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BeefTalk: Diversity Helps Mitigate Drought Effects



Healthy soil is critical to effective, sustainable farming practices.

By Kris Ringwall, NDSU Extension Beef Specialist

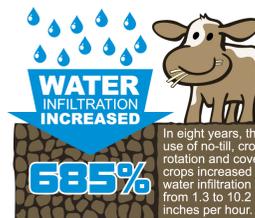
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Are you interested in increasing soil water absorption by 685 percent?

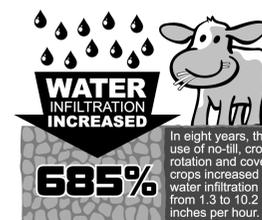
Remember the commercials that showed paper towels absorbing copious amounts of water, more than a competitor's paper towel? Is one paper towel better than another in water absorption? I think we know the answer: Yes.

Could this also be true in soils? Are the soils within some soil

Images



In eight years, the use of no-till, crop rotation and cover crops increased water infiltration from 1.3 to 10.2 inches per hour.



In eight years, the use of no-till, crop rotation and cover crops

columns

Spotlight on Economics: Spotlight on Economics: Challenges and Opportunities in the World Beef Market (2017-08-18) An increasing number of issues, some controversial, seem to be surrounding the global beef market. [FULL STORY](#)

BeefTalk: BeefTalk: Diversity Helps Mitigate Drought Effects (2017-08-17) Healthy soil is critical to effective, sustainable farming practices. [FULL STORY](#)

Prairie Fare: Prairie Fare: Is Any Food in Your Fridge Reaching Antique Status? (2017-08-17) Be aware of food label lingo to avoid having to toss food. [FULL STORY](#)

use of releases

The news media and others may use these news releases in their entirety. If

Are the soils with some cover management systems better at absorbing water than soils in other systems? The answer is: Absolutely yes!

increased water infiltration from 1.3 to 10.2 inches per hour.

these news releases in their entirety. If the articles are edited, the sources and NDSU must be given credit.

What does this mean? Poorly managed soil is like a poor paper towel; the soil does not absorb adequate water. Soil managed to improve soil health is like the superabsorbent paper towel; the soil literally can drink water. And that is good.

The Dickinson Research Extension Center had a quarter of land that was much like a poor paper towel. After a hard rain, the land looked like a lake, absorbing water at 1.3 inches per hour. Essentially, a good rain simply would run off the land, moving onto other parts of the watershed. The soil was not functioning as soil should, thus not allowing timely absorption of rainfall.

An important point: Water needs to stay in the soil, especially when the water received is in short supply.

To get the soil back on track and healthy, in 2008, the center started a diverse crop rotation of three years of alfalfa followed by winter triticale/hairy vetch, corn, oats/peas, a multispecies cover crop, spring wheat and winter wheat. The goal: get a better understanding and demonstrate the principles that enhance soil health.

The center stepped out of the box, set aside some long-established dryland cropping principles and

switched to no-till. Previous tillage-based cropping systems disturbed the soil at seeding.

At the same time, an increase in plant diversity through an aggressive crop rotation and the use of cover crops was implemented. The sequence of primary crops planted for grain or forage and the cover crops kept living roots in the soil during periods of time that cash crops no longer were growing actively. In addition, the soil was covered with plants and plant residue through most of the year, thus keeping bare areas to a minimum.

In the past nine years, crop production on this quarter of land has changed from a minimal, survivalist mode to fields that produce agricultural products from a functioning soil. After eight years, average water infiltration into the soil increased from 1.3 inches per hour to 10.2 inches per hour, an increase of 685 percent. That is good. Water is going directly into the soil.

Recent rains that fell on the parched soil brought life to thirsty plants, not coulees full of flowing water. During dry years such as this year, that is significant.

An added benefit is an increase in projected average plant-available nitrogen from 100 to 175 pounds per acre. That is an increase of 75 percent.

Healthy soil is critical to effective, sustainable farming practices. The crop rotation utilizes early fall-seeded crops, early spring-seeded crops and early summer-seeded crops. By varying the seeding dates, chances

of getting moisture on some field at the time it is needed certainly increases.

There is no perfect system, and Mother Nature does not provide irrigation pivots and a control box. Our response: Retain tools that support a multiple approach. Providing a program of good soil health that permits absorption of all the water when it arrives, increases soil critter activity and enhances nutrient cycling is critical.

All of these factors have helped target inputs for the center while increasing output. The eight-year rotation opened up a lot of opportunities.

Those same principles have been applied to another quarter of land, only in this case, the cropping rotation is five years, with the addition of cattle to improve net returns from within the cropping system.

The rotation is spring wheat, a multispecies cover crop, corn, field peas-barley and sunflowers. Spring wheat and sunflowers are cash crops. This rotation allows for more than 100 days of 2-plus pounds per day of beef gain while steers graze through the field peas-barley, standing corn and multispecies cover crop. The rest of the ranch uses a twice-over grazing system stocked appropriately to the various soil types to produce the steers that graze the rotation's annual forage crops while building soil health.

Perhaps we just need to stop and ponder for a while. No question about it: Diversity is not easy to implement and maintain. Agriculture tends to be

mechanistic, and most of those mechanistic processes lead producers to specialize. Once specialized, the economics of scale and the practicality of focused equipment and inputs tend to lead producers away from diversification.

Unfortunately, replacing inputs that healthy soil provides with purchased inputs comes at a long-term cost. Dry or wet, systems that foster improved soil health help us make the most of what Mother Nature gives us.

May you find all your ear tags.

For more information, contact your local NDSU Extension Service agent (<https://www.ag.ndsu.edu/extension/directory>) or Ringwall at the Dickinson Research Extension Center, 1041 State Ave., Dickinson, ND 58601; 701-456-1103; or [✉kris.ringwall@ndsu.edu](mailto:kris.ringwall@ndsu.edu).

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Attachments



[PDF - In eight years, the use of no-till, crop rotation and cover crops increased water infiltration from 1.3 to 10.2 inches per hour.](#) 

(NDSU_Extension_Service_BeefTalk_081717.pdf -
436.95 Kb)



EPS - color - In eight years, the use of
no-till, crop rotation and cover crops increased
water infiltration from 1.3 to 10.2 inches per
hour.

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- 385.95 Kb)



EPS - black - In eight years, the use of
no-till, crop rotation and cover crops increased
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- 385.93 Kb)

