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http://agebb.missouri.edu/agconnection

The Fundamentals of Baleage

Extended periods of wet weather can make it difficult to make high quality dry hay. Baleage provides a viable alternative by wrapping bales of high moisture forage in layers of airtight plastic and allowing it to ensile. This can produce high-quality feed and can be done in one day. Forage can be mowed in the morning, allowed to wilt for a few hours, and wrapped in the afternoon.

Heating occurs in all hay baled above 15% moisture. When baled above 20% moisture, it may mold or heat to a point which causes caramelization. Although livestock like to eat caramelized hay, it has little nutritional value. In extreme cases, when hay is baled at a very high moisture content, spontaneous combustion may occur.

Baleage is made when the moisture content of the forage is between 40-60%. Bales ensile best at the higher end (50-60%) of the moisture range. Forage wrapped when too wet or too dry can improperly ferment, leading to spoiled feed.

Bale wrappers may be single bale units which wrap each bale individually or inline wrappers which butt bales against one another creating a long tube. Individually wrapped bales use more plastic but usually contain less oxygen. Individually wrapped bales are easier to move and can result in less spoilage at feeding time than a tube which leaves a bale exposed to air every time one is removed from the stack.

One key to successful, high quality baleage is to start with forage that is not too mature. Mature forages are lower in moisture and sugar content and will be less likely to complete the fermentation process. Ensiling will **preserve** the quality of the feed, but does not **improve** the quality of the feed.

Another key to success is making a small dense bale. Balers equipped with a silage kit are more suitable for baling the wet forage. When using an inline wrapper, uniform bale size and shape helps eliminate air pockets between bales.

Smaller round bales require more total plastic to wrap, but larger bales quickly become too heavy to handle due to the weight of the added moisture. Net wrapped bales have a smoother surface than twine tied bales which helps reduce punctures in the plastic from thick stems. Avoid using treated twine which will degrade the plastic. Square bales can be wrapped but use more plastic than big round bales.

Using a minimum of 6 mm high-quality plastic when wrapping bales is critical for proper ensiling and storage. Monitor bales weekly for damage to the plastic from animals, equipment, and weather. A hole in the plastic the size of a quarter can result in a spoiled area in the bale the size of a basketball. Cover any rips or tears with silage tape as soon as possible to prevent spoilage.

Ideally, baleage should be stored near the feeding site. Store bales in a well-drained area that is accessible when soil conditions are wet. Feed ensiled bales within a year of harvest to reduce storage losses.

Source: *Valerie Tate, field specialist in agronomy*

High Pathogenic Avian Influenza: What Poultry Owners Need to Know

As spring approaches, a familiar and serious threat to poultry in Missouri returns: High Pathogenic Avian Influenza (HPAI). Often called "bird flu," HPAI is a highly infectious viral disease caused by a Type A influenza virus. Many wild birds, especially migratory waterfowl such as ducks and geese, carry this virus without appearing sick. As these birds move through Missouri from February through May, the virus can enter the environment and increase the risk to domestic poultry.

High Pathogenic Avian Influenza is a major concern for show birds, backyard flocks, gamebirds, and commercial poultry alike. The "high path" form spreads quickly and can lead to severe illness, high death loss, and required testing and depopulation if found. Protecting flocks begins with strong biosecurity. Biosecurity is a group of everyday practices which help keep disease threats, such as avian influenza, away from poultry or other livestock. While no single step provides complete protection, each layer of biosecurity lowers the chance of bringing the virus into a flock.

Keep Wild Birds Out

The main goal is to prevent contact between domestic poultry and wild waterfowl.

- House birds in covered enclosures using a roof, tarp, or heavy plastic sheeting
- Use wire mesh or netted sides to block wild birds from entering
- Keep poultry away from ponds, creeks, or other water sources visited by ducks and geese

These steps help create a protective "biosecurity bubble" around the flock.

Cleanliness is an Important Defense

Good sanitation reduces germs and makes disease spread less likely.

- Keep buildings, pens, and equipment clean and in good repair
- Replace feed and water often, and clean and disinfect bowls and buckets
- Remove dirt and manure before disinfecting
    - Best to clean, let dry, disinfect, let dry
- Sunlight works as a natural disinfectant, but products such as Lysol or Virkon are also effective when used as directed
- Scrub off caked mud or manure before applying disinfectants to boots or equipment

Manage Traffic: Birds and People

Anything that moves, feet, hands, tools, or equipment, can carry the virus.

- Limit visitors and reduce trips in and out of poultry areas
- Handle new or sick birds only after caring for healthy birds
- Spray or wipe boots with a disinfectant when entering or leaving poultry spaces

Quarantine New Arrivals

New birds should never be placed directly into an established flock.

- Quarantine new birds for at least 3 weeks; 30 days is better
- Keep quarantined birds at least 100 feet away from the main flock, if possible
- Observe quarantined birds daily for any signs of illness before introducing to the rest of the flock

Know the Signs of Trouble

Early detection can protect both the home flock and flocks in the surrounding community. Watch for the following signs:

- Sudden or unexplained bird deaths
- Drop in feed or water intake
- Lethargy or "ADR" ("Ain't doin' right") behavior
- Decrease in egg production
- Soft, thin-shelled, or misshapen eggs
- Swelling of the head, comb, wattles, or hocks
- Dark blue or purple discoloration of the comb, wattles, or legs
- Trouble breathing, including coughing, gasping, or sneezing
- Discharge from the eyes or nose
- Stumbling, dizziness, or falling down

Any unusual behavior or symptoms should be taken seriously.

If a Bird Dies Suddenly

Safe handling protects both people and other birds, and it helps diagnostic labs do their work correctly.

1. Put on rubber gloves
2. Place the bird in a plastic bag, then seal it inside a second plastic bag
3. Store the bagged bird in an ice chest or cooler with ice. Do not use dry ice and do not freeze the bird
4. Contact a veterinary diagnostic laboratory for instructions

Missouri poultry owners face another period of risk during fall migration as birds travel south. Staying alert throughout the year helps protect flocks across local communities. No biosecurity plan is perfect, but every step taken lowers the chance of disease. More layers of protection mean a safer environment for all poultry.

Source: *Heather Conrow, field specialist in livestock*

The Importance of Soil Health and the Power of Compost in the Garden

It starts with the soil. Healthy garden soil is the quiet engine behind every thriving garden. It is easy to focus on the plants, colors, shapes, and harvest, but it all starts underground. When soil is alive, balanced, and rich in organic matter, plants grow stronger, are more likely to resist pests and diseases, and produce more vibrant blooms or abundant vegetables.

Why Soil Health Matters

Soil is not just dirt. It is a living ecosystem filled with microorganisms, fungi, insects, and organic material. When this underground community is thriving, plants benefit in several ways:

- **Available nutrients:** Healthy gardens depend on soil which can steadily release nutrients to plants. Most flowers and vegetables grow best in soil which is slightly acidic to neutral, generally a **6.0 to 7.0 pH,** because this is the range where key nutrients like nitrogen, phosphorus, potassium, calcium, and magnesium are most available. When the pH falls too low or is too high, these nutrients may still be present in the soil but become "locked up," meaning roots cannot absorb the nutrients effectively. Healthy soil, rich in organic matter and active microbes, helps prevent this problem by naturally buffering pH and breaking down organic materials into forms plants can use. As microbes decompose compost and other organic inputs, nutrients are slowly and steadily released, creating a balanced supply which contributes to strong growth, higher yields, and fewer nutrient□related issues throughout the season.
- **Improved structure:** Soil rich in organic matter holds water without becoming soggy, drains well, and allows roots to spread and grow easily.
- **Enhanced resilience:** Plants grown in healthy soil are more resistant to disease, drought, and pests.

Compost: The Gardener's Secret Ingredient

Compost is comprised of decomposed organic material such as kitchen scraps, shredded leaves, and grass clippings that transform into a dark, crumbly, nutrient-rich amendment. Think of it as a multivitamin for the soil.

- **Boosts soil fertility:** Compost adds essential nutrients like nitrogen, phosphorus, and potassium in a slow-release form.
- **Feeds beneficial microbes:** These tiny organisms break down organic matter and help plants absorb nutrients more efficiently.
- **Improves moisture retention:** Compost helps sandy soil hold water and loosens clay soil aiding in better drainage.
- **Reduces waste:** Composting keeps organic materials out of landfills and returns it to the earth in a form plants can use.

How to Use Compost in Your Garden

- **Mixing into new beds:** Blend compost into the top 6 –8 inches of soil before planting.
- **Using as mulch:** Compost makes an excellent mulch that suppresses weeds while feeding the soil.
- **Adding to containers:** Mix compost with potting soil to give container plants a nutrient boost.
- **Do not overdo it!:** More is not better, and applying too much can have detrimental effects. Plants grown only in compost may only produce lush, leafy growth, and not set flowers or fruit. Never plant root crops such as radishes, turnips, carrots in compost, as tops will be leafy, and roots will not develop.
- **The ideal composting ratio for home composting is 3:1** (browns to greens by volume), or a 30:1 carbon-to-nitrogen ratio by weight, which is best approximated in backyard piles by using 3 parts brown for every 1-part green. Aim for 60% carbon-rich "browns" (leaves, paper, wood chips) and 40% nitrogen-rich "greens" (kitchen scraps, grass clippings) to ensure rapid decomposition, proper aeration, and no odor.
- For new garden beds, apply 3-4 inches of compost and work it into the top 6-12" of soil. For existing garden beds, apply a 1-inch layer over the surface and work it in. For new containers, mix up to 1/3 compost with potting mix. During the growing season, top-dress with a thin layer each month to replenish nutrients.
- When too much compost is added to the soil, plants fail to thrive and produce. If the compost contains excess soluble salts, plants often look stressed, burned or stunted. A plants' response to too much compost looks similar to fertilizer burn.

Building Soil Health Over Time

Soil improvement is a gradual process. With consistent additions, soil becomes richer, darker, and more alive each year with the following:

- less need for synthetic fertilizers
- fewer pest problems
- more productive plant growth and yields
- a more sustainable, self-sufficient garden ecosystem

Focusing on soil health is one of the most important tasks a gardener can do. When soil is nurtured, everything above it will be more productive.

For more information contact an MU Extension Field Specialist in Horticulture.

Source: *Jennifer Schutter, field specialist in horticulture*

Cornwall Dairy Innovator Kate Hoare Guest Presenter

International Year of the Woman Farmer

As celebrations for the United Nations' International Year of the Woman Farmer continue across Missouri and around the world, Kate Hoare, an award-winning dairy producer from Southeast Cornwall in England, will take center stage during an April virtual learning session spotlighting global women leaders in agriculture.

Kate Hoare decided to pursue a career as a full-time dairy farmer. A farmer's daughter, the choice to take over the family's milk contract and start a farm with husband Kevin and three children was definitely not expected.

Hoare operates Trenance Farm and has developed an innovative off-grid, biomethane capturing slurry lagoon system, a model that has earned international attention for reducing environmental impact while improving farm efficiency. The work serves as a tangible example of how women agriculturalists are leading advancements in sustainability, animal husbandry, and resource stewardship.

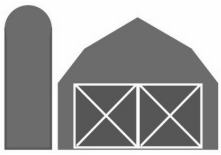
The presentation is expected to draw participants interested not only in dairy production but also in renewable energy, climate smart agriculture, and international farming models. As the agricultural sector continues to navigate complex issues ranging from environmental pressures to market volatility, Kate's perspective underscores the growing influence of women leaders shaping the future of food systems. There is no cost to participate.

Event Details

Date: April 22
Time: 12:00 p.m. CST
Location: Zoom
Registration: pears.io/events/mu/4093/

For more information about the International Year of the Woman Farmer visit https://tinyurl.com/MU-pearls.

Contact Heather Conrow, field specialist in livestock and statewide poultry specialist with MU Extension at hconrow@missouri.edu with questions.



Source: *Heather Conrow, field specialist in livestock*

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Mary Sobba

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