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**Contact:** [Anusuya Rangarajan](#); phone: 607-255-1780

**Cornell to Take 'Reduced-Till' Technologies to Small Growers in the Northeast**

By Mary Woodsen

ITHACA, NY: Anusuya Rangarajan, assistant professor of horticulture at Cornell University, recently received a \$150,000, three-year grant to develop and teach ways of improving soil quality while protecting rivers, lakes, and streams from the runoff of northeastern vegetable farms.

"Conservation tillage"-often called "no-till"-has become an established routine for farmers in many parts of North America. No-till keeps organic matter from last season's crops near the surface, which means that rainfall generally penetrates more easily and crop residues break down to enrich the soil. Equally important, no-till reduces soil compaction-a condition that can starve plant roots of necessary oxygen while inhibiting the movement of water through the soil.

But it's not easy to pull off no-till in the relatively cool climate of the Northeast. Crop residues at the surface may reflect warming sunshine away from the soil, so that some crops-melons or peppers, for example-don't have the chance to take hold and mature during the short northern growing season.

Rangarajan, along with a team of growers, Cooperative Extension educators, and researchers from around the Northeast, will develop and test several "reduced tillage" modifications of classic no-till techniques: modifications that should help the soil warm more quickly in the spring. They'll be working with the Residue Saver, a device developed at Cornell University that picks up crop residues ahead of a tiller, then drops them behind the implement-a sort of "mulch as you go" device that helps suppress weeds and cut down on erosion.

"We want to develop tools and techniques that will work for small growers, for the people who have only a 40- or 50-horsepower tractor," says Rangarajan. "The growers that have hundreds or even over a thousand acres can buy good reduced-tillage equipment that meets their needs. It'll be an achievement just to get the equipment right for those small farmers in the Northeast who don't have those options now."

Curtis Petzoldt, vegetable coordinator of the New York State Integrated Pest Management Program, is one of the scientists working with Rangarajan. "We anticipate learning better ways to build healthy soils," he says. "When you till less, yet incorporate more organic matter, your soils tend to have better structure and higher levels of beneficial microorganisms. This translates into a lower risk of root diseases and generally healthier crops that are better able to resist pests."

Rangarajan's project relies heavily on farmers who already have incorporated some aspect of no-till practice into their operations. They will consult with scientists on designing and evaluating the research, host field days at on-farm research plots, speak at workshops, and help new farmers who will be testing these reduced tillage systems.

The Sustainable Agriculture Research and Education program (United States Department of Agriculture) has funded Rangarajan's research.

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New York State Agricultural Experiment Station, 630 West North Street, Geneva, New York 14456  
Telephone: 315.787.2011



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