BIOSOLIDS DIGEST

FIELD GREEN The wiser fertilizer™

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Is there warm weather ahead?

The news is full of stories about how El Niño caused weather to be unusually warm throughout much of the country. So what is El Niño and how does this affect us?

By Troy Salzer
Minnesota Extension

El Niño refers to irregular warming in the sea surface temperatures from the coasts of Peru and Ecuador to the equatorial region of the central Pacific Ocean.

The result is a disruption of the ocean-atmosphere system in the tropical Pacific having important consequences for weather around the globe.

This year we are experiencing one of these El Niño events and some of the typical weather patterns are playing out locally, including warmer than normal temperatures for both daytime highs and overnight lows. This is in part due to the jet stream staying more directly west to east and not allowing cold air to come from Canada.

The data isn't as clear when it comes to moisture (snow and rain) for an El Niño occurrence. Mark Seely, a climatologist from the University of Minnesota suggests that this varies greatly due to the intensity of the El Niño event. The historical data would suggest generally less snow in early winter more in later winter.

With these points in mind it would be appropriate for farmers to keep a close watch on several items as the winter concludes and spring and summer unfold. (See page 2).

El Niños aren't totally predictable but on average occur once every two to seven years and last for about 18 months. The intensity varies and that variation makes it hard to predict exactly what will happen.

El Niño results from interaction between the surface layers of the ocean and the overlying atmosphere in tropical Pacific. The internal dynamics of the coupled ocean-atmosphere system determine the onset and termination of El Niño events.

The system oscillates between warm (El Niño) to neutral (or cold) conditions roughly every three to four years.

For now, just enjoy the wonderfully mild "winter" weather.

Inside

Warm winters can cause spring challenges

A warm winter may not lead to better crops next summer.

As the El Nino winter continues, farmers should keep an eye on fields for two potential problems.

A warmer winter with little snow cover can lead to expanses of standing water. When that water freezes as a sheet of ice, grass or alfalfa underneath can be killed.

Warmer, wetter weather also can lead to soggy soil, which can warm up slower and cause uneven crop growth.

Ironically, next summer's crops could fall victim to a mild winter. It's smart to keep an eye on your fields this winter and spring and be ready to adjust.

Here are some of the problems that Troy Salzer of the University of Minnesota Extension said farmers should look out for:

- Late winter snow and rain could delay planting. Be ready to take advantage of planting weather when it comes.
- Wet soils warm up slower, which can cause uneven growth in the forage stand.
- Insects and other pests can survive mild winters better. Some that typically come up on jet streams later in the year may survive the winter instead and show up on crops earlier. Scout for pests early.
- Winter kill can be an issue, especially if ice sheeting occurs.
- High soil moisture levels, no snow cover and cold temperatures can cause frost heaving and root damage.

An early inspection of stands can help you adjust, if necessary. See the box for inspection guidelines.

Here are some tips to check for winter kill:

- Check older stands first. They are more susceptible.
- Fields in soils with lower fertility are also at higher risk. If you aren't sure about a field enrolled in the Field Green® program, call for a soil test. (See next page).
- Focus on fields with short grass or sparse cover. Grassy fields generally have fewer problems because they are better insulated.

WLSSD

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Use WLSSD soil tests to improve crops

Good soil fertility – a balance of nutrients with good organic matter – helps your fields weather the worst of what the climate throws at you.

WLSSD's Field Green® biosolids program helps its customers by providing regular soil tests. These tests give you the knowledge to make good decisions about fertilizing.

Your soil test report will help you decide whether you need to supplement Field Green® with other fertilizers to balance nutrients. Over a longer period of time, you'll be able to manage your soil to be more resilient and consistently productive.

Here's a guide to what you'll find on a soil test from WLSSD:

Phosphorus:

Phosphorus helps photosynthesis, energy production, plant strength and cell structure. Recent discoveries have found that phosphorus also helps soil microorganisms release other soil nutrients.

Biosolids application rates are calculated to supply just enough nitrogen for your current crop year. Generally, that application rate will supply the phosphorus the crop needs, too.

Some soils in our region have naturally low phosphorus levels and may need some supplementation. Look for a "very low" or "low" rating on the soil test report.

It's important to test phosphorus levels in biosolids fields because if the levels get too high, the nutrient can enter nearby surface water.

NUTRIENT IN THE SOIL		INTERPRETATION			
		VLow	Low	Med	High
Nitrate					
Bray Phosphorus	9 ppm	*****	***		
Potassium	32 ppm	***			

This is a portion of a soil test report.

The "very low" potassium and "low" phosphorus levels indicate that supplementing biosolids with these nutrients will improve yields and soil health.

Potassium:

Plants have metabolisms like us, and potassium is critical to a healthy plant metabolism. Potassium, the "K" in the NPK rating on fertilizer bags, helps alfalfa resist winter kill, and all crops with drought resistance. It also helps grass avoid lodging by helping with cell strength.

Biosolids don't supply sufficient potassium for most crops, making it one of the more important nutrients for farmers to monitor and add to their fields if using biosolids as a primary nutrient source.

Organic matter:

Over the long run, increasing organic matter is one of the best things you can do for your soil.

Organic matter helps hold water and nutrients. WLSSD has measured organic matter increases in fields with regular biosolids applications. Manure, cover crops, leaving crop residue or reducing tillage also can help.

pH:

The pH of your soil – how acid or alkaline it is – is important because if the soil is too acidic, crops won't be able to take up the fertilizer you apply.

Biosolids can't be applied to a soil with a pH of less than 5.5. One of the best things you can do for your soil is to get the pH into the 6.5 to 7 range. Keeping soil in that range (and keeping adequate phosphorus and potassium levels) will help soil microorganisms cycle nutrients and convert nitrogen into usable form for crops.

Boron:

The micronutrient boron is often deficient in soils with organic matter below 3 percent. Boron helps cells divide and plants grow, and also is involved with plant hormone different plant enzymes.

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Clear Answers for Clean Water™

Contact us

Have a question or want information on Field Green® biosolids? Here is a guide to our staff members:

If you're interested in enrolling a field in the biosolids program, have general questions, are a member of the public or are a government official, contact:

Craig Lincoln, environmental programs coordinator, (218) 740-4808 or craig.lincoln@wlssd.com

If you are an existing customer and would like to schedule a field or have questions on a recent application, contact:

Paul Wilken, lead land application operator, (218) 740-4764 or paul.wilken@wlssd.com

For general questions, contact:

Todd MacMillan, biosolids supervisor, (218) 740-4767 or todd.macmillan@wlssd.com

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