

Club project spotlights: The "Husk-Hydro" Nano-Sponge

- Our Edible Elements Club conducted a focused study on sustainable water conservation and waste management. The project centered on transforming dry kitchen waste—specifically onion skins and garlic peels—into a "Smart Water-Retaining Mulch" for small-scale farmers.



Student Voices: Our students enjoyed the hands-on exploration of turning kitchen scraps into agricultural solutions. By creating the 'Transpiration Tunnel' model, they proved that soil mixed with Husk-Hydro pellets stays hydrated significantly longer than normal soil

Project Report and Skill Development

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Ms. LOVEPREET KAUR- 06/05/2026



- Project Goals:**
- To introduce students to sustainable agriculture through waste upcycling.
 - To understand the biochemical properties of common kitchen waste like onion and garlic husks.
 - To design an eco-friendly alternative to synthetic super-absorbent polymers (SAPs)

- Process/ Steps:**
- Gathering skins from local kitchens and restaurants. Sun-drying skins until crispy and grinding them into a fine flour.
 - Mixing flour with a heated "Hydro-Paste" and molding it into pellets with center holes to maximize surface area.

- Skills Learned :**
- **Agricultural Problem Solving:** Addressing water scarcity in dry areas.
 - **Materials Science:** Understanding how cellulose and binders create a hydrophobic-hydrophilic hybrid material

Challenges and solutions :

- It was initially a challenge to standardize the "glue" for the pellets. While rice water varied, the team switched to cornstarch or rice flour to ensure a consistent, moldable dough. By using silicone molds and poking center holes in the pellets, students successfully increased water absorption efficiency



Meet the Team :



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