

Conservation practices for times of drought

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COLBY – In 2012, raising crops proved to be tough. After a good wheat harvest, the faucet dried up, and it has proven difficult to grow even a crop of weeds.

Many producers went ahead and “dusted” in the wheat crop while praying for rain. Others waited, hoping for a little help from Mother Nature. Just as crops need moisture to grow strong roots and a sturdy base, terraces and other conservation practices also need adequate moisture during construction to stand the test of time.

Terrace ridges need a good solid base to ensure their longevity. This base cannot be achieved without adequate soil moisture to provide the soil compaction necessary to withstand heavy equipment. Imagine shoveling a 1- to 1 1/2-foot high pile of flour. Stomp on it hard. Poof! It is almost gone. This is similar to what a tractor and heavy implement will do to a powdery terrace ridge. It will be squashed down to nothing in a short time.

The soil moisture content at the time of construction should be such that, when kneaded in the hand, a ball will form which does not separate readily. A typical flat channel terrace requires a cut depth of only 0.4 to 0.6 feet to provide the earth fill necessary to construct the terrace ridge. During these extremely dry periods it is almost guaranteed that adequate soil moisture will not be available to build a good, solid-based terrace.

While these drought conditions persist, the Natural Resources Conservation Service recommends delaying the construction or rebuilding of terraces and similar practices until moisture conditions become more favorable.

To learn more about conservation practices, please contact your local service office or conservation district office located at your local county U.S. Department of Agriculture Service Center (listed in the telephone book under United States Government or on the Internet at offices.usda.gov).

Information is also available on the Kansas website at www.ks.nrcs.usda.gov.

Soil health different from soil quality

By Steven P. Graber
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DODGE CITY – Soil quality and soil health are concepts that are gaining recognition in the United States, and locally. They are not one and the same. They are defined separately as follows:

Soil quality is the capacity of each soil to function, within its natural or managed ecosystems, to sustain productivity, enhance water and air quality and support human and animal health and habitation. This is not limited to agriculture, but most work and evaluation has occurred on agricultural lands.

Soil health is the condition of the soil and its potential to sustain biological functions, maintain environmental quality, and promote plant and animal health.

Soil quality and soil health are vital for sustainable agro-ecosystem management and survival on planet Earth.

In order to evaluate soil quality, you need to use a set of indicators. These may be qualitative or quantitative. The indicators should integrate physical and chemical properties and be accessible to many users. They must be responsive to different management operations and must adapt to differing climates.

Most farmers are comfortable with and knowledgeable of the chemical aspects of this equation, as many of them use soil tests for fertility. The physical and biological aspects are much more elusive and not as easily understood.

An example of the physical indicators would be available bulk density, infiltration or water capacity. These three indicators can be grouped.

Through prolonged use of sweep plows operating at a depth of four to five inches, intense pressure has been exerted on the soil at and below this depth. A severe degree of compaction has occurred in generally a four- to six-inch layer, increasing the bulk density of the soil in this zone. When soil has an increase

in bulk density in the hardpan layer, water infiltration is severely limited. If rainfall is unable to penetrate into the soil, it runs off. The more rainfall that runs off, the less available water for plant use. I realize this is a very simplistic example, but it is a basic representation of the problem.

Another problem caused by high-bulk density is the inability of plant roots to penetrate the compacted zone. This is evident in many fields over the past two years of drought conditions. I have seen fields with failing crops where moisture is available below the hardpan, but the crops can't use it.

In order to evaluate soil health, you need a biological indicator. Soil organisms are responsible for the decomposition of organic matter and cycling of nutrients. An easily recognizable biological indicator is the worm activity in the soil. If a soil is healthy, earthworms are plentiful.

Earthworms play a key role in modifying the physical structure of soils by producing new aggregates and pores, which improves soil tilth, aeration, infiltration and drainage. Earthworms improve soil porosity by burrowing and mixing soil, and roots often follow earthworm burrows and use available nutrients associated with the worm casts.

In a farming operation, the best tools to use to look at your soil quality and soil health are a shovel and your own eyes. Dig a hole in your field and observe what the soil looks like.

Can you recognize the hardpan? Are the crop roots affected by the hardpan? Are there earthworms? If you do this, a whole new subterranean world may be opened up to you.

To learn more about soil quality and soil health management on your farm, please contact your local Natural Resources Conservation Service office or conservation district office located at your local county U.S. Department of Agriculture Service Center (listed in the telephone book under United States Government or on the Internet at offices.usda.gov).



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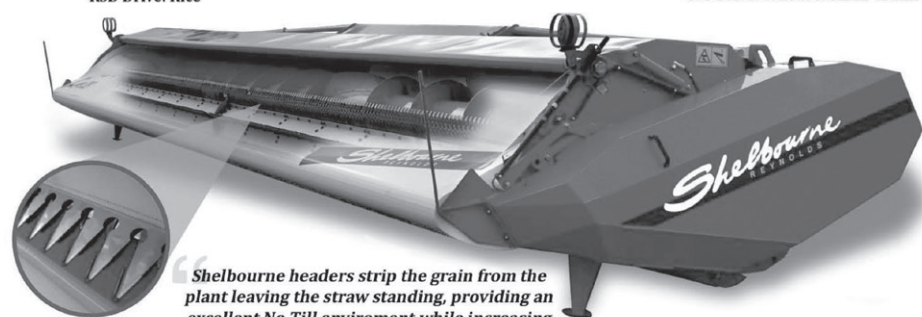
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