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Cover Crops Do More Than Conserve Water During Drought

By Justin Fruechte, Forage & Cover Crop Specialist, Millborn Seeds

Aug. 15, 2012 - When we're in a drought, farmers don't think about planting cover crops, but they should consider it, says Kris Nichols, research soil microbiologist with the USDA Agriculture Research Service, Mandan, N.D.

"Cover crops can be an important part of keeping moisture in the soil because they keep that soil covered," Nichols said.

Below the soil's surface, Nichols says cover crops play a vital role in soil and plant health.

"A green and growing cover feeds a whole web of soil organisms – much more than crop residue," Nichols says.

She explains that most soil organisms are carbon-limited, making them dependent on plant material either directly or indirectly to obtain carbon.

"In order to get that carbon, they have to trade something to the plant. Many times they are trading nutrients which they acquire from the soil, and in some cases, they also trade water," she says.

She uses the function of mycorrhizal fungi as an example.

"Mycorrhizae are a key group of organisms which are made up of fine threads and filaments called hyphae. Because these threads are so much smaller than plant roots, they have access to more soil and the nutrients or water it contains," Nichols says.

For farmers who have been using cover crops for a few years and have built up their soil ecology, she says these same organisms will help reduce the amount of stress their plants succumb to during a drought.

"Many times during a drought, plants are not as much water stressed as they are nutrient stressed," she explains. "The way plants get nutrients from the soil to their roots is through water. In times of drought, plants will sometimes give off their own water supply to create a water fill around the roots so nutrients can travel."

She explains that plants growing in soils rich with mycorrhizae can take advantage of the fungi to help them obtain nutrients from the soil.

"The fungi can do this using much less water," she said.

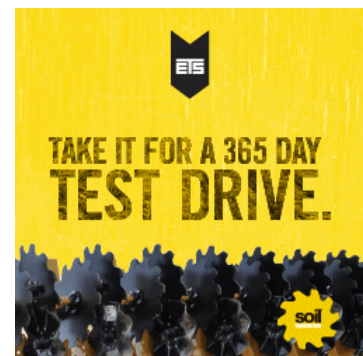
Nichols adds that soil rich with living organisms has a soil structure more conducive to water retention.

"Organisms help form soil aggregates, which allow for better water absorption because there is more pore space between the soil for water as well as gas exchange," she said.



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Can I plant cover crops during a drought?

Maintaining a soil ecology that promotes vigorous and sustainable crop production depends heavily on plant diversity. They are the most important factor in determining the biological diversity of the soil and the microorganisms in the soil and each plant introduced to the soil supports a host of unique bacterium, insects, and organisms.

To increase the overall beneficial soil organisms, I recommend implementing a diverse cover crop mixture. Although the state is in a drought, cover crops can still grow. Most species are very fine seeds and require little moisture to germinate. When planting into dry soil be sure to close the furrow tightly and that seed will wait for moisture.

COMMENTS: 2

Posted from: John, 8/21/12 at 8:51 AM CDT

Corrected, thank you!

Hyphae, not hythae

Posted from: Jon, 8/21/12 at 8:47 AM CDT

Sorry to be that guy.



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