

Sustaining Farming on the Urban Fringe



Monthly Highlights from the New Jersey Agricultural Experiment Station

January/February 2007

Backpack Sprayer Technology

Improving Application on Smaller or Organic Farms

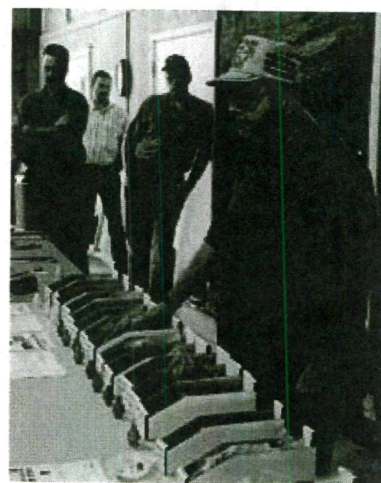
Jack Rabin, Associate Director for Farm Service, NJAES and John Grande, Director, Snyder Research Farm

Do New Jersey farms depend on backpack sprayers in this era of big costly farm equipment? You bet. Smaller organic and alternative farmers depend heavily on backpack sprayers for protecting smaller plots and fields. New Jersey farms of all sizes utilize backpack sprayers for special tasks. Large farms may use backpack sprayers in greenhouses, or in making spot treatments of herbicides minimizing chemical use. Livestock farmers may use backpacks in treating animals, barns, or stables against nuisance pests that reduce animal health and vitality. Landscape and grounds maintenance managers use backpack sprayers widely as well.

Yet, there has been an industry “technology disconnect” between the manufacturers of crop protection chemicals, backpack sprayers, and the “business end” of backpack sprayers: spray tip nozzles, triggers, valves, wands, hoses, and pressure regulators. Frequently, product application instructions approved by the Organic Materials Research Institute (OMRI) for protecting or feeding organically farmed crops contain little information about their application requirements compared to conventional crop



protection products. Many alternative organic products (like kaolin clay, Surround™) have unusual formulations not extensively tested by sprayer component makers. Instructions sometimes give farmers little guidance about their use with alternative application equipment like backpack sprayers on small farms.



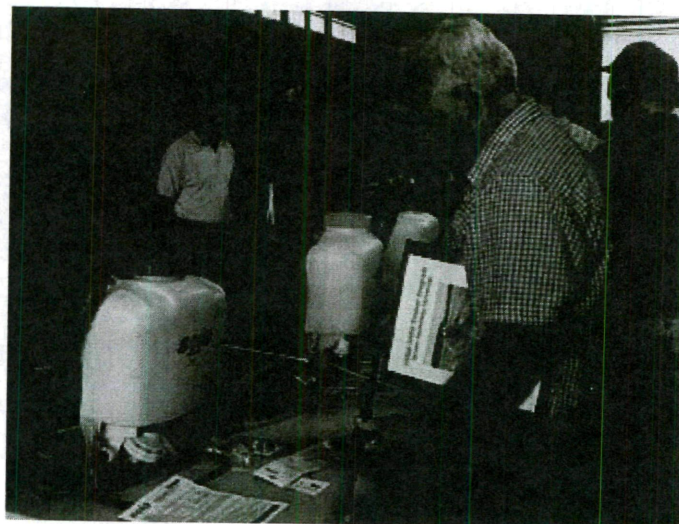
Rutgers NJAES Snyder Research Farm Director John Grande identified this gap for advancing technology using backpack sprayers for alternative smaller farmers. John and his NJAES research farm team are leading the solutions with a \$48,000 USDA Sustainable Agriculture Research & Education grant integrating the disconnected chemical-backpack sprayer-component technologies, building sample kits, and training agricultural professionals and farmers in three mid-Atlantic states.

One of their many experiences was finding an increase in operator application consistency, accuracy, and ease by retrofitting backpack sprayers with small, under \$20, pressure regulating valves (see CFValves™ above).

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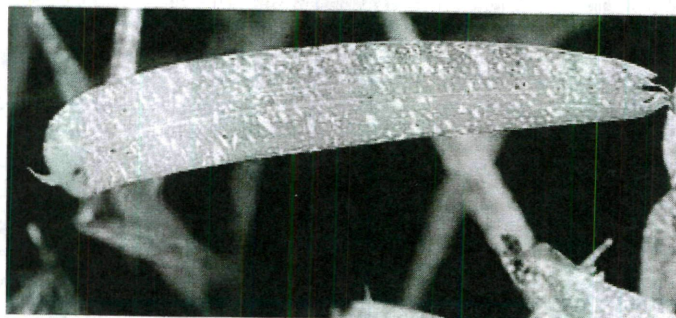
John Grande demonstrates backpack sprayer during training session at Rutgers Snyder Research and Extension Farm in Hunterdon County.



Training participants examine backpack sprayer parts during training session.

Due to their simple design, ease of filling and cleaning, and inexpensive price, backpack sprayers provide versatility for various (under 60 gpa) application spot treatments, odd-shaped field margins, field impediments (trees, fences, slopes), greenhouses and high tunnels, or small plots of short season crops. The results of integrating these off-the-shelf technologies are:

- More effective use of low-priced backpack sprayers for smaller farmers (or any farmers & landscapers of all sizes) in New Jersey and the region;
- Increased backpack sprayer accuracy minimizing risks of misapplying chemicals at the wrong rates;
- Successfully applying alternative organic product material formulations;
- Greater farmer/operator ease;
- Better efficient use of small farmers' precious time (labor = \$); and
- Increased safety.



Backpack hand-powered piston pump spray drop pattern.

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.