Princess Chulabhorn Science High School Trang

Developing equipment to help anchor seagrass seedling to increase seagrass survival rate

Members

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Introduction

The seagrass ecosystem is one of the first ecosystems to be affected by various activities.

The seagrass had a low survival rate. Due to environmental limitations in nature in each area.

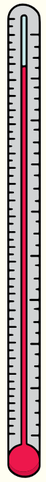
Research Questions

1. Is there a difference in water quality before and after planting seagrass?
2. Is there a difference in soil quality before and after planting seagrass?
3. Equipment to help anchor seagrass seedlings can increase the survival rate of seagrass

Hypothesis

1. Water quality before and after planting seagrass is difference.
2. Soil quality before and after planting seagrass is difference.
3. Equipment to help anchor seagrass seedlings can increase the survival rate of seagrass.

Materials



Thermometer

DO meter

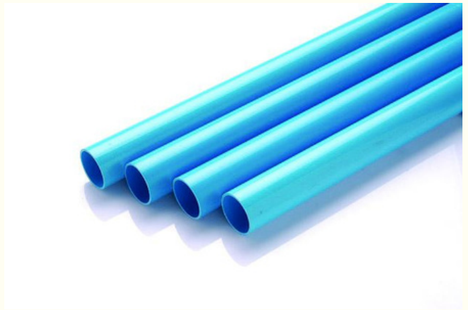
N P K test kit

Biocups

Kiln

Bamboo

Seagrasses 45 trees



PVC shovel

Turbidity tube

pH meter

Materials

Oven

Digital scale

Epoxy glue

Plastic rope

study sites

Trang province

Bunkong Bay

surveying the area

Bunkong Bay

Water quality

- Water temperature
- turbidity
- water surface temperature
- pH
- Dissolved oxygen

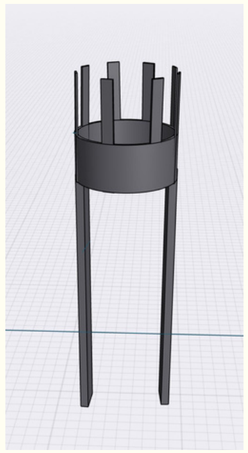
Soil quality

- Nitrogen
- Phosphorus
- Potassium
- organic matter

Sent data of water quality and soil quality to GLOBE data

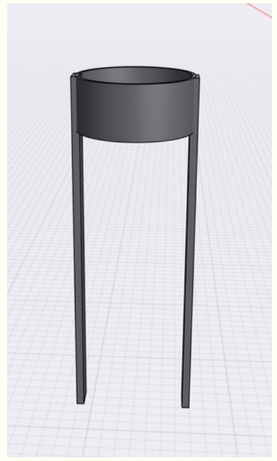
Design equipment

We use shapr3D application for design all type of equipment and use bamboo to create 3 type of equipment



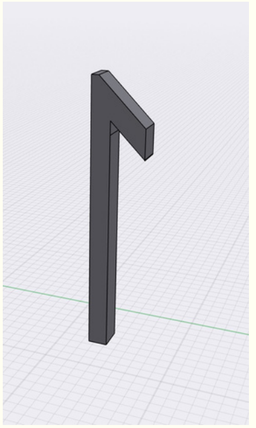
Type 1

have prongs for resist water current



Type 2

does not have prong



Type 3

look like an anchor

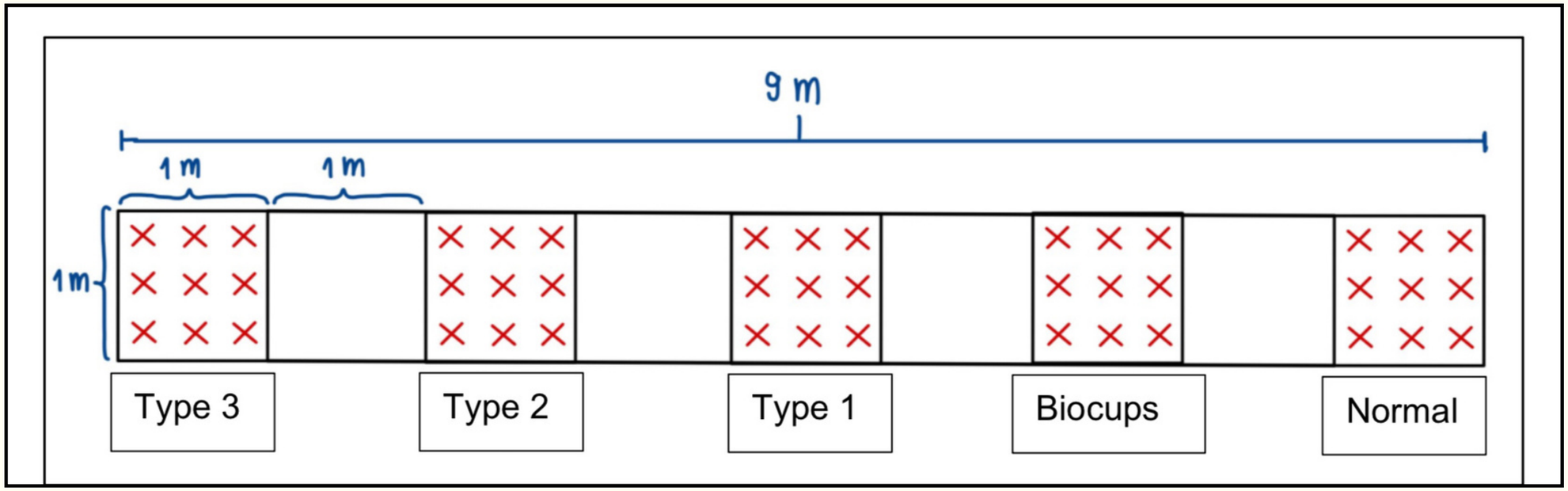
Create equipment

- length of innovation is 5 inch
- width of this innovation is 0.6 inch
- create innovation 9 piece/type

Test the equipment

Planting seagrass in the area of Bunkhong Bay at 47 N (x = 532580 , y = 83088)

Specify the planting area to be 1x1 meter per plot, totaling 5 plots
and in each plot plant 9 seagrass



Collect data of survival rate of seagrass after plant for 1 month

Result

Study of water quality

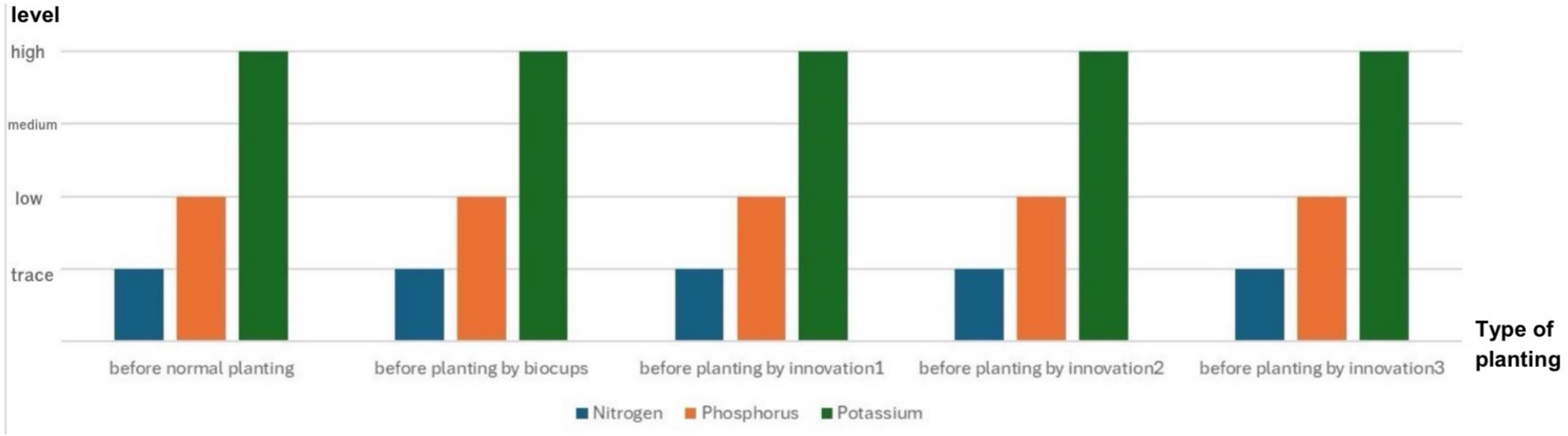
Table 1: results of water quality before and after planting seagrass in Boon Kong Bay.

factors / time	Water temperature	Surface water temperature	DO	pH	Turbidity
Before planting	29 ± 00	28.5 ± 00	5.3 ± 0.20	7.8 ±0.10	9.33±1.52
After planting	27± 00	27.5± 00	5.4 ± 0.50	7.4 ± 0.38	15.66± 4.04

Result

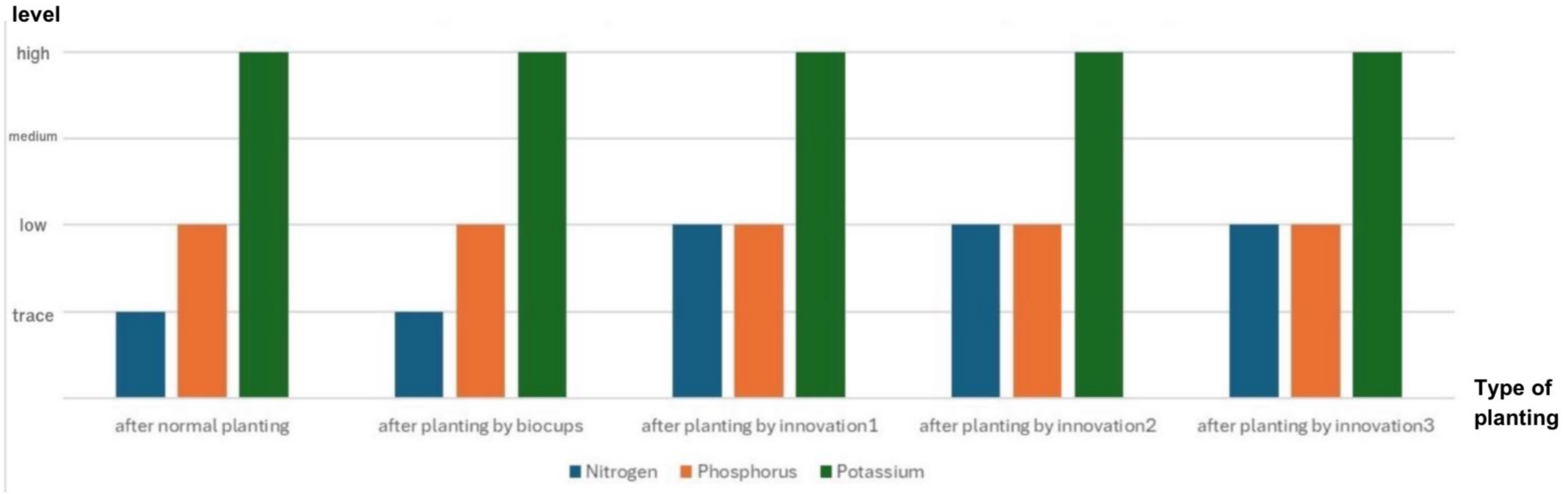
Study of soil quality

Graph 1: result of nitrogen phosphorus and potassium values before planting seagrass.



Result

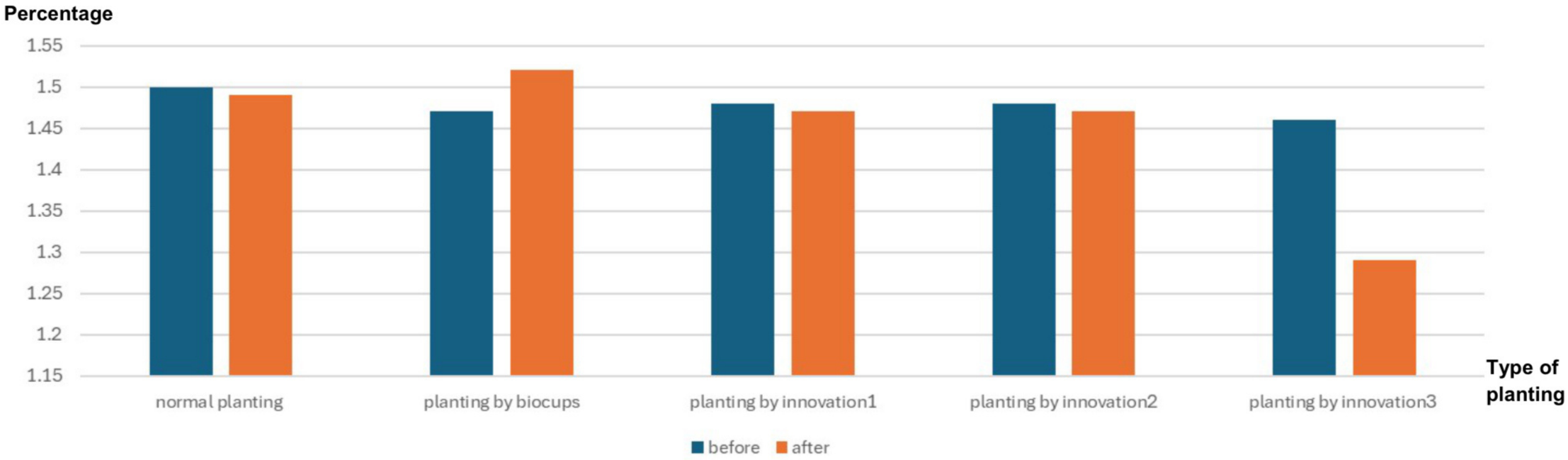
Graph 2: result of nitrogen phosphorus and potassium values after planting seagrass.



note: The soil in the area planted using innovation type 2 has become darker.

Result

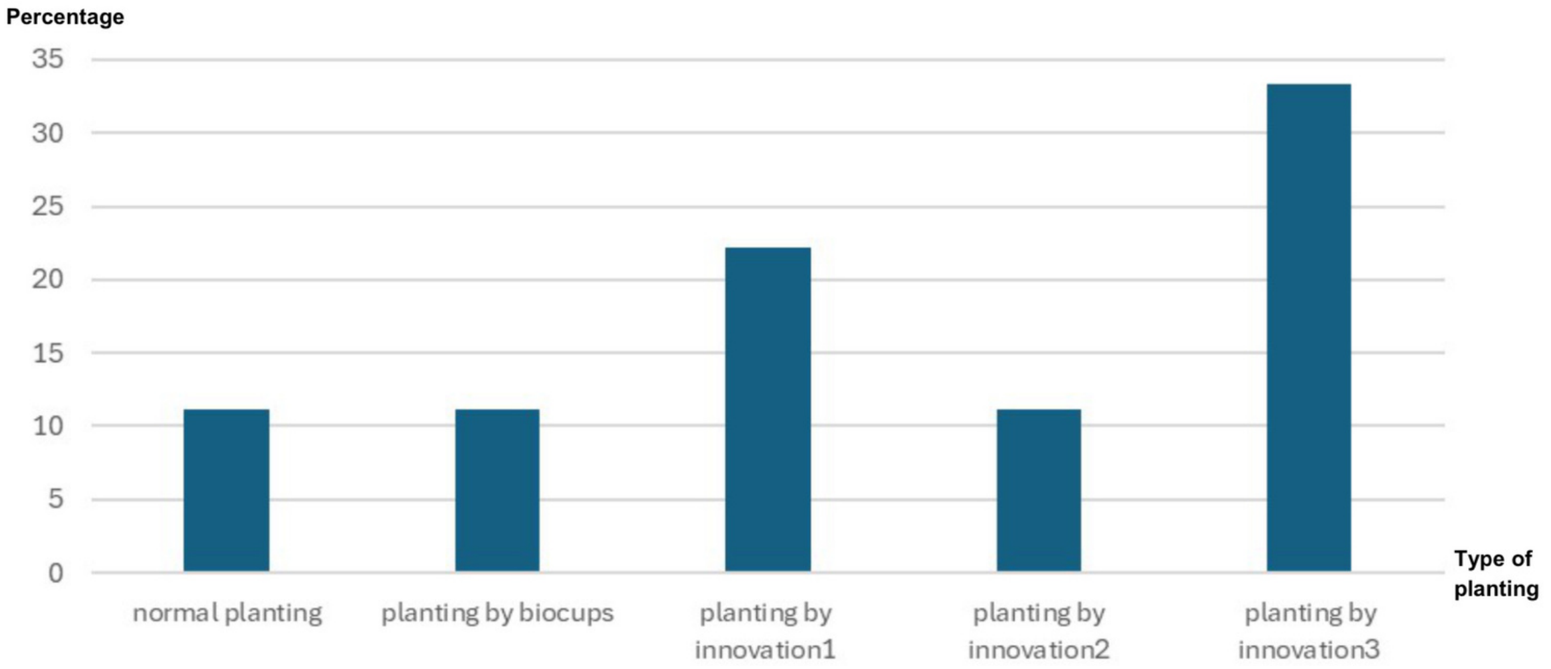
Graph 4 : results of organic matter in the soil before and after planting seagrass.



Result

Study of survival rate

Graph 3 : Comparison survival rates of seagrass grown using different types of innovation and normal planting.



Note : Seagrass have yellow leaf, survival rate is average of each planting plot

Discussion

- Seagrasses grown using equipment type 3 : 33.33 percent
- Seagrasses grown using equipment type 1 : 22.22 percent
- Seagrasses that was grown normally, planted with biocups and equipment type 2 : 11.11 percent.
- The nitrogen content very low , phosphorus low and potassium high
- The amount of nitrogen grown using all three type of equipment increased.
- The water quality and organic matter in the soil before and after planting were not different that much.

conclusion

- Seagrasses grown using equipment type 3 : 33.33 percent
- Seagrasses grown using equipment type 1 : 22.22 percent
- Seagrasses that was grown normally, planted with biocups and equipment type 2 : 11.11 percent.

Therefore this equipment can increase the survival rate of Seagrasses and should select the area that have environment, water quality and soil quality that suitable for planting seagrass for the most survival rate.

Acknowledgement

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Thank you!