Prepare Kansas: Get Ready for Winter with a Car Kit and Phone App

By Mary Lou Peter

With winter closing in and given how much we're in our vehicles every day, take a few minutes to download the "Winter Survival Kit" phone app, which helps you find your current location, call 911, contact friends and family and more. Plus, make a quick trip to the store and assemble an emergency kit for your car or truck.

Recommended items include:

• Flashlight & extra batteries
• Snow & ice scraper
• Shovel
• Jumper cables
• First aid kit
• Blanket or sleeping bag
• Snow shovel
• Non-clumping kitty litter or sand for traction
• Flares or reflectors
• Portable cell phone charger
• Keep gas tank at least half full

Much more information is available on our own KSRE Prepare Kansas blog and at the Extension Disaster Education Network (EDEN) website. EDEN is a network of land grant universities dedicated to helping prepare individuals and communities for disasters, from a flooded basement to a community hit by a tornado or blizzard. Information is also available at Ready.gov and the National Safety Council website.

Please feel free to use this info in your communications and we encourage you to take these steps, too! -- Mary Lou Peter and the Kansas EDEN (Extension Disaster Education Network) team

Financially Speaking: Keeping Your Holidays Green!

By Denise G. Dias

You may cringe at the fact that the Black Friday deals and holiday movies have already started, but it is not too soon to rein in your holiday spending. Check out these ways to tame the holiday frenzy:

Make (and stick to) a budget. Money can fly out of your wallet fast for gifts, special meals, decorations and travel. Plan ahead of time how much you're going to spend on each category, and then stay in that range.

Take inventory. Don't rush out to buy wrapping paper before checking to see if there's a forgotten stash of a dozen rolls shoved into the back of a closet. The same is true for presents you may have hidden too well last year.

Shop secondhand for decorations. Thrift stores and garage sales usually have loads of holiday decorations as people upgrade, downsize or realize their decorations somehow multiplied when they weren't looking.

Consider budget-friendly alternative gifts. Homemade gifts are a great option if you're crafty or a whiz in the kitchen, or even if you aren't either of those, but can follow online directions. Coupons for your "services," like babysitting, can also make good presents.

Make your own holiday cards. You can save money (and trees) by using e-cards to send greetings to your loved ones instead of traditional cards. Many websites offer free or inexpensive e-cards, some with options to add videos or slideshows.

Plan holiday meals early. Knowing what you're going to cook well in advance lets you shop the sales for the non-perishable items you'll need. It also helps spread the higher food costs over a couple of paychecks instead of just one.

Use your smart phone while shopping. Many retailers can send coupons right to your phone when you walk into their stores, which is handy (if not a little creepy). You can also use your phone to compare prices to make sure you're getting the best deal.

Consider traveling on the holiday itself. You could score a much cheaper airline ticket by flying on the holiday instead of in the days before. Plus, arriving on the big day conveniently gets you out of a lot of meal-prep duty.

Search hotel rates and airfares online. Take advantage of websites that compare airfares and hotels so you get the best deal. Many will also alert you to price drops. Another bonus: Those online reviews can help you avoid a vacation you remember for all the wrong reasons. Be sure to check out special travel options for service members on lodging and flights.

You can find more information on making the most of your money on the Financial Resource Management PFT website.

Source: https://www.militaryonesource.mil/-/9-tips-for-savvy-holiday-spending?inheritRedirect=true.

Kansas Mesonet launches soil moisture monitoring tool

The Kansas Mesonet is launching a new tool: soil moisture monitoring. Soil moisture is important for many field decisions. The Mesonet Soil Moisture page provides a general overview of the conditions across the state and by each station. This article gives a description of how soil moisture is monitored and reported.

Users can access this new tool from either the main Mesonet page by selecting from the drop down menu, Agriculture, then Soil Moisture (Figure 1); or directly from this link: http://mesonet.k-state.edu/agriculture/soilmoist/

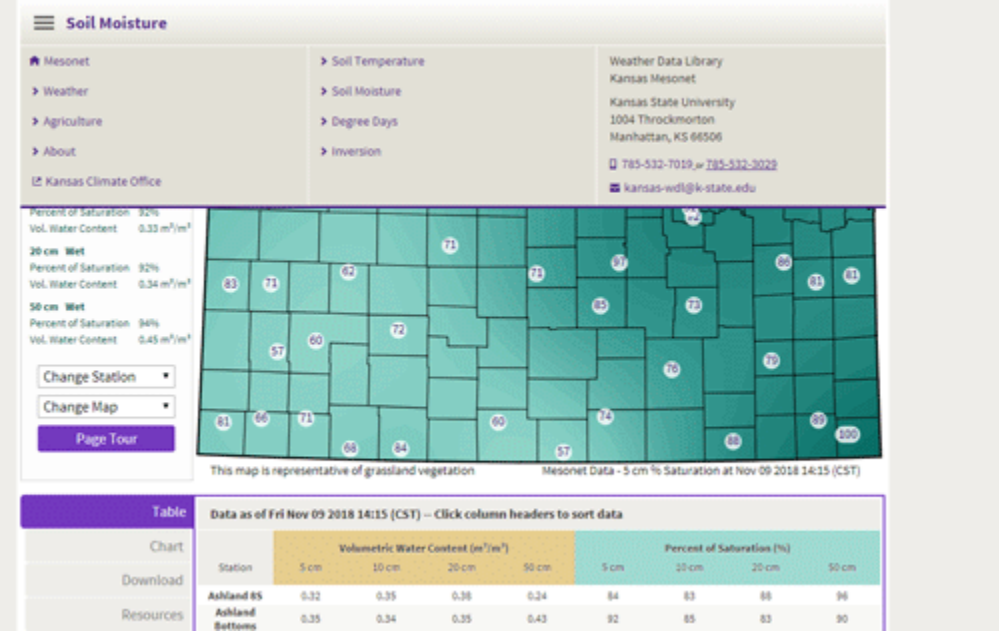

Figure 1. Screenshot of the menu path to the new Soil Moisture page on the Kansas Mesonet.

Soil Moisture

All Kansas Mesonet tower stations measure soil moisture at four depths. We utilize a time differential reflectometer probe (TDR) by Campbell Scientific, the CS655 model. Installation of current sensors began in mid-2017 and were completed early 2018. Data beyond 365 days is not currently available online but can be obtained by emailing the Mesonet (kansas-wdl@ksu.edu).

Soil Depths and Location

- Standardized depths consist of: 5, 10, 20, and 50 cm (approximately 2, 4, 8, and 20 inches).
- Locations of the sensors are also standardized at all stations with all soil sensors placed four feet south of the station.

Influencing Factors on Soil Moisture

Soil moisture is highly dependent on countless variables that can have local influences on the measured values, thus creating biases in the data. The Kansas Mesonet strives to limit these factors and make individual station data as representative of the surrounding region as possible.

- **Soil type**: Kansas has a diverse range of soil types, from sandy soils in the southwest to shallow soil over limestone in the Flint Hills. Often these types vary over very small distances and may not be representative of your location. Keep this in mind when using the data.
- **Sandy soil**: Grass is hard to maintain as a cover. Often, it is dug up by animals, blown away, or redeposited. This can allow water to penetrate easier into the soil or resurface a sensor making it respond faster than expected to atmospheric changes.

- **Clay soil**: Often the freeze/thaw process along with wetting/drying will cause uplift and/or sinking of the surface soil. As with erosion, this action can uplift or shift sensors deeper/shallower in the soil.
- The Mesonet staff verifies sensors aren't disturbed during maintenance visits.
- **Ground cover**: Soil measurements are taken under sod at all stations. However, there are a few exceptions where grass struggles to grow and it may change between maintenance visits. Grass cover will create faster uptake of soil moisture during the growing season due to plant demand.
- **Soil depth**: The depth of the sensors will often determine the type of soil and responsiveness to precipitation. The deeper in the soil, the slower the response time. Therefore, 2-inch sensors will often respond immediately to rainfall. Moisture takes longer to penetrate deep into the soil and therefore, the 8- and 20-inch sensors will take the longest to increase after a rain event. They will also take the longest to dry out (Figure 2).

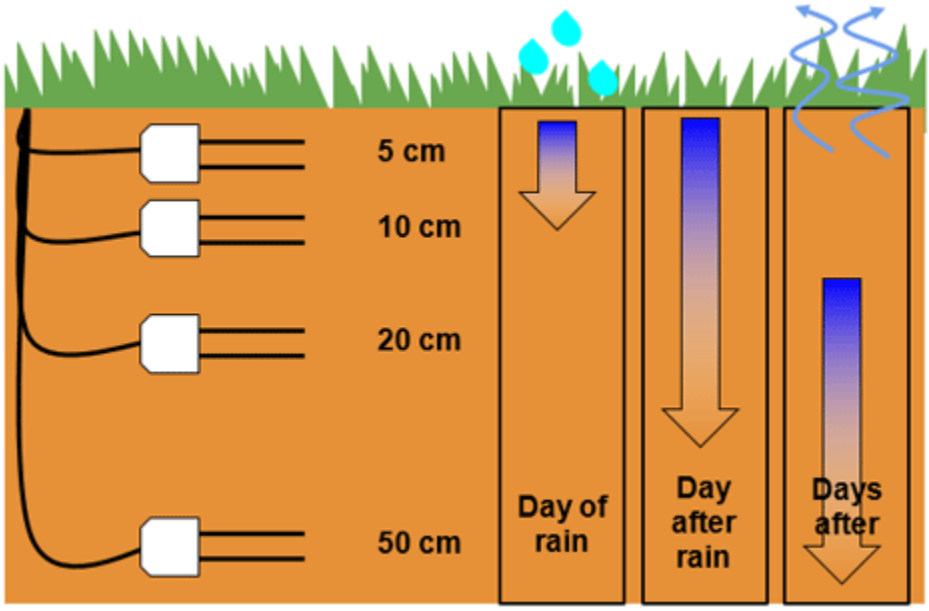

Figure 2. Soil moisture sensors at four soil depths (5, 10, 20, and 50 cm) and a general depiction of soil water movement following a rain event. Graphic from Kansas Mesonet.

Understanding the Webpage

There are some changes compared to other web pages on the Mesonet. The soil moisture measurements are displayed in two forms:

- **VWC, volumetric water content**. This can be calculated directly through the sensor and describes the amount of water contained within the area measured by the sensor. This value is unitless and considered to be cubic meter/cubic meter (m^3/m^3). The Mesonet uses a refined version of this calculation that incorporates other raw measurements from the sensor for a more accurate representation of soil moisture.
- **% sat, percent of saturation**. Using volumetric water content over time, upper and lower limits of the soil moisture are obtained during very wet and drought periods. These limits can define the wettest (100%) and driest (0%) percentage and provide historical context to current measurements.

"Wet vs Dry" verbiage is used at each station and depth to provide a quick and easy understanding of the current moisture present. Occasionally, "getting wetter" and "getting drier" will also follow the generic description. This description is the difference between the current measurement and that of seven days ago. It provides insight into general trends observed at each depth to assist in understanding the current state of the soil. Different from previous pages, you also have the ability to see these changes on a map with the "7-Day Change" for each depth using volumetric water content.

Lastly, the chart section has also been revised/improved to show larger scale trends beyond the initial seven days. The map is interactive as on previous pages. However, users now have the option to display the last 30, 90, and 365 days. This is a great tool to see numerous phenomena and trends during corresponding wet/dry periods. See below for some examples.

Using the Data

How might you benefit from Kansas Mesonet soil moisture data? Here are a few examples:

- **Non-irrigated fields**: A direct correlation to the demand and water availability during plant growth. Can assist in crop yield estimates.
- **Irrigated fields**: Though relationship may be different between water availability, the curves and trends can be very useful for determining the water demand. Mesonet measurements can also be used to calibrate and provide a standard reference to other soil module monitoring systems. With one comparable standard, sensors in specific applications can now be cross-analyzed from individual farm/fields making it more useful on a regional scale.
- **Drought awareness**: Though rainfall deficit can provide a quick proxy for drought, soil moisture is the best indicator for vegetative water demand. It can also provide an early warning for increasing demands of irrigation and other water use/storage trough curves and rapid declines.
- **Runoff estimates**: Heavy rainfall impacts are usually dictated by how saturated the surface is at the time of the event. Through curves on the chart, you can observe hourly rainfall and resulting influences by depth. During high rain rates, you can calculate the impact runoff may have due to resulting curves by depth. If there is a high rain rate, reactions may only be noted in the 2-inch sensor and thus significant runoff is/may be occurring.
- **Statewide statistics**: The table lets you quickly view and sort data from across the state. You can also download data to perform your own analysis (see the Download tab).
- **Graphics and social media**: Download any of the maps in .PNG format for easy sharing.

For more information on navigating this resource, users can select a page tour from the main soil moisture page located at the top of the featured map.

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High pH Soils and What to Do With Them

Though there are high pH soils in most parts of the state, alkaline soils tend to be more common in the central and western regions of Kansas. These high pH soils can cause problems for plants by reducing the availability of certain micronutrients. For example, most Kansas soils have more than adequate amounts of iron. However, a high pH can make iron unavailable resulting in a condition known as iron chlorosis as evidenced by light green leaves with darker green veins. Iron chlorosis reduces the health of plants by reducing photosynthesis. Lowering the pH of such soils will eliminate iron chlorosis.

Now would be a good time to have a soil test done to see if your pH is too high. If so, sulfur can be added either now or in the spring to lower the pH. Different textures of soil require different amounts. A sandy soil needs 1.0 to 1.5 pounds of sulfur per 100 square feet to reduce pH one point. A loam soil needs 1.5 - 2.0 pounds and clay needs 2.0 - 2.5 pounds to do the same. For example, if you wished to lower pH from 7.5 to 6.5 on a loam soil, you would need 1.5 - 2.0 pounds of sulfur per 100 square feet.

So, what pH do we shoot for? For most plants, a pH between 6.0 and 7.0 is preferred. Unfortunately, adding sulfur to lower pH is not as clear-cut a solution as we would like. Here are some other factors to keep in mind.

Free calcium carbonate: Some soils have free calcium carbonate, actual particles of limestone mixed in the soil. These "calcareous" soils normally have a pH of 7.3 to 8.5, with 8.2 to 8.3 being most common. In order for us to lower the pH with sulfur, all free calcium carbonate must be neutralized first. A recent soil test showed 6.7 percent free calcium carbonate. One pound of sulfur is needed to neutralize three pounds of calcium carbonate. Assuming 80 pounds for a cubic foot of soil, you would need about 1.75 pounds of sulfur per square foot just to neutralize the free lime. Additional sulfur would be needed to lower pH. Adding this much sulfur to a soil at one time is not recommended.

Not all high pH soils are calcareous. Perform this simple test to see if your soil contains appreciable amounts of free lime. Apply one drop of vinegar to dry soil. A vigorous fizz usually means the soil contains at least 3 percent calcium carbonate. A mild fizz suggests a calcium carbonate of between 1 and 2 percent and a fizz that can only be heard suggests the soil has a calcium carbonate content less than 1 percent.

How sulfur works: Elemental sulfur does not lower pH directly. It must first be oxidized to the sulfate form with the result being sulfuric acid. The sulfuric acid produces hydrogen, which acidifies the soil and lowers pH. The oxidation takes place primarily through microbial activity.

Oxidation takes time: Microbial oxidation of elemental sulfur takes time and depends on:

- number of sulfur oxidizing bacteria present
- temperature (75-104 degrees optimum)
- moisture content of soil (too wet or too dry will slow down process)
- size of sulfur particles (the smaller the better)

A single sulfur application normally takes at least 2 years for most the sulfur to react and form sulfuric acid. This, of course, depends on the above factors. So, what do you do about calcareous soils? See the companion article in this week's newsletter for specific recommendations. (Ward Upham)

Why Do Houseplants Lose Leaves After Being Brought Inside?

Newly bought houseplants or those brought in from outside often lose at least a portion of their leaves. In order to understand why this occurs, we need to look at how these plants are grown and what the plant needs to do to adapt to its new environment. Houseplants are normally produced either under shade outdoors in southern states or in greenhouses. Also, many homeowners move their houseplants outside during the summer. Regardless, the plants receive much more sunlight than they do in an indoor environment. Research done in Florida in the late 1970s revealed that tropical plants grown under high light conditions produce 'sun leaves' while those grown under low light conditions have 'shade leaves.'

These leaf types differ structurally in that sun leaves have less chlorophyll (the substance that plants use to convert sunlight to energy) and the chlorophyll that is present is located deeper inside the leaf. Sun leaves also tend to be thick, small and numerous while shade leaves are more thin, larger, and fewer in number. When plants are moved from one light condition to another they need time to adjust. This process is known as acclimatization. If they are forced to acclimatize too quickly, they will drop their sun leaves and produce a new set of shade leaves. If the acclimatization process is slower and less drastic, the plant can convert their sun leaves to the shade leaves that do better under low light. If going from shade to sun, this process is reversed.

Some houseplants are acclimatized before they are sold but many are not. So how do we help our new houseplants or those moved inside acclimatize to their new home environment? Houseplants should start out in an area of the home that receives plenty of light and then gradually moved to their permanent, darker location. This process should take 4 to 8 weeks depending on the degree of difference in light levels between the initial and final location of the plant. Remember, plants need to be acclimatized whether they are moved from a sunny location to one that receives less light or from shade to sun. Understanding plant processes allows us to anticipate potential problems. Acclimatization gives our houseplants a greater chance of retaining leaves and avoiding the stress of completely replacing them. (Ward Upham)

Knotweed Control

Knotweed thrives in compacted soils, so a thorough aeration is the first step in control. This weed will not compete in a healthy lawn. Chemically, there are two options. Knotweed is an annual that germinates in late February or early March, so a preemergence herbicide can be used in the late fall (about now). Pendimethalin (Scotts Halts), Surflan (Weed Impede), Barricade, Dimension and XL are labeled for knotweed. (Note: Pendimethalin, Barricade and Dimension can be used on all Kansas turfgrasses, while Surflan and XL can only be used on tall fescue and warm-season grasses such as buffalograss, zoysiagrass and bermuda).

The other option is to use a combination postemergence product such as Trimec, Weed-Out, Weed-B-Gon or Weed Free Zone after the knotweed has germinated in the spring but is still young.

If spring seeding of the lawn is planned, your options are more limited. Buctril can be used on commercial sites and has a very short residual. It must be used on very young knotweed to get control. Trimec and others require a month before overseeding to thicken up your lawn. Obviously, don't use a preemergence herbicide if you are trying to get new seed established. For homeowners seeding in the spring, tilling will control knotweed adequately without using a herbicide. If seeding without tilling (e.g., overseeding using a slicer-seeder), then use a combination product such as one mentioned above just after the knotweed comes up in the spring, and be sure to wait at least a month before seeding. (Ward Upham)