating a fruit vegetable plant according to any one of claims 1 to 12,

wherein the fruit vegetable plant is a tomato.

14. The method of cultivating a fruit vegetable plant according to claim 13,

wherein the tomato fruit obtained by the method of cultivating a fruit vegetable plant according to claim 15 comprises 15 mg/100 g or more of lycopene and has a Brix sugar content of 5% by mass or more.