

Sawdust as an appropriate substrate for soilless cultivation of vegetables

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The problem to be solved

Any soilless cultivation method (hydroponics, aquaponics, bioponics) entails a challenge which is picking the right materials for plant support. Such materials, referred to as substrates, are crucial as they hold the plants, keep them moist, and deliver nutrients. Using wrong substrates can compromise plant growth thus rendering the system inefficient. There is need to find substrates that work well for healthy seed germination and support early plant growth, but are also cost effective and easily available.

Proposed solution: Using sawdust substrate

The Living Lab in Bamenda, Cameroon investigated a series of substrates: cotton balls, sponges, sawdust, coffee husk, and wheat bran (Figure 1).



Figure 1 Substrates tested in this study. From left to right: cotton balls, sponge cuttings, coffee husks and wood shavings (sawdust).

The suitability of these substrates was screened in the germination test.

For this, plastic cups with holes for drainage were filled with the tested substrate and seeded with 2 seeds per container. They were placed in trays, watered, and covered with plastic to prevent drying. The seeds were observed daily for germination.

The seedlings appeared in sawdust within 4 days, but there was no germination in coffee husk and wheat bran. In addition, mold and stability problems were noticed in cups containing coffee husk and wheat bran. The seedlings were observed for further two weeks and different growth rates and patterns noted. Sawdust promoted quick growth with robust leaves. The seedlings in the coffee husk grew slower

albeit steadily. However, they seemed to lack nutrients for sustained growth and transferring them to a greenhouse did not improve their condition.

Hints and tips on implementation

Based on the above observations, the following is recommended:

To lower the contamination risks, all substrate materials need to be sterilized and all equipment (cups, trays etc.) should be cleaned with bleach or commercial disinfectant after every use.

The cups should be spaced properly in trays

Consistent moisture levels in substrate should be maintained by adding distilled water. Water can be either added directly into trays or the substrates are to be lightly misted, if dry. Trays should be covered with transparent plastic to retain moisture.

Substrates showing contamination signs or poor growth, need to be eliminated.

A keen eye should be kept on seedlings for nutrient deficiencies. Sawdust substrates may lead to quicker germination and greener leaves at first, but if not fertilized slow growth should be expected.

By following these guidelines, one can enhance the success of seed germination. Its worth noting that continuous monitoring and nutrient supplementation are essential for optimal plant health.

