



## Home-Grown and High-Tech

### Plasticulture Consists of Drip Irrigation and Plastic Mulch

It's been 40 years since Dustin Hoffman received the famous advice "Plastics" in the film *The Graduate*, but in agriculture, the advice still rings true. At Colorado State University's Arkansas Valley Research Station, research scientist Mike Bartolo is investigating plasticulture techniques that are transforming the area's vegetable production.

The Lower Arkansas Valley stretches from Pueblo on the west to the Kansas state line. It encompasses Bent, Otero, Prowers, and Pueblo counties as well as some areas in neighboring counties that rely on tributaries of the Arkansas River for irrigation. The major high-value vegetable crops that are grown in the region include peppers, melons, tomatoes, and onions. Many of these crops benefit from the area's natural conditions. The region has a fairly long growing season, and dramatic differences in the Valley's day and night temperatures can cause some vegetable crops to accumulate more sugar, making them extra tasty. Now plasticulture is helping farmers create an even better vegetable product. The area's signature crop, melons, illustrates the benefits of plasticulture technology.

For decades, the Arkansas Valley has been known for its delicious and juicy cantaloupes and watermelons. The town of Rocky Ford proudly declares itself the Melon Capital of the World and celebrates Watermelon Days along with the Arkansas Valley Fair in August, but the area is by no means the nation's biggest grower of the crop. "Areas in California and Texas outproduce us, but no one can top our quality," Bartolo says, and plasticulture makes the Rocky Ford melon industry more competitive.

"Plasticulture," Bartolo explains, "is a term that encompasses using plastic in various aspects of agriculture. In Colorado's Arkansas Valley, plasticulture primarily consists of drip irrigation systems and in some cases plastic mulch." In drip irrigation, small plastic hoses are used to deliver water directly to the root zone of plants, minimizing water lost to evaporation. In the Valley, the water that is used in drip irrigation is both well and surface water. Thus, equipment for pumping and filtering water also is needed to keep drip irrigation working properly. When cultivating melons or other crops, drip irrigation can ensure that the right amount of water is reaching a crop and little water is wasted. Also, fertilizers can be delivered directly through the drip system. "We're researching different aspects of drip systems now," Bartolo says. "Timing of the water applications is really important in maximizing yield and quality."

As for plastic mulch, "Melons love plastic mulch," Bartolo says. Plastic mulch helps with weed control, conserves water, and improves the quality of a crop that grows prone on the ground like melons. Best of all, plastic mulches warm the ground and extend the period during which a crop can be marketed. "Usually, the earlier in a season that we can get a crop to market, the more produce buyers are willing to pay for it. Growers can dramatically improve their yields, anywhere from 50-100 percent, by using plasticulture," Bartolo claims.

Of course, plasticulture and growing high-value crops involves enormous expense and huge risk for farmer. "There are some cost share incentives available from the United States Department of Agriculture for

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installing drip systems because they improve the region's water quality," Bartolo says, "but many farmers are just opting to make the change to plasticulture on their own. They see it as a way to stay competitive. These growers are very progressive: converting from furrow irrigation, looking at which crops work best, and using their limited water most wisely." Bartolo asserts that this forward-looking atmosphere makes the Valley an exciting place for research.

When asked about the specific problems confronting vegetable growers in the region, Bartolo has no problem reeling off a list of seven challenges: maintaining competitiveness in the face of increasing globalization and mobilization, labor issues, maintaining quality, pest management, hail storms, water shortages, and quality of water.



The latter refers to the area's problem with extremely saline water, an issue which Bartolo and his colleagues are researching with special attention to plasticulture. However,

despite the trials in the area, including recent drought and water sales, Bartolo feels that the Arkansas Valley is a hopeful place. "There's a lot of potential out there," he says.

Bartolo should know: he's a native of the region. He grew up on a small truck farm on the St. Charles Mesa east of Pueblo. "A feeling of kinship for the place and the people tie me to the area," Bartolo claims. He is happy

that his affinities for agriculture and science have allowed him to work on projects that might benefit the region. "The Arkansas Valley might not be the most classically scenic place in the world, but it grows on you," Bartolo says.

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## Colorado-Grown

Increasingly, consumers are seeking out locally grown products. The Colorado Department of Agriculture's program *Colorado Proud*, now in its sixth year, is one way that consumers can be made aware of locally grown, raised, and processed products and learn about the benefits of purchasing these products.

*Colorado Proud* members include farmers, ranchers, growers, and processors. Apples, milk, beef, melons, and wine are just some of the products labeled with the mountain and sun *Colorado Proud* logo. Grocery stores, notably Safeway and Whole Foods, have devoted special advertising campaigns to *Colorado Proud*, and a growing list of restaurants around the state are serving locally grown and raised food.

By selecting Colorado-grown products, consumers can help the state's economy, enjoy high-quality fresh foods, and help keep agricultural lands a part of the Colorado landscape.

For more information, see <http://www.ag.state.co.us/mkt/COProud/CO Proud Program.html>.