Princess Chulabhorn Science High School Trang

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

Members

Tanaporn Numuean

Nichapa Thongrod

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

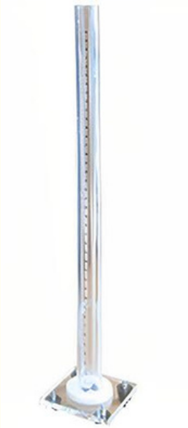
1. Is there a difference in water quality before and after planting seagrass?
2. Is there a difference in soil quality before and after planting seagrass?
3. Innovation for fasten seagrasses can increase the survival rate of seagrasses or not?

Hypothesis

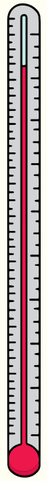
1. Water quality before and after planting seagrass is difference.
2. Soil quality before and after planting seagrass is difference.
3. Innovation for fasten seagrasses can increase the survival rate of seagrasses.

Materials

DO meter



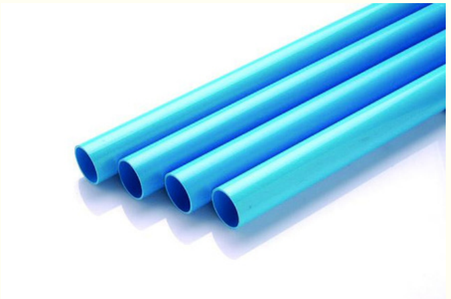
Turbidity tube



thermometer

pH meter

Plastic rope



PVC shovel

N P K test kit

Oven for baking soil

Kiln

Digital scale

Materials

Bamboo

Epoxy glue

Seagrasses 45 trees

Biocups

Innovation for fasten seagrasses

study sites

Trang province

Bunkong Bay

surveying the area

Bunkong Bay

Water quality

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

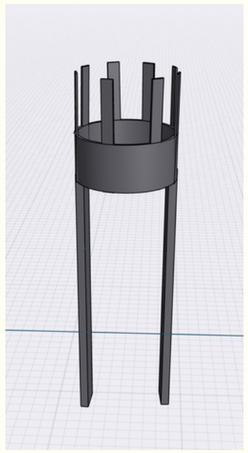
Soil quality

- Nitrogen
- Phosphorus
- Potassium
- organic matter

Sent data of water quality and soil quality to GLOBE data

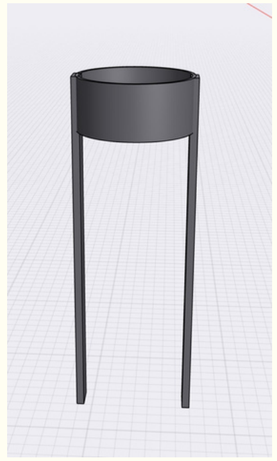
Design innovation

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



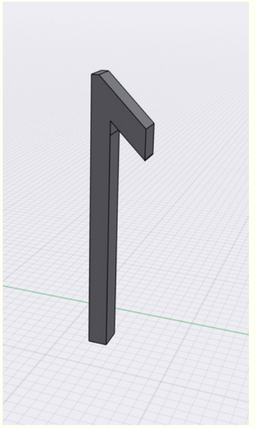
Type 1

have prongs for resist water current



Type 2

does not have prong



Type 3

look like an anchor

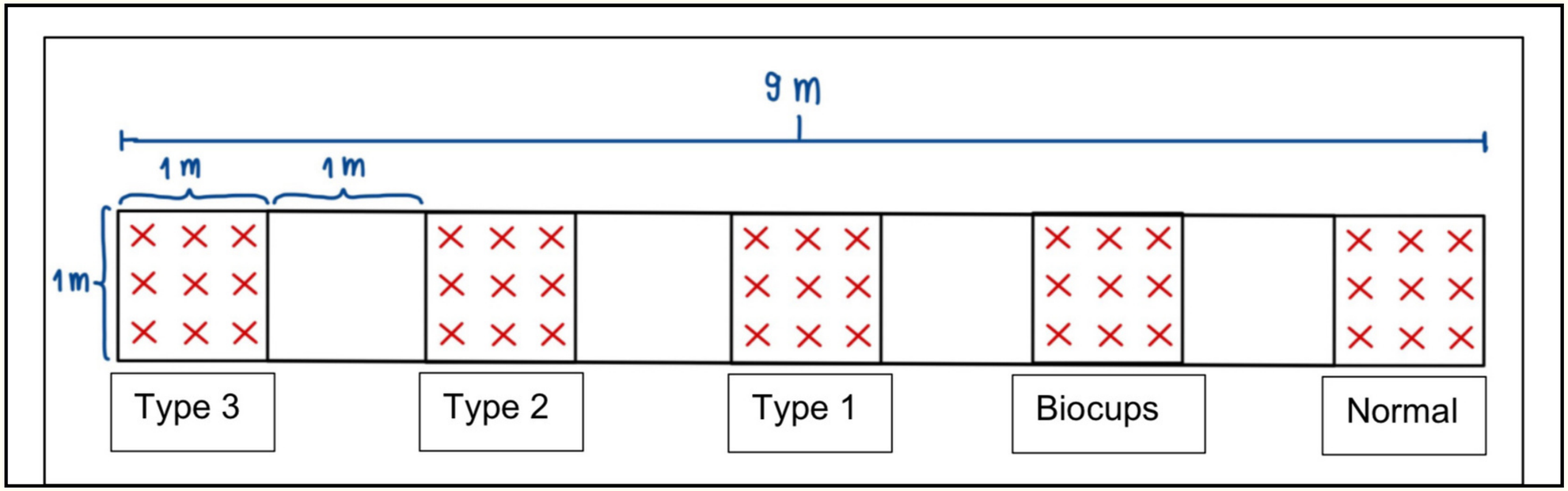
Create innovation

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

Test the innovation

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

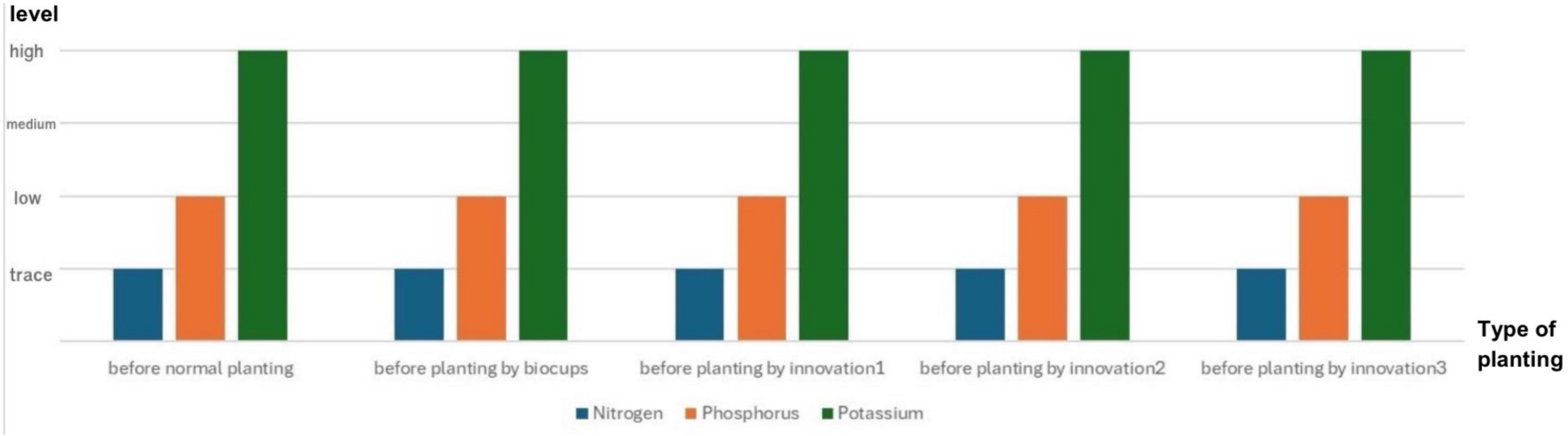
Result

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±0	28.5±0	5.3±0.2	7.8±0.1	9.33±1.52
After planting	27±0	27.5±0	5.6±0	7.6±0	10±2

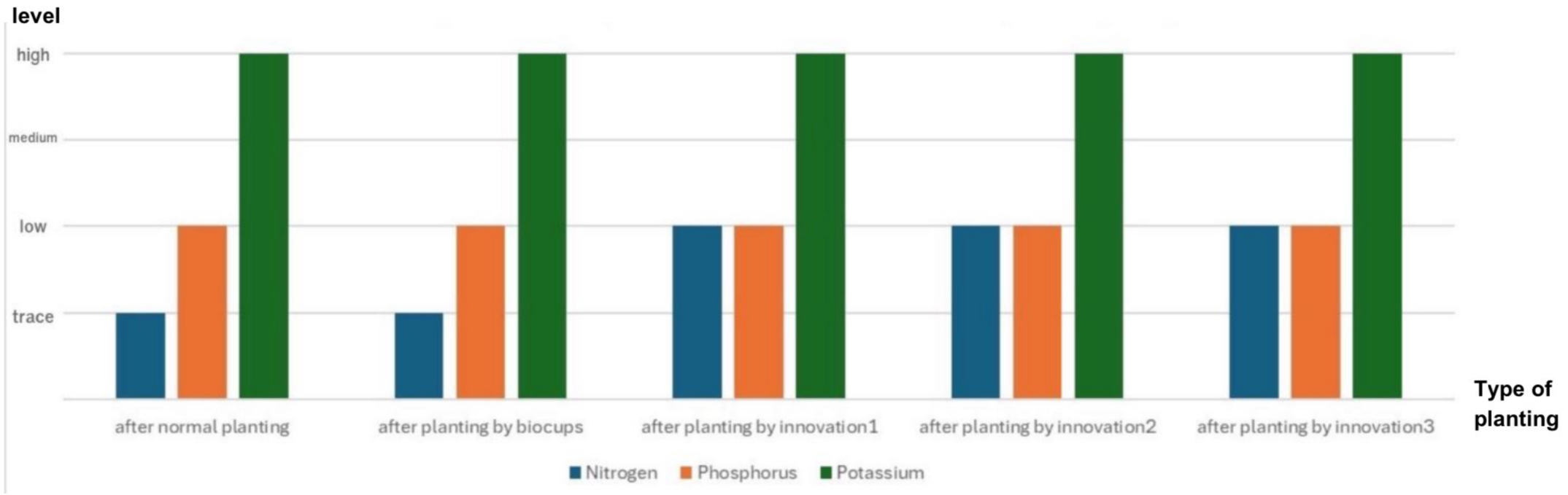
Result

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



Result

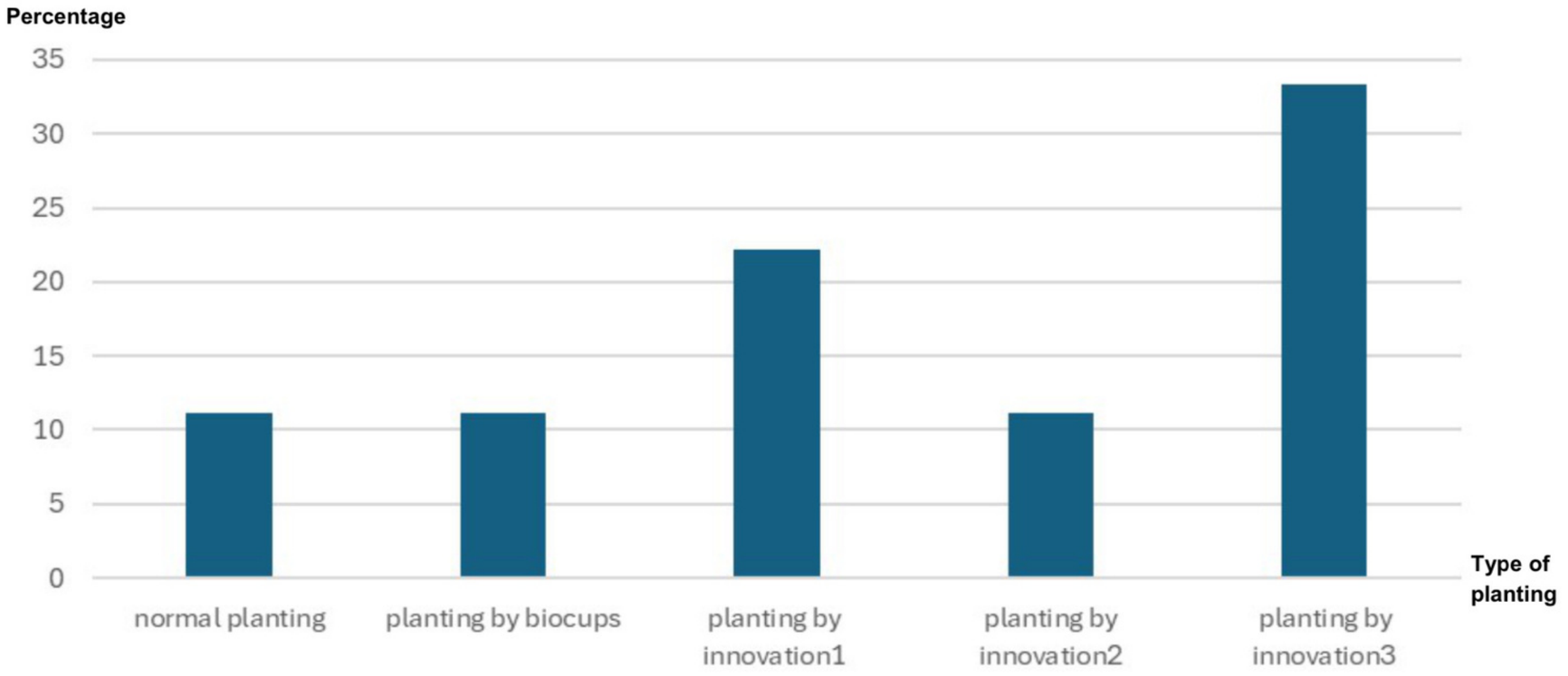
Graph 2: result of nitrogen phosphorus and potassium values after planting seagrass.



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

Result

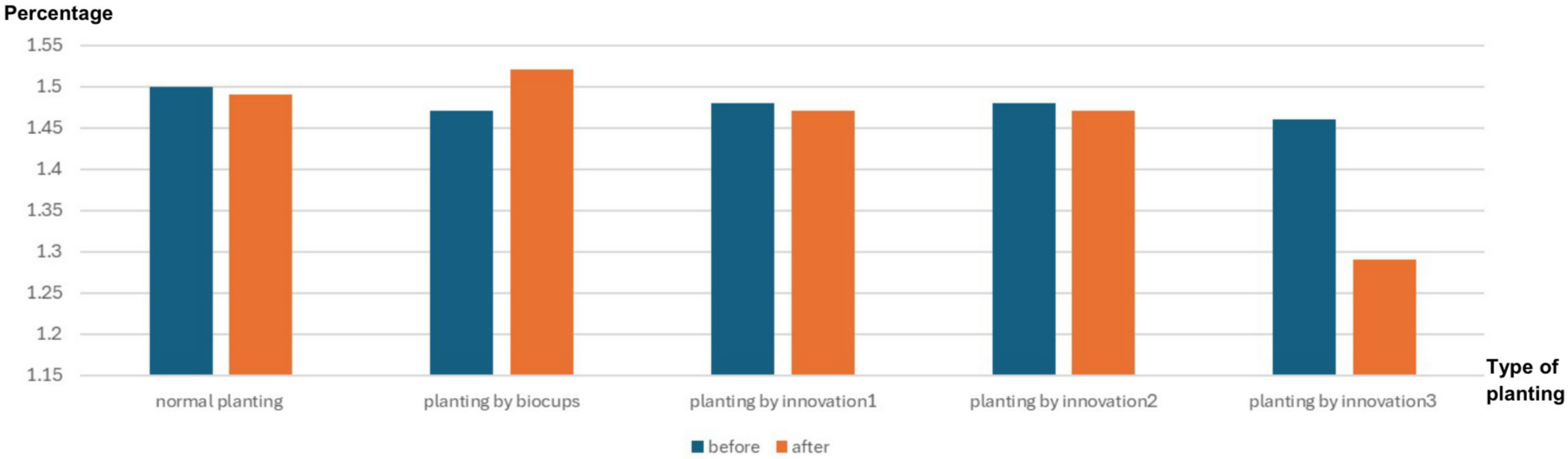
Graph 3 : Comparison survival rates of seagrass grown using different types of innovation and normal planting.



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

Result

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



Discussion

- seagrasses grown using innovation type 3 : 33.33 percent
- seagrasses grown using innovation type 1 : 22.22 percent
- seagrasses that was grown normally, planted with biocups and innovation type 2 : 11.11 percent.
- The nitrogen content very low , phosphorus low and potassium high
- After plant with innovation the nitrogen in soil increase

conclusion

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

Therefore this innovation can increase the survival rate of seagrasses.

Thank you!