K·STATE Research and Extension Finney County

# Extension Connection

**AGRICULTURE NEWSLETTER By: Katelyn Barthol March 2017**

**Topics**



## Topdressing wheat with sulfur

In recent years, sulfur (S) deficiency in wheat has become common in many areas of Kansas, particularly in no-till wheat. Classic S deficiency symptoms, confirmed by soil and plant analysis, have been observed in many no-till wheat fields during periods of rapid growth in the spring. These observed deficiencies generally occur during periods of rapid growth prior to joining, or during stem elongation.

There are two likely reasons for this: a reduction in sulfur additions to the crop from atmospheric deposition and phosphorus fertilizer applications, and cooler soil temperatures as a result of no-till planning, which slows S mineralization in the soil. The net effect of these factors is a significant reduction in the crop available S.

Generally the S-deficient wheat is yellow and stunted, and the problem is found in patches in the field, especially in areas where there has been previous soil erosion or soil movement. Sulfur deficiency on growing crops is often mistaken for nitrogen (N) deficiency. However, unlike N where the older leaves show firing and yellowing, with S deficiency, the pale yellow symptoms of S deficiency often appear first on the younger or uppermost leaves. Wheat plants with S deficiency often eventually become uniformly chlorotic. The patchy S deficient areas of the field are often found on hilltops or side slopes where erosion has occurred and soil organic matter is reduced, or where leaching is more pronounced. In terraced or leveled fields, wheat in areas where topsoil was removed or significant cuts were made also commonly shows symptoms.

Sulfur deficiencies in wheat have been showing up early in the spring, shortly after green-up, before organic S is mineralized from soil organic matter, and before wheat roots can grow into the subsoil to utilize sulfate accumulated there. Deficiencies of S are often difficult to identify because the paling in crop color is not always obvious. Crops lacking S also may be stunted, thin-stemmed, and spindly. In the case of wheat and other cereal grains, maturity is delayed. Due to the slower growth and lack of good tillering, winter annual weed competition is also enhanced.

The majority of S in soils is present in organic forms in surface soils and as sulfate. Sulfate is relatively soluble, so it tends to leach down from the surface soil into the subsoil. In many of our Kansas soils it will accumulate in the B horizon in two forms. Some will be sorbed to clay surfaces and coatings similar to the processes whereby phosphates are sorbed, though sulfate will not be absorbed as strongly. Sulfate will also be present in the subsoil of many Kansas soils as gypsum. Traditionally, S deficiency was most common on high-yielding crops grown on irrigated sandy soils low in organic matter and subject to leaching. However, due to the reduced additions from the atmosphere (there is less S in the air now) and continued crop removal, an increasing number of finer-textured soils have shown S deficiency in recent years.

A soil test for available sulfate-S in the soil profile is available. For proper interpretation of this test, soil organic matter, soil texture, the crop to be grown, and the expected yield level all need to be factored in. Since sulfate-S is mobile, sampling to a 24-inch depth is important. Accurate estimates of S needs cannot be made from a surface sample alone. However, due to the relatively high demand for S during the rapid vegetative growth phase of wheat growth, and relatively shallow rooting by the wheat crop at this me, the S measured in the deeper, subsoil levels by the test may not be available to wheat in the early spring, especially where soils are cold.

Many fields in North Central and Northeast Kansas now have an established history of S deficiency for wheat. In this situation rather than waiting for symptoms to appear in the spring, farmers may want to consider a winter top-dressing application of S as a preventive measure. There are many S-containing fertilizer materials. Several dry materials are available that can be blended with dry phosphorus or nitrogen fertilizers for winter/spring top-dressing. Some of these products are best used in preplant applications, however.

## Growing Wheat and Wildfires

Wheat can be injured by fire or super-heated air, and this injury will be most severe on the edge of the field closest to the heat. Wheat in the joining stage or beyond is in greater danger as the growing point is above ground, but wheat in the tillering stages of growth can also suffer consequences of extreme heat. It is not uncommon to have some injury to growing wheat on the edge of a field if the field is adjacent to a prescribed burn. The injury symptoms may be bleached or scorched leaves and possibly damaged growing points. The extent of injury from a wildfire depends on how quickly the fire moved through the field or around the field.

Research has found that the lethal high temperature for wheat is about 120 degrees F. Wheat exposed to temperatures above this threshold will most likely not recover. A wildfire can easily heat the air or the plants themselves to temperatures well above that level, depending on the distance of the fire from the wheat, possibly resulting in irrecoverable damage to the affected plants.

## Soil Temperature and Vegetables

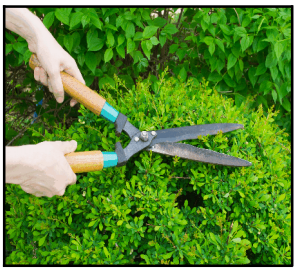
One of the most neglected tools for vegetable gardeners is a soil thermometer. Soil temperature is a much better measure of when to plant than air temperature or the calendar. Planting when soil is too cool can cause seeds to rot and transplants to sit there.

A number of vegetables can germinate and grow at cool temperatures. For example, peas will germinate and grow well at a soil temperature of 40 F. Though lettuce, parsnips, and spinach can sprout at a soil temperature of 35 F, they prefer at least 45 F for best germination and growth. Radishes also do well at a soil temperature of 45 F. Warm-season crops such as tomatoes, sweet corn and beans prefer at least 55 F for germination (or transplanting), but others such as peppers, cucumbers, melons and sweet potatoes need it even warmer, about 60 F.

Taking soil temperature accurately is a bit of a science. First, use a metal soil thermometer, which is sold in many garden, auto parts and hardware stores. Take temperature 2.5 inches deep at about 10 to 11 a.m. Temperature variations throughout the day and night affect soil temperature, with lowest readings after dawn and warmest around mid-afternoon. The late-morning reading gives a good average temperature. If taking the soil temperature at this time is not practical, take a reading before you leave for work and a second when you return home and use the average. Also be sure to get a consistent reading for four to five days in a row before planting, and make sure a cold snap is not predicted.

An excellent guide sheet on this subject is published by the Alabama Cooperative Extension System and is titled "Soil Temperature Conditions for Vegetable Seed Germination." It can be found at http://www.aces.edu/pubs/docs/A/ANR-1061/ANR-1061.pdf (Ward Upham, KSRE Rapid Response Specialist)

## Pruning Deciduous Shrubs



Gardeners are eager to get out and do something in the landscape this time of year. One chore that can be taken care of now is pruning certain shrubs. Often, gardeners approach pruning with trepidation, but it is not as difficult as it may seem. Remember, not all shrubs need to be pruned (i.e., witch hazel), and certain shrubs, which will be identified later, should not be pruned this time

of year. Shrubs are pruned to maintain or reduce size, rejuvenate growth, or to remove diseased, dead or damaged branches. Deciduous shrubs are those that lose their leaves each winter. Evergreen shrubs maintain foliage all year and include yews and junipers.

Deciduous shrubs are placed into three groups:

- Those that flower in the spring on wood produced last year

- Those that flower later in the year on current seasons' growth; and

- Those that may produce flowers, but those flowers are of little ornamental value.

Shrubs that flower in the spring should not be pruned until immediately after flowering. Though pruning earlier will not harm the health of the plant, the flowering display will be reduced. Examples of these types of plants include forsythia, lilac and mock orange. Shrubs that bloom on current seasons' growth or that do not produce ornamental flowers are best pruned in late winter to early spring. Examples include Rose-of-Sharon, pyracantha, Bumald spirea and Japanese spirea.

Pruning during the spring allows wounds to heal quickly without threat from insects or disease. There is no need to treat pruning cuts with paints or sealers. In fact, some of these products may retard healing. There are three basic methods used in pruning shrubs: thinning, heading back and rejuvenating. Thinning is used to thin out branches from a shrub that is too dense. It is accomplished by removing most of the inward growing twigs by either cutting them back to a larger branch or cutting them back to just above an outward- facing bud. On multi-stemmed shrubs, the oldest canes may be completely removed. Heading back is done by removing the end of a branch by cutting it back to a bud and is used for either reducing height or keeping a shrub compact. Branches are not cut back to a uniform height because this results in a "witches-broom" effect.

Rejuvenation is the most severe type of pruning and may be used on multi-stem shrubs that have become too large, with too many old branches to justify saving the younger canes. All stems are cut back to 3 to 5 inch stubs. This is not recommended for all shrubs but does work well for spirea, forsythia, pyracantha, ninebark, Russian almond, little leaf mock orange, shrub roses and flowering quince. (Ward Upham, KSRE Rapid Response Specialist)

## Calender

**March**

**6th:** Meet & Greet our new FACS Agent 4 p.m.- 6 p.m.

**11th:** 4-H Beef Tagging

**21st:** Soil Moisture Sensor Field Demonstration @ Roth Farms

**25th:** Finney County Pig & Goat Sale

## Upcoming Events: