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Biological report on fish/sea urchin compost

A microbial assessment on the above compost was undertaken from the 28th of February to the 2nd of March 2021.

This included a microscope observation of a microbial extraction of the compost @ x400 before brewing and regular observations through the brewing process. The compost was brewed in a compost tea brewer designed by Elaine Ingham from the Soil Food Web. 3L of compost was added to 150L of rainwater and brewed for 72 hours to observe microbial germination.

Microscope observations were made during the brewing at 2 hourly intervals up to 12 hours, then at 18, 24, 30, 36, 42, 48, 54, 60, 66 and 72 hours.

No feed was added at the start of brewing as is required when brewing a plant-based compost as it was considered this was a nutrient rich compost and feeding was unlikely required.

Throughout the brewing process rapid germination of all organisms was observed during 3 growth cycles indicating a high level of nutrient was present.

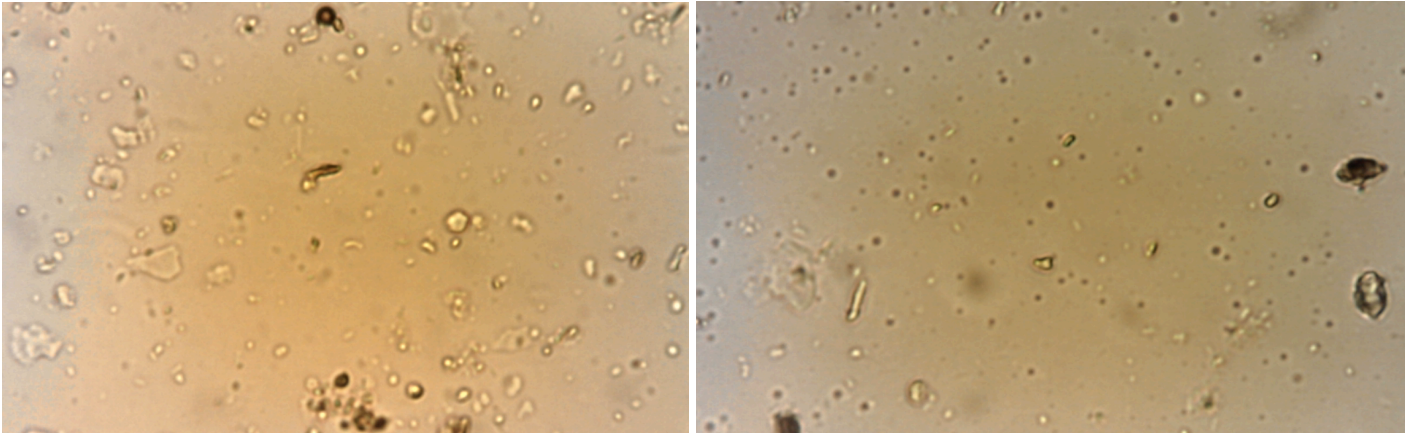
Maximum germination was at 12 hours of brewing after which the microbial biomass began to decline and was noticeably lower at 18 hours. Then slowly declined until at 24 hours it appeared to be back to slightly above the starting point indicating the microbes consumed available nutrient then fed upon themselves until equilibrium was reached. During the decline bacteria were observed consuming fungi

until all fungal hyphae were gone. At 30 hours new fungi germination was appearing indication the process was starting again.

Compost microbial extraction.

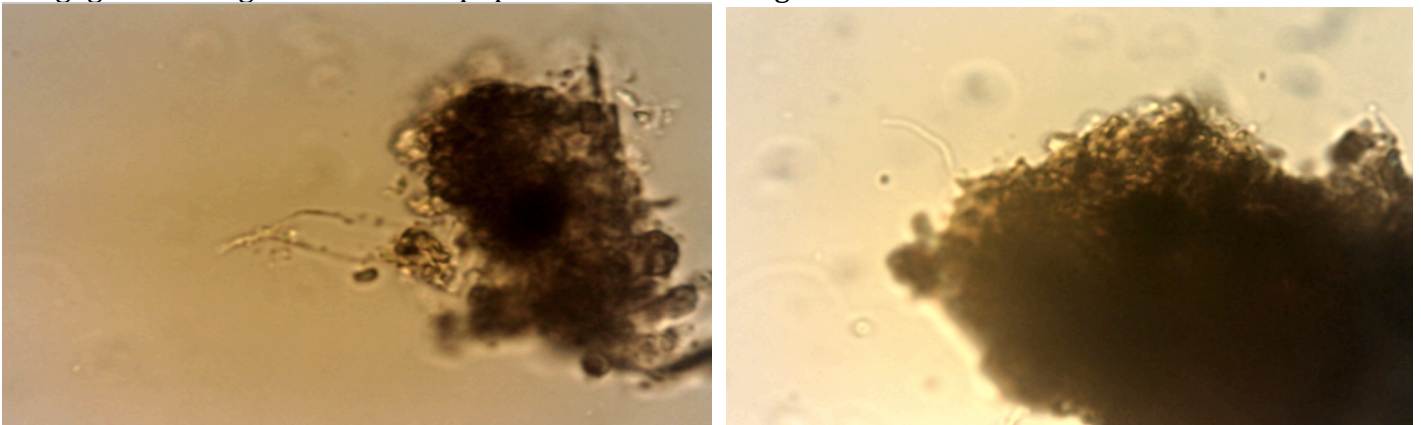
Low levels of microbial activity were observed when compared to a typical plant-based compost. Bacteria, protozoa, amoeba and a small number of fungi we observed before starting the brewing process. No nematodes were observed.

Start.

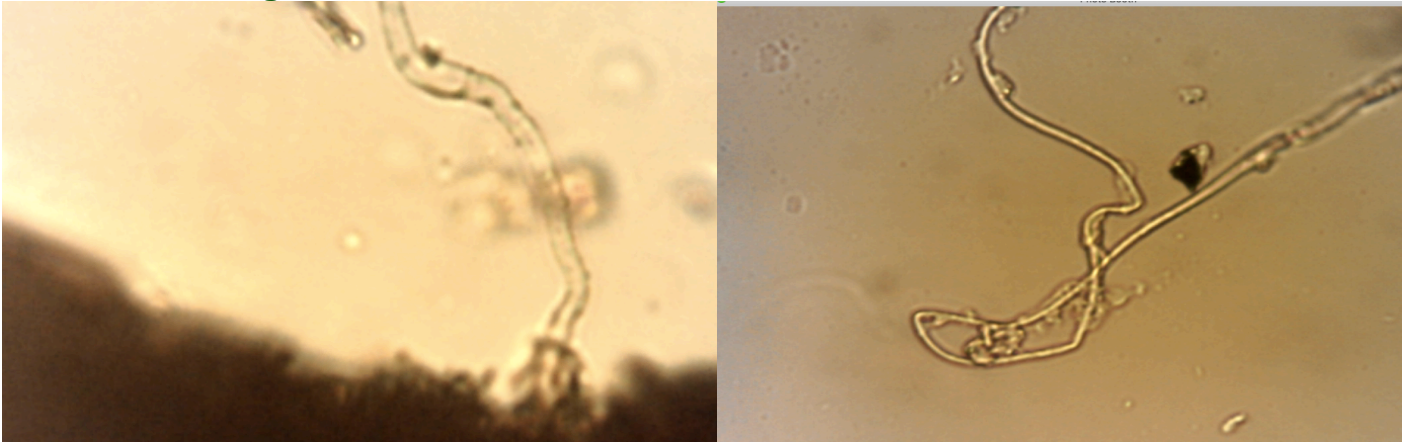


4 hours into brewing

Fungi germinating and increased populations of other organisms.

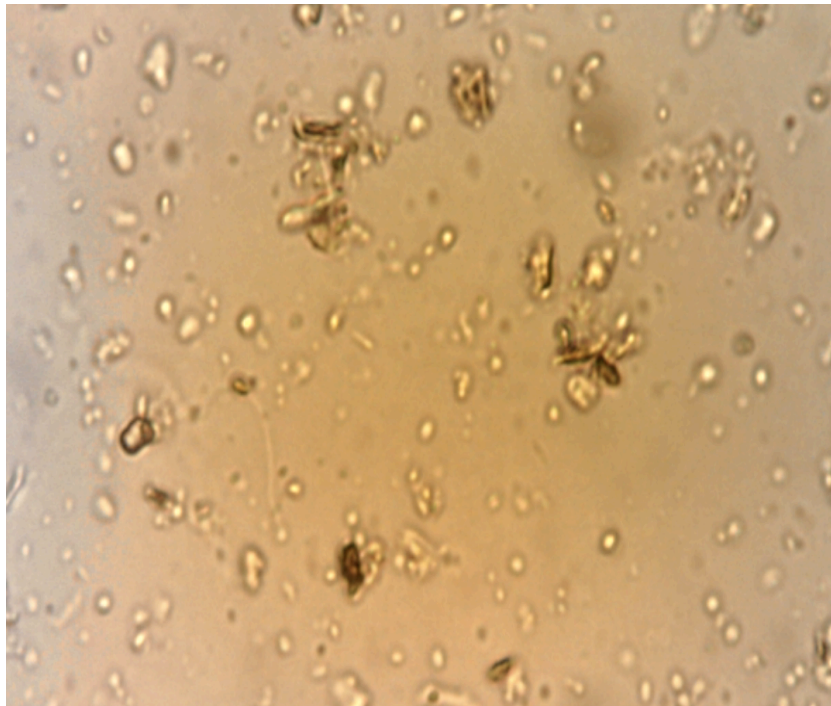
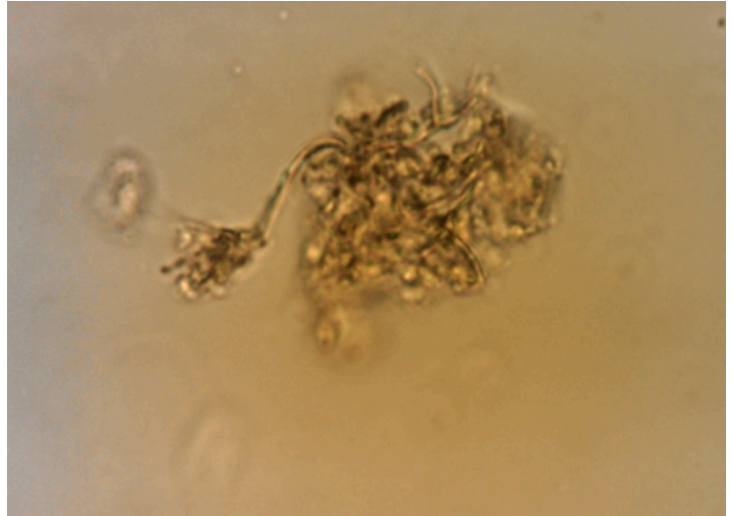
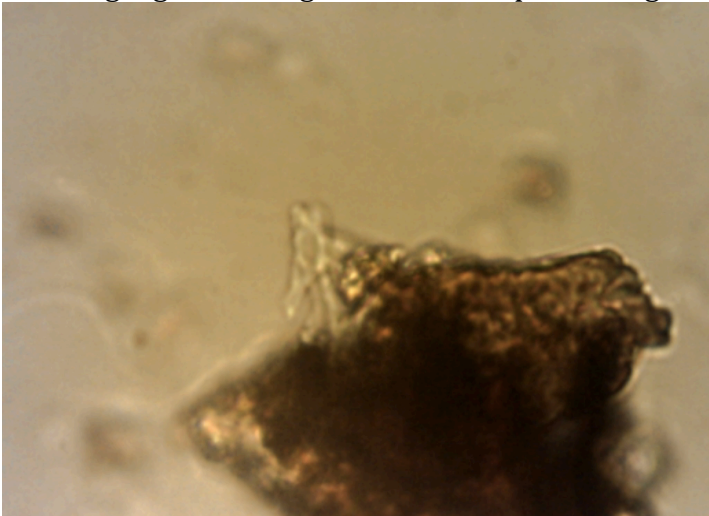


8 hours of brewing



12 hours of Brewing

Showing vigorous fungi, bacteria and protozoa growth.



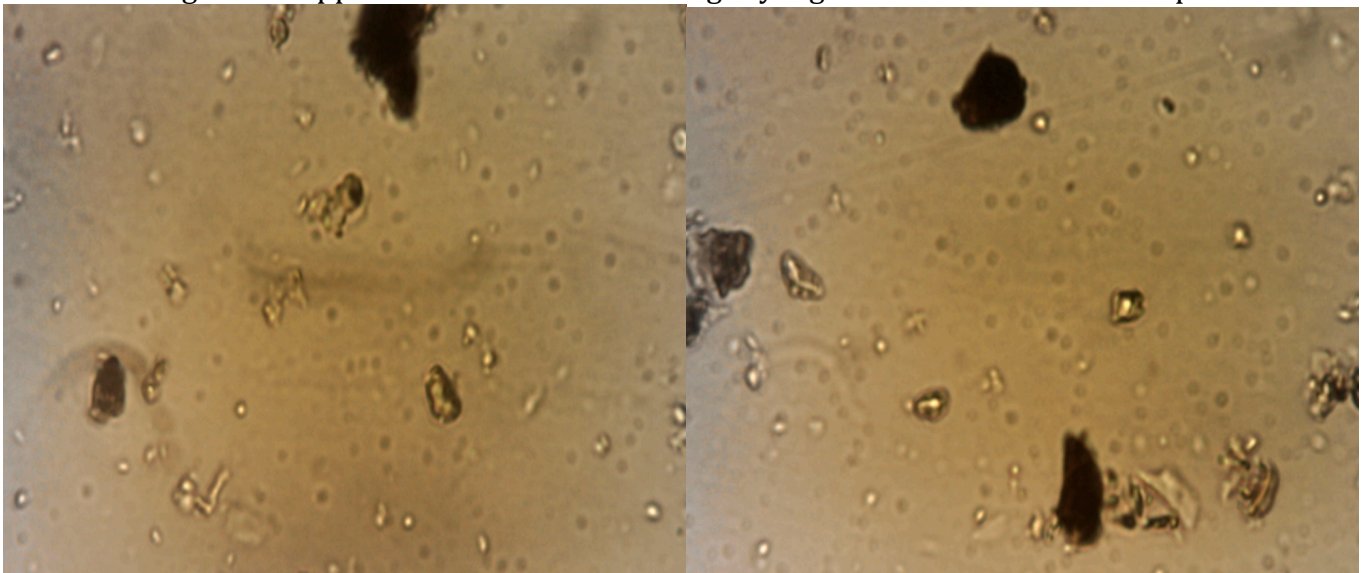
18 hours of brewing

Fungi beginning to be consumed by bacteria. Unfortunately a photo at 20 hours showing high bacterial attack on fungi was lost.



24 hours brewing

All organisms appear to be at a similar or slightly higher level than at the start point.



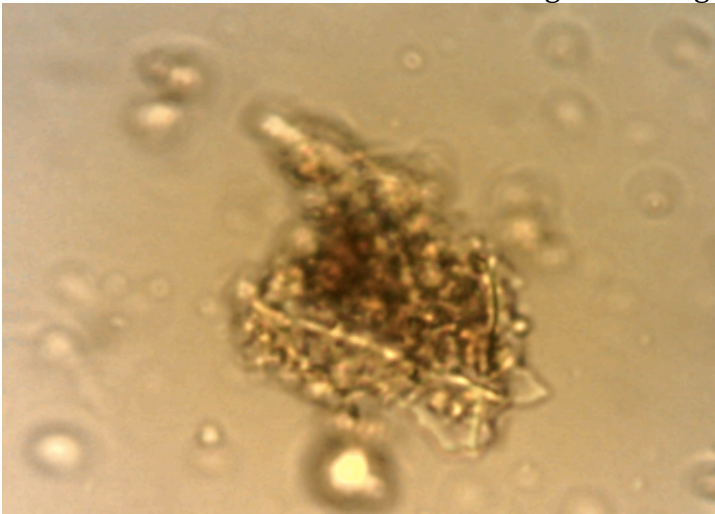
28 hours brewing

Fungi beginning to germinate again.

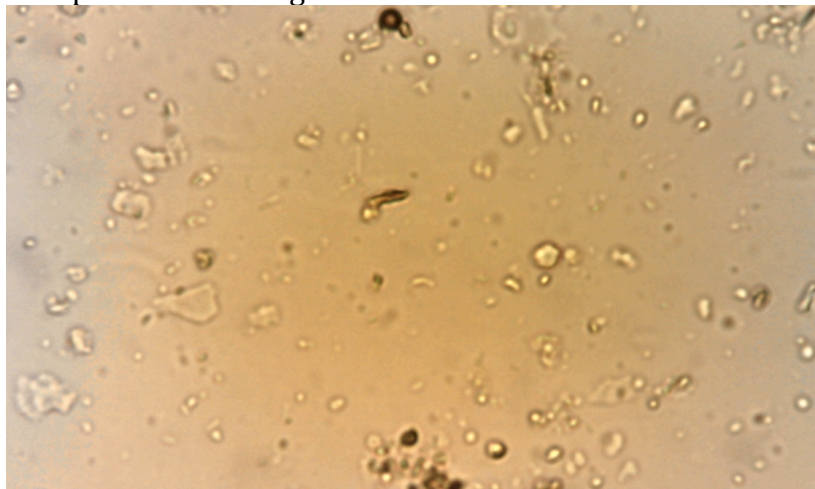


36 hours brewing

Fungi becoming very active again.



Bacteria and protozoa have again increased similar to the first 12 hour cycle.



After 48 hours brewing, the same low numbers were again similar to those at 24 hours and at the start. This growth and decline cycle was repeated in the third 24 hours of brewing.

Summary

The brewing was continued for 72 hours, 3 cycles of boom and bust were observed indicating microbes bred up vigorously when oxygen was supplied at an appropriate level to create an aerobic environment. The speed at which the organisms were able to multiply indicated a high level of nutrient was available.

A typical plant-based compost takes 36 hours of brewing to reach a high level of microbial biomass suitable for foliar application. This Ocean2Earth fish-based compost achieved maximum microbial biomass in 12 hours demonstrating the high nutrient values within this compost. A similar increase of soil microbes could be expected when this product is introduced to a soil environment and sufficient water was available.

Should you wish to discuss this further please email or phone me.

Regards,
Bruce Davison