

A Topographic Idea

New Subsoil Strategies Eyed To Control Runoff, Nurture Fertility

BY RITA BRHEL
P&D Correspondent

The silver lining of a major, widespread drought is the plethora of innovative ideas that producers come up with to survive the weather. One of these is Keyline Pattern cultivation, a subsoil plowing strategy created to control rainfall runoff flow, improving soil fertility and water-holding capacity and reducing erosion and compaction.

"As we all know, whether it's dry or wet, how we control water is ultimately what determines whether we win or lose," said Darren Doherty of Bendigo, Victoria, Australia, a guest speaker for Practical Farmers of Iowa on Jan. 8 in Ames, Iowa.

The Keyline Design was fashioned by P. A. Yeomans, who wrote a book on the concept in 1954, *The Keyline Plan*, available free of charge at www.soilandhealth.org/01aglibrary/010125yeomans/010125toc.html, and is based on the natural topography of the land, which determines the layout and positioning of farm dams, cropping systems and pastures, irrigation, roads, fences, farm buildings, and tree lines. This controls where water is flowing, curbing the effects irregular precipitation patterns.

Through the past 20 years, Doherty has been a student and teacher of Keyline Design, adding his own flair and now conducting trainings in more than 40 countries.

"This is not Keyline by the book, but Keyline by someone who's spent thousands and thousands of hours on a tractor doing Keyline plowing and has the resulting practical experience," he explained.

Doherty worked with Jeremy Peake of Waukon, Iowa, during the presentation to apply Keyline Design to his grass-based dairy farm.



PHOTO: METRO GRAPHICS

Like many producers in the area, the drought has left Peake with shallow, compacted, dry topsoil.

"Soils are the least permanent of the large things we have on our farms. They can be quickly changed, and they can be quickly destroyed," Doherty said.

The first step, Doherty explained, was for Peake to conduct a soil test and then do the recommendations to correct fertility. The next step will be to use a Keyline-type plow — which consists of two one-way discs separated enough to disturb the dirt as little as possible while making a deep cut into the subsoil — down to two inches below the hardpan, which will treat the compaction. Then, during the grazing season, Peake is to do planned rotational grazing with four- to six-week rest periods.

Keyline plowing must be carefully mapped out beforehand. Using a satellite image of Peake's land, Doherty mapped out the topography of the property, paying particular attention to the hierarchy of ridges and valleys. He illustrated with this with his fist: "The

knuckles are the primary ridge. Between the knuckles are the saddles, which are the first concentration of runoff before it runs down to the webs of the fingers," he described.

"On the ridges is where we get the shallowest soils typically. Most people are farming ridges rather than valleys," he said.

Included on the topography map are water sources, such as farm ponds or streams, as well as the ins and outs of water flow.

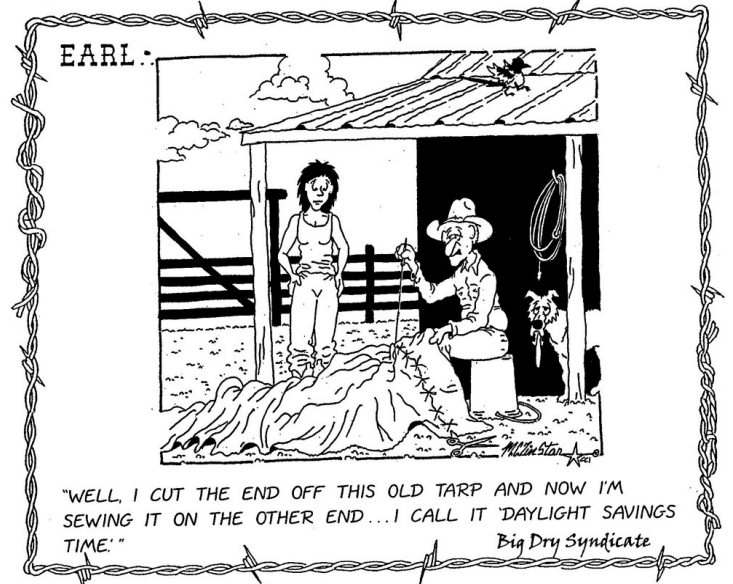
Once the features have been defined, the keyline can be identified. The keyline is a specific topographic feature: the particular contour that runs through the point, in all valleys, where the slope change occurs. Essentially, the keyline is the top of a valley, where the plateau begins to slope downward. Among other areas of farmstead planning in Keyline Design, the keyline defines the contour for cultivation.

After the keyline is marked on the map, the contours of cultivation can be drawn out on the topography map. The plow lines will run parallel to the keyline. The con-

tours get closer together on a steeper slope and farther apart on a flat area. The point of the plowing strategy is to collect the runoff on the ridge, rather than having the rainfall and any accompanying topsoil running down to the bottom of the valley. The result of Keyline plowing is a relatively wide drift of runoff down the slope, rather than a concentration in a downward gully. Even runoffs from torrential downpours can be utilized as gentle, soaking rains with Keyline cultivation, Doherty said.

There are other rules to the Keyline Design, such as not plowing slopes between ridges and a pond if the slope is very steep, and leaving grassy valleys unplowed. Depending on the topography, trees planted on a ridge can help direct moisture a particular way or Doherty would recommend irrigating a pasture, but the basics of Keyline is to redirect runoff into the earth rather than into a waterway or off the property.

"Keyline plowing is for rapid and cheap soil development," Doherty concluded.



"WELL, I CUT THE END OFF THIS OLD TARP AND NOW I'M SEWING IT ON THE OTHER END... I CALL IT 'DAYLIGHT SAVINGS TIME'"
Big Dry Syndicate

Webinar Series Looks At Managing Drought Risk On Ranches

BROOKINGS — The winter months have brought little relief to the devastating drought in the state of South Dakota. Ranchers are faced with another challenging year. In an effort to make preparations for the possibility of continued drought in 2013, SDSU Extension is working to provide cattle producers with needed tools to cope with the issues associated with the drought, says Kalyn Waters, SDSU Extension Cow/Calf Field Specialist.

"Management and preparedness is what it will take to make it through another year if the drought continues," Waters said.

It is the goal of Waters and other SDSU Extension Livestock staff to help producers be as prepared as possible to make critical management decisions if the drought continues to progress through 2013. As part of their plan to help South Dakota livestock producers, SDSU Extension has partnered with University of Nebraska-Lincoln (UNL) Extension to host a five-part webinar series with the focus of helping ranchers across the state prepare for the possibility of the drought continuing in 2013. This series of meetings is titled "Managing Drought Risk on the Ranch."

"UNL Extension and the Drought Mitigation Center have done an outstanding job putting together this program. They have slated some of the best speakers available to provide critical information to producers. Attending these meetings will provide ranchers with the tools they need to set critical trigger dates, and begin to develop a long term management plan," Waters said.

She adds that these meetings are also intended to educate professionals and consultants who work with ranchers as a professional development series.

The webinars will be presented the last Wednesday of each month beginning Jan. 30 and concluding in May. One hour webinars will begin at 9 a.m. MST or 10 a.m. CST at the SDSU Extension Regional Centers. Each session will include current drought updates, forecasts and presentations about specific information or tools.

Following each webinar, the regional centers will join together via video conference for a question and answer session

where SDSU Extension State and Field Specialists will provide additional information relevant to South Dakota producers.

Topics each month will consider drought planning information and tools available to producers. In addition to university and Extension presenters, a number of ranchers will also be featured. These ranchers will describe the development and execution of their drought management plans.

The topic of the Jan. 30 webinar is Managing Drought Risk on the Ranch: The Planning Process. The keynote speaker of the meeting will be Jerry Volesky, UNL Range and Forage Specialist at the West Central Research and Extension Center.

"Managing Drought Risk on the Ranch is a program that has been put together by range professionals and ranchers with instruction for developing individualized plans that includes ways ranchers can better prepare for and respond to drought. The first webinar will provide an overview of the different steps in putting together that drought plan," said Volesky.

Scheduled dates and topics for the series include:

- Jan. 30: Managing Drought Risk on the Ranch: The Planning Process;
- Feb. 27: Avoiding Analysis Paralysis: Monitoring and Setting Critical Dates for Decision Making During Drought;
- March 27: The New Cumulative Forage Reduction (CFR) Index: Assessing Drought Impacts and Planning a Grazing Strategy;
- April 24: Using a Drought Calculator to Assist Stocking Decisions;
- May 29: Economic Factors to Weigh in Making Decisions during Drought.

These meetings are sponsored by the National Drought Mitigation Center at the University of Nebraska-Lincoln. The series was developed with support from the Sustainable Agriculture Research and Education (SARE) program, which is funded by the U.S. Department of Agriculture — National Institute of Food and Agriculture (USDA-NIFA).

For more information, visit www.igrow.org or contact the local SDSU Extension Regional Center, or call Waters at the SDSU Extension Regional Center in Winner at 605-842-1267.

Opinion

Some Good News Comes With The Drought

BY RITA BRHEL
P&D Correspondent

Bummer. I was hoping that the December snowstorm that hit a week before Christmas was the beginning of the end for the drought. But this past weekend, when the snow has mostly melted away, it's quite clear the drought continues.

I have recently learned of three major family livestock farms selling off their entire herds. The sale barns continue to be filled to the gills with livestock too pretty to be culled but whose owners have quite simply run out of pasture or hay. On our little farm, we finally started feeding hay. We're super glad that we didn't expand our herd like we were originally planning to do. We should have enough hay to make it until the spring green-up, assuming there will be one. Never remembering a Depression this severe before, with only Dust Bowl pictures in my head of the Dirty 30s, I'm having nightmares of what this drought could turn into for the area.

My husband and I are taking this opportunity to focus on other aspects of our little farm. We kept the livestock we have and are continuing to manage the pastures as we had before, striving to understock the grass in an effort to stay ahead of the drought. And we've turned our heads toward are poultry enterprises.

We had tried a couple of years of selling eggs widespread, but what we found is that regular customers around our area aren't willing to pay much more for eggs than they get in the store, even if



Rita BRHEL

this rate, it was like we were paying our customers to take our eggs instead of the other way around.

So, at the start of the winter when feed prices were rising to scary heights anyway, we decided to cut our flock of laying hens down from 60 birds to about 20. We'll still keep our "Eggs for Sale" sign up on our driveway for the occasional customer like a neighbor beekeeper who likes to trade honey for a dozen or two or my daughter's school bus driver, but we're not making any extra effort

to sell these eggs. We're just keeping enough hens to produce the eggs we want to eat.

And now my husband is very interested in raising poultry, particularly heirloom waterfowl breeds, to sell to other producers. He really likes ducks. I find them messy and a bit smelly, but I appreciate my husband's interest and am taking an active role in the venture.

I, on the other hand, am branching into pigeons. There's not a whole lot of value here, besides hobby interest, to a lot of people unless they like squab. I love squab, or pigeon meat. My mom raises pigeons, so I've been eating squab for all my life. There is also a big show circuit for pigeons, and racing clubs for homing pigeons, as well.

My husband and I are still planning a garden but we're modifying our focus a bit. We have discovered the ease and convenience and really the inexpensiveness of a local farmers market. We also haven't had much luck with a garden since buying this property in

2009. The garden site is overrun with bindweed and seems to attract stink bugs from miles around. We've looked at moving the site, but there isn't anywhere else that works as well, as the rest of the property either has trees or is pasture. So, we're looking into doing raised beds to re-start the gardening process and to limit our crops to those that aren't available plentifully at our farmers market, like green beans and broccoli, as well as crops that we use a lot of, such as tomatoes which turn into freezers' full of pasta sauce, salsa, tomato juice, and more.

Of course, with this drought, I guess we'll see how well all these plans will turn out.

The good news of this drought is that while it's awfully hard on the money-making portion of our farm — the grass-based livestock — it does give us a chance to focus on other enterprises that we've had an interest in but haven't really taken the time to think through and try.

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