

Lactobacillus in Soil Remediation

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Soil Restitution can be an easy process even with the hardest ground. Basically on the same day as seedling transplanting, the preparation work only includes adding a fermented fertiliser that is infused with lactobacilli. The preferred medium for the organic fertiliser is chicken manure. After adding the fertiliser (Figure 1), the seedlings can be added to the plot on the very same day. The greatest strategy for soil restoration, beyond adding organic matter into the ground is to provide soil microbes an environment to multiply. Soil health can be restored by adding *Lactobacillus* into the earth.



Figure 1: Preparation.

Advantages of using *Lactobacillus* to Remediate the land

What is the advantage of using *Lactobacillus* in soil remediation? Farmers traditionally have to wait for a week or more before transplanting their seedlings. Using this organic method of cultiva-

tion, there is no root burns on the fragile seedlings. When starting the soil rejuvenation process using *Lactobacillus*, the land can be used for farming immediately. As the plants continue to grow, more *Lactobacillus* infused fertiliser can be added weekly to the plots. Soil degradation can be reversed once the *Lactobacillus* breaks down organic matter in the soil and turn them into compost and humus (Figure 2).



Figure 2: Transplanting the seedlings.

This process can work on a no-tilt method where fertiliser is just added on top of the soil. It is so simple that even preschoolers can work on the plot and after a month or two, can already see the results (Figure 3). The best thing is that with each harvest cycle, less fertiliser is used because the *Lactobacilli* are working on the soil, and making it more friable.



Figure 3: Improve Soil Friability.

How does Lactobacillus help to improve soil friability? The soil can be composed of clay, loam or silt. When left untreated, soil can harden up and may impede water flow. When vegetation cannot have access to moisture, the farm yield can be stymied. The Lactobacillus in the soil can help to improve soil friability by breaking down the organic matter in the soil. Not only does this process allows nutrient uptake in the plants, the soil quality improves over time (Figure 4).



Figure 4: Sandy soil improvement.

Container farming

This method extends to container cultivation where space is limited. The vegetables grow faster (Figure 5). Even when the weather is extremely hot and water maybe limited, the soil is kept at a lower temperature by the soil reconstitution process. When earth worms are introduced into the soil mix, they multiply. The Lactobacillus acts as a thermostat to the container by regulating the heat inside. In an urban setting, a rooftop with a farm can bring down the temperature to the building and at the same time green the city space (Figure 6,7).



Figure 5: A self watering system.



Figure 6: Lettuce and other plants grow quickly.



Figure 7: Rooftop farming.

Land restoration

With Lactobacillus infused Fertiliser, we can make great improvement in land use and at the same time reverse the damages to the soil. We can provide practical solution in food security by reclaiming damaged farmlands. This can help farmers restore they productivity by producing more quality food. Food that is produced using reconstituted ground are more nutrient dense. The plants are heathy and more resistant to pests and diseases (Figure 8).



Figure 8: Nutrient Dense Kale Seedling.

Restoring soil health

Remediation is the first step to soil management and it has tangible impact on modern farming by encouraging Farmers to take the steps in the right direction. Improved yield can be achieved once the land is rejuvenated using Lactobacillus. The right soil microbes work for the Farmers by land regeneration. The farm fertility improvement is an ecological restoration become a significant part of food production. Not only is this type of remediation simple, it is also inexpensive. By restoration the land, the future of agriculture remains bright (Figure 9).



Figure 9: Plot Restoration

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