

Inoculated biochar

-as a potting compost additive.

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The problem? Seedlings in potting compost require regular water and feeding to maintain growth rates. Synthetic nutrients are often used for plant nutrition, and peat is used to increase water retention. Neither is sustainable.

Our investigation: Could inoculated Biochar provide slow release nutrition for seedlings and increase water retention?



What is Biochar?

Biochar is a high carbon form of charcoal which is produced from woody biomass.

It is useful to farmers and horticulturalists due to its highly porous structure. It can retain water, improve soil structure and acts as a fertiliser once inoculated.

Biochar has a role in mitigating climate change. It is an active method of reducing the amount of carbon dioxide in the atmosphere through carbon sequestration: the process of capturing and storing atmospheric carbon dioxide.

Why is Biochar inoculated?

Biochar has large surface area which has potential for nutrient absorption whilst providing habitat for microbial life. If it is added to potting compost raw, it will absorb nutrients and minerals from the soil making them LESS available for plants

Using Biofertilisers and Biostimulants to pre-inoculate Biochar loads it with nutrients and beneficial microbes. This creates a finished product which will provide slow-release nutrition to plants and create seed populations of native microbes.



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Experiment

We trialled Biochar inoculated with seaweed biostimulant with worm compost and Biochar inoculated with supermagro biostimulant with worm compost. We tested different ratios against control groups of pure worm compost.



With Biochar



Without Biochar

Outcomes:

- Seeds that were planted in compost containing inoculated Biochar germinated 7 days before those without.
- Root growth on plants grown in compost containing inoculated Biochar was visibly better.
- After 13 weeks plants grown in compost containing inoculated Biochar were larger and more mature.

Next steps:

Further research could be done into the role which Biochar could play as a 'safehouse' for soil microbes, particularly in ploughed vegetable growing systems where the soil food web is systematically disrupted. Could loading Biochar with specific native microbes, known to be beneficial to plant growth (such as arbuscular fungi) provide seed populations which could recolonise the soil more rapidly?



With Biochar



Without Biochar