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A turtle and lotus root ecological Symbiosis system and green planting-feeding method

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ABSTRACT

The invention relates to a turtle and lotus root ecological Symbiosis system and green planting-feeding method. It comprises the following steps in turn: pretreatment of planting pond, planting lotus root, putting in turtles, feeding and managing of turtles and harvesting . The turtle and lotus root ecological Symbiosis system improves the economic benefit per unit area. Feeding turtle in lotus root pond obviously increases the economic benefit per unit area. the way of feeding turtle in lotus root pond not only saves a lot of bait cost, purifies water quality and improves water environment, bur also enhances the disease resistance and immunity of the turtle. In addition, the turtle has large activity space, no drug and environmental pollution, and the turtle has strong constitution and bright body color, just like wild turtle. Turtle will not affect the growth and yield of lotus root, but can loosen the bottom material of lotus root pond, feed on pests in lotus root pond and improve the quality of lotus root.

FIGURES

1/1

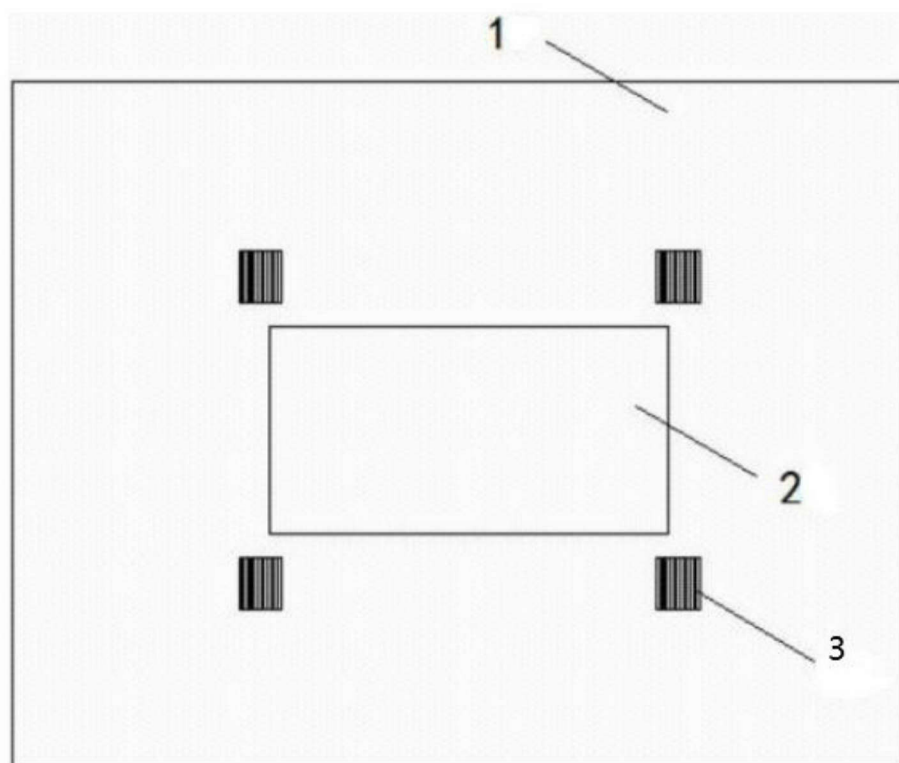


Figure 1

A turtle and lotus root ecological Symbiosis system and green planting-feeding method

TECHNICAL FIELD

The invention relates to the technical field of lotus root comprehensive species breeding, in particular to a turtle and lotus root ecological Symbiosis system and green planting-feeding method.

BACKGROUND

Lotus root originated in India and was introduced into China very early. Lotus root adapts to warm environment, not shade and water shortage, strong wind. Lotus root is slightly sweet and crisp. It can be eaten raw or cooked, and its medicinal value is quite high. Its roots, leaves, flowers and fruits are all treasures and can be nourished and used as medicine. Powder made by lotus root can promote digestion, stop diarrhea, stimulate appetite, clear heat, nourish and prevent internal hemorrhage. It is a good liquid food and nourishing delicacy for women, children, women, and the infirm.

In recent years, China has vigorously advocated the green planting-feeding mode. Water resources, weed resources and aquatic biological resources in lotus root planting pond constitute a complex ecosystem. Taking advantage of the active and frequent foraging habits of turtles, It can control weeds, prey on aquatic animals and drive away pests. At the same time, the residual bait and excrement of turtles can provide fertilizer for lotus root. While increasing the nutrition level of lotus root planting pond water body, it can greatly reduce the use of chemical fertilizer. In addition, it can promote the reproduction of aquatic biological resources such as plankton in ponds and increase the bait of turtle. At present, there is no report on the comprehensive feeding technology of turtle in lotus root planting pond.

SUMMARY

The purpose of the invention is to provide a turtle and lotus root ecological Symbiosis system and green planting-feeding method, which has obvious benefits and effects of comprehensive planting and feeding.

In order to achieve the above purpose, the technical scheme adopted by the invention is as follows:

The invention relates to a turtle and lotus root ecological Symbiosis system and green planting-feeding method, which comprises the following steps:

(1) Pretreatment of planting pond:

The water depth of the planting pond is 1m, lotus roots are planted in the middle position (2) of the planting pond (1), and a back drying platform (3) is respectively arranged around the lotus roots, so that the back-drying platform can be used as an eating platform, and asbestos tiles with a length of 1.8 m and a width of 0.75 m can be obliquely placed into water;

(2) Planting lotus root:

1) Planting density: row space is 180-220 cm and hole space is 70-100 cm; 300-500 hole per 666.67 m² and 2~3 plants per hole with a depth of 15 cm;

2) Managing of lotus root:

After planting, in order to raise the ground temperature during the day, keep 3 ~ 5 cm of shallow water, but when encountering cold current and low temperature at night, fill about 10 cm of deep water to prevent cold and keep the ground temperature;

3) Turning the head of lotus root : adjusting the lotus root whip is carry out from the end of June to the end of July, once every 7 days, for about 4 times in total;

(3) Putting turtle into lotus root pond:

1) Turtle variety: *Trionyx sinensis*, the total weight of the turtle putted in is 125 kg;

2) Putting date: April 15th to May 15th every year;

3) Average specification: 150-250 g/turtle, input quantity is 625 turtles/666.67 m², total weight is 125 kg/666.67 m², body length is 10 cm;

4) Package measures during transportation of turtle: the inner wall of the box is clean and smooth, in order to reduce the possibility of damaging the skin of the turtle due to friction

during transportation, the bottom of the box is padded with aquatic plants, and the box should have appropriate moisture;

5) The way of Putting the young turtles into the pond: when putting the turtles into pond, the temperature difference between the air temperature and the water temperature is too large, first placing the turtles on the shore, slowly adjusting the temperature difference, and allowing the turtles to climb into the water by themselves;

6) Disinfect medicine and concentration of medicine: soaked in 10mg/L povidone iodine solution for 10 min before putting turtle into the pond;

(4) Feeding and managing the turtles

1) Feeding: the protein content of the turtles feed should be 41%-42%, and the turtles feed should be fresh and palatable; Feeding the commercial feed or artificially prepared feed twice a day and fresh bait once a day at 6: 00 a.m, 4: 00 p.m, 7: 00 p.m .The fresh bait consists of wild miscellaneous fish, shrimp and snails, which need to be washed clean with clear water and soaked in 3-5% salt water for 5-10 minutes; Feeding at 6 a.m accounted for 30% of the whole feed, feeding at 4 p.m accounted for 25% of the whole feed and feeding at 7 p.m accounted for 45% of the whole feed for one day ; Because outdoors, the feeding amount should be adjusted in time according to climate change, and it is advisable to finish the feed within 2 hours; Feed is thrown on a fixed eating table, which is fixed with asbestos shingle iron wire and forms an included angle of 30 degrees with the water surface; 1/4 of the food and turtle activity places are placed under the water surface and 3/4 above the water surface, which is convenient for inspection, stopping waste and disinfection;

2) Water quality management: dissolved oxygen is required to be above 5.5 mg/L, pH is 7.5 ~ 8, and transparency is 25 cm ~ 30 cm; The water color is yellow-green in summer and tea green or light green in autumn; It is better to be in a state of micro-flowing water; Often add fresh water; Sprinkling 25 mg/L quicklime solution into the water body every 15-20 days to supplement calcium in the water body and adjust the pH value;

3) Fertilization and medication: the lotus root pond has fertile water quality, rich organic matter in bottom material, and a large amount of animal and plant feed, animals and aquatic insects that can be eaten by turtles; The manure and residual bait of turtles can also be used as natural fertilizer in lotus root pond, so as to improve the quality of lotus root without applying chemical fertilizer, using no or less drugs;

4) High-temperature season management measures: when summer comes, the temperature rises, the turtles feed is fed in a large amount, the metabolism is exuberant, metabolites and residual feed in the water are easy to cause water quality change, and

harmful to the water which is easy to out of the standard, so the ecological preparation is used to transfer water once every 15-20 days, and when the ecological preparation is used, water is added to activate for 1-2 hours on sunny days at 8-9 o'clock in the morning and then sprinkled; The use of ecological preparations cannot disinfect and kill insects within 3-5 hours;

(5) Harvesting:

Lotus root harvest date: November 10th ~ November 30th every year; Starting date of turtles catching: December 20th to December 30th every year.

Preferably, the artificial prepared feed comprises 25-45 parts of soybean meal, 3-8 parts of fish meal, 1-5 parts of yellow mealworm larva dry powder, 5-10 parts of yellow mealworm adult dry powder, 1-10 parts of compound plant powder, 1-10 parts of compound Chinese medicine powder, 0.1-1 part of mineral powder, 0.01-0.1 part of VB6, 0.01-0.05 part of VB12, 0.05-0.1 part of cod liver oil;

Further preferably, the preparation method of the artificially prepared feed comprises the following steps:

(1) Preparation of composite plant power

Cleaning *Descurainia sophia*, *Galium spurium L.* and *Euphorbia lathyris L* respectively, adding water 3 times the weight of plants, heating and reflux extraction for 3 hours, filtering to obtain filter residue, adding water 2 times the weight of filter residue, and heating and reflux extraction for 3 hours again; Combining the filtrates twice, concentrating under reduced pressure and spray drying in turn to obtain composite plant powder;

(2) Preparation of compound Chinese medicinal power

Sequentially crushing *Pueraria Lobatae*, *Melilotus Officinalis* and *Senecio scandens* to a particle size of 100 meshes, then uniformly mixing the powder, adding 95% ethanol 3 times the weight of the powder, heating and reflux extraction for 2 hours, then filtering to obtain filter residue, adding 95% ethanol 2 times the weight of the filter residue, and heating and reflux extraction for 2 hours again; Combining the filtrates twice, and sequentially concentrating under reduced pressure and spray drying to obtain composite Chinese medicine powder;

(3) Mixing feed granulate

Soybean meal, fish meal, *Tenebrio molitor* larva dry powder, *Tenebrio molitor* adult dry powder, composite plant powder, composite traditional Chinese medicine powder, mineral

powder, VB6, VB12 and cod liver oil are added into the mixing equipment according to the adding proportion, and a small amount of water is added, uniformly mixed, granulated by a granulator, then dried until the moisture content of the granules is less than 2%, and finally tested and packaged.

Compared with the prior technique, the invention has the following beneficial effects:

1) The model is innovative, and the economic benefits are remarkable.

A turtle and lotus root ecological Symbiosis system and green planting-feeding method improves the economic benefit per unit area. Introducing turtles into lotus root planting pond obviously increases the economic benefit per unit area. Compared with traditional single lotus root planting, the economic benefit is extremely significant.

2) Biodiversity, natural ecological prevention and control of diseases.

A turtle and lotus root ecological Symbiosis system and green planting-feeding method based on lotus root planting pond introduces turtles in the feeding process to increase the utilization rate of bait organisms in water body; Lotus root planting pond provides a relaxed and high-quality environmental place for turtle activities, with a wide range of activities, feeding and back drying, fast growth and development, enhanced the disease resistance of turtle, almost no disease occurred during growth, and achieved the effect of ecological prevention and control;

3) Improve quality and increase efficiency and have good ecological benefits.

A turtle and lotus root ecological Symbiosis system and green planting-feeding method avoids the input of chemical fertilizers and pesticides, reduces environmental pollution, improves the overall agricultural environment, and has remarkable ecological benefits. Due to abundant fresh bait, the turtles cultured in lotus root pond not only saves a lot of bait cost, but also the lotus root purifies water quality, improves water environment, enhances the disease resistance and immunity of the turtles. In addition, the turtles has large activity space, no drug and environmental pollution, and the cultured turtle has strong constitution and bright body color, just like wild turtle. Turtle mixed culture in lotus root pond will not affect the growth and yield of lotus root, but can loosen the bottom material of lotus root pond, feed on pests in lotus root pond and improve the quality of lotus root, which is worth popularizing.

4) Feed innovation

Through reasonable collocation of nutrients, the prepared artificial feed does not contain antibiotics, and the nutritional components are comprehensive and balanced. At the same time,

the feed has delicate taste, which can significantly enhance appetite, promote its yield increase and fattening, and can also significantly improve its immunity, growth rate and survival rate.

BRIEF DESCRIPTION OF THE FIGURES

In the following, a turtle and lotus root ecological Symbiosis system and green planting-feeding method will be further described in combination with examples and drawings.

Fig.1 is a schematic diagram of turtle ecological symbiotic culture based on lotus root planting pond.

DESCRIPTION OF THE INVENTION

Example:

A turtle and lotus root ecological Symbiosis system and green planting-feeding method comprises the following steps:

(1) Pretreatment of planting pond:

The water depth of the planting pond was 1m, lotus roots were planted in the middle position (2) of the planting pond (1), and a back drying platform (3) is respectively arranged around the lotus roots, so that the back drying platform can be used as a eating platform, and asbestos tiles with a length of 1.8 m and a width of 0.75 m can be obliquely placed into water;

(2)Planted lotus root :

1) Planting density: row space was 180-220 cm and hole space was 70-100 cm; 300-500 hole per 666.67 m² and 2~3 plants per hole with a depth of 15 cm;

2) Managing of lotus root:

After planting, in order to raise the ground temperature during the day, kept 3 ~ 5 cm of shallow water, but when encountering cold current and low temperature at night, filled about 10 cm of deep water to prevent cold and keep the ground temperature;

3) Turned the head of lotus root : adjusting the lotus root whip was carry out from the end of June to the end of July, once every 7 days, for about 4 times in total;

(3) Putted turtle into lotus root pond:

1) Turtle variety: *Trionyx sinensis*, the total weight of the turtle putted in was 125 kg;

2) Putted date: April 15th to May 15th every year;

3) Average specification: 150-250 g/turtle, input quantity was 625 turtles/666.67 m², total weight was 125 kg/666.67 m², body length was 10 cm;

4) Package measures during transportation of turtle: the inner wall of the box was clean and smooth, in order to reduce the possibility of damaging the skin of the turtle due to friction during transportation, the bottom of the box was padded with aquatic plants, and the box should have appropriate moisture;

5)Transportation mode: automobile transportation

6) The way of Putting the young turtles into the pond: when putted the turtles into pond, the temperature difference between the air temperature and the water temperature was too large, first placed the turtles on the shore, slowly adjusted the temperature difference, and allowed the turtles to climb into the water by themselves;

7) Disinfect medicine and concentration of medicine: soaked in 10mg/L povidone iodine solution for 10 min before putting turtle into the pond;

(4) Feeding and managing the turtles

1) Feeding: the protein content of the turtles feed should be 41%-42%, and the turtles feed should be fresh and palatable; Feeding the commercial feed or artificially prepared feed twice a day and fresh bait once a day at 6: 00 a.m, 4: 00 p.m, 7: 00 p.m .The fresh bait consists of wild miscellaneous fish, shrimp and snails, which need to be washed clean with clear water and soaked in 3-5% salt water for 5-10 minutes; Feeding at 6 a.m accounted for 30% of the whole feed, feeding at 4 p.m accounted for 25% of the whole feed and feeding at 7 p.m accounted for 45% of the whole feed for one day ; Because outdoors, the feeding amount should be adjusted in time according to climate change, and it is advisable to finish the feed within 2 hours; Feed is thrown on a fixed eating table, which was fixed with asbestos shingle iron wire and formed an included angle of 30 degrees with the water surface; 1/4 of the food and turtle activity places were placed under the water surface and 3/4 above the water surface, which is convenient for inspection, stopped waste and disinfection;

2) Water quality management: dissolved oxygen was required to be above 5.5 mg/L, pH was 7.5 ~ 8, and transparency was 25 cm ~ 30 cm; The water color was yellow-green in summer and tea green or light green in autumn; It was better to be in a state of micro-flowing water; Often added fresh water; Sprinkling 25 mg/L quicklime solution into the water body every 15-20 days to supplement calcium in the water body and adjust the pH value;

3) Fertilization and medication: the lotus root pond has fertile water quality, rich organic matter in bottom material, and a large amount of animal and plant feed, animals and aquatic insects that can be eaten by turtles; The manure and residual bait of turtles can also be used as natural fertilizer in lotus root pond, so as to improve the quality of lotus root without applying chemical fertilizer, using no or less drugs;

4) High-temperature season management measures: when summer came, the temperature rised, the turtles feed was fed in a large amount, the metabolism was exuberant, metabolites and residual feed in the water were easy to cause water quality change, and harmful to the water which was easy to out of the standard, so the ecological preparation was used to transfer water once every 15-20 days, and when the ecological preparation was used, water was added to activate for 1-2 hours on sunny days at 8-9 o'clock in the morning and then sprinkled; The use of ecological preparations cannot disinfect and kill insects within 3-5 hours;

(5) Harvesting:

1) Lotus root

1. Harvest date of lotus root: November 10th ~ November 30th every year.

2. Lotus root yield: 2000 kg/667 m², average single plant weight: 14 kg, maximum single plant weight: 16 kg, minimum single plant weight: 12 kg.

2) Turtle

1. Turtle caught date: December 20th to December 30th every year.

2. The average size of turtle catching: 750 g/turtle (the maximum size: 800 g/turtle and the minimum size: 700 g/turtle). There are 590 turtles with a total weight of 442.5 kg and a body length of 19cm, and the recapture rate is about 95%.

3. Turtle yield: 317.5 kg /667 m² and 442.5 kg /667 m².

CLAIMS:

1. A turtle and lotus root ecological Symbiosis system and green planting-feeding method, characterized in that the steps are as follows:

(1) Pretreatment of planting pond:

The water depth of the planting pond is 1m, lotus roots are planted in the middle position (2) of the planting pond (1), and a back drying platform (3) is respectively arranged around the lotus roots, so that the back drying platform can be used as a eating platform, and asbestos tiles with a length of 1.8 m and a width of 0.75 m can be obliquely placed into water;

(2)Planting lotus root :

1) Planting density: row space is 180-220 cm and hole space is 70-100 cm; 300-500 hole per 666.67 m² and 2~ 3 plants per hole with a depth of 15 cm;

2) Managing of lotus root:

After planting, in order to raise the ground temperature during the day, keep 3 ~ 5 cm of shallow water, but when encountering cold current and low temperature at night, fill about 10 cm of deep water to prevent cold and keep the ground temperature;

3) Turning the head of lotus root : adjusting the lotus root whip is carry out from the end of June to the end of July, once every 7 days, for about 4 times in total;

(3) Putting turtles into lotus root pond :

1) Turtle variety:*Trionyx sinensis*, the total weight of the turtles putted in is 125 kg;

2) Putting date: April 15th to May 15th every year;

3) Average specification: 150-250 g/turtle, input quantity is 625 turtles /666.67 m², total weight is 125 kg/666.67 m², body length is 10 cm;

4) Package measures during transportation of turtle: the inner wall of the box is clean and smooth, in order to reduce the possibility of damaging the skin of the turtle due to friction during transportation, the bottom of the box is padded with aquatic plants, and the box should have appropriate moisture;

5) The way of Putting the young turtles into the pond: when putting the young turtles into pond, the temperature difference between the air temperature and the water temperature is too large, first placing the turtles on the shore, slowly adjusting the temperature difference, and allowing the turtles to climb into the water by themselves;

6) Disinfect medicine and concentration of medicine: soaked in 10mg/L povidone iodine solution for 10 min before putting turtles into the pond;

(4) Feeding and managing the turtles

1) Feeding: the protein content of the turtles feed should be 41%-42%, and the turtles feed should be fresh and palatable; Feeding the commercial feed or artificially prepared feed twice a day and fresh bait once a day at 6: 00 a.m, 4: 00 p.m, 7: 00 p.m .The fresh bait consists of wild miscellaneous fish, shrimp and snails, which need to be washed clean with clear water and soaked in 3-5% salt water for 5-10 minutes; Feeding at 6 a.m accounted for 30% of the whole feed, feeding at 4 p.m accounted for 25% of the whole feed and feeding at 7 p.m accounted for 45% of the whole feed for one day ; Because outdoors, the feeding amount should be adjusted in time according to climate change, and it is advisable to finish the feed within 2 hours; Feed is thrown on a fixed eating table, which is fixed with asbestos shingle iron wire and forms an included angle of 30 degrees with the water surface; 1/4 of the food and turtle activity places are placed under the water surface and 3/4 above the water surface, which is convenient for inspection, stopping waste and disinfection;

2) Water quality management: dissolved oxygen is required to be above 5.5 mg/L, pH is 7.5 ~ 8, and transparency is 25 cm ~ 30 cm; The water color is yellow-green in summer and tea green or light green in autumn; It is better to be in a state of micro-flowing water; Often add fresh water; Sprinkling 25 mg/L quicklime solution into the water body every 15-20 days to supplement calcium in the water body and adjust the pH value;

3) Fertilization and medication: the lotus root pond has fertile water quality, rich organic matter in bottom material, and a large amount of animal and plant feed, zoobenthos and aquatic insects that can be eaten by turtles; The manure and residual bait of turtles can also be used as natural fertilizer in lotus root pond, so as to improve the quality of lotus root without applying chemical fertilizer, using no or less drugs;

4) High-temperature season management measures: when summer comes, the temperature rises, the turtles feed is fed in a large amount, the metabolism is exuberant, metabolites and residual feed in the water are easy to cause water quality change, and harmful to the water which is easy to out of the standard, so the ecological preparation is used to transfer water once every 15-20 days, and when the ecological preparation is used, water is added to activate for 1-2 hours on sunny days at 8-9 o'clock in the morning and then sprinkled; The use of ecological preparations cannot disinfect and kill insects within 3-5 hours;

(5) Harvesting:

Lotus root harvest date: November 10th ~ November 30th every year; Starting date of turtles catching: December 20th to December 30th every year.

2. A turtle and lotus root ecological Symbiosis system and green planting-feeding method according to claim 1, characterized in that the artificial prepared feed comprises 25-45 parts of soybean meal, 3-8 parts of fish meal, 1-5 parts of yellow mealworm larva dry powder, 5-10 parts of yellow mealworm adult dry powder, 1-10 parts of compound plant powder, 1-10 parts of compound Chinese medicine powder, 0.1-1 part of mineral powder, 0.01-0.1 part of VB6, 0.01-0.05 part of VB12, 0.05-0.1 part of cod liver oil;

3. A turtle and lotus root ecological Symbiosis system and green planting-feeding method according to claim 2, characterized in that the preparation method of the artificially prepared feed comprises the following steps:

(1) Preparation of composite plant power

Cleaning *Descurainia sophia*, *Galium spurium L.* and *Euphorbia lathyris L* respectively, adding water 3 times the weight of plants, heating and reflux extraction for 3 hours, filtering to obtain filter residue, adding water 2 times the weight of filter residue, and heating and reflux extraction for 3 hours again; Combining the filtrates twice, concentrating under reduced pressure and spray drying in turn to obtain composite plant powder;

(2) Preparation of compound Chinese medicinal power

Sequentially crushing *Pueraria Lobatae*, *Melilotus Officinalis* and *Senecio scandens* to a particle size of 100 meshes, then uniformly mixing the powder, adding 95% ethanol 3 times the weight of the powder, heating and reflux extraction for 2 hours, then filtering to obtain filter residue, adding 95% ethanol 2 times the weight of the filter residue, and heating and reflux extraction for 2 hours again; Combining the filtrates twice, and sequentially concentrating under reduced pressure and spray drying to obtain composite Chinese medicine powder;

(3) Mixing feed granulate

Soybean meal, fish meal, *Tenebrio molitor* larva dry powder, *Tenebrio molitor* adult dry powder, composite plant powder, composite traditional Chinese medicine powder, mineral powder, VB6, VB12 and cod liver oil are added into the mixing equipment according to the adding proportion, and a small amount of water is added, uniformly mixed, granulated by a granulator, then dried until the moisture content of the granules is less than 2%, and finally tested and packaged.

FIGURES

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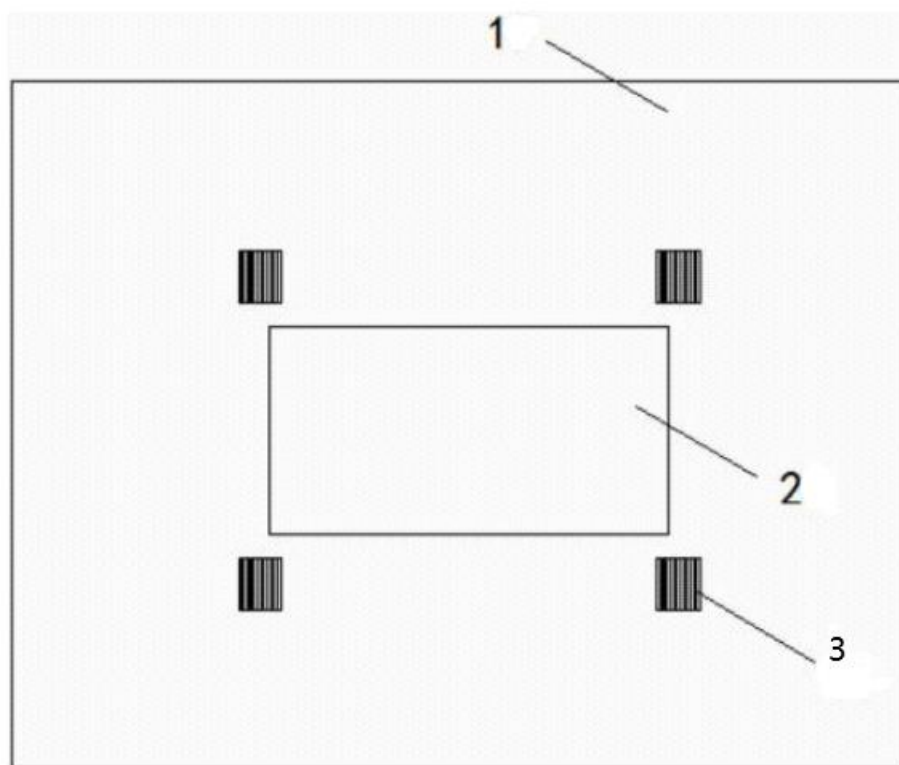


Figure 1