



PHOTOS OF ACTUAL MICROGREENS GROWN ON RENU TERRA MICROGREENS MATS

RE-NUBLE CASE STUDY

ReNu Terra Microgreens Mats Deliver High Yields Compared To Conventional Microgreens Mats



Background

This case study was conducted at Re-Nuble's research and development laboratory in Bentonville, Arkansas, supervised by JC Chidiac, re-Nuble's Senior Director of Research and Development.



Challenge

To determine the efficacy of Re-Nuble's ReNu Terra Grow Sheets for microgreens compared to a conventional sprouts sheet product produced from unknown raw materials..



Crops Grown

Broccoli
Radish



Grow Set Up

ReNu Terra Microgreens Mats	Lids
Conventional microgreens mats (hemp, jute, felt)	UV-C lights
Ebb & flow trays (2ft x 4ft each)	Pure water
1020 flats	
Hydroponic fertilizer	

METHOD

1. We began by determining the seeding quantities for each crop species by consulting our seeding charts.
2. Four (4) ebb-and-flow trays with lighting to irrigate the microgreens were prepared, with each tray having a capacity of four (4) 1020 flats. We used a different type of 1020 flat in each tray to cover the spectrum of options that growers are currently using.
3. All of the microgreens mats were soaked in water until they were fully saturated. Then, we sterilized the 1020 flats using UV-C light, laid the wet microgreens mats onto them, followed by sterilization using UV-C lights.
4. We spread the seeds evenly onto the microgreens mats before a third round of UV-C sterilization. Then, we seeded each crop species into eight (8) 1020 flats, for a total of 16.
5. The seeds were misted thoroughly before lids were placed on the flats to keep them dark and humid, however they were not airtight and so moisture was able to slowly escape. Then, they were stacked until germination occurred.
6. We kept all trays in identical conditions and handled them the same way throughout the study. Temperatures were between 66 F - 76 F, relative humidity was between 40% and 60%, and PPFD was between 180 and 325 uMol/m².s.
7. Once the seeds were sufficiently germinated (after 3 days), the flats were transferred to the trays to be irrigated and given light. Each tray contained 1 type of flat and 4 types of mats, and the position of each mat was randomized.
8. They were then irrigated every 12 hours with a hydroponic fertilizer solution at an E.C. of 1.0 dS/m and a pH of 6.0. The microgreens were photographed daily. After ten (10) days in the system, we documented the results. Further details are available in our testing protocol, which may be shared upon request.

Broccoli

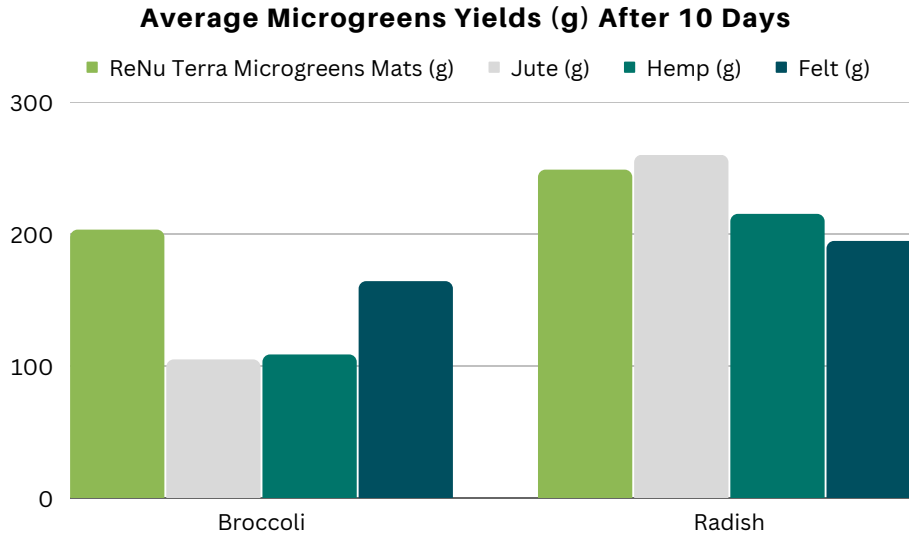
Radish



Microgreens grown using ReNu Terra Microgreens Mats

RESULTS

By day ten (10), germination for the broccoli and radish was better for two (2) of the 1020 flat types versus the other two (2). However, the majority of seeds germinated without any issue, regardless of the mat treatment. The average yield (fresh weight) for broccoli was significantly higher on ReNu Terra Microgreen Mats than on the conventional microgreen mats, and numerically higher on jute for radish, with ReNu Terra coming in a close second, as can be seen in the bar graph below.



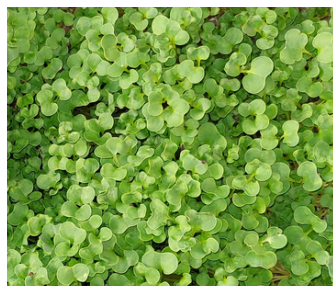
The quality and size of the sprouts was fairly consistent between the treatments but the ReNu Terra Microgreen Mats resulted in slightly larger radish microgreens.

Microgreens Yield Comparison After 10 Days

Broccoli



ReNu Terra



Hemp



Felt

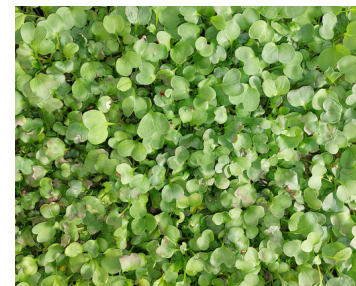


Jute

Radish



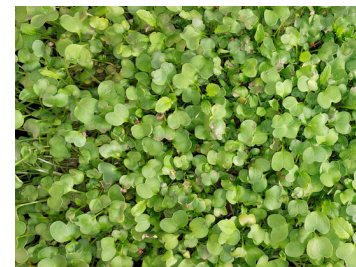
ReNu Terra



Hemp



Felt



Jute

Our taste tests showed excellent flavor across the board, with no discernible difference between ReNu Terra mats and conventional mats.

When evaluating for user experience specific to ease and efficiency of product handling, we found that all the mat types were durable and stayed in one piece during handling, though rigidity varied, and the ReNu Terra mats provided the highest rigidity, which contributed to ease of harvesting. Root penetration was superior on the ReNu Terra and felt mats compared to hemp and jute.

CONCLUSIONS

Difference in Yield & Size

While all treatments resulted in similar germination, the ReNu Terra sheets delivered high yields in both crops as well as larger radish microgreens. The difference in yields and size may be attributed to higher overall water retention and increased porosity in the ReNu Terra Microgreens Mats compared to the conventional mats due to improved loft, leading them to dry more slowly in between irrigation events and provide more oxygen to the roots when fully saturated.

Quality & Taste

The product quality and taste as well as the harvesting experience were not significantly different between any treatments

Harvest Time

The rigidity of the ReNu Terra mat saved about 10% of the harvest time compared to the other mats

Performance

The ReNu Terra Microgreens Mats proved to be sterile, absorbent, and consistent

Sustainability

Compared to the conventional microgreens mats,, our proprietary fibers within our ReNu Terra Microgreen Mats are fully compostable and significantly more sustainable. Its proprietary fibers are USDA Certified Biobased Product and are Certified Plastic-Free by The Plastic Planet.



Root Growth Comparison After 10 Days

Broccoli - Open Mesh Flats



ReNu Terra

Hemp

Radish - Solid with Holes



ReNu Terra

Hemp



Felt

Jute



Felt

Jute



ReNu Terra Microgreen Mats delivered high yields in both crops and larger radish microgreens [and] saved about 10% of the time required to harvest. They proved to be sterile, absorbent, and consistent [and] are entirely compostable and sustainable.

JC CHIDIAC

Sr. Director of Research & Development, Re-Nuble

HAVE ANY QUESTIONS ABOUT OUR CASE STUDY? WE'RE HERE TO HELP.
 CONTACT US AT: WECARE@RE-NUBLE.COM, 646-266-9775
 BUSINESS HOURS: MON-FRI. (10-5 PM EST)



ITEM: RENU TERRA MICROGREEN 10"X20" MAT
DIMENSIONS: 10"X"20". CUSTOM AVAIL.

UNIT COUNT: 10-PACK, 40-PACK, 140-PACK