A Study of Soil Properties in Beach and Paddy Field Areas on the Growth and Sweetness of Koh Sukorn Watermelons, Pa Lian District, Trang Province, Thailand

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Advisors

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Special Advisors

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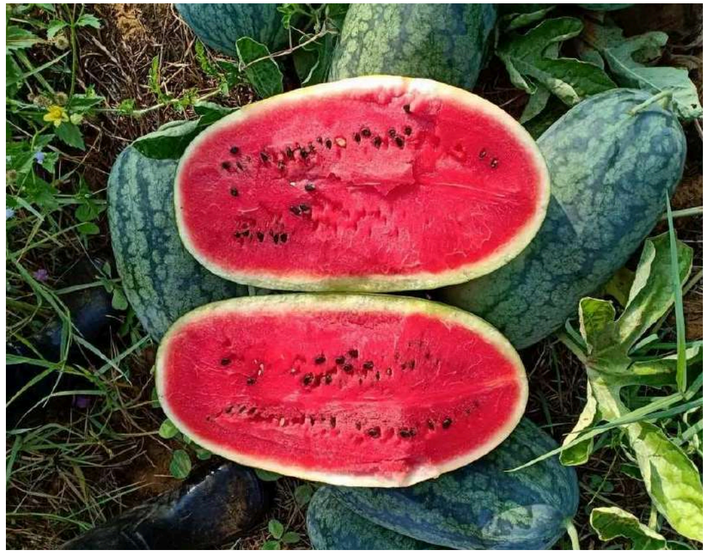
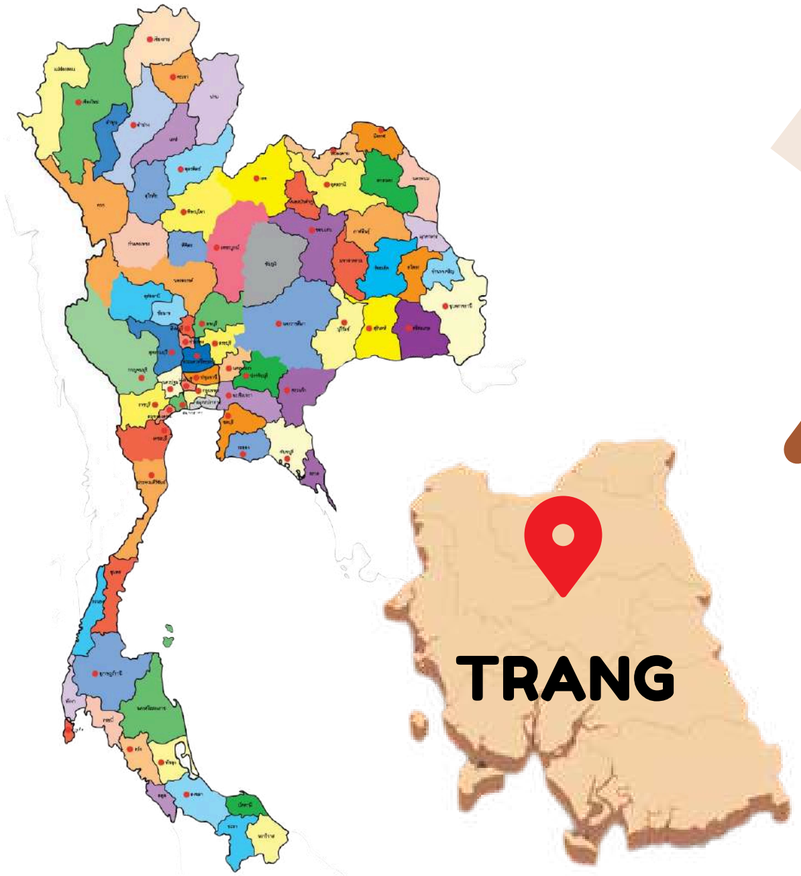
- Mrs. Supattra Srisakote

Overview



Introduction

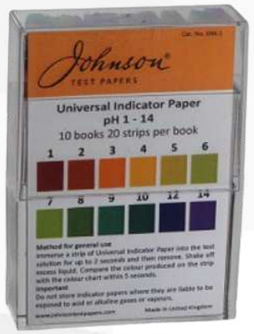
ที่มา: www.thaigov.go.th



Koh Sukorn

Materials

Soil test kit



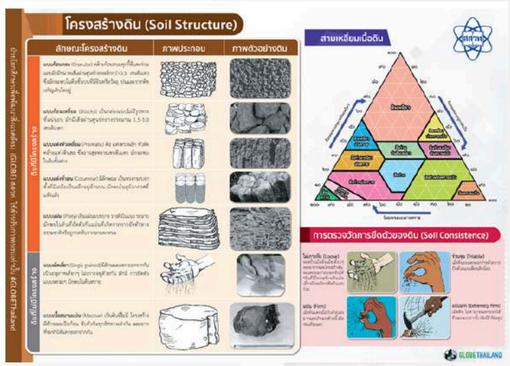
Universal indicator

Soil color

Brix Refractometer

Temperature control cabinet

Clay furnace



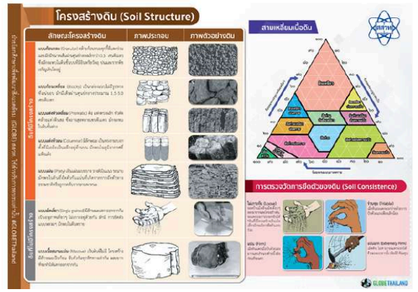
Soil texture

Methods

1

Collect soil samples and entered the data into the GLOBE Data Entry.

2



Analyze soil quality

3

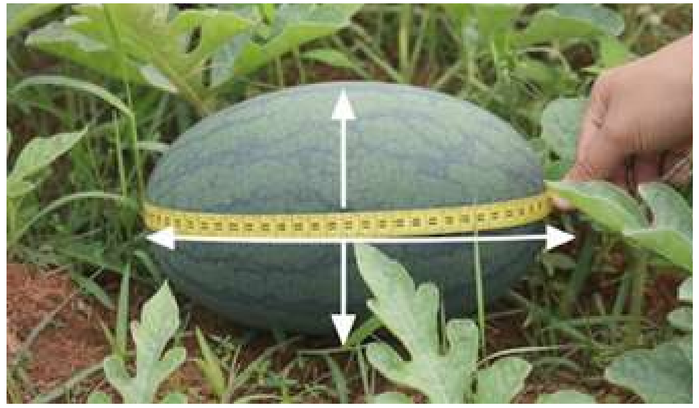
Analyze statistical data.

- Soil quality assessment

Conduct soil quality measurements according to GLOBE principles.

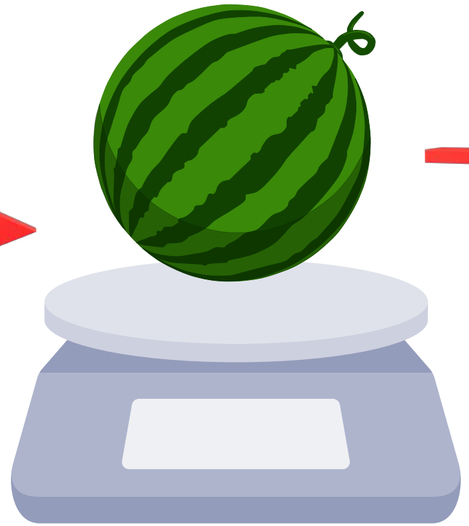
Methodology

- A Study on the Growth and Sweetness of Watermelon.



Measurement of horizontal head circumference (X).

Measurement of vertical head circumference (Y).



Measurement of fruit weight.

Measurement of sweetness using a hand refractometer.

Results

- **Soil quality assessment**

Table 1: Soil Quality Data

Study Area	Soil Quality (%)		pH	Soil Nutrients		
	Moisture	Organic Matter		Nitrogen	Phosphorus	Potassium
Beach Soil	5.22 ± 0.59^{a}	3.12 ± 0.62^{a}	7	trace	trace	trace
Paddy Field Soil	10.35 ± 1.27^{b}	5.20 ± 0.56^{b}	6	trace	low	trace

Note: Different letters in the same column indicate statistically significant differences ($p \leq 0.05$)

Results

- Soil quality assessment

Table 2: Soil Texture and Soil Color

Study Area	Soil Texture	Soil Color
Beach Area	Sandy Loam	Brown (10YR 4/3)
Paddy Field Area	Silty Loam	Yellowish Brown (10YR 4/6)

Results

- **A Study on the Size of Watermelon.**

Table 3: Watermelon Size Data

Study Area	Mean Watermelon Data		
	Horizontal Circumference (X) (cm)	Vertical Circumference (Y) (cm)	Fruit Weight (kg)
Beach Area	52.4 ± 2.1^{a}	58.2 ± 3.5^{a}	2.8 ± 2.4^{a}
Paddy Field Area	64.8 ± 3.2^{b}	70.5 ± 4.8^{b}	4.2 ± 0.6^{b}

Note: Different letters in the same column indicate statistically significant differences ($p \leq 0.05$)

Results

- **A Study on the Sweetness Level of Watermelon.**

Table 4: Watermelon Sweetness Data

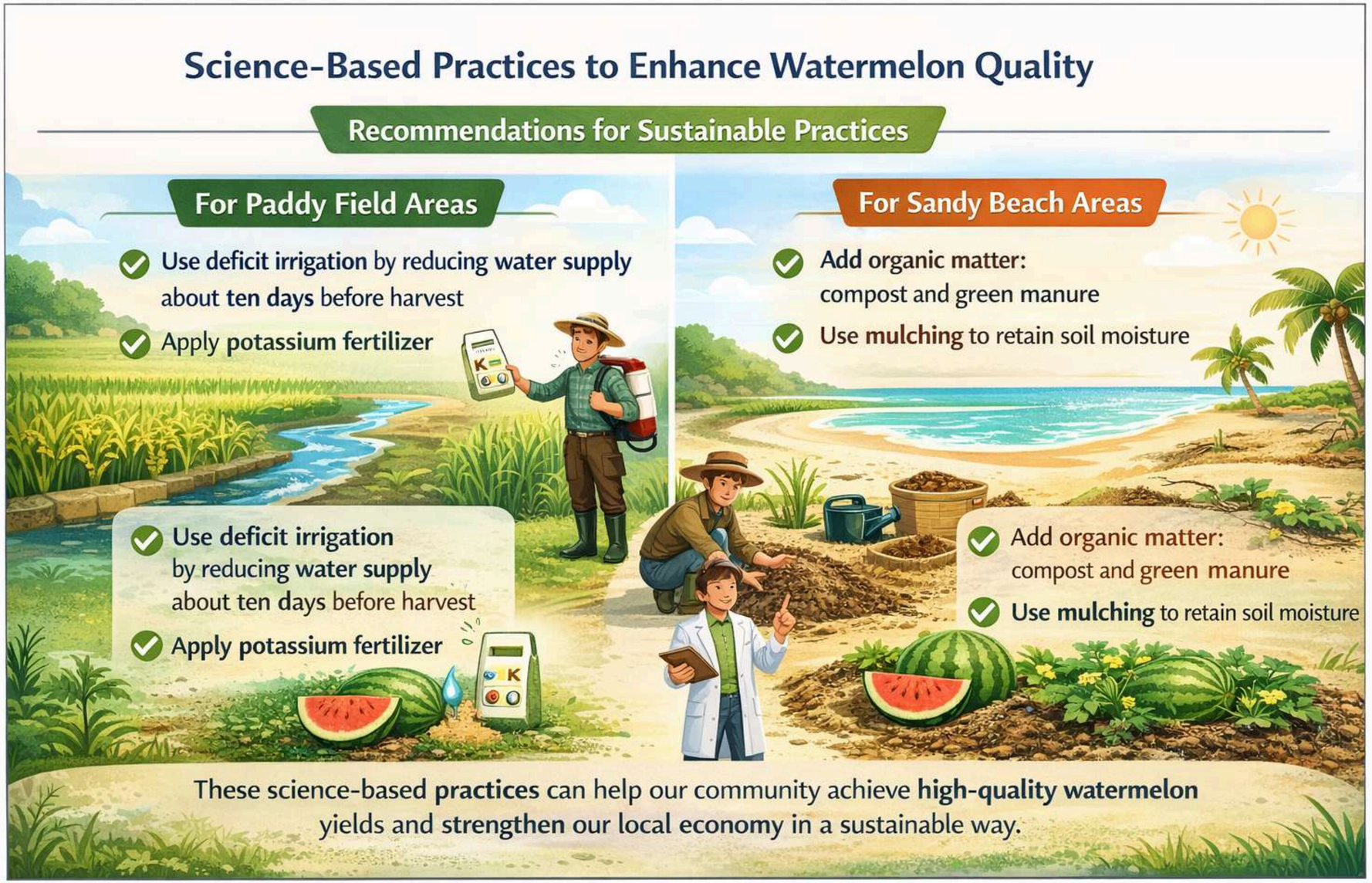
Study Area	Sweetness (°Brix)
Beach Area	15.0[a]
Paddy Field Area	12.6[b]

Note: Different letters in the same column indicate statistically significant differences ($p \leq 0.05$)

Discussion

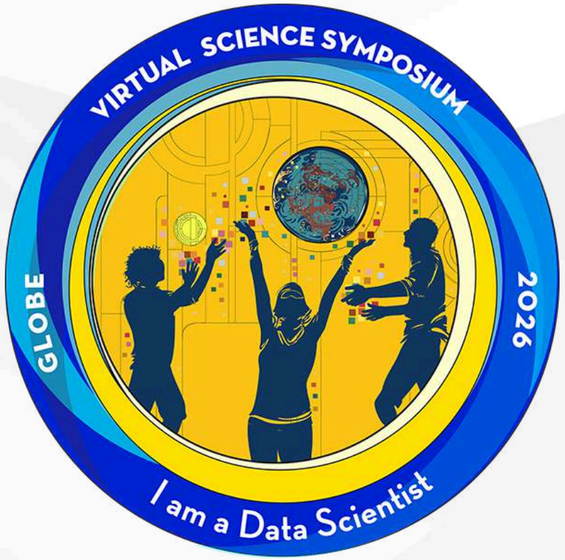

Plant Stress Response Explaining the Trade-off Between Fruit Size and Sweetness
Sandy Beach Soil
Paddy Field Soil
Water Stress → Sugar Accumulation
High Moisture → Cell Expansion
Sweet but Small → Large but Diluted
Low Water Availability
Water Stress:
Sugar Accumulation
Osmottic Pressure
Sugar Build-up
Plant Stress Response
Plant Stress Response
High Water Availability
Dilution Effect: Cell Expansion
Cell Growth
Fruit Enlargement
Dilution Effect
Larger & Less Sweet

Conclusions

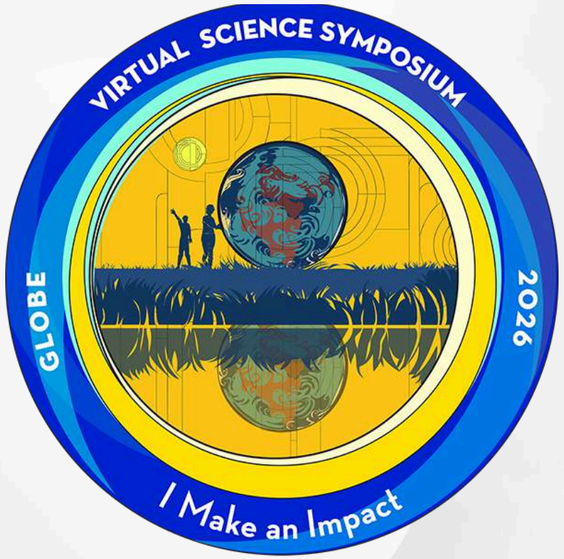


Badges

I am an Earth Systems Scientist.



I am a Data Scientist.



I Make an Impact.

Citations

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"Soil Wisdom,
Sustainable Watermelon."