

# Seeding success in India turns coconut dust into gold

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Women plant seeds in seedling trays.

Coconut dust may not be fairy dust, but in southern India, the substance is creating healthy crops. A Virginia Tech-led program is showing farmers that the material, derived from husks, is great potting soil for seedlings. Without such help, seeds haven't flourished.

"Seedlings are normally not very healthy, and almost 50 percent of them are lost to diseases," says Muni Muniappan, director of the Integrated Pest Management Innovation Lab at Virginia Tech. Soil carries bacterial and fungal diseases, and seeds are susceptible to these threats in the soil. When a farmer doesn't use healthy seeds, he or she will get a poor crop.

"They start to germinate, then get attacked by a fungus and die off. On its own raised in soil, a seedling will only grow to 50 percent of its potential," Muniappan says. "But if it's healthy, you can as much as double the yield."

Seed health is a particular challenge in developing countries. Sale and transport of seeds from one country to another is not well regulated, and farmers' knowledge is not sophisticated. Sound practices—like not taking seeds from diseased plants—often are ignored, and even seed companies may be unaware of best practices.

Once a virus gets into a seed that is then planted in a field, an insect can easily pick it up and transmit it to another plant.

The Integrated Pest Management Innovation Lab, funded by the U.S. Agency for International Development, began working with universities in India on this project seven years ago. At that time, scientists introduced the technique of using coconut dust in seedling trays to germinate seeds. Farmers were resistant at first, but once they saw the benefits, they were eager to adopt the practice. "What we find is that it's important in each place to have an entrepreneur, an enthusiastic farmer, who will adopt and promote the new practice," Muniappan says. This person serves as a catalyst for widespread adoption, showing that the practice is doable and beneficial.

Coconut dust provides an ideal medium in which to grow young seedlings until they're ready to be transplanted. Their lightweight

cellulosic structure allows the roots of a seed to establish themselves and at the same time absorb just the right amount of water. Furthermore, when "coco-peat" is added to soil, it improves the soil's texture and structure. Sandy soil becomes more compact, and clayey [soil](#) becomes more arable. Plus the medium is more likely to be free from bacteria and fungi.

The Indian government has helped fund the cost of materials, making them accessible to smallholder farmers and expanding the impact of the Virginia Tech program.

The technique has proven highly successful and has led to the growth of nurseries. "Where farmers used to grow their own seedlings, now they buy them from nurseries, a healthier option," says S. Mohankumar, professor of [plant molecular biology](#) at Tamil Nadu Agricultural University and a partner on the project. Muniappan explains, "In this way we have helped spur private sector development at the same time that we are helping farmers produce better crops."

Because of this Integrated Pest Management Innovation Lab intervention, nurseries have grown as an industry in southern India. It used to be the custom that [farmers](#) raised their own [seedlings](#). Now, for every 50 villages or so, there's a nursery, Muniappan says.

The Innovation Lab plans to expand the practice to northern India and into Bangladesh, Nepal, Indonesia, and African countries. Until then, in southern India, coconut dust has achieved a rare sort of biological alchemy. "The waste material has become gold," Muniappan says.

Provided by Virginia Tech

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