

Natural Farming with Indigenous Microorganisms



IMO (not GMO!) papayas grown on the Prell farm in Hawaii.

by Jackie Prell

What if the best fertilizer was right under your feet? Four years ago we bought a farm on Hawaii's Big Island with soil that had been blasted for 70-plus years with herbicides, fungicides and arsenic — the usual arsenal of chemicals used by ginger, sweet potato and sugarcane growers. We were initially excited to be on land with soil, not just the lava rock common on the Big Island, but were immediately dismayed to see and feel this soil close up: dry, lifeless powder, with not a worm to be found. Our first crops struggled against weeds and pests. Then, a year and a half ago, we were introduced to Natural Farming with indigenous microorganisms (IMO), and we are seeing amazing improvements in our soil structure and plant health. Wherever we put down our homemade, mycorrhizae-rich "fertility drug," as my husband calls it, the soil regains its loaminess, tilth and structure, and the earthworms come in droves.

Natural Farming with IMO is a distinctive approach to organic farming practiced successfully in more than 30 countries, in home gardens and on a commercial scale. Mr. Han Kyu Cho formulated and fine-tuned these practices for 40 years and has trained over 18,000 people at the Janong Natural Farming

Institute (janonglove.com), and the dedicated work of Dr. Hoon Park brought Natural Farming to Hawaii. Dr. Park was in South Korea doing missionary work and noticed commercial piggeries with virtually no smell that were using Natural Farming methods. As he learned more about these practices, he realized that they could help eliminate hunger and poverty in extremely poor parts of the world. He came back to Hawaii, his home, and began giving classes for free.

Natural Farming is unique in that it is not meant to be commercialized, but rather practiced by individual farmers, with cheap, easily available ingredients, and microbes or mycorrhizae indigenous to each locale or farm. These microorganisms are:

- Cultured in a simple wooden box of rice;
- Mixed with brown sugar and stored in a crock;
- Further propagated on rice bran or wheat mill run;
- Mixed with soil and cultured again.

The result is then mixed with compost, added to potting soil, or spread on beds before planting. The entire process takes three to four weeks. (A complete guide to making this input can be found by following a link on the Hawaii Natural Farmers website at localgarden.us.)

Other inputs and sprays are made from fermented plant juices, made from the tips of growing plants mixed with brown sugar. There are also recipes for water soluble calcium made from eggshells, fish amino acid made from fish waste, lactic acid bacteria, and insect attractants made from rice wine. There is also water-soluble calcium phosphate made from animal bones and vinegar and a seed soak solution. There are half dozen more inputs that can be made simply and easily at home, which are used according to the nutritive/growth cycle of the plants. Many of these inputs are made from things that would otherwise just be thrown away, which I love. We get fish waste from the local fish market, which the market would have to pay to dispose of otherwise. The fish amino acids are simply fresh fish waste, de-boned and packed into a container with brown sugar and fermented for a few months.

Several University of Hawaii at Hilo Community College professors have been learning Natural Farming and practicing it, as well as going to South Korea to observe it firsthand. One professor taught basic Natural Farming classes at HCC and another, Michael DuPonte, has helped to establish a piggery here using Natural Farming methods and feed. The pigs excrement is so odorless, clean and dry, that you literally don't even have to clean it out.

The benefits of using the Natural Farming methods include:

- Lower costs to the farmer (by as much as 60 percent)
- More desirable crops
- Stronger, healthier and more nutritious plants
- Higher yield
- Better quality
- Farmer friendly
- Zero waste emission
- The inputs are made from natural materials, which are not only safe for the environment, but actually invigorate and rehabilitate the ecology.

The basic theories of Natural Farming include:

- Use of indigenous microorganisms (IMOs)
- Maximize the inborn potential
- Do not use chemical fertilizers
- Do not till the land

- Zero emission of livestock wastewater

- Sow less, yield more.

Natural Farming has been embraced by the South Korean government after one county experimented — every farmer in that county practiced it for a year. These rice farmers not only had bigger yields than usual, but saved money on their inputs and sold their rice for a premium. Where they practice Natural Farming it has had the added benefit of cleaning up the waterways, rivers and even coastal waters.

A co-op of 40 strawberry farmers uses Natural Farming methods exclusively in their 300-foot-long greenhouses producing gorgeous, scrumptious strawberries, which again sell for a premium, certified as produced by Natural Farming methods. In another wide-scale experiment, an entire county is practicing a model of totally self-sufficient farming where each farm has 500 chickens, 200 pigs and five beef cattle.

Mr. Cho has spread Natural Farming worldwide. He went to the Gobi Desert in Mongolia and planted trees there. Efforts to plant trees had failed three times earlier, under the harsh wind and with only few inches of rainfall a year. With Natural Farming methods the trees had a 97 percent survival rate and are now 20 feet tall. Corn and barnyard grasses have been planted for livestock feed, and wells have been dug. Watermelon farming now provides a stable income to farmers there also.

When the Chinese were preparing for the Olympics to be held in Beijing, the Chinese army came in, bringing with them their pigs, which they raise to feed themselves. The population of Beijing was suddenly assaulted by the smell of pig waste and protested violently. The head of the Chinese army sent two men to South Korea to study Natural Farming, which he had heard about. The men came back, the army immediately started practicing the Natural Farming methods, and the smell went away. The University of Beijing now offers Masters and Ph.D programs in Natural Farming.

NATURAL FARMING RECIPE

Mr. Cho's son has created his own methodology of Natural Farming, which

is even more economical. His basic recipe for introducing indigenous mycorrhizae to the soil and increasing microbiological activity on one-quarter acre of land follows.

Into a 125-gallon container of water, put 5 gallons of ocean water, 6-7 lbs. of sugar, 2 liters of agricultural mineral water (water which has had an aquarium pump circulating the water or has been dropped from 10 feet onto mineral stone or azomite).

Find a naturally fertile, shaded spot on your land and scoop up a handful of soil off the top half inch — soil that has its own mycorrhizae already present and thriving. Add to this, a handful of soil from three different naturally fertile spots.

Mix these soils together and take one handful and drop it into a pint of water, then add the mixture to the 125 gallons of water.

The last ingredient you make in a blender — pack it with wild grass and a little water and blend. Make 2 quarts of this and add it to the 125 gallons of water/mix.

Let this mixture sit for 18 to 20 hours. To apply it directly onto the soil, dilute it 10 times. To foliar feed, dilute it 20 times. Apply it during rain or right before rain or in the evening or early morning. This solution can be applied eight to 10 times a year for the best results.

SUMMARY

What is this Natural Farming? Very simply, it is the propagation of mycorrhizae, along with protocol for adding specific inputs during the nutritive cycle of the plant. Mycorrhizae are “fungus roots” and act as an interface between plants and soil. They grow into the roots of crops and out into the soil, increasing the root system many thousands of times over. They act symbiotically, converting with enzymes the nutrients of the soil into food the plants can use and taking carbohydrates from the plants and turning it into nutrients the soil can use: sequestering carbon in the soil for later use. Miles of fungal filaments can be present in an ounce of healthy soil. Mycorrhizal inoculation of soil increases the accumulation of carbon by depositing glomalin, which in turn increases soil structure by binding organic matter to mineral par-

ticles in the soil. It is glomalin that gives soil its tilth, its texture and rich feel, its buoyancy and ability to hold water.

A way to anchor or feed mycorrhizae in the soil is by adding charcoal, specifically charcoal made without fossil fuels. Charcoal provides shelter for the mycorrhizae to live in with its myriad, tiny holes. This biochar was used in the Amazon Basin 6,000 years ago, and samples of this ancient soil are impressively fertile still today.

Can Natural Farming be done with no store-bought fertilizers? Yes, it *is* done, and on a commercial scale. For us, here in Hawaii, it is incredibly empowering to mix our own mycorrhizae-rich soil amendments, our soil “fertility drug,” and to be weaned from the fertilizer store. But the proof is in the pudding, as they say. It is simple, cheap and easy to try. Follow the steps at the *localgarden.us* website and make your own. Plant a tray of seedlings with it and next to it, and a tray of seedlings without it. You'll be amazed by the difference!

Jackie Prell can be reached at P.O. Box 1380, Pahoa, Hawaii 96778, e-mail jacqueprell@hotmail.com.

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