



Test Report: Effect of The WaterCleanser 12g Block on Hydroponic Lettuce Growth

This report documents a controlled test conducted to evaluate the effectiveness of The WaterCleanser (TWC) 12-gram block in enhancing nutrient availability and plant growth when using organic fertiliser in a hydroponic system. The aim of the trial was to determine whether the application of TWC could accelerate the breakdown of organic matter into bioavailable forms, thereby improving overall plant biomass and productivity.

Materials and Methods

Test Setup

- **Location:** Hydroponic lettuce farm (NFT – Nutrient Film Technique system)
- **Crop:** Red Oak Leaf Lettuce (*Lactuca sativa* var. *crispa*)
- **Fertiliser:** Organic fertiliser applied equally to both systems

Measurement Protocol

- Plants were harvested at a comparable growth stage
- Each lettuce head was weighed using a digital scale (grams/kilograms)

Treatment Groups

- **Control Group (Photo 1):** Hydroponic sump operated with organic fertiliser only
- **TWC Group (Photo 2):** Hydroponic sump operated with organic fertiliser plus a 12 g TWC block

Results Overview

Control Group

(without TWC)

Final weight: 0.070 kg (70 g) per head

Plants showed normal leaf development but reduced density and volume compared to treated plants

Treatment Group

(with TWC 12g block)

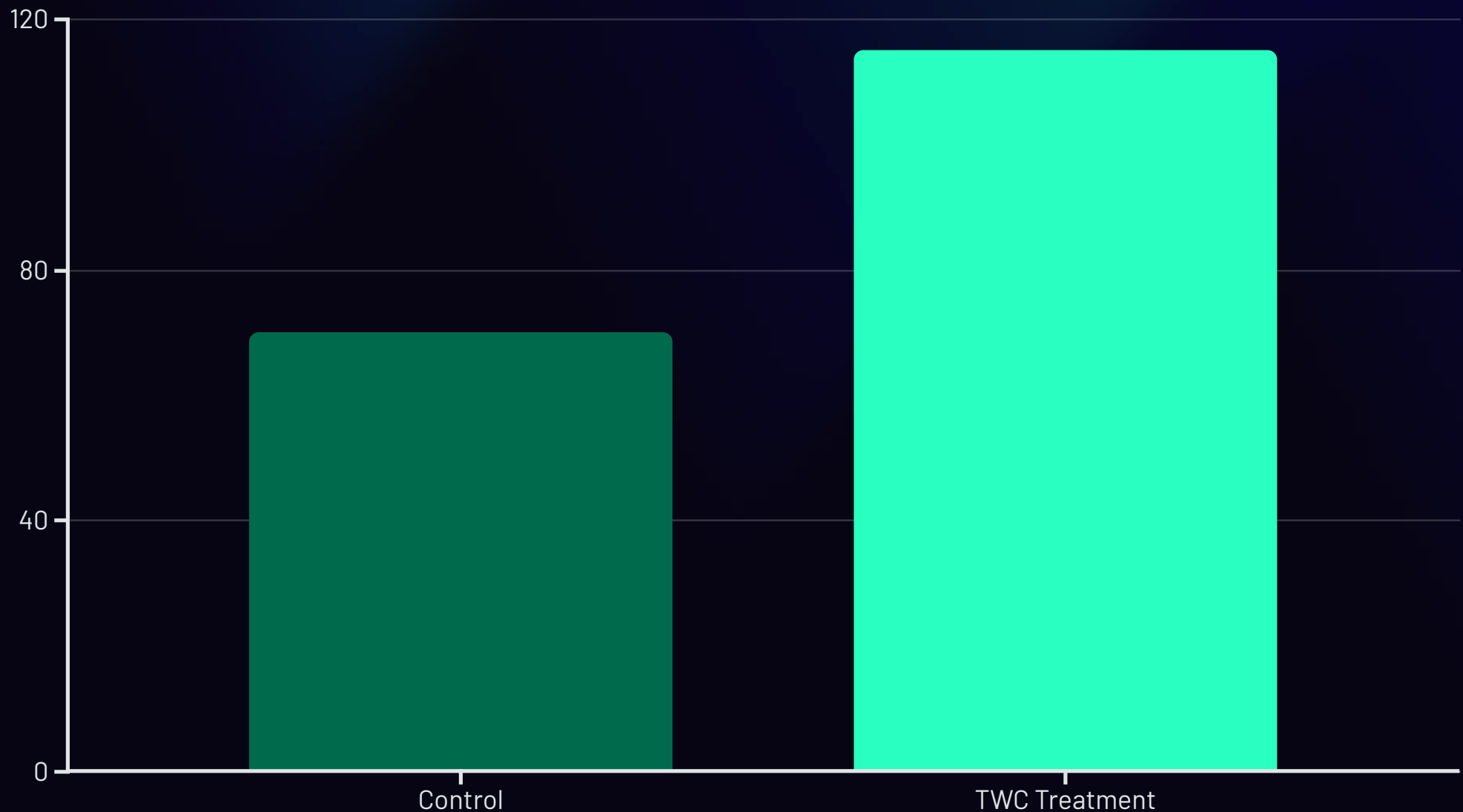
Final weight: 0.115 kg (115 g) per head

Plants displayed greater leaf density, deeper colouration, and improved overall biomass

Growth Difference Analysis

64% Increase

Lettuce grown with TWC showed a **64% increase in fresh weight** compared to the control (115 g vs. 70 g).



Discussion: How TWC Works

The trial indicates that TWC enhances the conversion of organic fertilisers into bioavailable nutrients, particularly nitrogen and phosphorus, through stimulation of beneficial *Bacillus* species. These microbes improve nutrient cycling by:

01

Breaking down organic matter

Converting organic compounds into accessible forms that plants can readily absorb

02

Supporting stable microbial ecosystems

Maintaining beneficial bacterial populations within the hydroponic solution

03

Reducing nutrient lock-up

Increasing uptake efficiency and preventing nutrient waste

This results in visibly healthier plants with larger biomass in the same growth period.

Photos from Test



Graphical Representation of Results

The following charts illustrate the comparative results of the trial between the control group and the group treated with The WaterCleanser 12 g block:

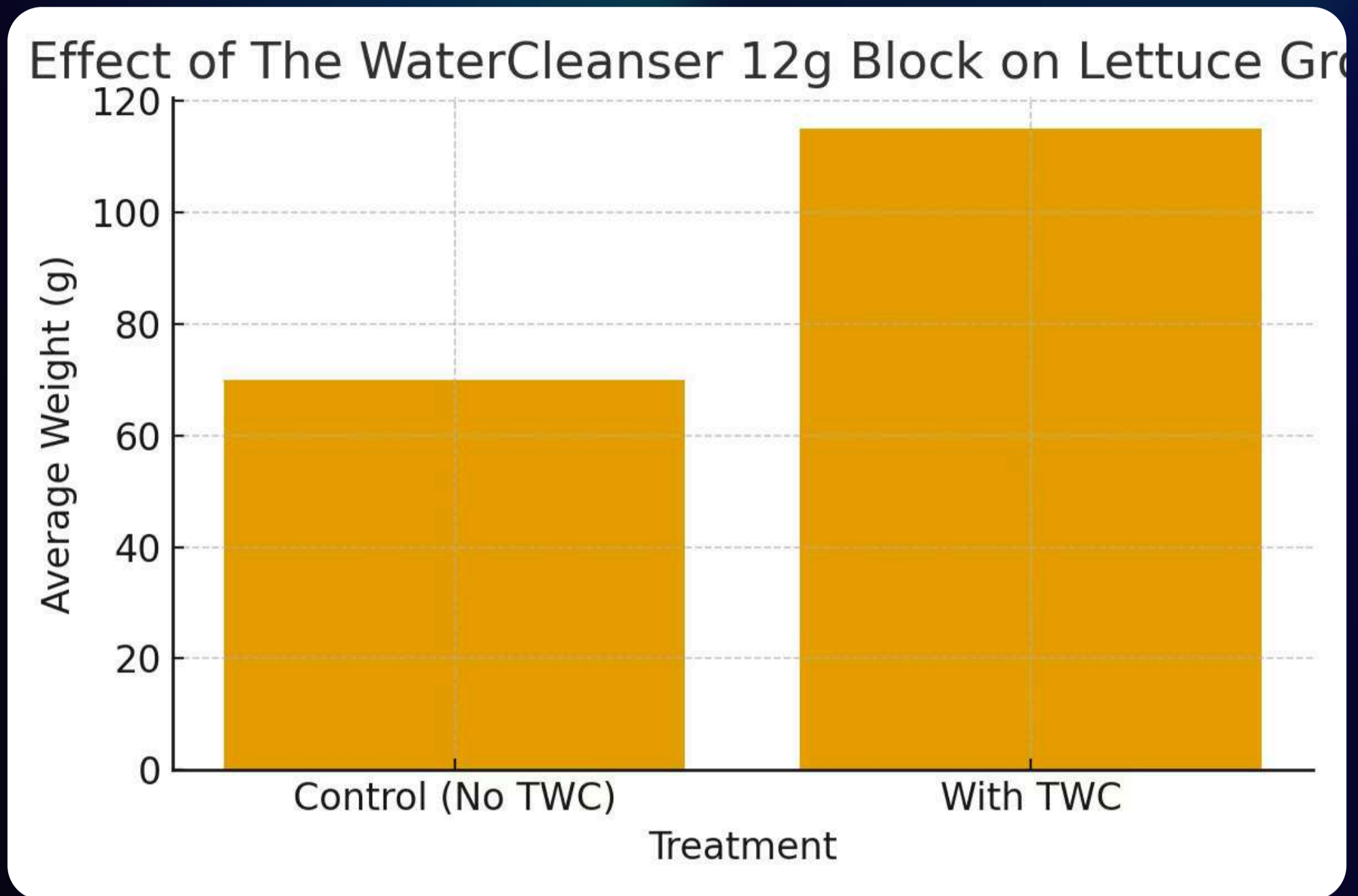


Figure 1. Average final weight of lettuce heads grown with and without The WaterCleanser.

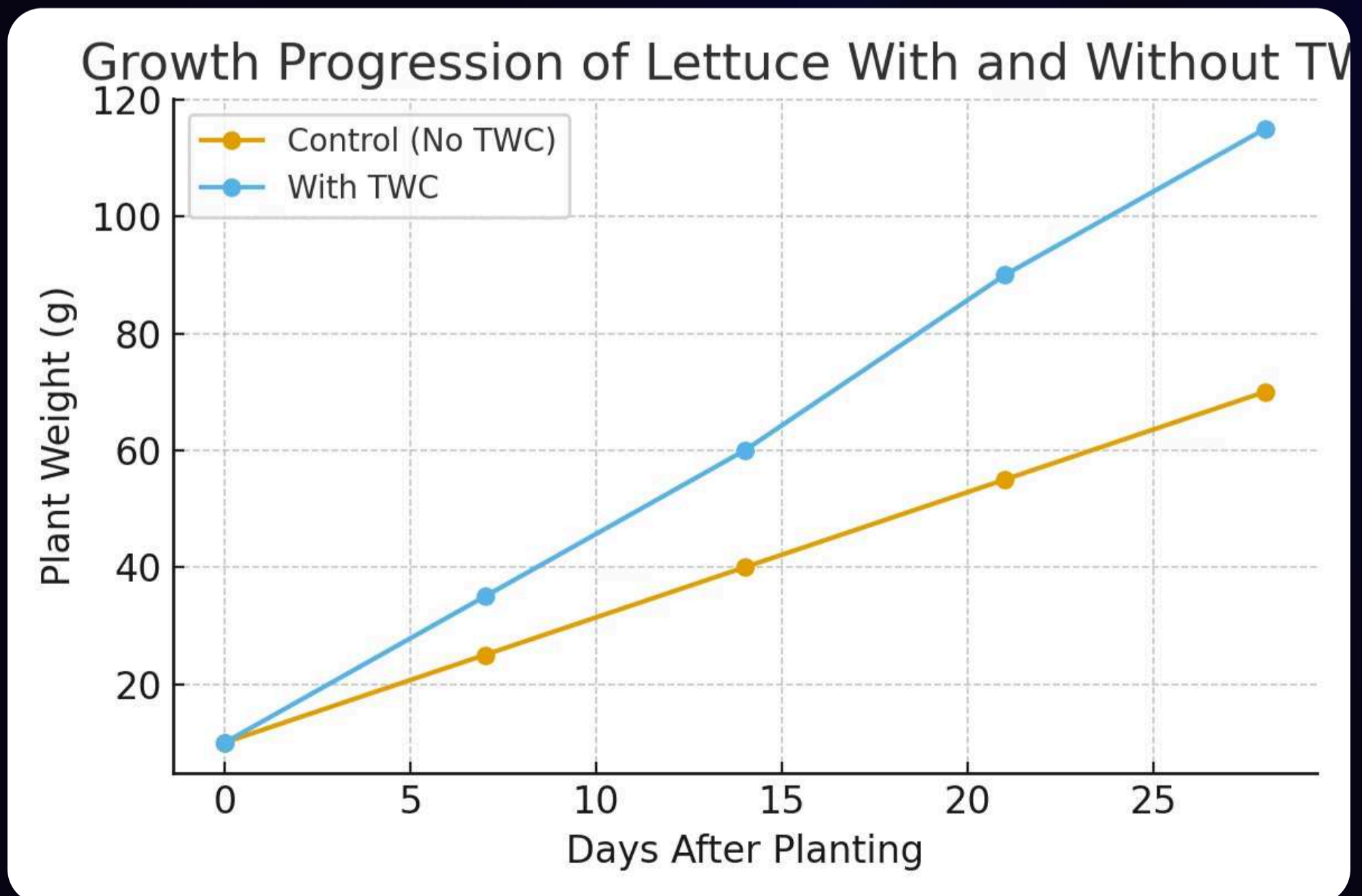


Figure 2. Hypothetical growth progression of lettuce over 28 days, illustrating accelerated growth with The WaterCleanser.

Conclusion

The application of The WaterCleanser 12 g block in hydroponic systems using organic fertiliser significantly improves crop growth and yield.

70g

Control yield

per head

115g

TWC yield

per head

64%

Improvement

increase in biomass

This simple, low-cost intervention has proven beneficial in optimising organic fertiliser efficiency and should be considered for broader application across hydroponic and soil-based systems.

Recommendations for Future Research

1 Crop Diversity Testing

Repeat trials across different crop types (lettuce varieties, herbs, fruiting crops) to confirm broad-spectrum benefits

2 Scale-Up Assessment

Scale up testing in larger hydroponic systems to assess cumulative yield improvements

3 Water Quality Analysis

Conduct water quality analysis (nitrates, nitrites, TSS, dissolved oxygen) to quantify microbial action

4 Commercial Viability

Evaluate commercial cost-benefit scenarios to support adoption by growers

Key Takeaways

Proven Benefits

- **64% increase** in lettuce biomass
- Enhanced nutrient availability from organic fertilizers
- Improved plant density and coloration
- Simple, low-cost intervention

Next Steps

- Expand testing to other crops
- Scale up to commercial operations
- Conduct detailed water quality analysis
- Develop cost-benefit models

