

Location:

IIT Ropar, Punjab

Application:

Wheatgrass Cultivation (Microgreens)

Unit installed:

NanoAqua N10 Oxygen Nanobubble Generator

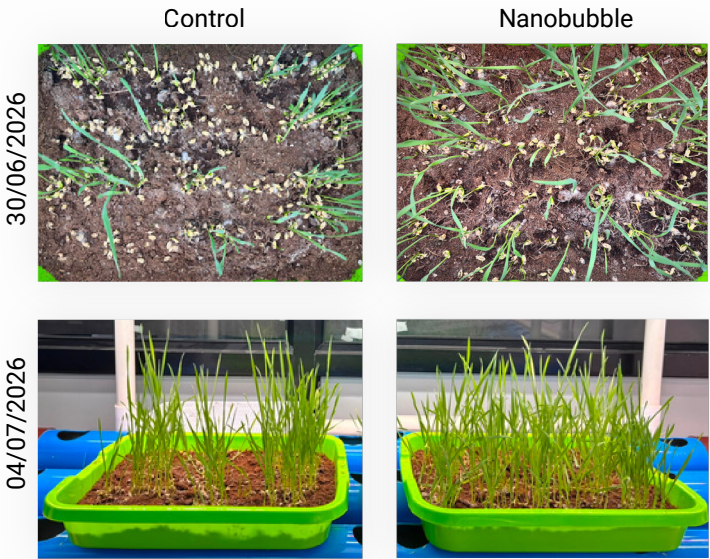
Results:

- 13.68% Higher Seed Germination
- 10.40% Higher Overall Germination
- Uniform Early Crop Establishment

To evaluate the effect of oxygen nanobubbles on seed germination, Nanokriti conducted a controlled wheatgrass microgreen trial at IIT Ropar. Wheatgrass was grown in cocopeat under identical controlled-environment conditions using 250 seeds per treatment with three replicates. Light intensity, temperature, tray size, irrigation frequency, growing medium, and all cultivation parameters were kept constant. The only difference was the use of oxygen nanobubble-enriched water for irrigation in the treatment group, while the control received normal water.

Intervention

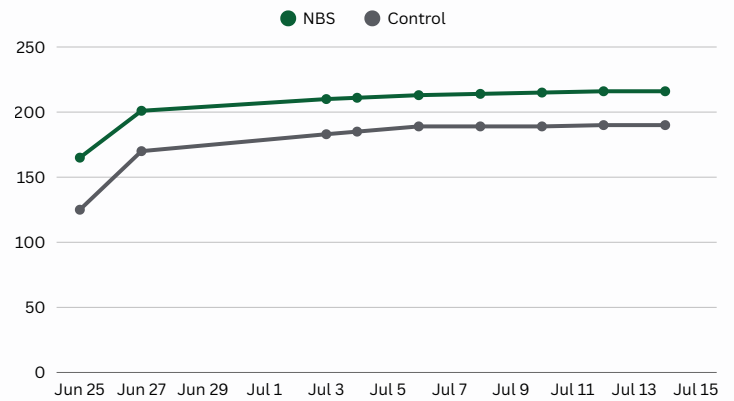
The NanoAqua N10 continuously supplied oxygen nanobubble-enriched water throughout the germination period. Both the control and treatment trays followed the same irrigation schedule and cultivation practices, allowing the study to isolate the effect of oxygen nanobubbles on seed germination and early crop establishment.



The oxygen-enriched water supported better metabolic activity during germination, promoting healthier early root initiation and more uniform crop establishment. This improved oxygen availability enhanced seed performance without changing cultivation practices or requiring additional nutrient application.

Results & Key Findings:

The nanobubble-treated wheatgrass demonstrated a 13.68% improvement in seed germination compared to the control treatment, along with a 10.40% higher overall germination percentage. More uniform seed emergence and healthier early crop establishment were observed under the nanobubble treatment. The results indicate that oxygen nanobubble technology can significantly enhance germination performance in controlled environment agriculture while maintaining the same irrigation schedule and cultivation conditions.



Conclusion

The IIT Ropar germination study demonstrates that oxygen nanobubble irrigation can significantly improve wheatgrass establishment during the critical germination stage. By enhancing oxygen availability in the irrigation water, the NanoAqua N10 produced higher germination, more uniform seedling emergence, and stronger early crop establishment without changing irrigation schedules or growing conditions.

Mechanism

Unlike conventional irrigation water, oxygen nanobubbles remain suspended for extended periods, improving oxygen availability around germinating seeds.

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