



Replacing Plastic Sponges with Biodegradable Organic Fiber Loofahs Experimental Plan



Planning and execution unit: Valofresh Co., Ltd

Ideology

Hydroponic farming has rapidly emerged around the world replacing traditional soil farming methods to meet the huge demand for vegetables. Currently, hydroponic farms around the world are facing the problem of unrecyclable sponge waste, leading to global water shortages. Billions of inorganic chemical sponges are produced every month on farms and must be discarded and cannot be recycled.

Valofresh Co., Ltd. conducted research and evaluation on the application of loofah products to see the feasibility of replacing inorganic chemical sponges with organic loofah fibers.

Valofresh Co., Ltd. will start this experimental plan in 2023, hoping to find the right organic fiber to replace the inorganic chemical sponge, truly achieving the goal of 100% zero waste and zero carbon emissions, fulfilling its corporate social responsibility for global ESG.



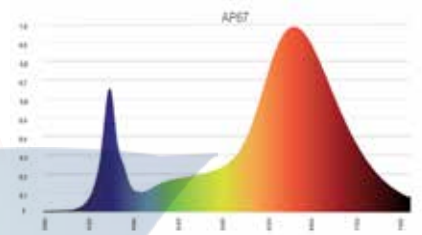
Equipment Required for Experiments



Loofah



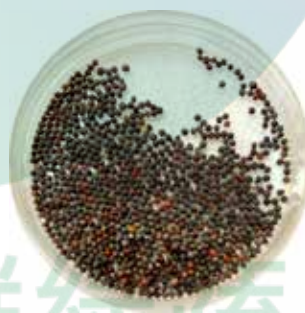
Valoya Agricultural Growth Light



Watercress Seeds



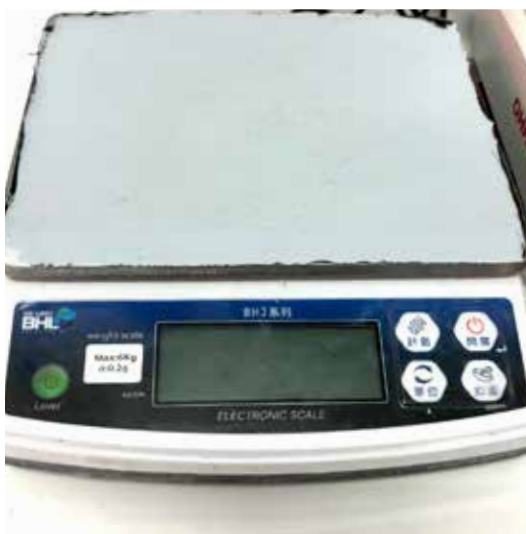
Lettuce Seeds



Mizuna Seeds



Arugula Seeds



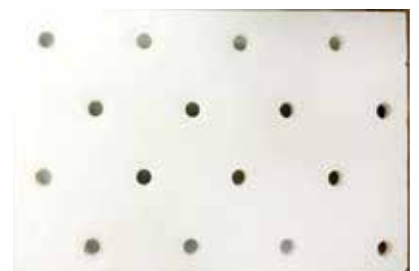
Pound Scale



Microscope



Seedling Tray



Perforated Board

Experimental Crop Variations



Water cress



Lettuce



Mizuna



Arugula

光鮮綠蔬

Experimental Procedures

1. Extract loofah and divide into three sizes

3cmx3cmx1cm(0.2g)



3cmx3cmx2cm (0.4g)



3cmx3cmx3cm (0.8g)



2. Loofah disinfection

Soak in room temperature water (25 degrees Celsius) for 10 minutes.
Soak in H₂O₂ hydrogen peroxide for 10 minutes.
Soak in 100 degree hot water for 10 minutes.
Receive UV treatment for 60 minutes.
Soak in hypochlorous acid (HClO) for 10 minutes.

3. Sow seeds and start planting samples

4. Record growth from Day 1 ~ Day 28

5. Harvest crops

6. Perform inspection after the use of the loofah fiber

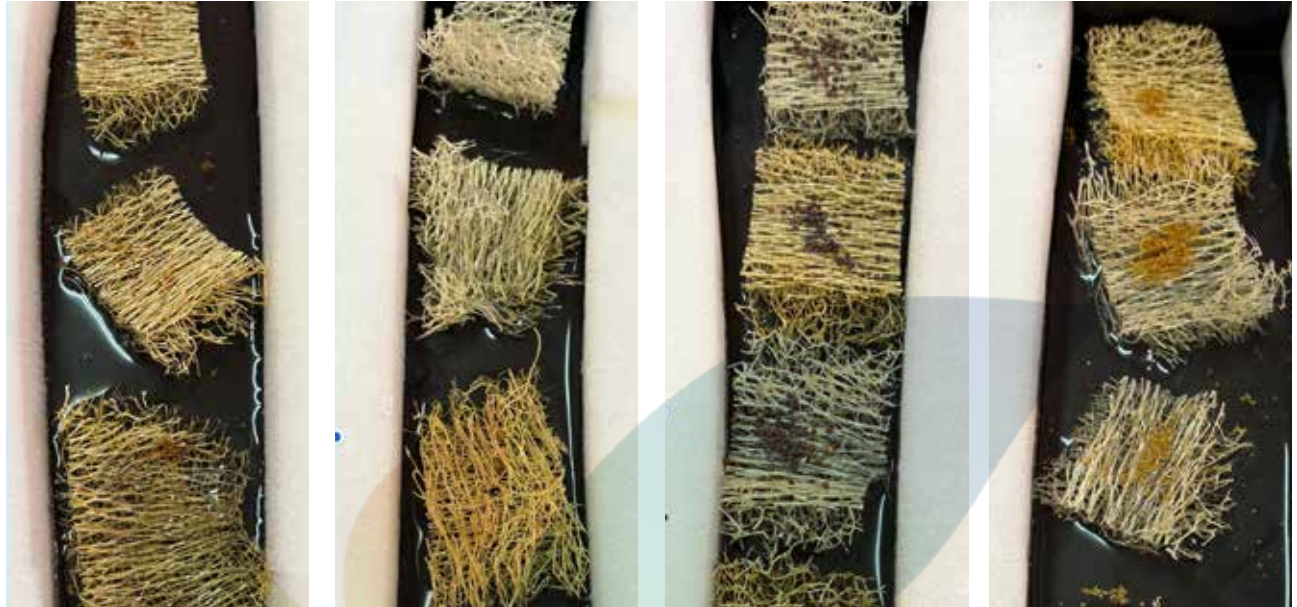
7. Initiate the Soil Burial Test



Soak 3cmx3cmx1cm loofah in 25 degrees, room temperature, water for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

Arugula

Day7 Starts sprouting

Day8 Starts sprouting

Day4 Starts sprouting

Day5 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day10 Colonized



Water cress

Day9 Contaminated



Lettuce

Day10 Colonized



Mizuna

Day9 Contaminated



Arugula

Day17 Contaminated



Water cress

Day16 Grow



Mizuna

Day26 Harvest



Mizuna

光鮮綠蔬

Soak 3cmx3cmx2cm loofah in 25 degrees, room temperature, water for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress



Lettuce



Mizuna



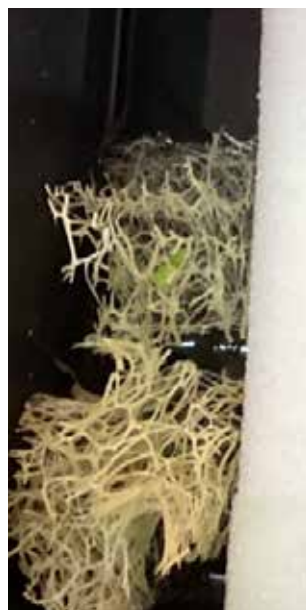
Arugula

Day7 Starts sprouting



Water cress

Day8 Starts sprouting



Lettuce

Day4 Starts sprouting



Mizuna

Day5 Starts sprouting



Arugula

光鮮綠蔬

Day10 Colonized



Water cress

Day10 Two plants grew mold



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



Arugula

Soak 3cmx3cmx3cm loofah in 25 degrees, room temperature, water for 10 minutes

Growth Process

Day1 Start sowing



Water cress

Day1 Start sowing



Lettuce

Day1 Start sowing



Mizuna

Day1 Start sowing



Arugula

Day9 Starts sprouting



Water cress

Day5 Starts sprouting



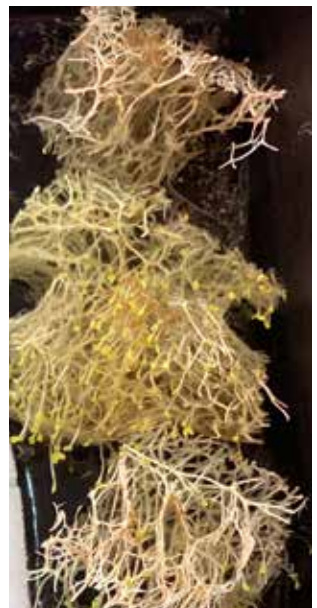
Lettuce

Day5 Starts sprouting



Mizuna

Day7 Starts sprouting



Arugula

光鮮綠蔬

Day10 Two plants grew mold



Water cress

Day10 One plants grew mold



Lettuce

Day10 Colonized



Mizuna

Day10 One plants grew mold



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



Arugula

Soak 3cmx3cmx1cm loofah in H2O2 hydrogen peroxide for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

Arugula

Day7 Starts sprouting

Day8 Starts sprouting

Day4 Starts sprouting

Day5 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day10 One plants
grew mold



Water cress

Day10 Two plants
grew mold



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day17 Grow



Water cress

Day17 All moldy



Lettuce

Day16 Grow



Mizuna

Day17 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



Arugula

Soak 3cmx3cmx2cm loofah in H2O2 hydrogen peroxide for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress



Lettuce



Mizuna



Arugula

Day7 Starts sprouting



Water cress

Day7 Starts sprouting



Lettuce

Day6 Starts sprouting



Mizuna

Day6 Starts sprouting



Arugula

Day10 One plants grew mold



Water cress

Day10 Colonized



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day17 Grow



Water cress

Day16 Two plants grew mold



Lettuce

Day16 Grow



Mizuna

Day17 One plants grew mold



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest

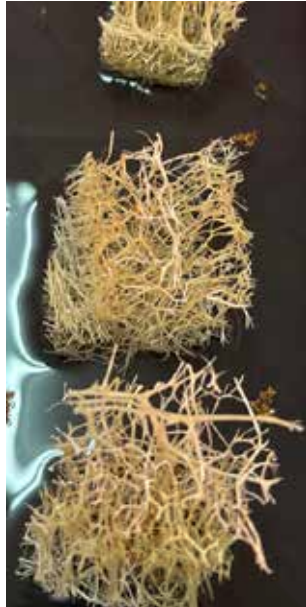


Arugula

Soak 3cmx3cmx3cm loofah in H2O2 hydrogen peroxide for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress



Lettuce



Mizuna



Arugula

Day8 Starts sprouting



Water cress

Day5 Starts sprouting



Lettuce

Day6 Starts sprouting



Mizuna

Day6 Starts sprouting



Arugula

Day10 Colonized



Water cress

Day10 One plants grew mold



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



Arugula

Soak 3cmx3cmx1cm loofah in 100 degree hot water for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress



Lettuce



Mizuna



Arugula

Day6 Starts sprouting



Water cress

Day7 Starts sprouting



Lettuce

Day4 Starts sprouting



Mizuna

Day6 Starts sprouting



Arugula

光鮮綠蔬

Day10 One plants
grew mold



Water cress

Day10 Colonized



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



Arugula

Soak 3cmx3cmx2cm loofah in 100 degree hot water for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress



Lettuce



Mizuna



Arugula

Day7 Starts sprouting



Water cress

Day5 Starts sprouting



Lettuce

Day5 Starts sprouting



Mizuna

Day6 Starts sprouting



Arugula

光鮮綠蔬

Day10 One plants grew mold



Water cress

Day10 Three plants grew mold



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



Arugula

Soak 3cmx3cmx3cm loofah in 100 degree hot water for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress



Lettuce



Mizuna



Arugula

Day8 Starts sprouting



Water cress

Day6 Starts sprouting



Lettuce

Day5 Starts sprouting



Mizuna

Day6 Starts sprouting



Arugula

Day10 One plants
grew mold



Water cress

Day10 Colonized



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Day33 Harvest



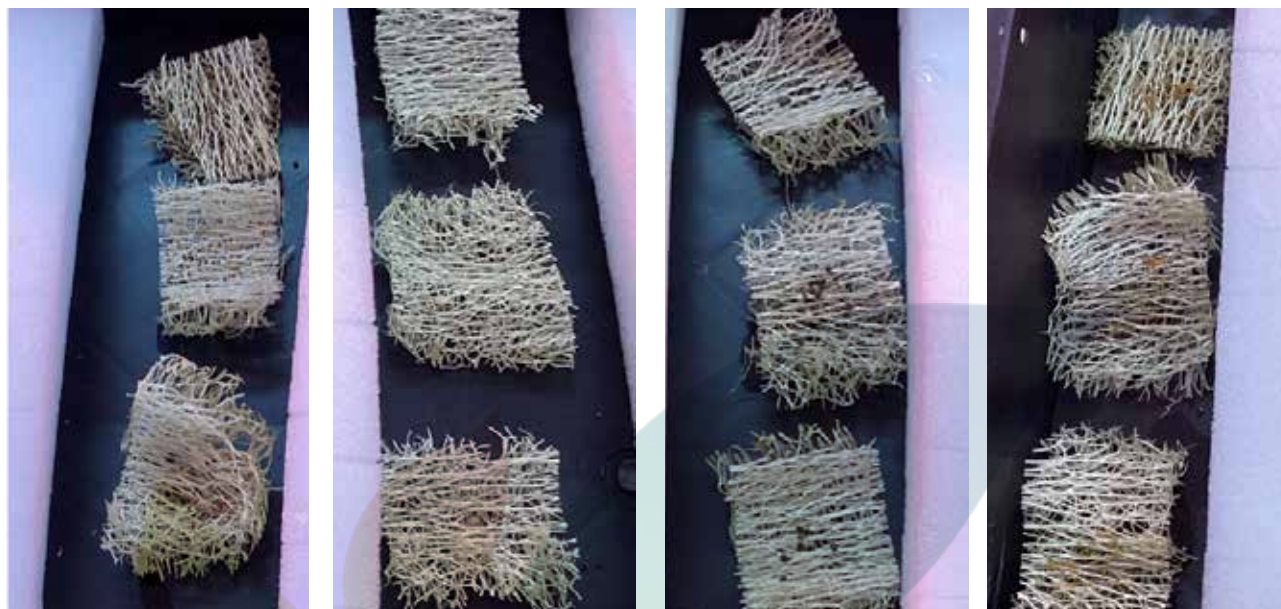
Arugula

3cmx3cmx1cm loofah

Receive UV treatment for 60 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

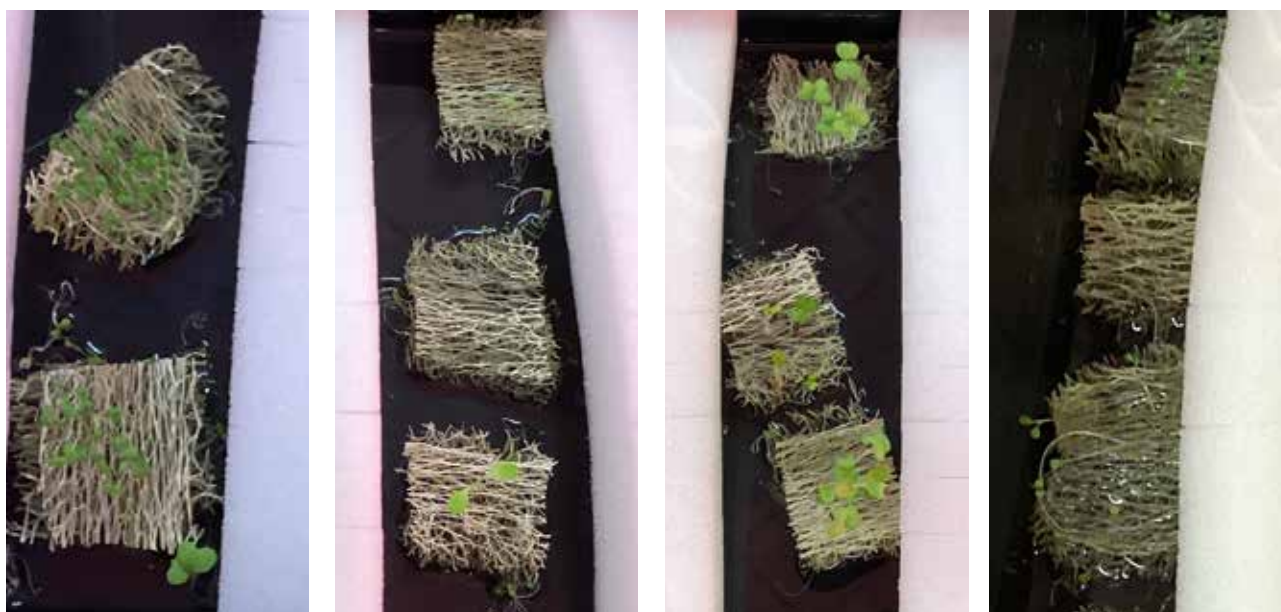
Arugula

Day6 Starts sprouting

Day6 Starts sprouting

Day4 Starts sprouting

Day6 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day10 Colonized



Water cress

Day10 Colonized



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

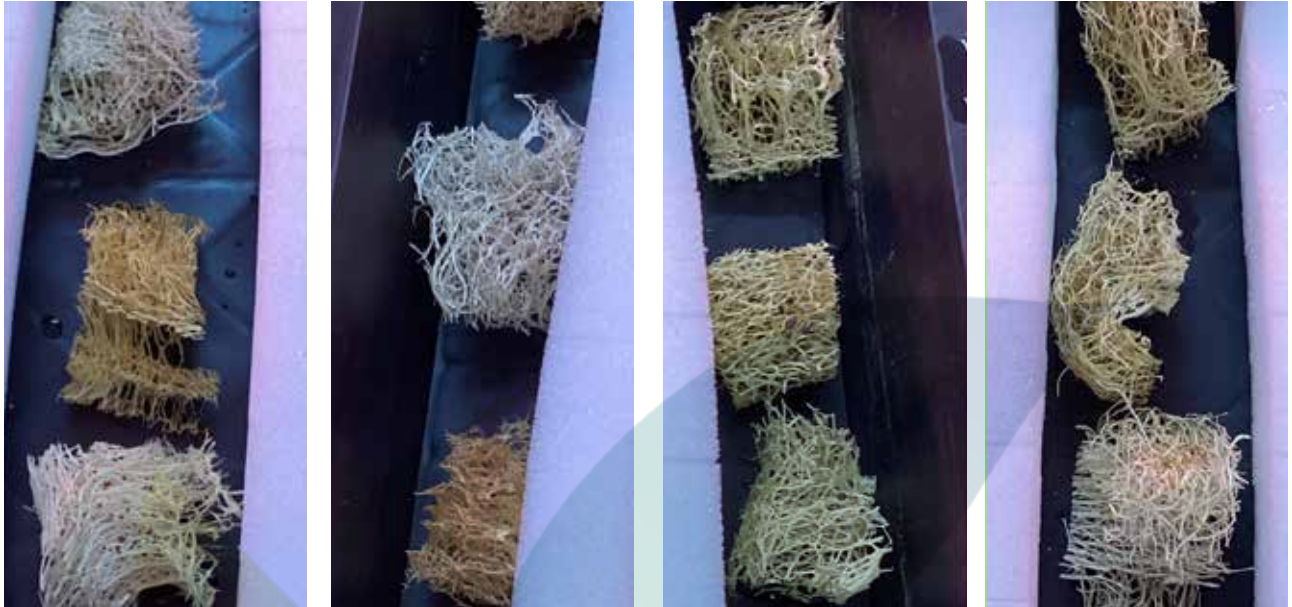
Day26 Harvest



Mizuna

3cmx3cmx2cm loofah Receive UV treatment for 60 minutes Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

Arugula

Day6 Starts sprouting

Day6 Starts sprouting

Day5 Starts sprouting

Day5 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day10 Colonized



Water cress

Day10 Colonized



Lettuce

Day10 Colonized



Mizuna

Day10 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



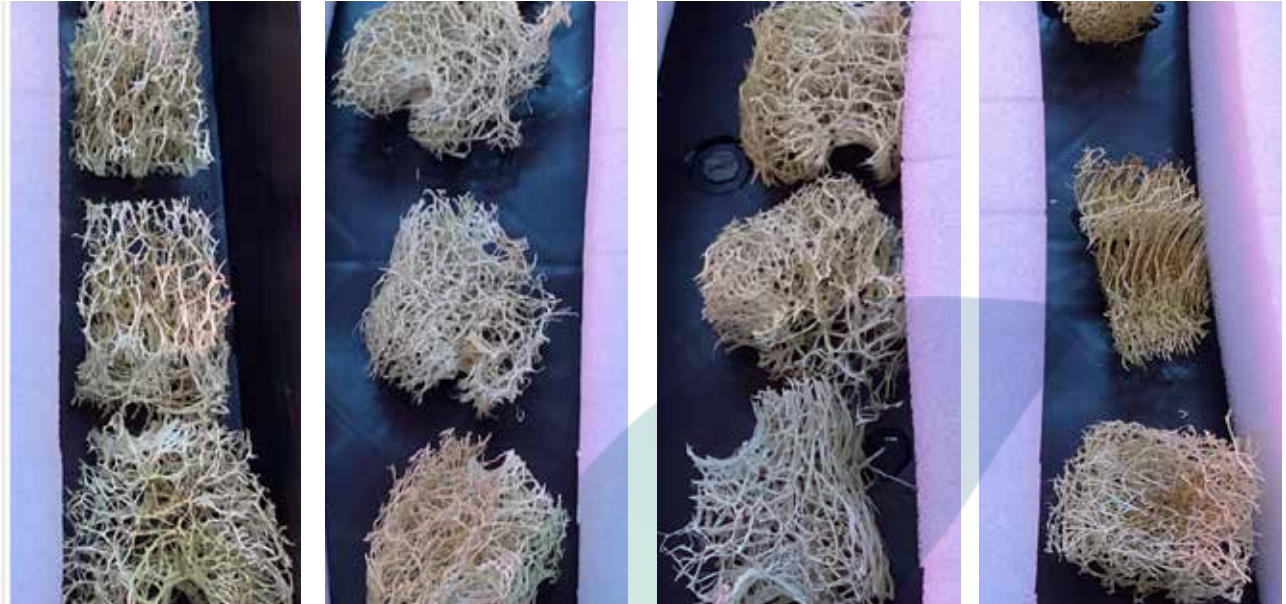
Mizuna

3cmx3cmx3cm loofah

Receive UV treatment for 60 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

Arugula

Day6 Starts sprouting

Day6 Starts sprouting

Day5 Starts sprouting

Day5 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day7 Colonized



Water cress

Day7 Colonized



Lettuce

Day7 Colonized



Mizuna

Day7 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Soak 3cmx3cmx1cm loofah in hypochlorous acid (HClO) for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

Arugula

Day6 Starts sprouting

Day7 Starts sprouting

Day4 Starts sprouting

Day6 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day9 Colonized



Water cress

Day9 Colonized
(not grown up)



Lettuce

Day9 Colonized



Mizuna

Day9 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day26 Harvest



Mizuna

光鮮綠蔬

Soak 3cmx3cmx2cm loofah in hypochlorous acid (HClO) for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

Arugula

Day4 Starts sprouting

Day5 Starts sprouting

Day4 Starts sprouting

Day4 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day9 Colonized



Water cress

Day9 Colonized



Lettuce

Day9 Colonized



Mizuna

Day9 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest

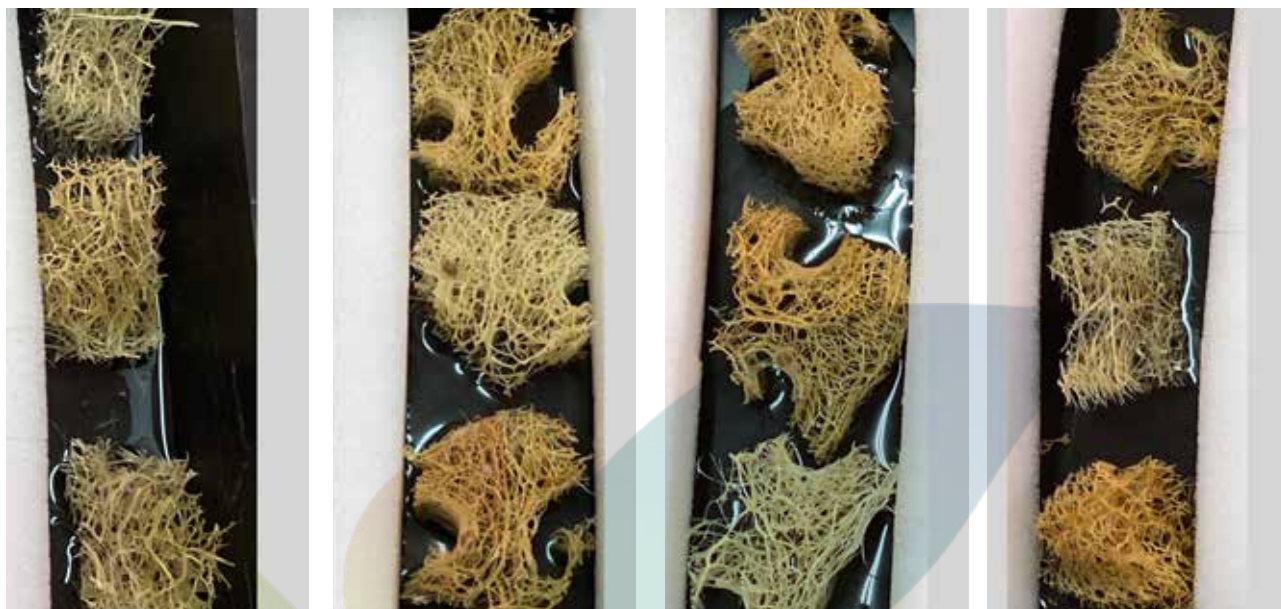


Mizuna

Soak 3cmx3cmx3cm loofah in hypochlorous acid (HClO) for 10 minutes

Growth Process

Day1 Start sowing Day1 Start sowing Day1 Start sowing Day1 Start sowing



Water cress

Lettuce

Mizuna

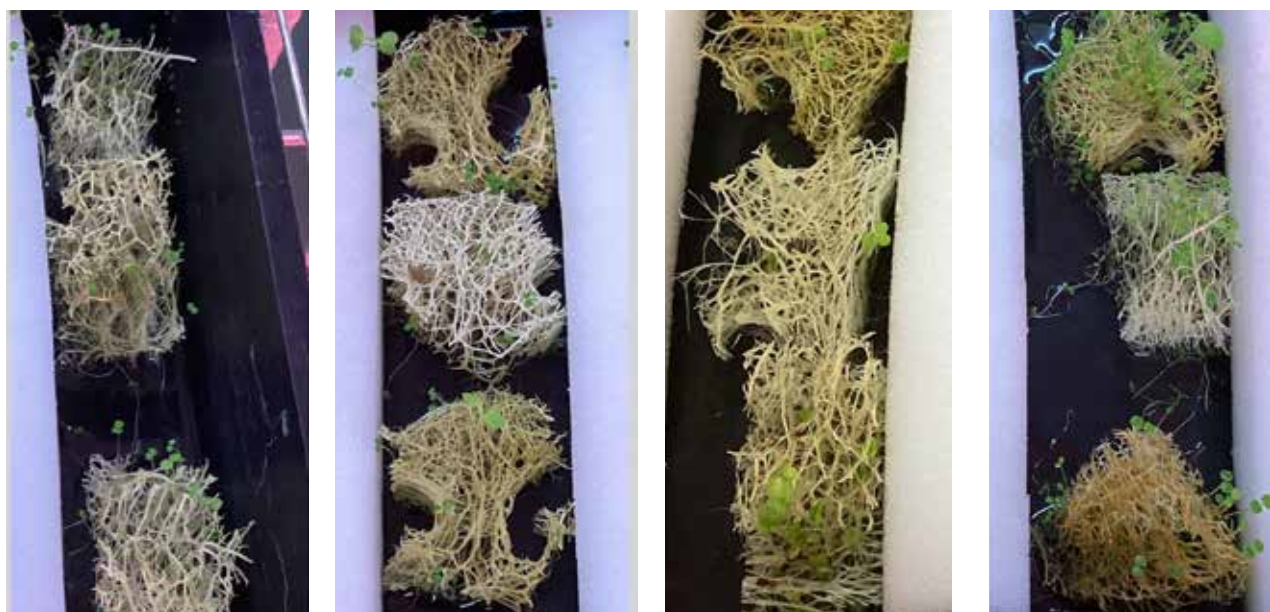
Arugula

Day5 Starts sprouting

Day6 Starts sprouting

Day4 Starts sprouting

Day5 Starts sprouting



Water cress

Lettuce

Mizuna

Arugula

Day9 Colonized



Water cress

Day9 Colonized



Lettuce

Day9 Colonized



Mizuna

Day9 Colonized



Arugula

Day16 Grow



Water cress

Day16 Grow



Lettuce

Day16 Grow



Mizuna

Day16 Grow



Arugula

Day30 Harvest



Water cress

Day32 Grow



Lettuce

Day26 Harvest



Mizuna

Valofresh EcoSponge: La révolution du loofah pour l'agriculture verticale

Cultivation verte, guidée par les fibres naturelles

L'éponge en loofah de Valofresh, une ferme pionnière, incarne une révolution écologique en offrant une alternative durable aux blocs de mousse synthétique dans l'agriculture verticale. Grâce à l'utilisation de fibres de loofah 100 % naturelles, Valofresh ouvre la voie à une réduction drastique des déchets plastiques, proposant ainsi une solution avant-gardiste et écologiquement responsable pour des légumes éclatants de santé.

Les fermes verticales du monde entier, qui recourent habituellement à des blocs de mousse inorganique pour la croissance racinaire des semences, génèrent ainsi d'importantes quantités de déchets plastiques non recyclables. Non seulement cette pratique est néfaste pour l'environnement, mais elle accroît également les coûts liés à la gestion des déchets plastiques. Notre invention, en utilisant des fibres de loofah naturelles à la place des blocs de mousse inorganique, offre une solution durable et définitive à ce problème persistant de pollution plastique.



Valofresh Ltd, le principal acteur de l'agriculture verticale à Taiwan, élimine annuellement plus de 10 millions d'éponges inorganiques, leur plus grand défi en matière de réduction de carbone et de plastique. Le passage aux fibres de loofah est un pas important vers une meilleure durabilité et améliore nettement son ESG.



L'utilisation de fibres de loofah naturelles en remplacement des blocs de mousse inorganique permet de résoudre de manière durable le problème de déchets plastiques non recyclables des fermes verticales, offrant une solution écologique et réduisant les coûts liés à la gestion des déchets.

	<p>Traditionnel : Non biodégradable Déchets plastiques marins</p>	
	<p>Innovation : Capture de carbone Sans plastique</p>	



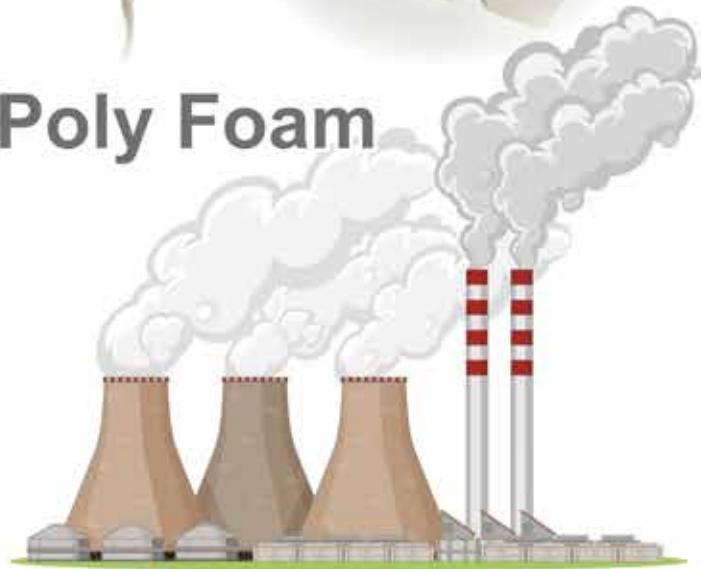
En Taiwan, des tests en laboratoire ont réussi à cultiver dans des conditions réelles et ont lancé un projet complet sur la base de luffa.



Luffa Fiber



Poly Foam



2024 International Exhibition of Inventions in Paris, France Won the 123rd Gold Medal Award



▲ Certificates and Gold Medals ►



Congratulatory messages from the President and Vice President

