Extension
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Northeast Missouri
Ag Connection

Your local link to MU for ag extension and research information
http://agebb.missouri.edu/agconnection

The Importance of Soil pH and Liming

Soil pH is a measurement of soil acidity. A pH of 7.0 is neutral, below 7.0 is acidic and above 7.0 is alkaline. The target pH for most field and forage crops is between 6.0 and 6.5. Soils in Missouri naturally become more acidic over time. Crop removal of calcium, magnesium, and potassium play a large role in the change of pH. The breakdown of organic matter and nitrogen fertilizer also increase soil acidity.

When the pH is low or very low, essential plant nutrients, like nitrogen, phosphorus and potassium, are not available for plant growth. Phosphorus becomes unavailable because it forms insoluble compounds with aluminum and iron. Some micronutrients, like aluminum and manganese, become readily available, resulting in toxicity issues. High concentrations of available aluminum may inhibit root development and limit water and nutrient uptake. Many beneficial soil microorganisms, like rhizobia bacteria needed for nitrogen fixation in legumes, need a pH near 6.0 to function efficiently.

Soil testing is the only way to know soil pH. University of Missouri Soil Testing Laboratory recommendations for adjusting soil pH are given in the amount of Effective Neutralizing Material (ENM) needed to raise the pH to the optimum level. The MU Soil Testing Lab measures salt pH, which is generally 0.5 units lower than the water pH. It is important to read pesticide labels that may indicate a desirable water pH range for most effective weed control.

Soil pH is raised by adding a liming material to neutralize the acidity. The most common material used is calcium carbonate in the form of crushed limestone. When magnesium is deficient in the soil, dolomitic limestone should be used. Limestone breaks down slowly, taking about six months to fully take effect.

Agricultural liming materials sold in Missouri must have an ENM rating. This number is based on the purity of the calcium carbonate in the product and how finely it is ground. Optimum soil pH required is based on the crop being grown. For example, alfalfa requires a higher pH than other forage crops.

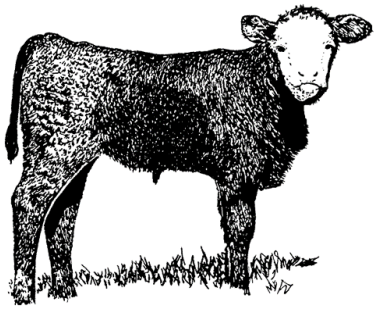
If the liming material is not tilled into the soil, caution should be used to avoid raising pH too much at the soil surface. No more than 1500 ENM of lime per acre should be applied at one time. If more is needed, a split application should be made one year apart.

Products other than crushed limestone can be used, but are often more expensive. Pelletized lime is less dusty, but it may take more time to breakdown and have the full effect on soil pH due to the binding agents. Liquid lime will react more quickly than crushed limestone, but usually has a lower ENM value and will have an effect only near the soil surface. Hydrated lime will react very quickly with the soil, but can be difficult to handle due to its caustic nature. Although gypsum contains calcium, it is not effective at neutralizing soil acidity.

Maintaining the proper pH is critical for efficient fertilizer uptake and plant growth as well as insuring adequate availability of essential nutrient and reducing the toxicity of micronutrients. Adjusting pH to the desired range is often the most economical soil amendment.

Source: *Valerie Tate, agronomy specialist*

Colostrum Consumption



Setting up the newborn calf for success becomes critically important to the profitability of the operation since the majority of the income comes from selling a calf crop. Proper nutrition of the nursing calf is important as it results in the most pounds of beef to sell at weaning; it sets the calf up for achieving optimal post weaning performance.

The timing and the amount of colostrum consumption is critical for the health of the newborn calf. Ideally, newborn calves need to stand and nurse within the first few hours of life to maximize colostral absorption and immunity. The first meal a calf consumes is one of the most important meals because a sequence of gut changes begins with that meal. The intestines of a newborn calf are capable of carrying their contents across the wall and into the blood. This ability is critical to move antibodies; however, the process is not just for antibodies but can allow pathogens into the blood as well.

To protect the newborn from pathogens, the gut begins to "close" or loses its ability to take contents directly across into the blood, as soon as the calf's first meal is introduced to the intestinal tract. As a result, less and less antibodies can be absorbed from each subsequent meal until gut closure is complete. The window of time for delivery of colostrum is not always 24 hours. The window really depends on when the calf first consumes any kind of meal. A calf can still absorb some antibodies at 24 hours if the calf has nothing to eat. If the calf consumes anything, closure begins immediately and can be complete before the 24-hour mark.

If a newborn cannot nurse colostrum from its own dam, the following options are available:

1. Milk out dam and feed with bottle or tube
2. Feed colostrum from other cows that have lost their calves
3. Feed commercial colostrum replacement product
4. Feed colostrum banked from neighboring herds (beef or dairy)
5. Feed colostrum supplement

These options are in order of decreasing efficacy and increasing risk of introducing new diseases. Commercial colostrum replacers are effective but can be expensive. Feeding colostrum from neighboring herds can be effective, but dramatically increases the risk of introducing diseases into a producer's herd. Colostrum supplements are relatively safe in terms of disease transmission; however, they typically do not contain high enough concentrations of antibodies to guarantee adequate passive transfer.

Cow-calf producers should be prepared before the onset of the calving season by having a bottle, tube feeder, and a source of colostrum replacement. Visit with a licensed veterinarian or University of Missouri Extension livestock specialist with further questions.

Source: *Heather Conrow, livestock specialist*

Gardening Tips for January

Ornamentals

- Brush off heavy snow from trees and shrubs.
- Allow ice to melt naturally from plants to reduce injury.
- Check stored summer bulbs such as dahlias, cannas, and gladiolus to be sure they are not rotting or drying out.
- Limbs damaged by ice or snow should be pruned promptly to prevent bark from tearing.
- Sow pansy seeds indoors.

Houseplants

- Wash dust off plant leaves on a regular basis. This allows the leaves to gather light more efficiently and will result in better growth.
- Set pots of humidity-loving house plants on trays filled with pebbles and water.
- Kill mealy bugs on plants by wiping them off with a cotton ball soaked in rubbing alcohol.
- Insecticidal soap sprays can be safely applied to most house plants for the control of many insect pests.
- To clean heavily encrusted clay pots, scrub them with a steel wool pad after they have soaked

overnight in a solution consisting of one gallon of water, and one cup each of white vinegar and household bleach.

Miscellaneous

All Month

- Store wood ashes in sealed, fireproof containers for future use.
  - ► Apply a dusting of ashes around lilacs, baby's breath, asters, lilies, and roses in spring.
  - ► Do not apply to acid-loving plants.
  - ► Excess ashes may be composted.
- Check fruit trees for evidence of rodent injury to bark.
- Avoid foot traffic on frozen lawns as this may injure turf grasses.

Week 1-2

- Christmas tree boughs can be used to mulch garden perennials.
- If bulbs were not planted before the ground froze, plant them immediately in individual peat pots and place the pots in flats. Set them outside where it is cold and bury the bulbs under thick blankets of leaves. Transplant them into the garden any time weather permits.
- Seed and nursery catalogs arrive. While reviewing garden catalogs, look for plants with improved insect, disease, and drought-tolerance.
- Old Christmas trees can be recycled outdoors as a feeding station for birds. String garlands of peanuts, popcorn, cranberries, and fruits through their boughs.

Source: Missouri Botanical Garden

Source: *Jennifer Schutter, horticulture specialist*

Computers on the Farm Conference

Jan. 17-18, 2020

Lake Ozark, MO
Margaritaville Lake Resort (formerly Tan-Tar-A)

"Digital Tools for the Farm"

Coordinated by MU Extension with several classes taught by farmers. Computer use is from beginning to advanced. Mapping will be a big part of the conference, including GIS tools from MU's All Things Missouri data and mapping service.

Registration details: http://agebb.missouri.edu/cotf/
Info call: Kent Shannon 573-445-9792

Private Pesticide Applicator Training

(for those who need to obtain a license and those who need to renew a license)

Adair (Kirksville) – Feb. 20 @ 2 p.m. or 6 p.m. (660-665-9866)

Audrain (Mexico) – Feb. 19 @ 2 p.m. or 6 p.m. (573-581-3231)

Boone (Columbia) – Feb. 4 @ 2 p.m. or 6 p.m. (573-445-9792)

Callaway (Fulton) – Jan. 7 @ 1:30 p.m. (573-642-0755)

Chariton (Keytesville) – Jan. 8 @ 1 p.m. or 6 p.m. (660-288-3239)

Clark (Kahoka) – Jan. 16 @ 2 p.m. (660-727-3339)

Howard (Fayette) – Feb. 3 @ 2 p.m. or 6 p.m. (660-248-2272)

Knox (Novelty) – Feb. 6 @ 10 a.m. (660-397-2179)

Lewis (Lewistown) – Jan. 16 @ 6 p.m. (573-767-5273)

Linn (Linneus) – Jan. 8 @ 2 p.m. or 6 p.m. (660-895-5123)

Macon (Macon) – Jan. 10 @ 10 a.m. or 2 p.m. (660-385-2173)

Marion (Palmyra) – Feb. 6 @ 6 p.m.. (573-769-2177)

Monroe (Paris) – Feb. 4 @ 1:30 p.m. (660-327-4158)

Osage (Linn) – Jan. 14 @ 6 p.m. (573-897-3648)

Pike (Bowling Green) – Feb. 25 @ 1:30 p.m. (573-324-5464)

Putnam (Unionville) – Feb 25 @ 2 p.m. (660-947-2705)

Ralls (Center)– Feb. 4 @ 6 p.m. (573-985-3911)

Randolph (Moberly) – Feb. 12 @ 6 p.m. (660-269-9656)

Schuyler (Lancaster) – Feb. 20 @ 10 a.m. (660-457-3469)

Scotland (Memphis) – Jan. 16 @ 10 a.m.. (660-465-7255)

Shelby (Shelbyville) – Feb. 6 @ 2 p.m. (573-633-2640)

Sullivan (Milan) – Jan. 13 @ 2 p.m. (660-265-4541)

MU Extension Seeks Input on Updating Custom Rate Guide

The Missouri Custom Rates survey is routinely used by landowners, farmers, custom operators and government agencies. This survey is conducted every three years to update prices.

University of Missouri Extension is asking all persons involved in custom farming activities to fill out the survey. Responses will benefit the agricultural community of Missouri as it efficiently produces food, fuel and fiber.

The online survey contains dozens of questions but is organized so that respondents can quickly locate the questions specific to their business. Completing the survey should be quick and easy. While the survey is formatted for phones, it is best taken on a computer where entering numbers is simpler.

To take the survey go to tinyurl.com/MOCustomRate Choose the broad categories of custom activity for which you will provide information and enter your values for individual activities.

UNIVERSITY OF MISSOURI Extension

AGRICULTURE

2016 Custom Rates for Farm Services in Missouri

The rates reported in this guide are based on a statewide survey conducted by mail in the winter of 2017. Farmers, agribusiness firms, aerial applicators and land improvement contractors responded to questions on the rates they were charging or paying in 2016 for custom services, excluding the cost of materials being applied.

There is no assurance that the average rates reported in this guide will cover *your* costs for performing the service or that you will be able to hire a custom operator in your area for the rates shown. *Calculate your own costs carefully before deciding the rate to charge or pay. Before entering into an agreement, discuss with the other party all the details of the specific job to be performed.*

Custom rates cover the cost of machinery, fuel, labor and, indicate that Missouri farmers were paying more for almost every activity in 2016, relative to 2012.

Explanation of the rates in this guide

Rates in this guide reflect each respondent's judgment of a "normal" job. Operators may add charges if they consider a job abnormal, such as in distance from the operator's base location, the amount of product or labor involved, the difficulty of the terrain, or special requirements of the customer or location.

The "Number reporting" and "Range in rates" columns are important. Some items had very few responses or a wide range in rates, so the average rate may not accurately reflect rates in your area. Possible explanations of the wide ranges are the type or size of equipment used, the mix of