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Preventing Chimney Fires

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Back in our May issue, we talked about harvesting firewood and I promised to share more about chimney fires. So, here is "combustion 101," a very brief primer on burning wood safely in a stove or fireplace.

When wood burns, the fire goes through three stages. In the first stage (up to around 500 degrees), the heat of the fire simply dries the wood. In the second stage (500 to 1100 degrees), sometimes referred to as pyrolysis, the wood breaks down chemically, emitting flammable gases that contain more than half of the heat energy of the wood. In the third stage (over about 1100 degrees), the gases and remaining charcoal burn.

Just for fun, if you watch a log burn in an open fireplace, you might catch a glimpse of a jet of hot gases blowing out the end of a log. You may actually see that the gases are escaping from the log, but not igniting until the jet of gas is a measurable distance away from the surface of the wood.

Problems develop when the flammable gases enter the chimney or vent pipe before they have burned. As the gases cool below 250 degrees, they con-

dense as acids on the inside of the chimney. As they dry and coagulate, the acids thicken into a highly flammable, tar-like substance called creosote.

Because the creosote formation is caused by cooling the unburned gases, anything that leads to incomplete combustion or cool chimney temperatures will increase the problem. Wet wood uses more of the fire's heat to evaporate water and reduces the exhaust gas temperature. Restricting the combustion air to the fire slows the burning rate and leads to incomplete combustion and lower temperatures. Even using heat exchangers to capture more chimney heat will lead to cooler chimney temperatures and more creosote formation.

Slow burning fires and efficient heat transfer to the room would seem to be desirable situations. However, the risk associated with creosote formation is that if the chimney gets hot enough, the creosote will ignite, causing a chimney fire.

Chimney fires are easily identified. You may first hear a "crackling" in the chimney. If enough creosote fuel is present, the crackling may develop into a roar. The chimney will become extremely hot.

Metal vents may actually glow red or orange. The chimney may become hot enough to ignite nearby building materials and start a house fire. Flames and sparks shooting out the top of the chimney may cause a fire on the house roof or on surrounding buildings. The chimney liner may be cracked or warped by the hot fire, making the chimney unsafe for future use.

You can avoid chimney fires by preventing creosote build-up in your chimney. Here are some pointers:



- Season wood properly before burning. Wet, unseasoned wood causes more creosote than dry wood.
- Avoid long, slow-burning fires. Restricting the fresh air supply causes incomplete combustion and more creosote build-up in the chimney.

- Allow frequent hot fires. A brief hot fire every day or two can help remove small creosote deposits.
- Check your chimney monthly. Clean your chimney with a stiff wire chimney brush annually, or before the creosote reaches a thickness of one-eighth inch.
- Use a catalytic stove that allows the volatile gases to burn at a much lower temperature, greatly reducing wood smoke and creosote, and also increasing heat output by 25 to 30%. These catalytic combustors can be purchased in new stoves or can be added to existing stoves. They generally add around \$200 to the cost of a stove and must be replaced every several years.

If a chimney fire does happen, take these steps:

1. Call the fire department and evacuate the house.
2. Close all air inlets and dampers to smother the fire.
3. Discharge a fire extinguisher into the stove, or use a chimney fire extinguisher stick.
4. Wet the roof and watch for outside fires caused by sparks.

5. Have your chimney inspected before putting it back into service.

Baking soda can be used to help suffocate a fire in the absence of a fire extinguisher. Check with your local fire department for the availability of fire extinguisher sticks. These devices emit large amounts of smoke to help smother a fire.

Chimney fires are a real and dangerous possibility when heating with wood. A 1982 study by the US Consumer Product Safety Commission reported that wood-burning appliance fires accounted for 20% of all residential fires and 5% of all fire deaths. While most chimney fires are confined to the chimney itself, the intense heat sometimes ignites surrounding building materials and furnishings.

While we're talking safety, let's not forget disposal of ashes. Ashes must be stored in a metal container with a tight lid. The closed container should be placed on a non-combustible floor or on the ground well away from all combustible materials. Wood ashes do contain small amounts of phosphorus and potassium, essential plant nutrients. However, wood ashes are also very alkaline. Adding large amounts of ashes to the soil can raise pH to undesirable levels and cause plant growth problems. Before you add ashes to your garden, test your soil. If the pH is above 7.5, don't add ashes. If you do add ashes, spread them uniformly at no more than 15 pounds per 1000 square feet. If you are unsure about using ashes on your garden, check with your extension specialist in crop production or horticulture.

Careful operation and maintenance can help minimize the risk of accidental chimney fires. For more information on chimney installation and maintenance, talk to your local building inspector, home insurance carrier, or fire department, or ask for ISU Extension bulletin Pm-802 "Wood-Burning Stoves, Furnaces, and Fireplaces." The University of Missouri also has several bulletins about wood stoves and chimneys available on-line at <http://muextension.missouri.edu/xplor/agguides/agengin/#Housing>.



Improving Pastures for 2001

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Okay, so 2001 is a long way off. But this is the time to start improving both the quality and quantity of your pastures for next year. Start by making an inventory of the species and the health of those species you presently have in your pasture.

I assume you have forage species. If you have weeds, now is the time to start to work on perennials, do the job on biennials, and promise to do better on the annuals. Most of the perennials are still preparing for winter by unloading food from the leaves to the roots. No need to work on perennials in the spring. You can piggyback chemicals on the food to kill the roots. Some perennials, such as Canada thistle, may still not die, but they will be weaker for next year. Biennials, such as musk thistle, are in the rosette stage and are pretty vulnerable right now. The annual weeds are dead--we'll try to thicken our good specie to smother the annuals.

The most common translocated herbicides for pastures are phenoxy products such as 2,4-D and Banvel. Check with your ISU Extension office for help in weed identification and selecting the proper herbicide.

A spade will also work on if you don't have too many weeds and/or you need the exercise.

Winter annuals, i.e. mustard, are the fourth type of weed you may be concerned about. They sprout in the fall and flower early in the spring. Good pasture health will also take care of them.



If your pasture specie is mostly smooth brome grass or bluegrass but is a little thin (that is, you can see soil), consider application of some nitrogen fertilizer in late summer or early fall. These two grasses spread by underground roots in the fall. Spring applied nitrogen tends to promote top-growth at the expense of root growth.

Some people like to do a fall interseeding. "Fall" seeding is probably not the best term since we'd prefer that "fall" seedings be completed by mid to late August to allow the root and plant time to develop before a killing frost pays a visit. Always a risk, of course, but you might be better to wait for an early spring attempt to thicken the stand. Pick up the bulletin, "Selecting Forage Species," PM 1792, at your county ISU Extension office, or find it on-line at <http://www.extension.iastate.edu/Publications/PM1792.pdf>.

In the meantime, you might be reading journals, visiting with neighbors, and your extension personnel to get a handle on the species that might be most useful to you. We continue to get questions on some of the exotic plants that promise great things, but, somehow, we always come back to the old tried and true.

The same goes for some magic bullet to improve pastures. It just seems to boil down to creating and maintaining a proper environment for the desired plants, and they'll respond to their best ability.

Follow Safety Tips for Halloween Fun

by Bonnie Coblentz, Ag Communications Department, Mississippi State University Extension



Halloween is supposed to be a fun time for kids to dress up and collect bags of candy, but the night can bring more danger to youth than an upset stomach.

When parents think of dangers, they often think of candy that has been poisoned or tampered with, and dark streets filled with strangers. But other more common dangers haunt kids.

The Consumer Product Safety Commission listed three costume-related injuries trick-or-treaters can sustain. Youth may be burned from flammable costumes catching fire from items such as candles and jack-o'-lanterns, eye abrasions from sharp objects attached to masks and costumes, and skin irritations or rashes from decorative paints.

The safety commission offered several Halloween safety tips on-line.

"When purchasing costumes ... look for flame resistant nylon or polyester fabrics or look for the label 'flame resistant'," the site said. "To minimize the risk of contact with candles and other fire sources, avoid costumes made with flimsy materials and outfits with big, baggy sleeves or billowing skirts."

Costumes and candy sacks should be clearly visible to motorists, a trick which can be achieved by trimming these items with reflective tape from hardware or sporting goods stores. Have children carry flashlights to aid in seeing and being seen. Costumes should also be short enough so they don't

trip kids, and shoes should be well-fitting and sturdy. It is not a good idea to let a child wear their parent's shoes. Be sure masks have big enough eye holes to allow full vision and take steps to prevent any other head wear from blocking their vision.

Costume props such as swords or knives should be made of soft, flexible material.

Dr. Louise Davis, child and family development specialist with the Mississippi State University Extension Service, encouraged parents and children to handle treats with caution until ensuring they are safe.

"Warn children not to eat any treats before an adult has examined them carefully for evidence of tampering," Davis said. "When in doubt, throw it out."

Davis also warned against homemade treats and commercially produced candy where the wrapper is loose or the seal broken. She also recommended having bags of goodies x-rayed by participating hospitals or health clinics.

While Halloween provides a time when many situations are ripe for danger, kids can still enjoy a safe outing if parents and children set guidelines and work together.

"Parents should always accompany younger children from door-to-door," Davis said. "Older children may be allowed to travel in groups in familiar neighborhoods with friends, but parents should always know who they are with, the area they will be visiting and when they will be back home."

Acreage Living is published monthly. For more information, contact your local county ISU Extension office.

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