Dealing with Mold from Recent Flooding
Bob Schultheis

Our unusually wet spring and summer, with often torrential rains, has caused flooding of buildings throughout the Ozarks. Combine that with warm temperatures, and it creates the perfect environment to incubate and grow mold and mildew.

I’m often asked how to get a home tested for mold. I generally discourage mold testing, which is an unregulated business, and home test kits are of questionable benefit. Proper testing for mold through a laboratory is expensive and generally not helpful, because the results will always show at least 4-5 different types of mold.

There are two simple tests for mold which any homeowner can do: (1) if it smells like mold, it probably is, and (2) if a few drops of straight laundry bleach on the suspect area makes the gray/black/green stuff disappear in 1-2 minutes, it's mold. All of these molds can be prevented by doing two things---removing the moisture source and improving airflow.

Here are the things to check first in getting rid of excess moisture.

1. Are there gutters and downspouts on the home, are they clean, and do they direct the storm water away from the foundation? Does the ground near the foundation slope away from the home? If not, every 1 inch of rain from the roof of a 1600 square foot home drops 1000 gallons of water against the house foundation.

2. Does water get in the crawl space or basement even when it’s not raining? If so, you may have a restrictive soil layer uphill of the home. A curtain drain (http://extension.missouri.edu/p/EQ401#drains) installed upslope of the home can redirect surface and subsurface runoff away from the building foundation.

3. Is there a 6-mil or thicker plastic vapor barrier installed and sealed to the floor and foundation walls of the crawl space under the home? If not, up to 20-25 gallons of water vapor per day is rising out of the ground to invade the home. Mold will show up first around the baseboards of poorly-ventilated rooms such as closets.

4. Are the foundation vents on the crawl space open to circulate air under the house? They should be, except maybe for the coldest winter days. Keeping them open also helps solve radon problems, which 1 in 5 Missouri homes have. Radon is a radioactive gas caused by the natural breakdown of rocks. Radon is the second-leading cause of lung cancer next to smoking. A free test kit is available at http://health.mo.gov/living/environment/radon/.

5. Are there any roof leaks, plumbing leaks, or condensate drains from air conditioning units that allow water into or under the home? If so, fix or re-route them outside. Make sure the range hood vent, bathroom fans, laundry dryer vent, and any combustion appliances also exhaust to the outdoors.

6. Did the drywall or insulation get wet? If so, it needs to be removed and replaced. It acts like a sponge and can wick water up the walls several feet from the high-water mark of a flooded floor (see photo below).

7. Did the structural lumber of the walls or floor get wet? If so, it must be dried back down to 13 percent moisture content or less before insulation and drywall is replaced. This can take several weeks to dry if the water stood for even a few days. Use fans and dehumidifiers to speed the drying. Limit use of central air conditioning units to avoid drawing mold spores through the HVAC ducts.

8. What is the relative humidity in the home? It should be in the 30-50 percent range to prevent mold growth. You can check the humidity level with an inexpensive ($10-$20) digital humidity gauge (hygrometer). See http://extension.missouri.edu/webster/documents/resources/disaster/Temperature-HumidityGaugeSourceList.pdf for examples.

9. Is there mold growing on hard surfaces? If so, clean the surface with a solution of 1/3 cup low-suds household cleanser or laundry detergent (no ammonia) per 1 gallon of water, using a brush or sponge. Rinse with a solution of 1 cup of unscented liquid chlorine bleach per 1 gallon of water. Scrub with a brush. Rinse again with clean water and let dry. You can use a fan to speed drying.

For more information on mold and cleaning up flooded homes, see http://extension.missouri.edu/webster/mold-control.aspx and http://extension.missouri.edu/p/MP904.
Compost Barns for Dairy Cows
Compost Barn Field Day
Ted Probert

The value of housing for dairy cows in southern Missouri has been a frequent topic of discussion over the
years. One line of thought is that a low cost, low input production system, i.e. blue sky housing, will lead to a more
favorable bottom line than will a system that invests in an
expensive housing structure. An opposing philosophy is that
an investment in a barn for cows is a good one that will solve
a lot of herd management problems and result in increased
profitability. I’m sure these discussions will continue for
years to come.

One thing has changed in dairy cow housing in recent
years that may impact this discussion. That change is the
introduction of bedded pack compost barns to our industry.
A compost bedded pack barn is a housing system that consists
of a large, open resting area that is most often bedded with
wood shavings or sawdust. These barns differ from
traditional bedded pack barns in that their management
includes mechanically stirring the bedding on a regular basis,
usually twice daily.

For the most part, compost barns offer all the same
benefits as more traditional free stall barns when these
systems are compared to systems without housing. These
benefits include improvements in cow comfort, potential for
higher feed intake, improvement in udder health/somatic cell
count, and ultimately increased milk production.

Compost barns also offer some additional benefits.
Generally speaking, they are less expensive and lower
maintenance than free stall barns. For a given herd size, a
larger structure will be required for a compost barn than
would be the case with a free stall barn but concrete cost can
be less and there are no stall loops to purchase. Since manure
storage is largely accomplished inside the building, the need
for an additional manure storage structure is eliminated or
greatly reduced. Additionally, compost barn housing can lead
to improved heat detection, and manure value will be
increased compared to some other types of waste handling
systems. Since the interior of the barn is a large open
expanses, a compost barn can easily be transformed into a
storage barn for hay or machinery if a producer decides to
exit the dairy business or sell the farm. One negative with
compost barns is that expenditures for bedding will be higher
than would be the case for a free stall barn.

Proper management of a bedded pack compost barn
is critical to achieving success with the structure. Bedding
needs to be stirred twice daily. This can be accomplished
with a tractor and chisel plow or rotary tiller. Additional
bedding should be added as needed to prevent wetness. Time
is required to haul manure, usually twice annually. Good cow
prep procedures at milking time are important in a compost
dairy barn system.

There are quite a number of southern Missouri dairy
producers who have installed feeding floors as a part of a
waste management program. These facilities have addressed
the issue of manure handling and they have also provided a
permanent, hard surfaced area of feeding hay, silage or a
TMR. The addition of a compost barn may be the next
logical step for those who want to take their herd
management to the next level.

David and Rhonda Gray are area producers who
recently completed construction of a bedded pack compost
barn for their dairy herd. A field day is planned to give the
public an opportunity to look at the facility and learn what it
has done for the Grays. The event is scheduled for Tuesday,
August 25 at 10:30 am. Anyone who wants to learn more
about compost barns or is interested in seeing one of these
barns in use is welcome to attend. The Gray farm is located
at 1167 Hart Road, Macomb. Directions are as follows: Go
east of Mansfield or west of Mountain Grove on Hwy 60 to
the Macomb exit. Go south on Hwy K 1.4 miles then turn left
on Hart Road. The dairy is just ahead on the right hand side
of the road.

Improved cow comfort is an important feature of a bedded pack compost barn.
Solar Energy Systems Heating Up
Bob Schultheis
I get calls on a weekly basis from people interested in pursuing some sort of renewable energy system as a way to replace their current energy source. Their concerns usually center around the high cost of propane or electricity, and most wonder if windmills or solar panels can serve as a replacement because that energy is “free.” But that energy is not free, because of the cost of the equipment needed to capture those natural resources of wind and sun.

The reality is you’re not actually saving any money until you have recaptured the money you spent to do the energy measure. So if you can first make the buildings and equipment more energy-efficient without spending a lot of money, it pays back quicker and allows the renewable energy system to be smaller and therefore less expensive.

Even with smaller systems, some are still not cost-effective yet. An example is a wind turbine. The average wind speed for most of the Ozarks is 11 MPH (miles per hour). At that wind speed, a 10kW wind turbine with a 23-foot diameter rotor and costing about $50,000 to install will produce about 1,250 watts of power, or enough to run either a toaster or mid-sized microwave oven.

Solar energy systems, however, are getting more affordable. Photovoltaic panel systems that cost $10 per watt three years ago now cost less than $3 per watt. Some investor-owned utilities will provide rebates as part of their renewable energy mandate. All systems installed through December 2016 are eligible for a 30 percent federal energy tax credit, further reducing the cost. Simple payback on these systems is now down to 9-12 years, for a system that typically has a 20-25 year warranty and 30-year functional life.

These options will be discussed at our next workshop on home energy conservation and solar energy systems, set for Aug. 26 in Pineville, MO. See http://extension.missouri.edu/webster for details.


Managing a Forage Surplus and Stockpiling
Sarah Kenyon
Ideal growing conditions through the spring and summer months have created a forage surplus. Having too much forage can be a greater management challenge that managing a forage deficit. What should a farmer do to manage over-grown fields?

One answer is to stockpile that forage to feed through the winter months. Under ideal conditions, the stockpiling period would begin by grazing or clipping during mid-August. Beginning the stockpile before August can result in lower forage quality. Several studies have concluded that delaying the stockpiling process until September can increase forage quality, but yield will be lower. Therefore, using summer surplus forage for stockpile will result if forage quality that is lower.

Another important consideration is that tall fescue and other cool season grasses begin forming new tillers in the fall. Having a thick forage canopy will likely reduce the amount of tillers that the plant produces. This is especially important for those that produce tall fescue seed—only tillers that go through winter will produce seed. Fescue seed yield will be lower if pastures are not grazed or clipped early this fall.

Fall tiller production is also important for those that do not sell fescue seed. Having more tillers in the fall creates a thicker forage base allowing for more spring yield and increase competition with weeds.

The decision of what to do with spring and summer forage surplus does not have an easy answer. The best thing to do is to graze, hay, or brush hog the forage this fall (by the end of October). If grazing, the animals can spend part of the grazing period eating the older, mature forage and then the remainder on young, high quality forage. Doing this can maintain milk production levels, ADG, and animal performance.

Tips for Stockpiling Tall Fescue
- Graze or clip pastures to 3-6 inches stubble in late August. Delaying initiation of stockpiling will result in higher quality forage though yields may be lower.
- Apply 40-60 pounds of nitrogen in late August.
- Insure adequate pH and phosphorus and potash levels prior to stockpiling.
- Start grazing no later than mid-December.
- Stockpile one acre per cow. Forty percent more grazing days can be obtained by strip-grazing cattle on stockpiled fescue in 3-day versus 14-day allotments, potentially providing 75 to 90 days of feed.
It's Time to Start Thinking About Drinking Water

Randy Wiedmeier

This time of year I start thinking about drinking water for livestock regarding quantity and quality. This year quantity may not be a problem due to the extraordinarily wet spring and early summer we have experienced. The ponds are full and the springs and seeps are running. However, as the summer presses on the situation can change rapidly. Many years ago my vo-ag instructor used to emphasize the importance of water in animal agriculture. His counsel has proven fortuitous because since that time I have had several experiences that have verified his timely observation.

Some time ago (more than I care to remember) I served as an animal nutritionist at a feed company in my hometown. One of our clients was an “egg ranch” with about 100 thousand laying hens. I was trained as a ruminant nutritionist, so you can probably imagine that I lacked confidence in that particular field of my discipline. The problem with laying hens and dairy cattle is that your mistakes are made apparent overnight. The only thing that saved me was the fact that I had taken a poultry production class at Montana State University from, believe it or not, Professor Beakler. To make a long story short, the EPA asked that the laying hen sheds be moved up on a bench away from a local lake. After the move to the sheds on the bench, egg production plummeted and try as I did, no adjustment in the diet resulted in improved production. The owners concluded that I was in over my head or at least out of my league, so they called in poultry specialists from Washington and California. They also made adjustments in the diet but to no avail. Blood samples were taken and analyzed for various diseases. Fecal samples were analyzed for parasites. Nothing could be detected that would account for the loss in production.

Finally, I remembered the lessons from my vo-ag teacher Henry Robinson and Professor Beakler and I checked the water quality. A new well was drilled when the facility was moved up on the bench and although the water appeared clear and pure, it contained fairly high concentrations of magnesium and sulfates. This water would have been fine for cattle but poultry are the farm animals most sensitive to water quality factors such as dissolved solids. The well was drilled another 100 feet deep and the problem was solved.

There is a fairly close relationship between Feed (dry matter, DM) Intake and Water Intake. If DM intake increases, Water Requirement Increases. If Water Intake is Restricted, DM Intake is Reduced. The laying hens in the example above restricted their intake of water because of the dissolved solids and as a consequence, feed intake was reduced with a concomitant drop in egg production.

On another occasion many years later, I was asked to visit a dairy farm that was having problems with its calves. The calves were housed in individual hutches that seemed to be clean and well maintained, but the calves exhibited unthrifty appearance and a poor growth rate. I first checked the hygiene practices associated with the milk the calves were receiving and the composition of the grain ration. The management of the calves seemed to be top-notch. Then I glanced at the drinking water buckets in the hutches and needed to look no further. Most had extensive algae growth and a few even had what my Grandpa would call “swimmers”. Again water had been overlooked as the Most Important Essential Nutrient. And even though the calves were receiving a ration of milk each day, they were not consuming enough water.

As a result of my observations at that dairy, I conducted and published a study to verify the importance of proper drinking water management in young dairy calves. The treatments of the study were hutch drinking water buckets being cleaned and rinsed Daily, at 7-Day Intervals, or 14-Day Intervals. Results of the study revealed that calves whose water buckets were cleaned and rinsed daily or at 7-Day intervals exhibited similar performance. However if the cleaning and rinsing period was extended to 14-Day intervals, Average Daily Gain was Reduced by nearly 10% and the Incidence of Health Problems was Increased.

So, I guess the “Take-Home Message” of my portion of the newsletter this month is: Don’t Forget About the Importance of Drinking Water for Your Livestock.

For more detailed information regarding drinking water issues for livestock, go to http://extension.missouri.edu/howell/livestock.aspx and view a power point presentation by Dr. Wiedmeier entitled “Survey of Basic Nutrient Groups for Farm Animals.” Slides 4-25 cover the importance of watering of animals.

What is this?
Sarah Kenyon

Barnyardgrass (Echinochloa crusgalli) typically grows in moist areas. Record rain amounts have created ideal conditions for this plant.

Barnyardgrass is a summer annual that propagates by seed. Tillering begins roughly ten days after emergence, when the plant is about 4 inches tall. One plant may form as many as fifteen tillers, giving this grass its tufted or patch-like appearance. Because of this, one clump may spread over an area 30 inches in diameter.

The large seeds of this grass make it an important food source for bobwhite quail. Barnyardgrass also provides good brood habitat, and quail may roost in patches of this grass.

In fescue/orchardgrass pastures and hayfields, there are few control options. Glyphosate is the only approved chemical. Barnyardgrass can be grazed and is considered to have a high sugar content; however, this plant can accumulate toxic levels of nitrates under the right conditions.