



**Princess Chulabhorn Science High School Trang**



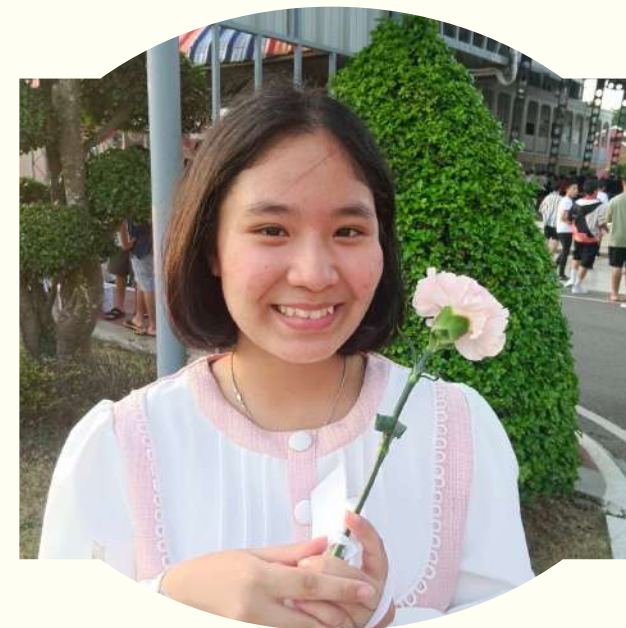
# Developing equipment to help anchor seagrass seedling to increase seagrass survival rate



## 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

Equipment to help anchor seagrass seedlings can increase the survival rate of seagrass or not?

# Hypothesis

1

Water quality before and after planting seagrass is difference.

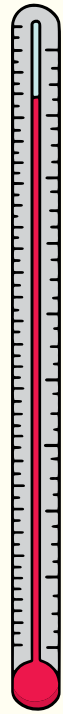
2

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



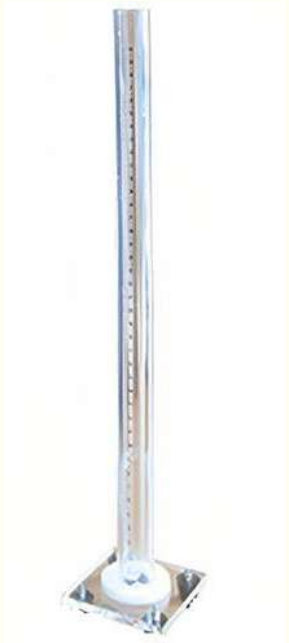
Bamboo



Seagrasses 45 trees



PVC shovel



Turbidity tube



pH meter

# Materials



Oven



Digital scale

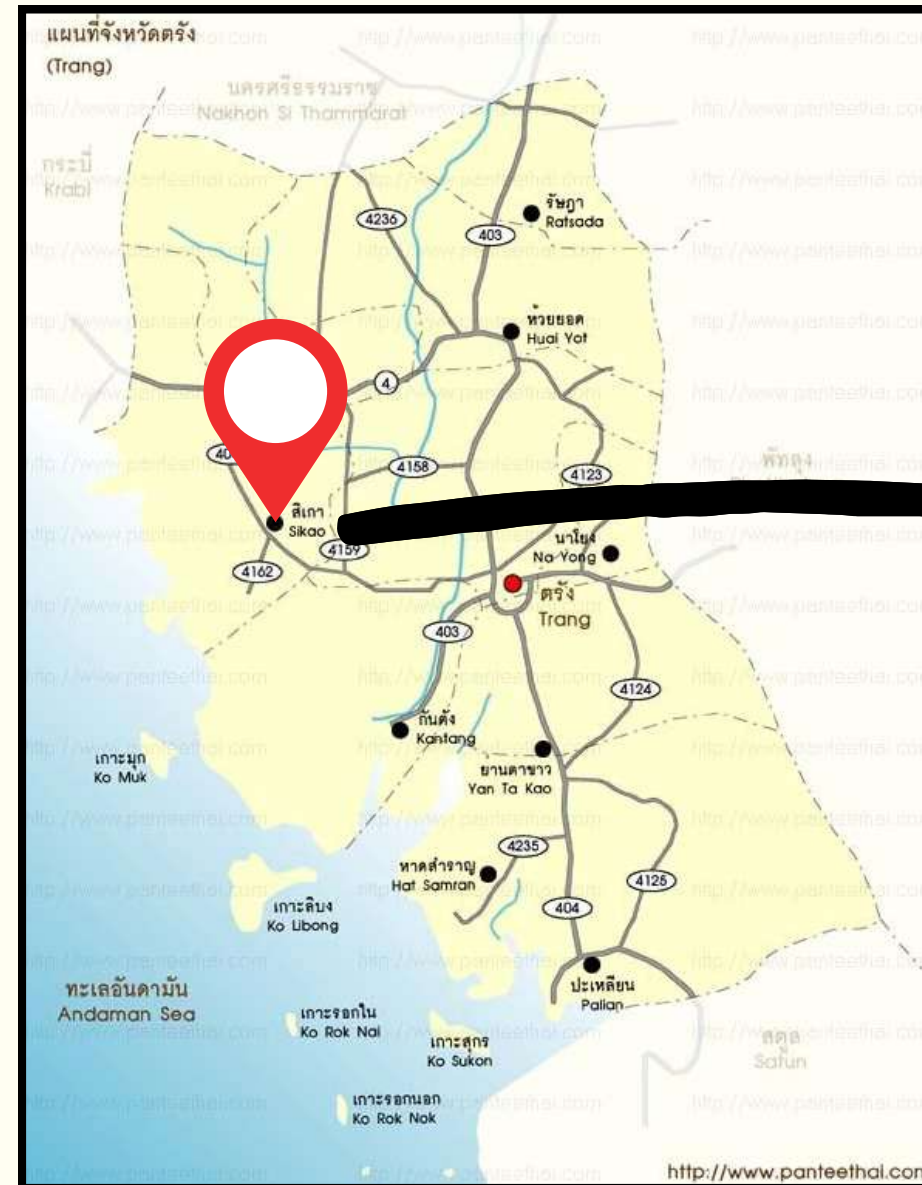


Epoxy glue



Plastic rope

# study sites



Trang province



Bunkong Bay

# surveying the area



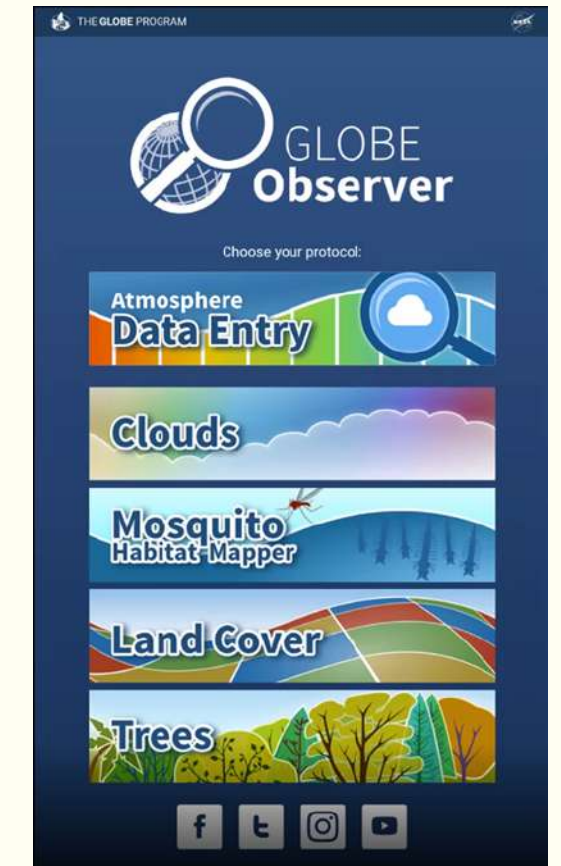
Bunkong Bay

## Water quality

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

## Soil quality

- Nitrogen
- Phosphorus
- Potassium
- organic matter

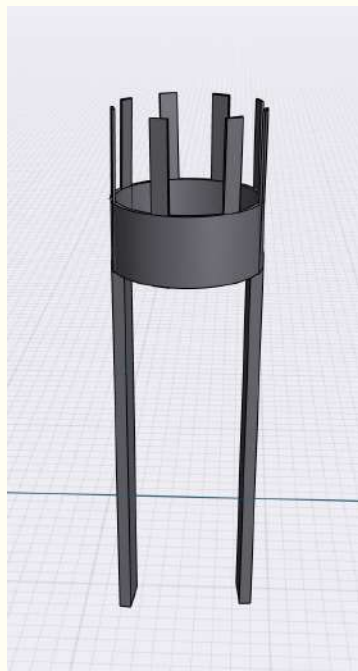


**Sent data of water quality and soil quality to GLOBE data**



# Design equipment

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



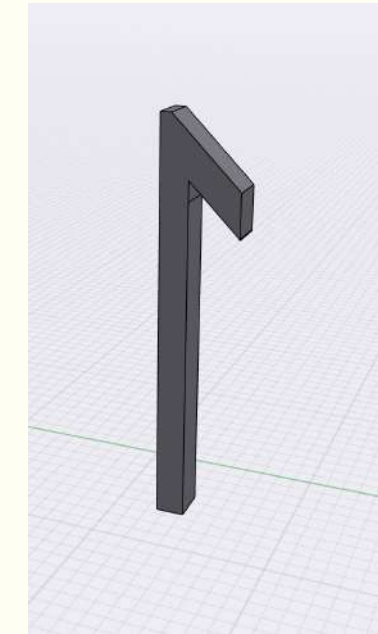
**Type 1**

have prongs for resist water current



**Type 2**

does not have prong



**Type 3**

look like an anchor

# Create equipment

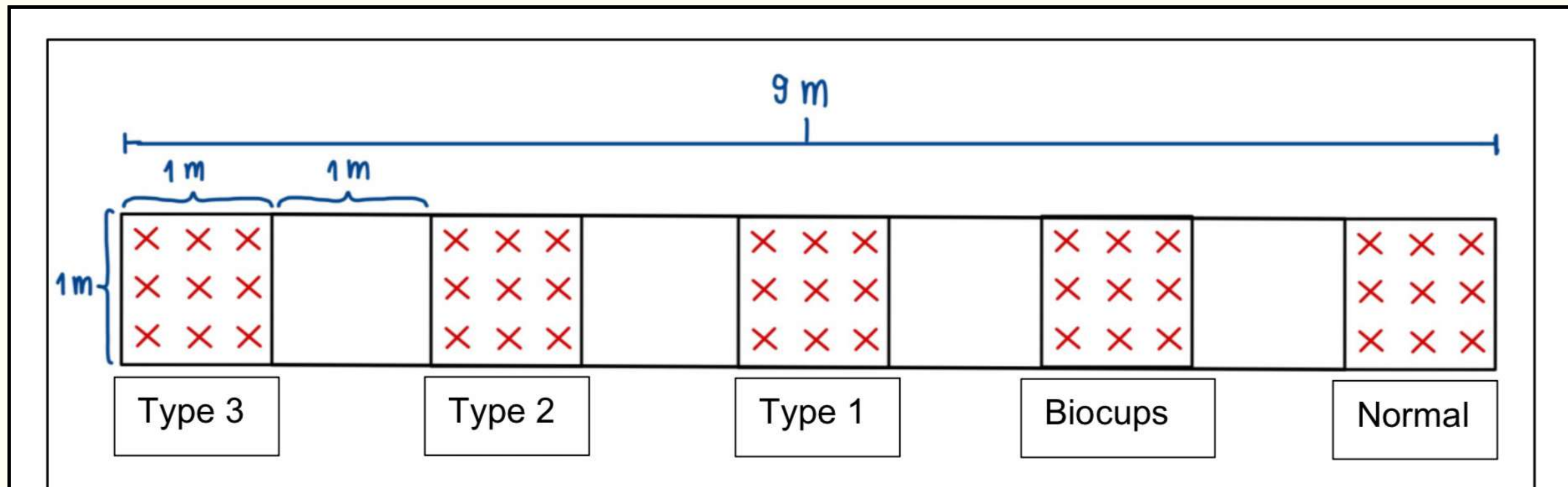


- length of equipment is 5 inch
- width of this equipment is 0.6 inch
- create equipment 9 piece/type

# 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

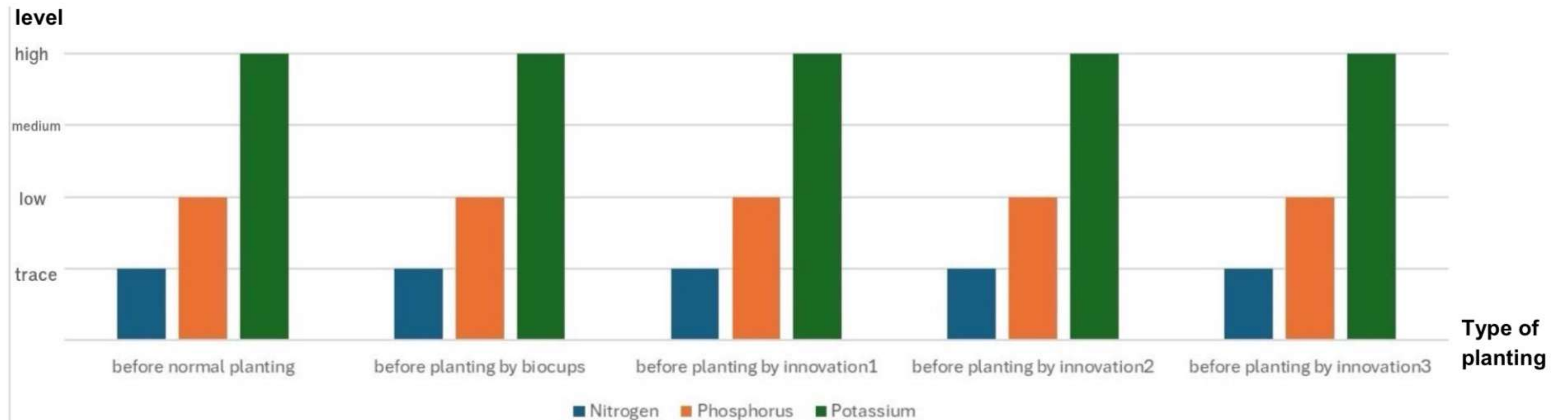
Table 1: results of water quality before and after planting seagrass in Boon Kong Bay.

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

# Result

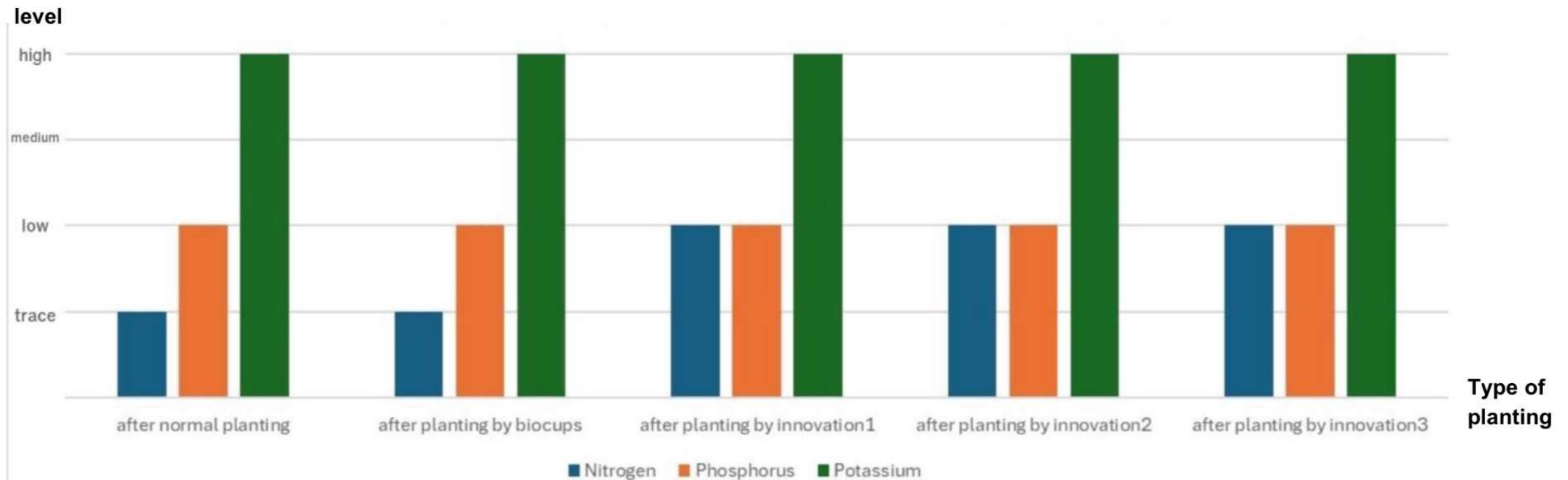
## Study of soil quality

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



# Result

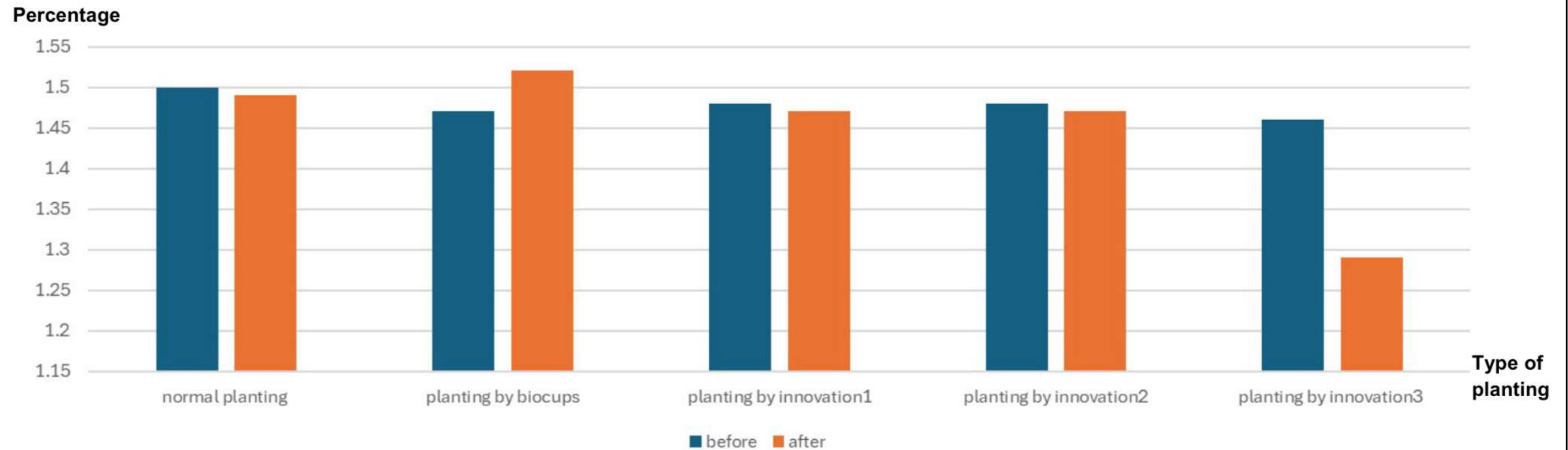
Graph 2: result of nitrogen phosphorus and potassium values after planting seagrass.



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

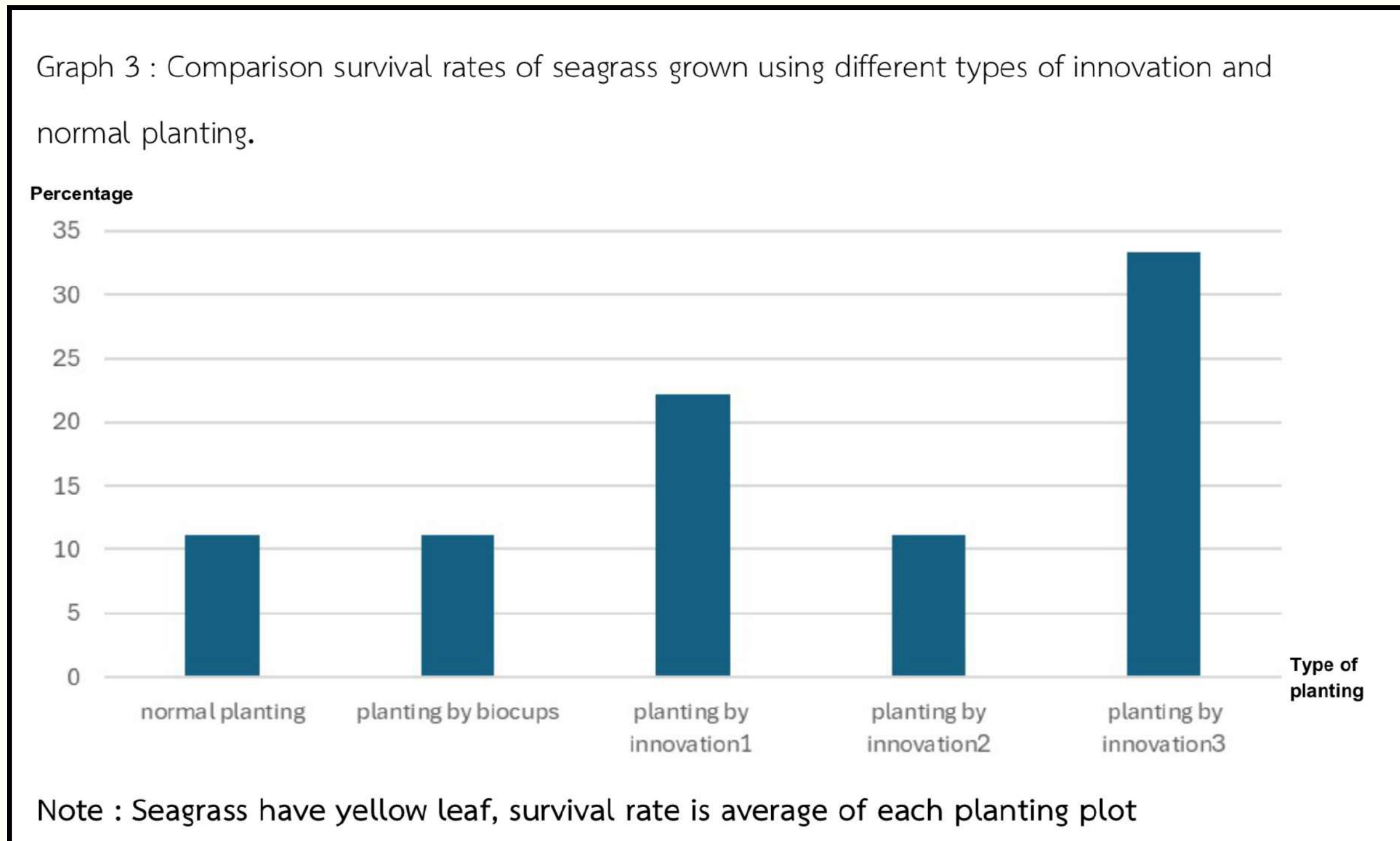
# Result

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



# Result

## Study of survival rate







# 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!*