

Engineering-Oriented Plantation and Mechanical Harvesting of Aquatic Plants in Water Body Restoration Engineering

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Content

- 1. Water body restoring engineering and
Plantation of related aquatic plants**
- 2. Mechanical harvesting of aquatic plants in
water body restoring engineering**

1、 Water body restoring engineering and plantation of related aquatic plants

1) Waterbody contamination and Ecological restoration

● Waterbody contamination

Lakes and reservoirs contamination

75% of China's rivers and lakes are facing heavy metal contamination and eutrophication(Phosphorus and nitrogen).



blue algae in dianchi lake, Yunnan, China



water lettuce



hyacinth

Main contamination resources



domestic sewage



Industrial waste water



pesticides spraying plane



Aquaculture wastewater



usage of fertilizer

● Ecological restoration for waterbodies

There are many ways to improve and restore water bodies, of which, artificial wetland is an effective way to improve large water bodies. Which combine microbes with aquatic plants to purify water, and it is suitable for treatment of industrial waste water, domestic sewage etc.



Artificial Floating Islands in shaoxing and ningbo ,zhejiang province, China

Barracuda grass



Poly grass



Thalia dealbata



Jussiaea stipulacea Ohwi



2) Engineering-oriented plantation of related aquatic plants

These pictures are from a cooperation project of Zhejiang University and Qingshan Lake Sewage Treatment Plant, Linan City, Zhejiang Province.

An artificial wetland was designed to purify tail water from the sewage treatment plant. Some plants are planted outdoors, and other plants were planted in greenhouses.



Orderly planting is very important for mechanical harvesting, especially for those planted in greenhouses.

2. Mechanical harvesting of aquatic plants in water body restoring engineering

1) Ordinary harvesting method for aquatic plants

Most harvesting machines using a boat as the harvesting platform, and cutting collecting devices are fixed on the boat.

Here are some harvestors produced by some companies in China or some other countries.



An overall automation harvesting boat

Specially designed for floating plants, such as blue algae, water hyacinth, and floating rubbish etc.

Produced by Hua Kai Science & Technology Cor, Ltd, Hanzhou,China



Emerged plants harvester

Designed for rooted emerged plants, such as reed

Produced by Aquatic Technology Center, New York, USA



Aquatic Plants Harvesting System

compents

1	Pump	5	Collection Bag
2	Outboard Motors	6	Operators Console
3	Inboard Pump Engine	7	Arm
4	Pump Discharge Pipe	8	Collection Hood

A product of Freshwater Environment Management Company, Australia

2) Harvesting machinery for aquatic plants

● **Adverse conditions** for mechanical harvesting in greenhouses:

✓ **Narrow space**

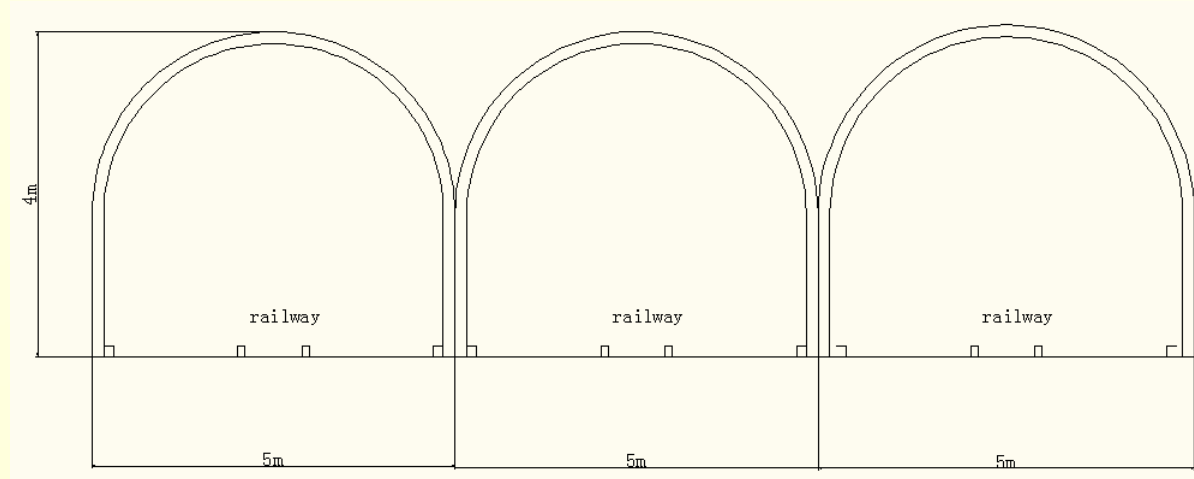
✓ **A pool in each greenhouse**

✓ **Transfer between adjacent two houses**

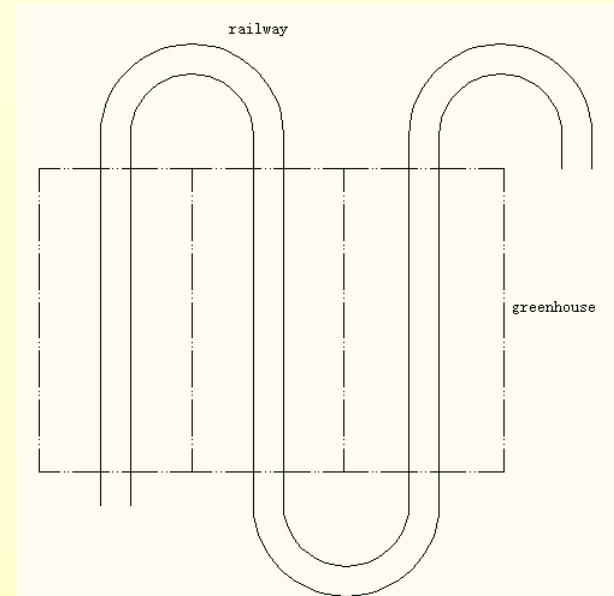
Above boats are not suitable for greenhouses harvesting!

● Guided harvesting machinery for greenhouses

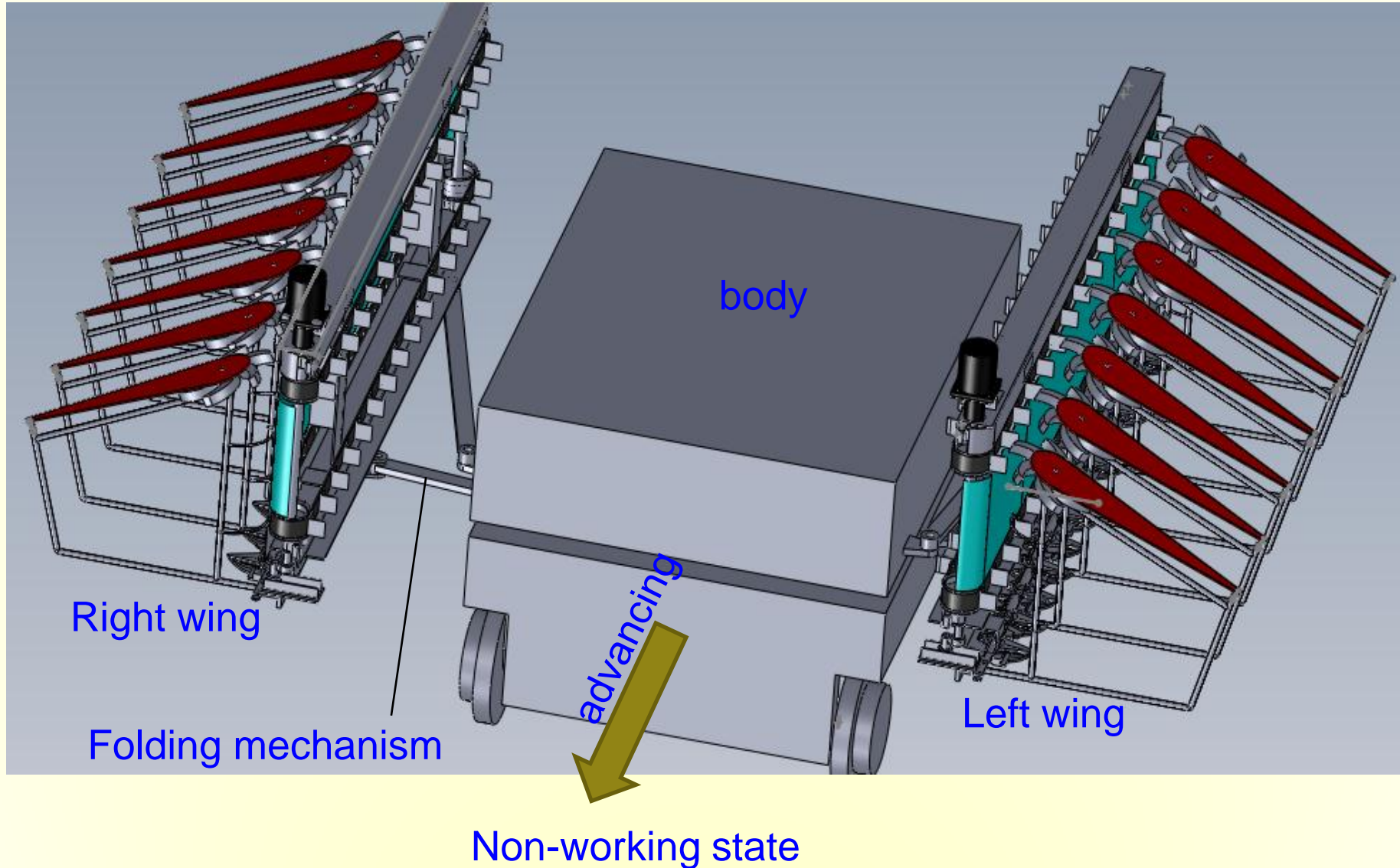
Layout of railway
in green houses

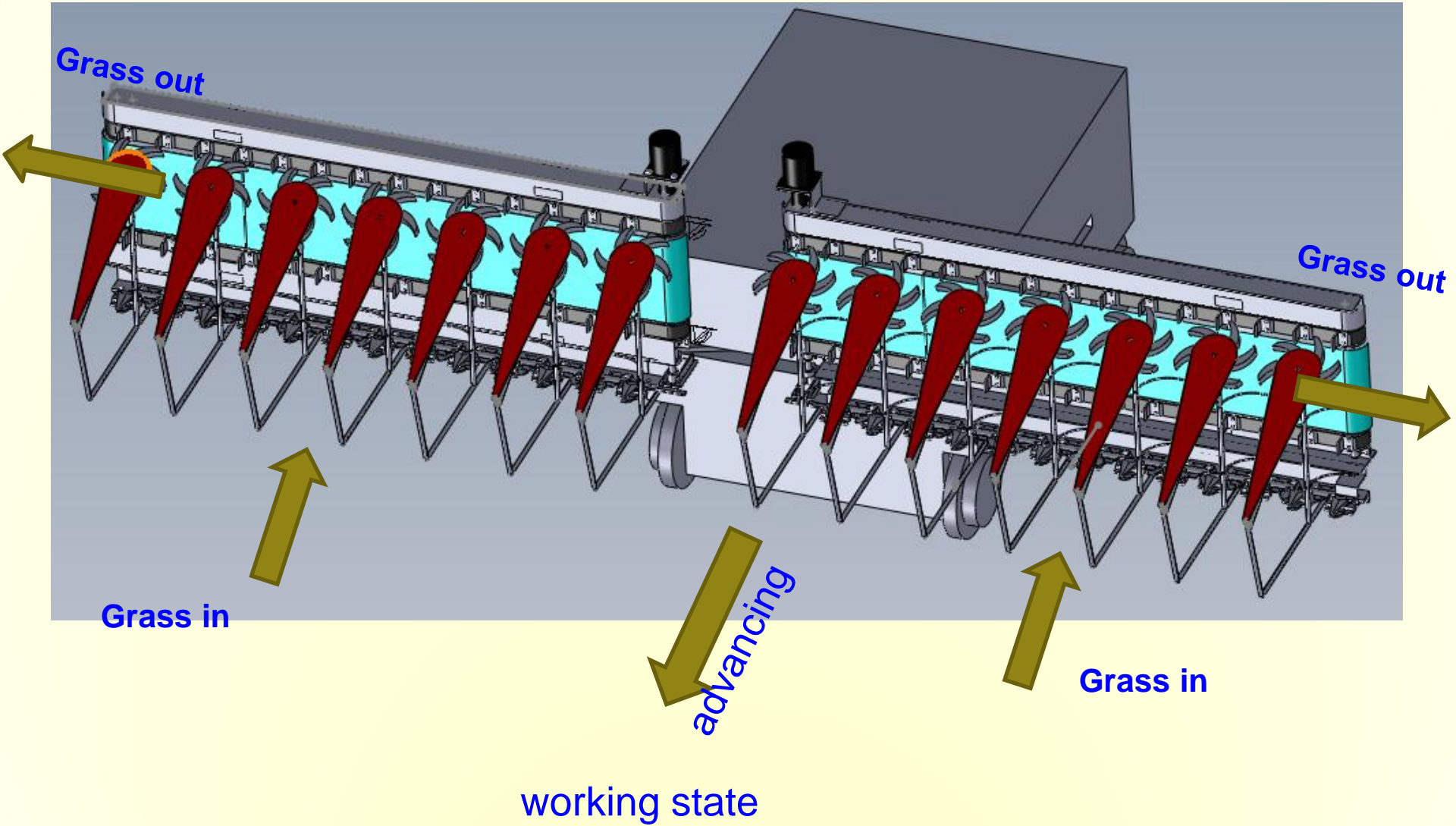


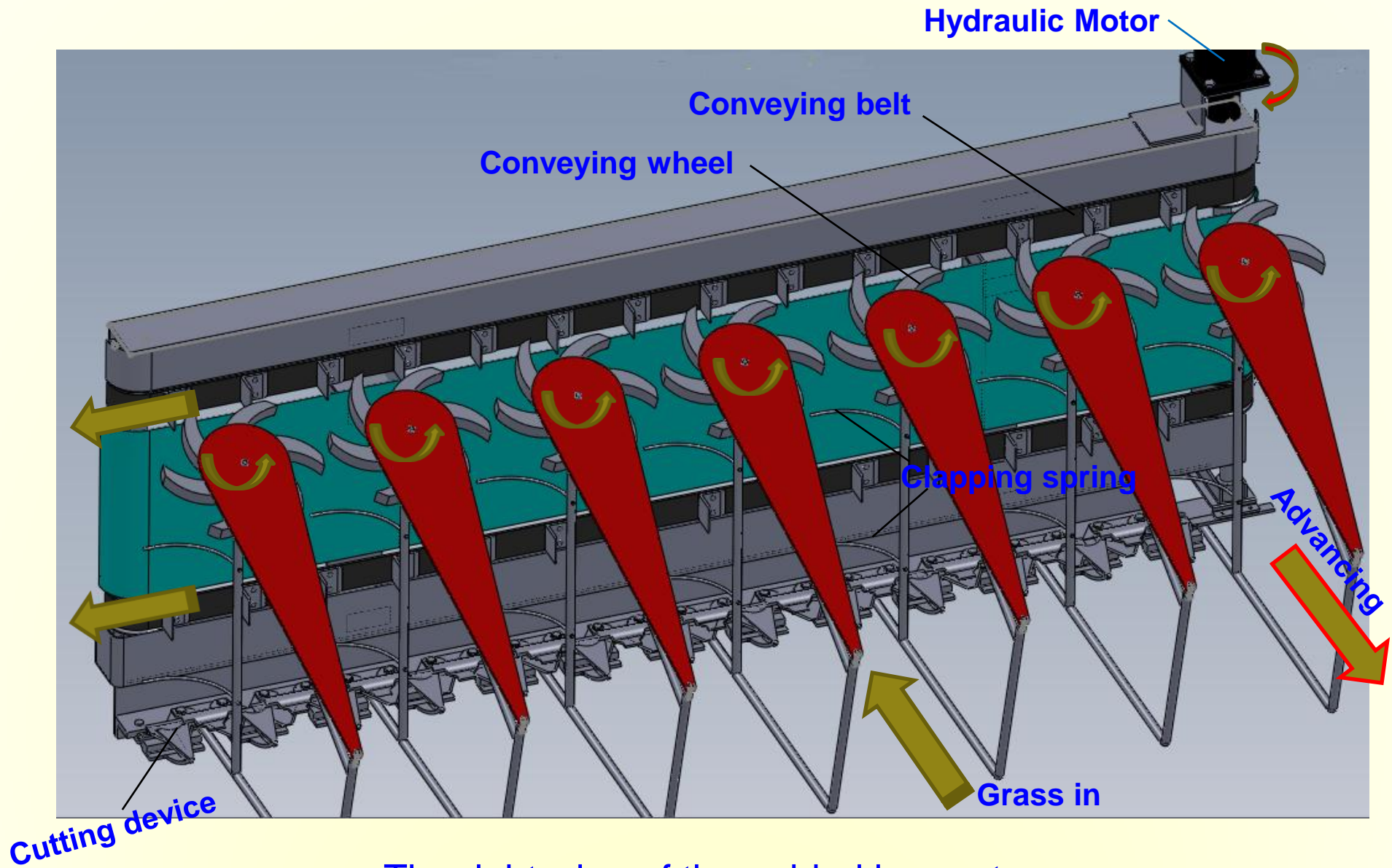
Overview of railway
in greenhouses from
above



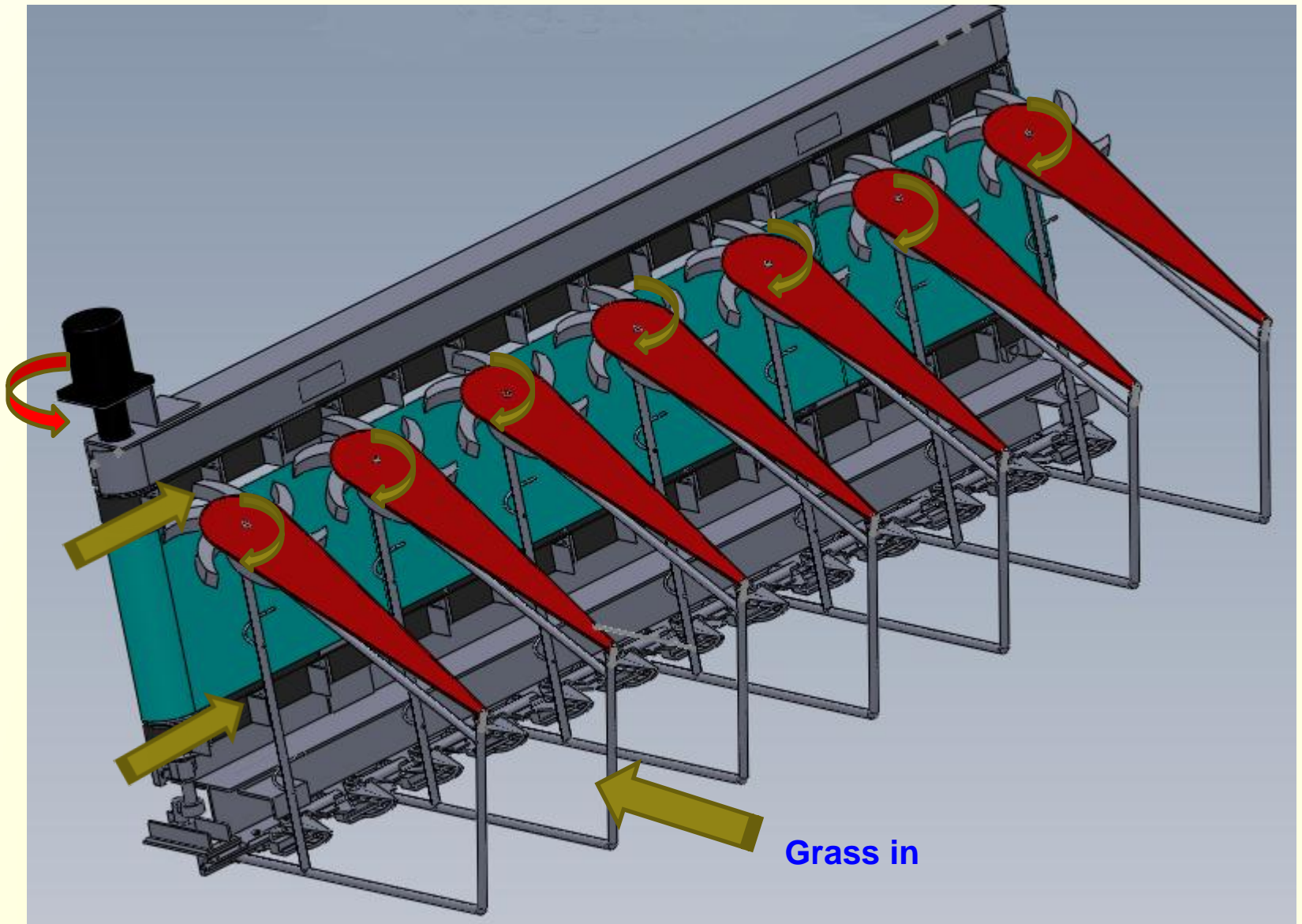
● Structures and principle for guided harvester in greenhouses



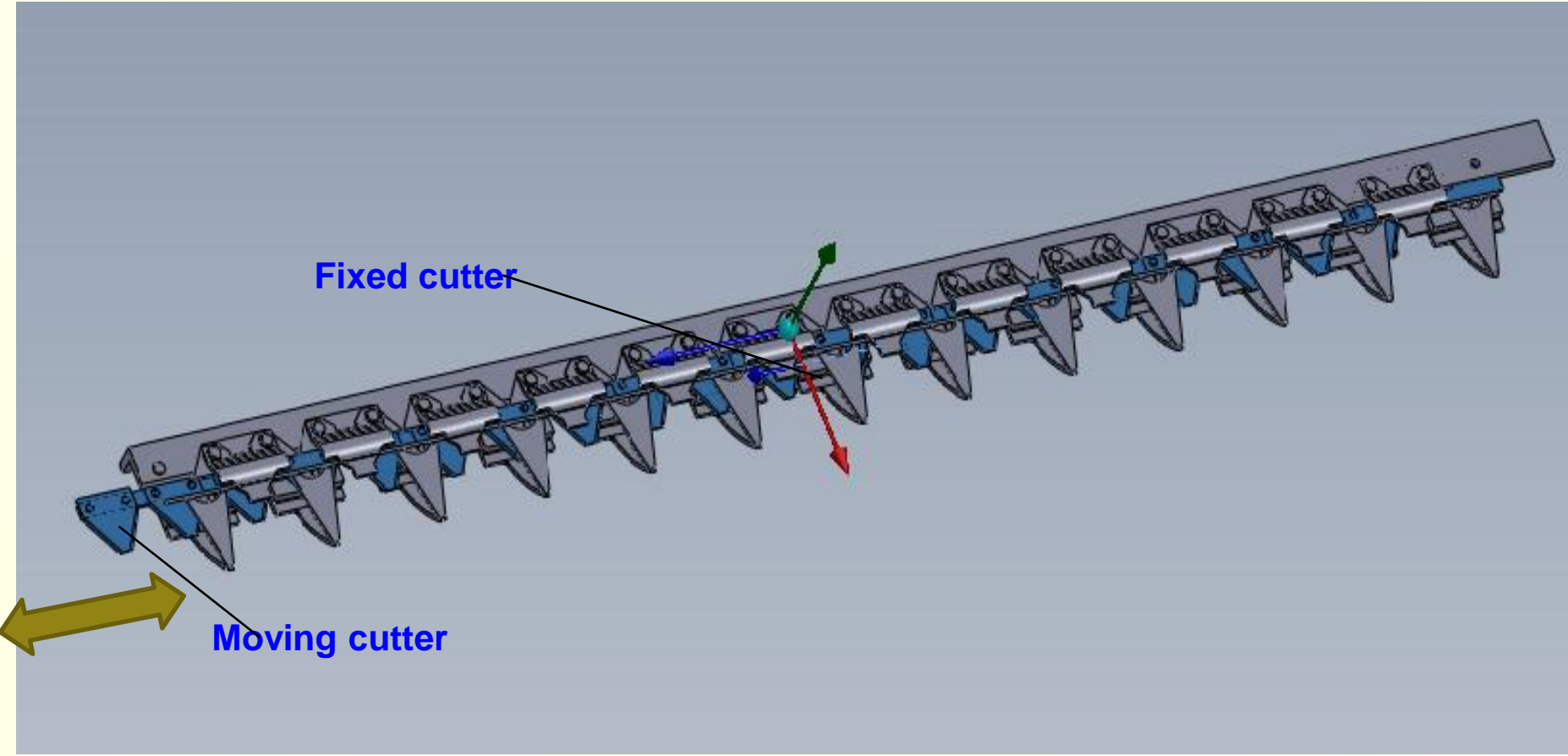




The right wing of the guided harvester



The left wing of the guided harvester



Right-hand Cutting Device Assembly

THANK YOU !