

WEST CENTRAL MISSOURI  
WINTER 2010

## Tunnels reduce the threat of disease

High tunnels don't simply offer protection from cold temperatures and wind and hail damage. They most notably create an environment in which plants can thrive due to reduced disease pressure.

This advantage is of particular importance to producers of crops susceptible to foliar fungal diseases. The exclusion of rainfall under the high tunnel limits the leaf wetness periods needed for these diseases to develop. For instance, tomatoes grown under high tunnels typically do not develop Septoria leaf spot or early blight, except on side rows that are subject to wind-driven rain.

Another advantage of rain exclusion is that producers can more precisely manage soil moisture levels. By avoiding fluctuations in soil moisture, physiological disorders such as blossom end rot can be avoided.



## High tunnels extend the growing season

**The most interesting season extension tool is the high tunnel, which is basically a low-cost, plastic-covered, unheated structure. High tunnels, also known as hoop houses, are passively vented and typically do not have supplemental heat. Their use is normally limited to a few weeks before and after the first and last frosts of the season.**

The financial value of this additional production time can be monumental as producers are able to seek premiums by marketing crops before and after traditionally grown produce is available. As high tunnel technology continues to develop, producers are realizing the benefits of these structures go beyond extending the growing season.

High tunnel environmental conditions cannot be manipulated as precisely as greenhouses. They can sufficiently warm soil and air temperatures in the spring and fall to start warm-season crops early and maintain crop productivity longer. It is not uncommon for daytime air temperatures under a high tunnel to be greater than 10 degrees warmer

than ambient field temperatures. Some sources indicate that this effect can essentially move a farm in USDA Hardiness Zone 5 into Zone 7 growing conditions.

Keep in mind that nighttime temperatures inside and outside the high tunnel typically do not differ drastically. For this reason, tender crops started early in high tunnels often need additional protection when the threat of frost looms. This protection can be provided by the use of floating row covers or supplemental heat sources.

Many types of high tunnels are on the market. Most recently, moveable high tunnels have gained popularity for their versatility. Ultimately, the kind of tunnel to use depends on a number of variables, including cropping options and site considerations.

## a look ahead

**Jan. 27 - Mar. 31** - Grow Your Farm, [extension.missouri.edu/growyourfarm](http://extension.missouri.edu/growyourfarm)

**Feb. 17** - Winter Crop Conference, New Oak Vineyards, Wellington, Mo., [abendrothj@missouri.edu](mailto:abendrothj@missouri.edu), 816.776.6961

**Mar. 13** - Spring Gardening Seminar, Master Gardeners of Greater Kansas City, Kansas City Zoo, [mgkcc.org](http://mgkcc.org)

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## Frost seeding requires planning

Frost seeding is often not as successful as seeding with a drill. Frost seeding does, however, result in a significant savings of time and money compared to drilling, making it a popular choice.

While there is nothing difficult about broadcasting seed, establishing a quality stand of legumes through frost seeding does require planning.

The biggest threat to a quality legume stand is competition from grass species. Legumes should be seeded into pastures with thin stands of grass or pastures where bunch-grasses such as fescue or orchardgrass are grown.

If thin stands are unavailable, targeted pastures should be heavily grazed or lightly worked in the fall before seeding.

Legume establishment is also dependent on soil fertility. Adequate soil pH and adequate levels of phosphorus and potassium in the soil are needed for successful winter seeding.



## Frost seeding offers efficiency

Take advantage of the winter freezing-and-thawing process to improve pastures without the need to till

**Establishing legumes in a pasture or hay field has numerous benefits. Grass legume systems have a reduced need for nitrogen fertilizer and offer improved forage quality, better seasonal forage distribution and increased forage yields. There is also a reduced risk to grazing animals when compared to grass monocultures.**

Legumes can be mixed with grass seed when fields are first established or can be broadcast or drilled into existing stands of grass in the spring or fall. The most common way to establish legumes is through a process known as frost seeding.

Frost seeding is the process of broadcasting legume seed in an established grass system when the ground is still frozen in late winter, specifically mid- to late February. The occasional warm, sunny day during this time of

year briefly thaws the surface of the soil. This freezing-and-thawing process, along with early spring rains, works legume seed into the soil.

In Missouri, all commonly grown legume varieties, including birdsfoot trefoil, annual lespedeza and red and white clovers, can be established through frost seeding. Seeding rates should typically be slightly higher than legumes that are drilled or planted into a prepared seedbed. All legume seed should be inoculated with bacteria prior to frost seeding.

Control of competing grasses and other weeds is critical during the first few months of legume establishment. This is accomplished primarily through mowing or grazing as most herbicides will kill legumes. Overgrazing

can kill young legume seedlings.

In the past two years, many producers have seen an overabundance of legumes in their pastures. This was due primarily to wet, moderate weather conditions, which were ideal for legume growth. Just because legumes have seemed to crowd out grasses in the past does not mean they will do so this year. Legumes have a limited lifespan, about three to four years for white clovers and only two years for red clover. Producers should assess their legume stands. If they need to plant more legumes, frost seeding is a great way to do it.

**Frost seeding results in significant savings of time and money**

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## Increase body condition scores before calving

**The combination of poor quality hay, tough winter weather and the approaching calving season creates a critical time to monitor your cows' body condition scores. Body condition is a good measure of the nutrition level of the herd.**

Hay quality has been poor for the past couple of years. Rainy conditions caused hay to be harvested at extreme maturity; some hay was rained on numerous times. The result is hay deficient in energy and/or protein for cows. Fiber levels in the hay are high enough to prevent cows from consuming extra. This results in cows that are calving or close to calving on a negative plane of nutrition.

Wet cattle need more energy to keep warm than dry cattle. January, February and March can result in cold, windy

and icy weather. These conditions can result in cows with energy requirements 15 percent to 25 percent higher than expected. Unless producers supplement during these nutritionally stressful times with grain or by-products, cows will deplete their reserves and lose body condition.

Losing body condition in late gestation has a negative effect on calf vigor and cow reproduction. Cows in poor body condition will have delayed estrous cycles after calving. The beef cow's body has built-in sensors that relay information about body condition and nutrient supply to the cow's brain to control reproduction. As a result of poor body condition at calving or breeding, thin cows will re-breed later, if at all.

Cows in poor body condition deliver weak calves and produce lower quality colostrum. This results in

poorer performing calves and increased death loss.

Increasing body condition before calving is much better for the cow and calf. After calving, the cow's system is geared toward milk production so extra energy results in extra milk but little increase in body condition.

In extreme weather, cows need an extra 7 to 10 pounds of hay or 3 to 5 pounds of grain. Cows will not be able to eat more hay unless it is of good quality. Cows on a negative plane of nutrition can lose 1 to 2 pounds per day during harsh conditions. There are many good sources of energy to use as a supplement, with corn and grain by-products (corn gluten feed, soy hulls and wheat midds) offering the cheapest alternatives.

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## Potash expensive but necessary

**Fields of soybeans and corn with tell-tale yellow leaf edges revealing potash deficiencies were common this past year. As potash prices climbed to 50 cents per pound, many producers cut back on applications.**

This is a concern because a 120 bushel per acre corn yield can remove 35 pounds of potash from the field. A 45 bushel per acre yield of soybeans can remove 65 pounds of potash. By rotating the two crops and applying potash only before planting the corn, a 100 pound application of potash would be needed to replenish the soil.

Three tons of fescue hay can remove 100 pounds of potash. Old hay fields can be nearly depleted of potash.

A potash-deficient field will not yield its full potential. Producers should take soil tests after harvest to check levels of potash as well as other nutrients.

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### State regulations govern the off-farm sale of dairy products

Dairy items have become hot commodities as farmers seek ways to increase product sales. Milk in glass containers, artisan cheeses and fresh yogurts have become products both popular with consumers and profitable. Yet connecting consumers with local dairies and dairy products is just one aspect of increasing dairy sales.

Producers must adhere to state statutes that regulate the safe and legal sale of all dairy products. In Missouri, the dairy industry is overseen by the Missouri Milk Board, a division of the Missouri Department of Agriculture.

Consumers may be most familiar with buying milk at the grocery store but off-farm sales, including home delivery, continue to increase in our state. In Missouri, raw milk and cream from cattle, sheep and goats can legally be sold off the farm. To comply with state regulations, these products must be delivered directly to a consumer and may not be sold in any retail fashion. Dairy farmers are not allowed to sell products at farmers' markets or in retail stores.

Producers cannot legally sell butter, yogurt, cheese or ice cream without proper licensing and a permit from the Missouri State Milk Board. Obtaining this license further requires an inspection by the state governing agency. Producers can ensure their sales and production practices are in compliance with state statutes by contacting the Missouri State Milk Board at 573.751.3830.

Keep in mind that farmers who do not adhere to the state statutes regarding the safe and legal sale of dairy products put all dairy producers in our state in jeopardy.

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