

Trial Report – Lettuce (NFT)

Introduction

- **Trial Start Date:** 16 March 2025;
 - **Start of harvesting:** 09 April 2025.
 - **Trial end:** 24 May 2025
 - **Crop:** Lettuce + Spinach
 - **Number of plants:** Control - + Experimental -
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Objective

To evaluate the effect of seaweed extract on growth parameters (weight, height, root length) and yield of lettuce plants under NFT systems.

Methodology

- **Parameters Recorded:**
 - Plant Weight (g)
 - Plant Height (cm)
 - Root Length (cm)
 - Harvest Weight (g)
 - **Frequency of Readings:** Periodic data collection throughout the crop cycle, with final harvesting weights recorded on specific dates in April–May 2025.
 - **Analysis Method:**
 - Independent **T-test** used to assess statistical differences between the two systems.
 - Significance threshold: **$p < 0.05$** .
 - **Fertilizer dosing:** Twice in week
 - **Seaweed dosing:** Apply 4 times in overall trial
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Result

1. Plant Weight Comparison (g)

Sample NFT (A) NFT (B)

Mean (Calculated from data) (Calculated from data)

T-test **0.784** → Not Significant

2. Plant Height Comparison (cm)

Sample NFT (A) NFT (B)

Mean (Calculated from data) (Calculated from data)

T-test **0.054** → Near Significant

3. Root Length Comparison (cm)

Sample NFT (A) NFT (B)

Mean (Calculated from data) (Calculated from data)

T-test **0.132** → Not Significant

4. Harvest Weights

Date	NFT (A)	NFT (B)
09-Apr-2025	1470 g	2060 g
16-Apr-2025	3554 g	4316 g
04-May-2025	1084 g	2256 g
13-May-2025	1671 g	2500 g
18-May-2025	1533 g	2225 g

T-test **0.0** → Significant

Observation sheet link :

<https://docs.google.com/spreadsheets/d/1vdhNR58SrOovoDO2pfUE9YoDR1ut5Q3aW6iwfZ2cgqs/edit?gid=496375798#gid=496375798>

Visual observations

- **Nitrogen Deficiency:**

Lettuce showed yellowing of older leaves due to nitrogen deficiency. A corrective application of 200 ppm nitrogen temporarily improved plant health, indicating nutrient responsiveness. However, symptoms reappeared, suggesting ongoing nutrient management challenges.

- **System Performance:**

The **DWC system** consistently outperformed the **NFT system** in growth parameters despite similar nutrient application.

Possible Reasons for DWC Superiority:

- **Better root oxygenation:** Air bubbler ensured consistent dissolved oxygen levels.
- **Consistent nutrient availability:** Roots remained submerged in a nutrient-rich solution.
- **Buffering capacity:** Larger volume of solution in DWC helped maintain stable pH and EC levels.
- **Root development space:** More space and less restriction in DWC encouraged healthier root systems.

Conclusion

The t-test analysis doesn't show significant difference in growth parameters & yield. But experimental plants showed 43.43 % higher yield during trial. This shows there is further scope to investigate reason behind non-significant t-test results and impact of seaweed extract on yield on lettuce during trial. We are proposing another trial in both NFT and DWC system with control plots.
