

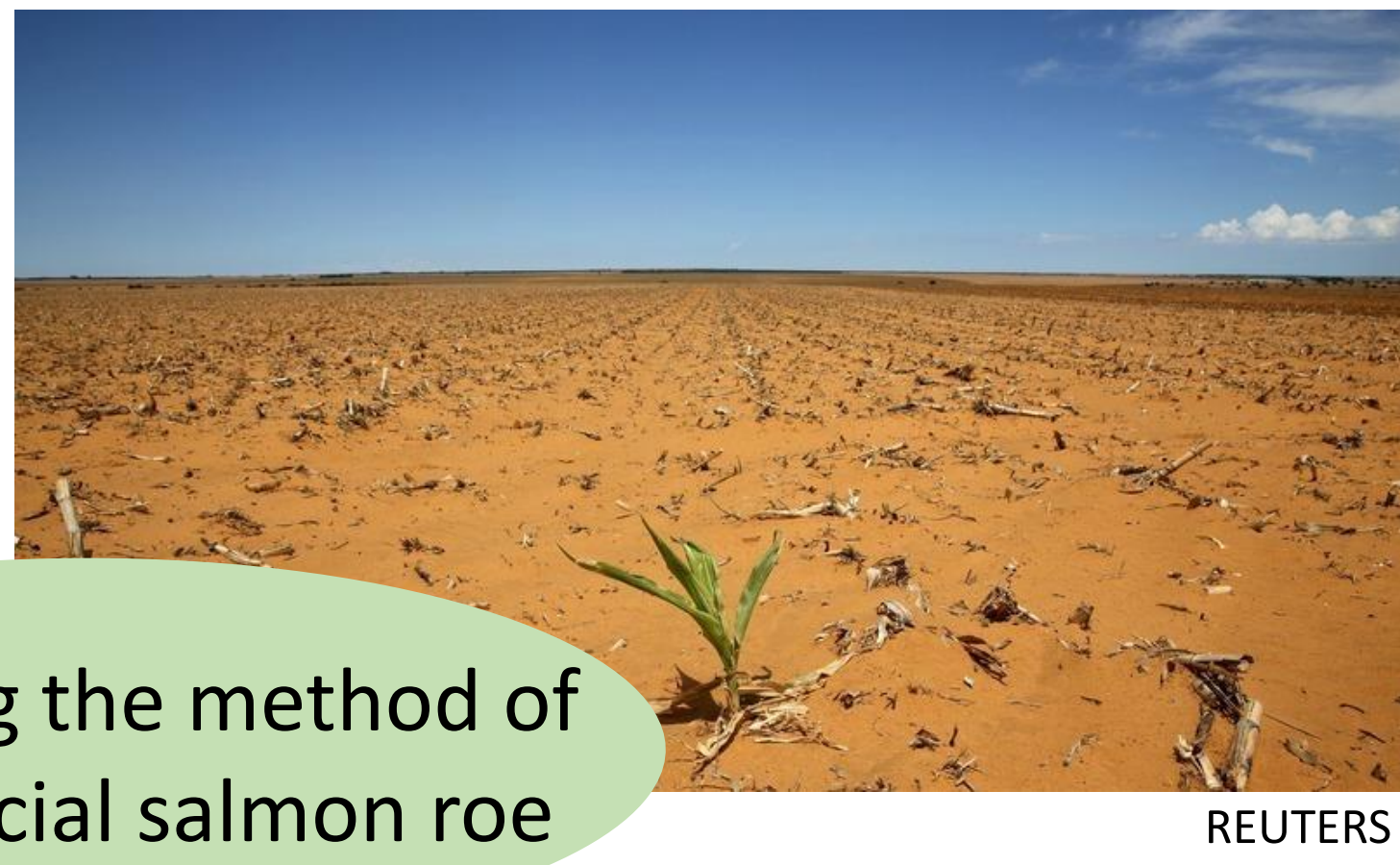
Cultivation with Artificial Salmon Roe -Aiming at Less Water Consumption-

W20190: Tokyo Metropolitan Minamitama Secondary Education School

1. Introduction

Cultivation with soil

Plants are affected by the weather



REUTERS

Researching the method of using artificial salmon roe

Cultivation with water

Plants can grow indoors

BUT

A lot of water is needed

Cultivation with artificial salmon roe...?

It will solve the problems.

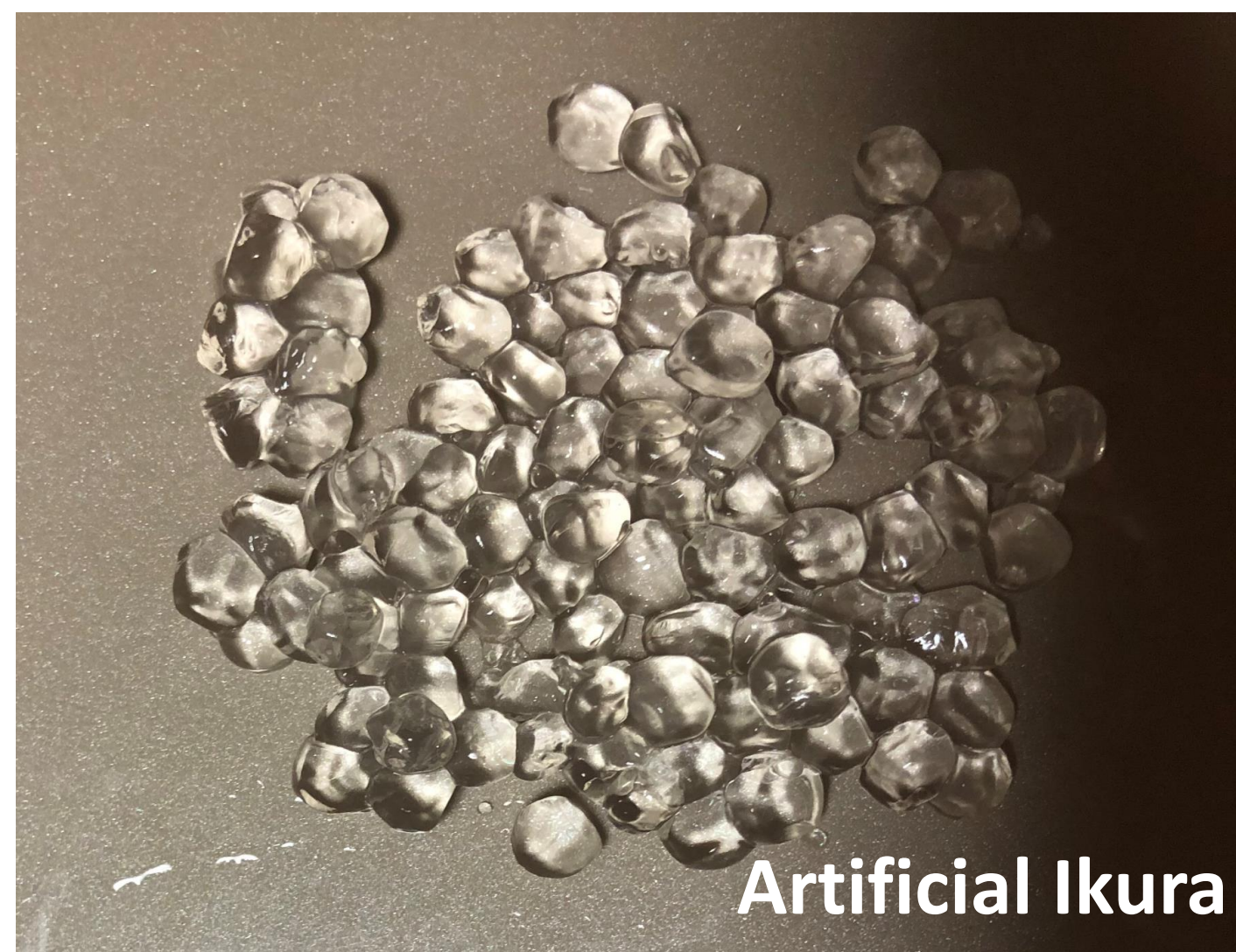
2. Artificial Salmon Roe (Ikura)

Made from sodium alginate and calcium lactate

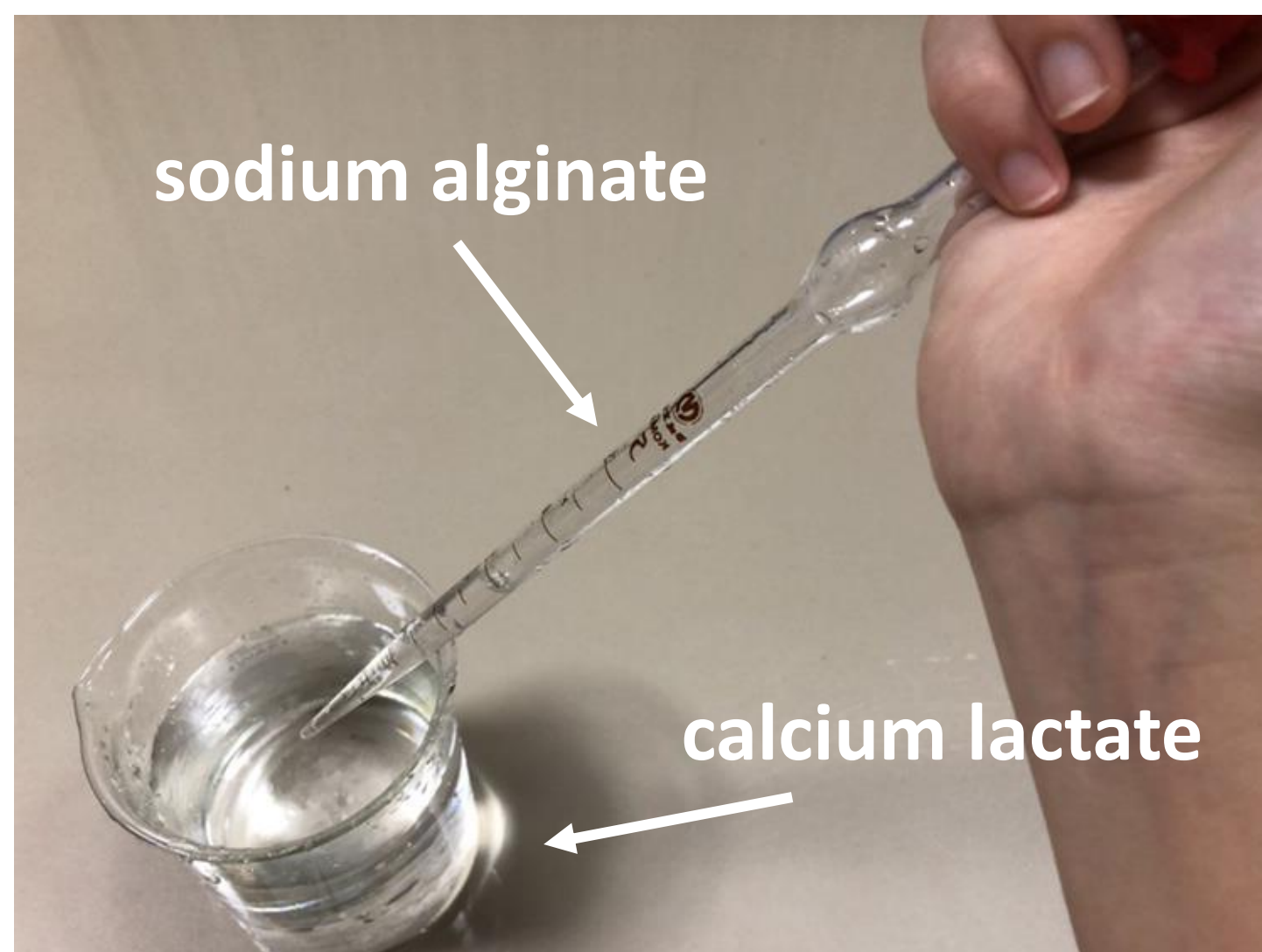
Imitates the texture of ikura

Safe and moist

How I made artificial ikura:



Artificial Ikura



sodium alginate

calcium lactate

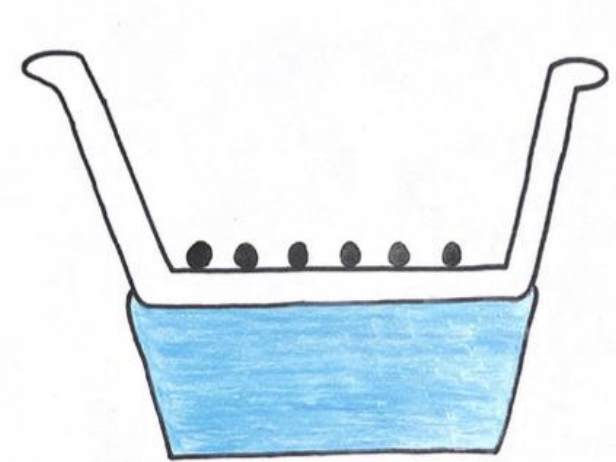
3. Purpose

- comparison of **water consumption** ...Experiment 1
- comparison of **plants' growth**...Experiment 1
- comparison of **water retention**...Experiment 2

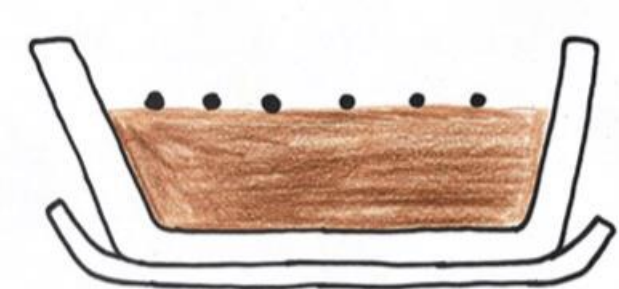
4. Experiment 1

Methods

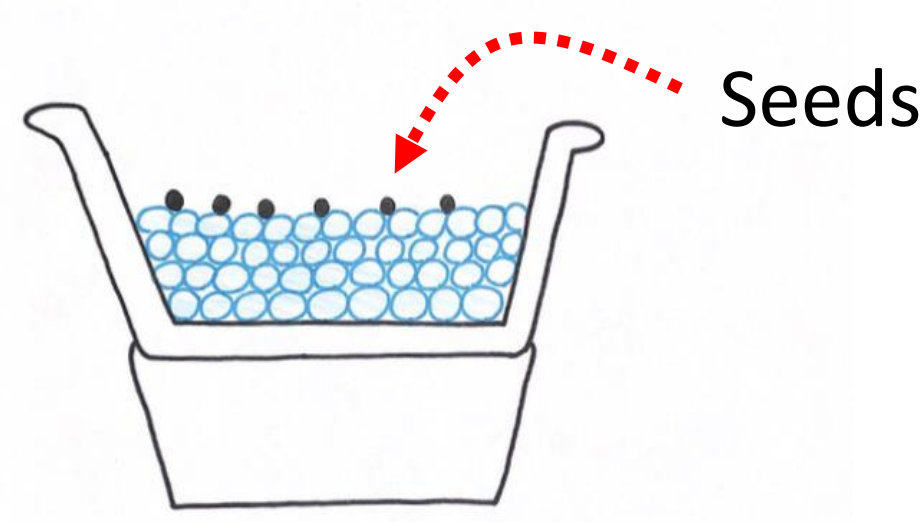
1.Through pre-experiments, I decided on this method.



Water



Soil



Artificial ikura

Seeds

2.Sowed 20 broccoli sprout seeds and grew them for 7 days

* Watering Methods

water: replaced water every day

soil: used a watering can when the soil was dry

artificial ikura: sprayed with water when the ikura was dry

Results

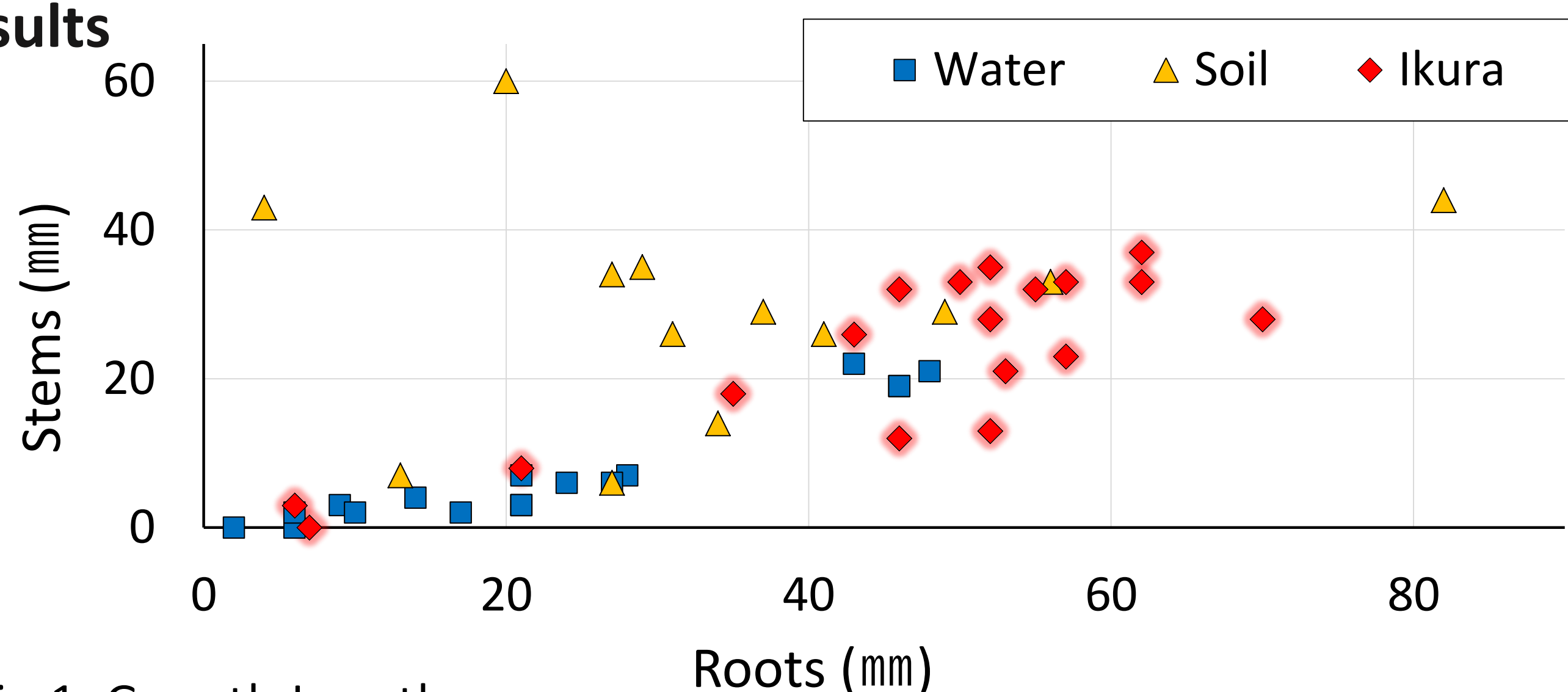


Fig.1 Growth Length

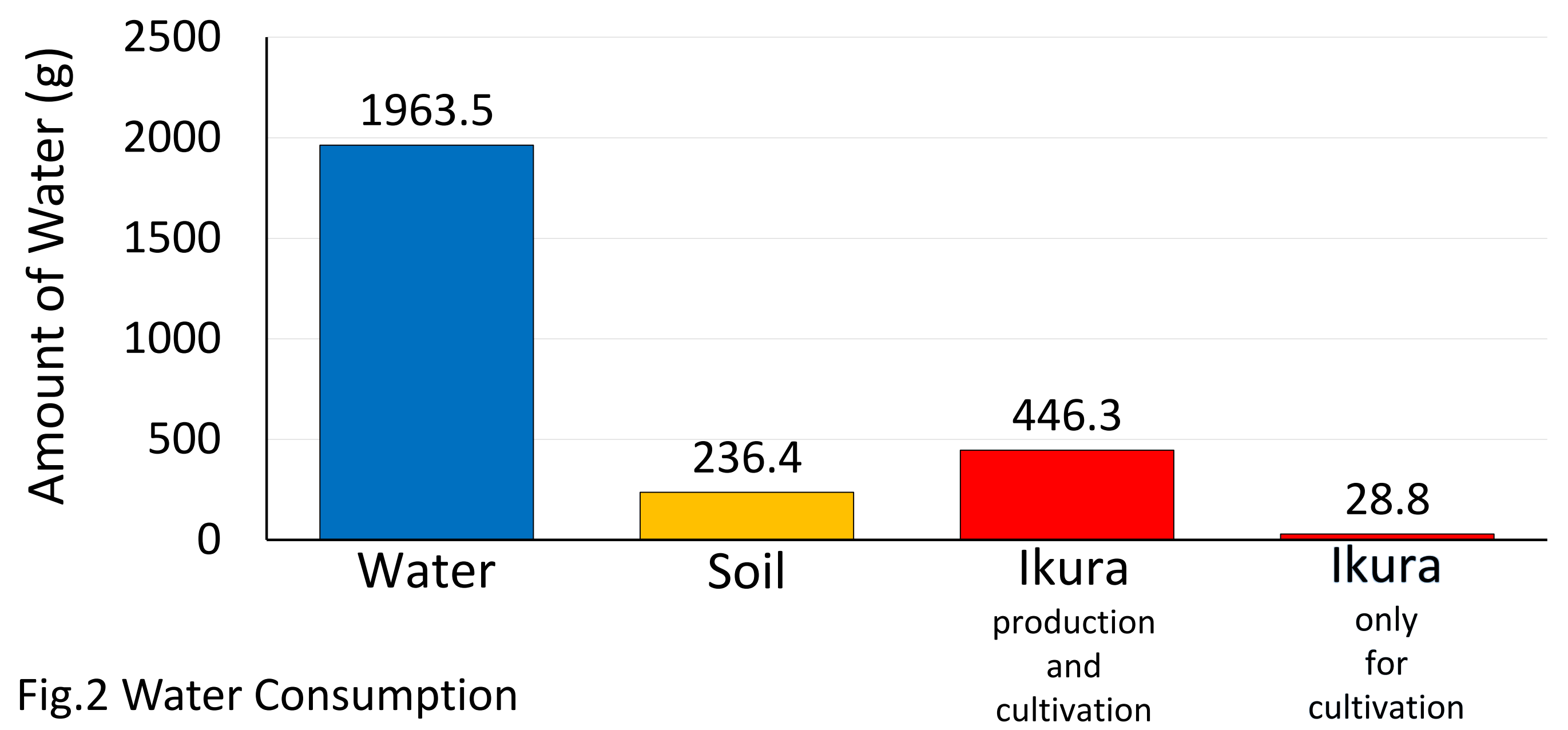


Fig.2 Water Consumption

Discussion

Water cultivation used the most water.

Plants grew better in the artificial ikura than in the water.

→Artificial ikura cultivation can be a good alternative to water cultivation.

Soil used less water than artificial ikura.

5. Experiment 2

Methods

1. Almost all the methods were the same as in Experiment 1.
2. I watered each culture medium only on day 1.

Results

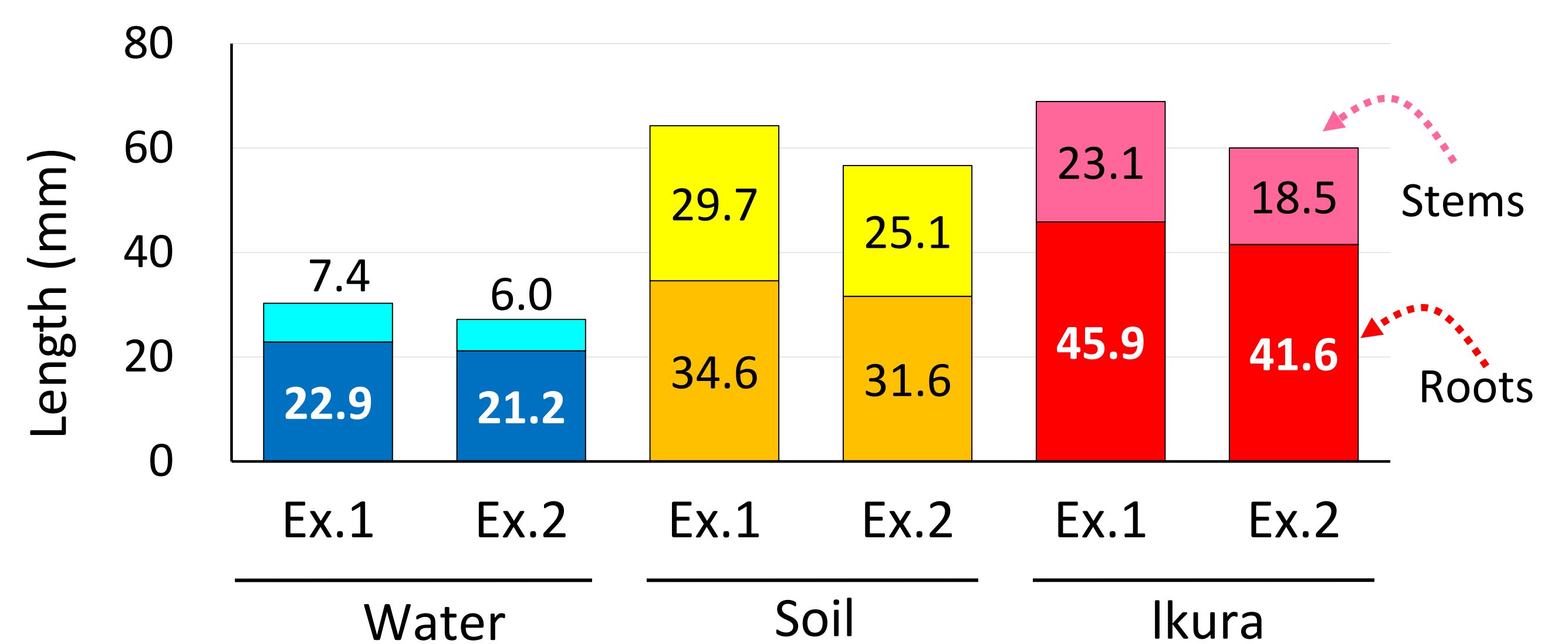


Fig.3 Growth Length (Ex.1 and Ex.2)

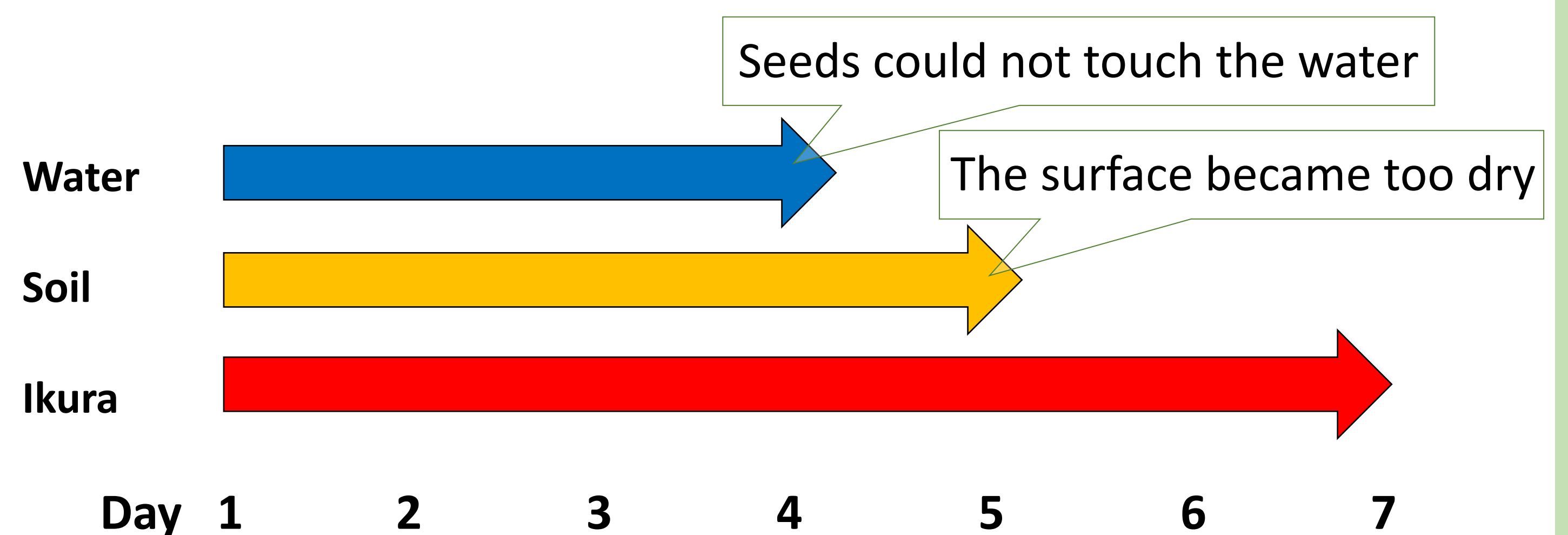


Fig.4 Water Retention

Discussion

Artificial ikura had the best water retention.

The growth of the plants in artificial ikura was almost the same as in Experiment 1.

→Plants in artificial ikura can grow well without water for several days.

6. Conclusion & Future Experiments

- From Experiment 1 and 2, artificial ikura cultivation can be a good alternative to water cultivation because of **less water consumption** and **good water retention**
- From Experiment 2, soil used less water than artificial ikura, but soil cultivation has some risks and **the actual water consumption** of artificial ikura was **less than with soil**
- Artificial ikura can also be an alternative to soil

To perfect this method...

- I would like to grow root vegetables using the liquid fertilizer which I have already succeeded in mixing with the artificial ikura.