

Sustaining Farming on the Urban Fringe



Monthly Highlights from the New Jersey Agricultural Experiment Station

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Rutgers NJAES Delivers “Farm Size Neutral” Innovations

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In our many contributions to New Jersey farmers, we never lose sight of deploying innovations delivering equal economic benefits to smaller urban fringe New Jersey farms, as well as larger family farms.

Farm size neutral technological advances or practices are those whose profitable benefits scale proportionally from large farm acreages to smaller farms. A typical example is using drip irrigation and agricultural plastics. Drip irrigation is an amazingly *scalable practice* pioneered at Rutgers NJAES since the 1960s, and still advanced today. Installing drip irrigation on 10 acres demands similar capital and operating *costs per acre* and offers similar *profitable benefits per acre* as drip irrigation on 100 or 1,000 acres. Equally well. The same can be said for our recent Extension high tunnel work.

Drip irrigation flow rates per acre are low. Thus, a smaller, cheaper well drawing less electric power on a smaller farm has no investment disadvantage adopting drip irrigation compared to a large farm. The water conservation benefits accrue to farms of any size, and to the public. It is not surprising how popular drip irrigation has become, nor why NJAES has leaders in this field, including Warren County Agent Bill Tietjen, who is the new President of the American Society for Plasticulture.

Farm size neutral technologies are not always obvious

Conservation tillage is an outstanding cost and energy saving, and environmentally-friendly farming innovation in U.S. agriculture over the same 1960s to present. Conservation tillage depends on chemical herbicide weed control contributions from NJAES weed scientists like Brad Majek and Mark Van Gessel (Univ. of DE). However, conservation tillage imple-



County Agent Wes Kline and colleagues at Rutgers NJAES Agricultural Research and Extension Center in Upper Deerfield conduct training on high tunnel plasticulture, extending the horticultural marketing season.

ments are large, heavy, and costly. There is lots of “steel in field.” The horsepower required to pull implements is expensive and must be spread over more acres. While New Jersey’s outstanding larger field crops farmers use conservation tillage, we re-think how to bring conservation tillage benefits to smaller urban fringe farmers and other crops, like applying municipally collected leaves to farmland. Leaves benefit the soil, provide free fertilizer value saving energy, and turn a costly community waste stream into an environmentally friendly farm practice.

A list of farm size neutral practices includes:

- Everyone benefits from better varieties and seeds. NJAES makes public variety releases, including hybrids, from asparagus and nectarines to dogwoods and fine turf.

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Jersey Fresh bell peppers growing at the Rutgers NJAES Snyder Research Farm using drip irrigation and plastic mulch - a practice that result in superior yields and crop quality for farms of all sizes.



Steve Sarson of Bekeart demonstrates installing high tensile steel wire deer fence. NJAES hosts deer exclusion fence training at Rutgers NJAES Cream Ridge Research and Extension Center in cooperation with NJDA.

- Drip irrigation, agricultural plastics, and high tunnels.
- Chemical fertilizers, herbicides, and pesticide efficacy. While society debates conventional versus organic farming, there is no doubt fertilizers and crop protection chemicals bring remarkable benefits—proportionally—to farms of any size. Backpack sprayer calibration trainings are conducted through a USDA SARE funded project at the Rutgers Snyder Farm.
- Dwarf tree fruit and other intensive production practices.
- Deer fencing installation demonstrations. Deer fence costs are constant per linear foot on big farms and small ones. There is no doubt in some areas of New Jersey that non-lethal exclusion of deer is the only method to save farms from losses.

Farm size neutral technologies result in size independent ***Economy of Scale*** benefits as much as possible. They have moderate capital investment barriers to entry; are “scalable” in cost and manpower when farm size acres change; do not require proportionally larger initial farm manager time irrespective of size, and cost the same per acre whether implemented on an 80 or 800 acre farm. Their initial investment, cost per acre, and revenues and profits are proportional.

Rutgers NJAES also extends larger farm technologies, as we should. These are technologies providing greater benefits as farm size acres increase. Economy of scale benefits are exploited.

What are some larger farm technologies?

- Controlled environment greenhouse plant production with electronic controls.
- Postharvest handling practices. Capital investments in forced air pressure room cooling, hydrocooling, or vacuum cooling for temperature management have high initial capital costs, but are essential in our food system.
- Beneficial reuse of nursery water.
- GPS/GIS precision farming tools.
- Self-propelled novel pesticide application equipment reducing chemical rates and drift, like electrostatic sprayers. Self-propelled and mechanized harvest aids and packing house automation are large farm biased as well.
- Conservation tillage practices for field crops and quality hay production.
- Transportation and marketing.

These are higher in initial capital investment, have a minimum investment in farm manager time irrespective of acres, or have recurring costs. IPM (Integrated Pest Management) monitoring does not fit neatly as a farm size neutral practice. This may account for the struggle some farmers and Rutgers Cooperative Extension have maintaining IPM monitoring on urban fringe New Jersey farms.

If you are interested in making tax-deductible support gifts toward specific projects or supporting the advance of farm size neutral technologies sustaining New Jersey farms, please contact Jack Rabin, Associate Director – Farm Services (732) 932-5000 ext.610 or rabin@aesop.rutgers.edu.