

THE FURROW

JANUARY 2011

GETTING OUR FOOD
TO THE TABLE

THE ENERGY SPEND



Pecan pride
Georgia peach pros

By Steve Werblow

Paper or plastic?

*Biodegradable mulch
could roll out new opportunities*

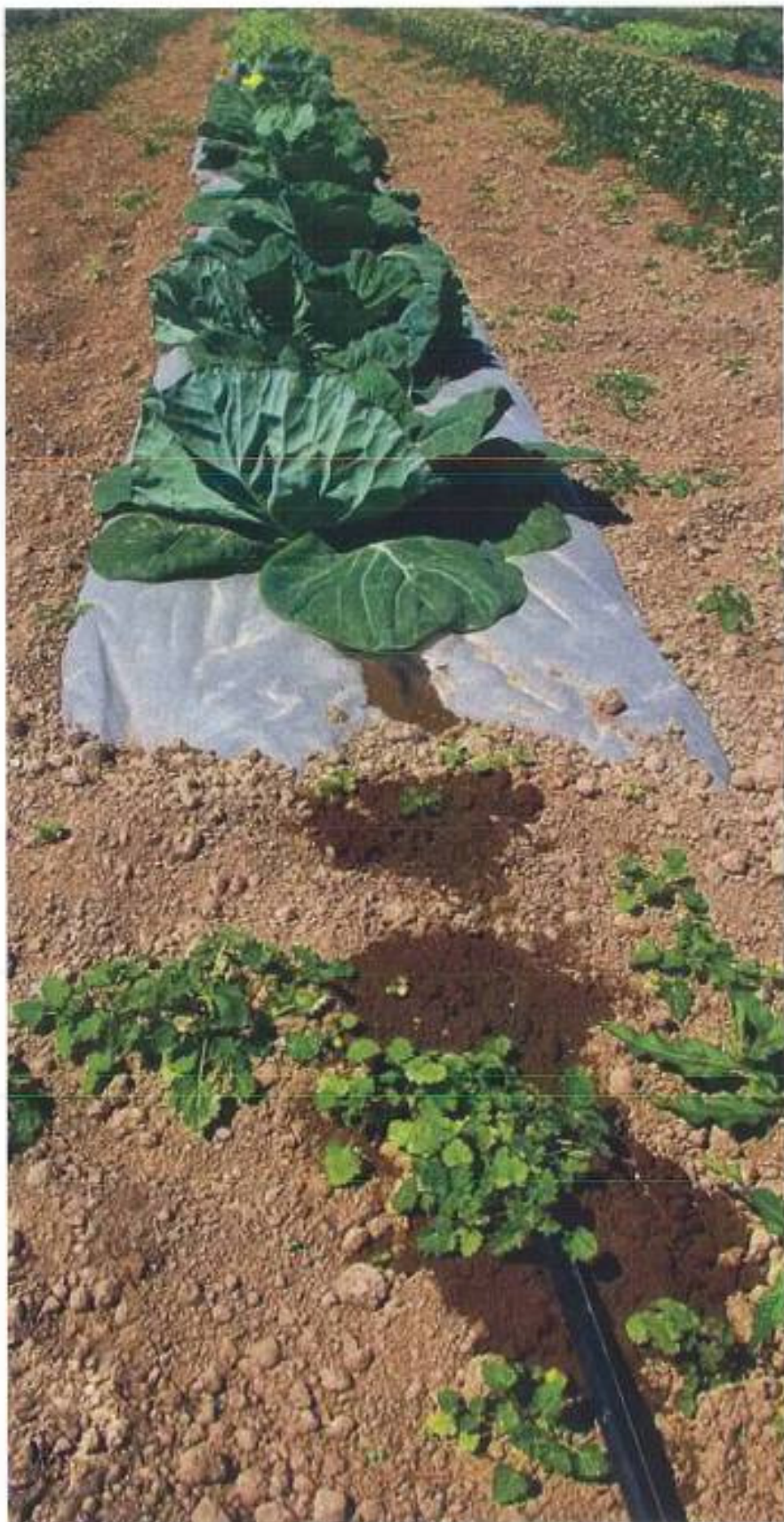
Rows of plastic mulch could help keep vegetable growers' balance sheets in the black, but many producers are afraid of getting snarled up by a tool that can cost more than \$200 an acre to install, as well as time, effort, and cost to discard.

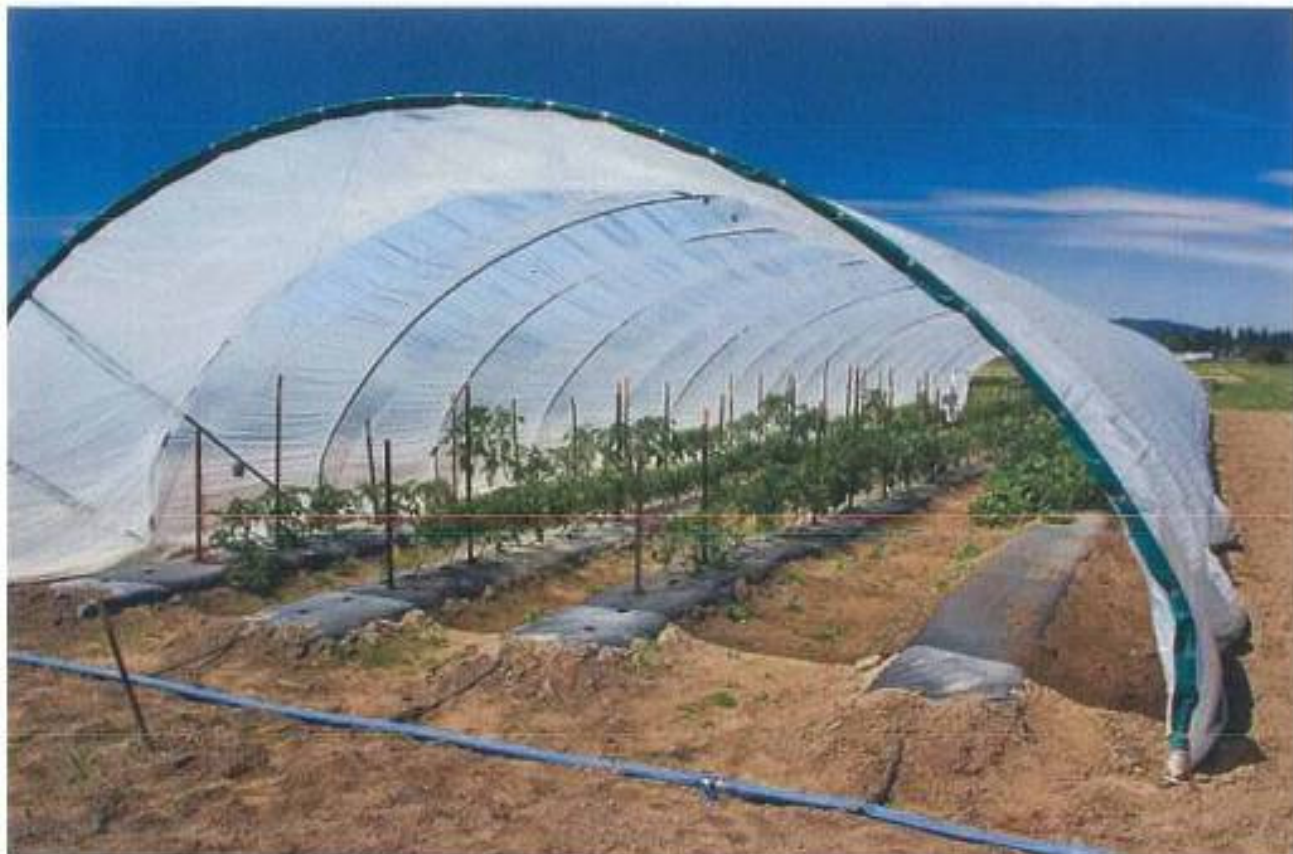
Plastic mulch can deliver 98% weed control and dramatically influence the microclimate in the row. U.S. growers only use 3% to 4% of the world's agricultural plastic, says Carol Miles at Washington State University's Northwestern Research and Extension Center in Mt. Vernon, Wash. It still represents a mountain of trash.

Deeper look. "Mulch gives farmers the opportunity to reduce their chemical usage and get better water conservation, temperature moderation, earlier harvest, and greater market opportunity," Miles says. "What keeps them back is the inability to deal with the waste product."

The ideal mulch would deliver the production benefits of today's plastic

► **Right:** A 3-year study of mulches—like this paper mulch—is exploring biodegradability and performance to provide new tools for growers.





►**Above:** The mulch study also incorporates high tunnels, which may help improve earliness and even disease control. ►**Left:** Washington's Carol Miles has studied mulches for years. She's assembled a team to dig much deeper into biodegradable options in a broad array of climates.

"Soil scientists are focusing on soil ecology with the mulch plots during the growing season, and when the mulch is tilled into the soil," she says. "Materials scientists are looking at how degradation occurs with the products over time, down to the molecular level. And plant pathologists are very critically looking at foliar and root diseases as they happen."

Adjusting products. Paper mulch did surprisingly well in 2010, the first year of the study, says Miles, noting that paper mulches tend to be quick to degrade but can be difficult to install mechanically because of their tendency to rip during application.

Among the most exciting aspects of the study is its connection with Washington State University's Department of Apparel, Merchandising, Design, & Textiles, which allowed the university's fabric specialists to participate by

developing and thoroughly studying biodegradable mulches.

"We're merging the polymer area of testing with the agronomy testing," says Karen Leonas, chair of the department and an expert in creating textiles from biodegradable polymers.

For the 2010 season, the materials team rolled out a spunbonded, non-woven fabric made from fibers of corn-based polylactic acid (PLA). In the lab, they're studying samples from all three sites, taken at the beginning, middle, and end of the season.

Analyzing the samples, as well as testing them in a weathering chamber that simulates sunlight and dew in the lab, could help Leonas' team fine-tune fabrics. "Changing the fiber, the fabric characteristics, and the method of bonding all change a textile's properties," she explains. "We would like to make more targeted formulations."

With those tailor-made materials, Miles hopes the study yields mulch that can be made into compost on-farm or disked into the soil to degrade months later—creating opportunity nationwide without creating trash. ■

mulch materials, but could be tilled a few inches into the soil after harvest to be consumed by soil microbes.

Miles has field-tested mulch materials for years. Now, fueled by a USDA grant, she and WSU plant pathologist Debra Inglis have pulled together 18 researchers from different disciplines for an in-depth, 3-year biodegradable mulch study at sites in Washington; Lubbock, Texas; and Knoxville, Tenn.