

## Conservation



**LIDAR IN THE EAST:** LiDAR elevation data is available in most counties in the eastern U.S.

# Think 3-D to guide rows on slopes

By LYNN BETTS

**L**ET'S say you've come to the point where you're using no-till or till-plant systems with technology like auto-steering and obtaining most of the benefits of precision farming. That's great news. If you're farming fairly level land, or sloping land with terraces or other practices that have established row patterns that fit the contour of the land, you're set.

But what if you have the opportunity to rent or buy some rolling land that is being farmed uphill and downhill?

Contour farming, one of the most cost-effective soil conservation practices, brings elevation, the third coordinate of spatial relationships in real-world farming, to the forefront in row-pattern consideration.



**TOM BUMAN**

Soil loss reductions with contouring vary widely, depending on severity of storms, length and steepness of slope, amount of ground cover, and height of soil ridges

formed by tillage or planting equipment. Contouring can save large amounts of soil — especially when heavy residue is left on the field to encourage water infiltration.

Farming around the hill also guards against seeds or young plants being washed out of the row, along with the best of your topsoil, during heavy rains.

### Contouring a lost art

Old-time conservationists called contouring an art as much as a science. It seems simple enough to follow the contour of a slope around the hill. But in practice, goals of contouring also include developing a pattern that promotes long rows, eliminates as many point rows as possible, and maintains grassed waterways with row directions that neither erode soil nor dump sediment into the waterway.

The know-how, software and hardware exists to lay out and drive contour lines from your own tractor cab — if you live in the right county in the right state. The power behind contours, LiDAR elevation

### Key Points

- Contouring is not dead, but few people know how to lay out systems.
- Autosteer helps, but more so on flat land or where terraces are installed.
- Steering systems for cost-effective contouring consider elevation, too.

data, is available in certain counties from the Great Plains to the East Coast.

Tom Buman, president of Agren in Carroll, Iowa, has seen the expansion of light detection and ranging, or LiDAR, mapping across the country. For several years, his small firm has been developing and licensing time-saving conservation software for USDA, state and local conservationists in locating and making estimates for practices like ponds, waterways and terraces.

"Very few field offices still stake out contour lines for a farmer to follow in planting," Buman says. "And frankly, it makes much more sense to use elevation data. Where LiDAR is available, a conservationist — public or private — can use LiDAR contour maps to draw contour lines on a map without having to walk and survey a field.

"In the very near future, I think conservationists will be able to provide an electronic file copy of the key contour line to the farmer quickly. Autosteer companies already have the capability to transfer tile lines to autosteer. It won't be long until they figure out how to upload a key contour line file to the steering system, too."

Buman's company develops software that formats LiDAR data and makes its use state-specific for conservation purposes. He notes that such technology is quickly becoming ingrained in farming today.

"Robots are in development now that will identify and zap weeds" Buman says. "Some scientists are envisioning intelligent robots that talk to each other to monitor, collect data and care for plants in ways far beyond what are economically feasible today. They see swarms of small bots that will monitor soil conditions, photograph and analyze plants, and detect insect infestations and diseases before they become widespread. The question is," he says, "will conservation technology keep pace?"

*Betts writes from Johnston, Iowa.*

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