Hello Northeast Ohio Counties!

The sun is finally shining again, after a couple of inches of rain that fell across NE Ohio last week.

If anyone needs Beef Quality Assurance recertification there will be a training held in Portage on December 13th. See the attached flyer below.

Have a great week!
**Fall Soil Fertility Sampling**
By: Laura Lindsey, Emma Matcham, Steve Culman
Source: [https://agcrops.osu.edu/newsletter/corn-newsletter/2021-37/fall-soil-fertility-sampling](https://agcrops.osu.edu/newsletter/corn-newsletter/2021-37/fall-soil-fertility-sampling)

The fall is a great time to collect soil samples to identify any needs for lime, P, and K. Soil sampling either this fall or spring 2022 will be particularly important with the high costs of agricultural inputs. *If soil test P and soil test K levels are within the maintenance range it is extremely unlikely that there will be a yield response with additional fertilizer application.* For more information on the state soil fertility guidelines, see the newly revised ‘Tri-State Fertilizer Recommendations for Corn, Soybeans, Wheat, and Alfalfa available here: [https://agcrops.osu.edu/FertilityResources/tri-state_info](https://agcrops.osu.edu/FertilityResources/tri-state_info)

Keep in mind, when you collect a soil sample for fertility analysis, you can also collect soil for soybean cyst nematode (SCN) analysis. Please see Dr. Lopez-Nicora’s article on collecting soil samples for SCN in the fall.

**When should you soil sample?** Consistency is important. Sampling at the same time of the year the field was last sampled is ideal to help track trends. The fall after harvest or the spring before planting is generally the easiest time to sample. Fall sampling is preferred if lime applications are anticipated.

**How frequently should you soil sample?** Most fields should be sampled every three to four years.

What kind of sampling strategy should you use? The three primary soil sampling strategies include: 1) whole field sampling (one representative sample per field), 2) zone sampling (field sub-divided into geo-referenced zones based on soil texture, landscape position, yield potential, or some other factor), 3) grid sampling (field sub-divided systematically in a grid pattern). Each sampling strategy has limitations and strengths (Figure 1). Zone and grid soil sampling will provide the highest level of information from soil test results as fields can have a great deal of variability of soil test P, K, and pH (Figure 2). However, these two methods are also the costliest and require a greater sampling effort. With the current high fertilizer prices, this extra effort in soil sampling will typically pay off in fertilizer and lime savings.
Figure 1. Comparison of cost, prior information needed, sampling effort, and information received for the soil sampling approaches of 1) whole field, 2) zone, and 3) grid.

**How deep should you sample?** Sampling depth consistency is extremely important. The guidelines in the Tri-State Fertilizer Recommendations are based on a 0 to 8-inch soil sample. Samples collected shallower or deeper than 8 inches will not align with the guidelines due to nutrient stratification, which depends on multiple factors (tillage, soil texture, fertilizer placement, etc).

**How should I handle my soil samples?** Soil samples should be sent to a laboratory as soon as possible. Excessive heat or prolonged storage in a bag can compromise the soil test results. Soil samples can also be air-dried.

**Where should I send my soil for analysis?** There are many commercial soil testing laboratories located within Ohio and surrounding states. The North Central Regional Research Committee (NCR-13) has developed methods that work best on soils in the north central region. Laboratories that test Ohio soils should use these procedures. You may also want to choose a laboratory that provides lime and fertilizer recommendations based on the Tri-State Fertilizer Recommendations bulletin.

For more information on soil sampling techniques, including the importance of soil sampling and scheme (starting at minute 1:11), how to use Google tools to create

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grid soil sampling points (starting at minute 11:19), and how to begin sampling your fields (starting at minute 20:35), please see: https://www.youtube.com/watch?v=6bKW6GRO6Cg

Figure 2. Soil test P from 0.25 acre grid soil samples showing areas below the critical level, within the maintenance range, and over the maintenance range within the same field. (Image from: Matcham et al., 2021. Available at: https://acsess.onlinelibrary.wiley.com/doi/10.1002/cft2.20126)

GETTING A SOLID SOIL RESPONSE TO BIOSOLIDS APPLICATION
By Kaine Korzekwa
Many people do not know that human waste can be recycled to benefit the environment. After intense treatment, it can be applied to fields in the form of biosolids.

Biosolids are applied using a spreader in agricultural soils. All biosolids applied in the study had similar nutrient composition. Photo by Rebecca Ryals.

While scientists know that this can benefit the soil, they are still learning about the best ways to measure this. In addition, it can be hard to determine how much it helps the soil over a long period.

That’s where Yocelyn Villa from the University of California, Merced comes in. She and her collaborators studied fields in California where biosolids have been applied for 20 years.

Their findings were recently published in *Journal of Environmental Quality*, a publication of the American Society of Agronomy, Crop Science Society of America and the Soil Science Society of America.
“Our goal was to assess how stocks of soil carbon have changed over time at each of these sites,” she says. “We did this by measuring how much carbon is present compared to adjacent areas without biosolids application. Specifically, we wanted to account for not only shallow soil depths, but also deep soil carbon, down to 100 cm depths.”

Soil samples were taken using an auger at five different depth increments. Photo by Rebecca Ryals.

The three sites they studied had different biosolids application frequencies, management practices, and soil texture. The researchers focused on measuring microbial biomass carbon and nitrogen, soil organic carbon, and total nitrogen. These are all soil qualities known to benefit from the application of biosolids.

They predicted that the more biosolids that are applied, the more carbon and nitrogen there would be in those soils. Most of their results were what they expected. However, they were surprised that the site that had the highest application of biosolids did not show the most change. In addition, one of the sites did not show a benefit from the biosolids application until they performed tests on the deeper soil.
“If we had only taken the top 30 cm into account, we would have not detected a change in soil carbon at the Merced site,” Villa said. “This is the biggest and most important finding.”

She adds that this shows how the organic matter in biosolids does not simply sit in the soil and accumulate. Instead, it is impacted by dynamic properties that also influence soil organic matter.

Field with freshly applied biosolids to help improve the soil. Photo by Yocelyn Villa.

This told the researchers that it’s important to measure deep soil carbon and consider other management practices at a site when studying the impact of biosolids. These local controls can be soil texture, irrigation practices, and tillage.

“Many studies have shown the benefits of biosolids application for plant production and nutrient cycling,” Villa explains. “This conjointly provides benefits to soil carbon. Farmers and ranchers have seen differences in vegetation for livestock and other soil health benefits. I would recommend monitoring these benefits through time.”

Another reason scientists are interested in soil carbon is because of its potential to mitigate climate change. Soils that can sequester carbon can keep it out of the
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atmosphere. So, Villa’s findings highlight the importance of taking deep soil carbon into account to better predict a soil’s ability to mitigate climate change.

“This research is interesting to me personally because I have always been interested in climate change,” she says. “The more I learned about the environment, the more I realized that soils may be the key to mitigate climate change.

Different areas were roped off to create transects. Along each transect, soil samples were taken every 10 meters. Photo by Rebecca Ryals.

The next steps in Villa’s work are to determine how exactly the soils stabilize carbon and keep it in the soil. She is also assessing where the carbon is in the soil, which will provide insight on how accessible the carbon is for microbes to use. Overall, she is excited to see others beginning to appreciate soil’s potential. Biosolids have been used in cities like Chicago for several years, to help clean up industrial sites and other purposes.

“I think people don’t realize that human waste can be recycled like this, and that soil is a potential solution to climate change,” she says. “It’s always a treat to see how people’s
faces light up with intrigue. Hopefully I have convinced them that we need to stop treating soil like dirt!"

Funding for this research was provided by the Bay Area Clean Water Agencies, Jena and Michael King Foundation, and Department of Life and Environmental Sciences at the University of California, Merced.

**Maximizing Carcass Value Through Weaning Management and Stress Reduction**

By: Dr. Francis Fluharty, Professor and Head, Department of Animal and Dairy Sciences, College of Agricultural & Environmental Sciences, University of Georgia

Source: [https://site.extension.uga.edu/beef/files/2021/10/Fluharty-October-Issue-2.pdf](https://site.extension.uga.edu/beef/files/2021/10/Fluharty-October-Issue-2.pdf)

Many all-natural programs, commercial feedlots, and cattle producers who retain Trumbullownership through the feedlot understand that weaning programs that boost the immunity of the calf by minimizing the stress of weaning are important, as weaning can have impacts on animal health, growth rate, feed efficiency, and marbling (Duff and Galyean, 2007). CattleFax reported at this summer’s NCBA convention in Nashville that in a recent survey nearly 30% of cow-calf producer respondents retained ownership through the feedlot. For those producers, and anyone trying to manage calves for a premium, understanding the relationship that weaning stress and morbidity have on USDA Quality Grades is critical.

We need to understand that the days of 3% USDA Prime carcasses and loads of 50% USDA Choice carcasses are gone. According to the August 30, 2021 USDA national steer and heifer estimated grading percent report ([https://www.ams.usda.gov/mnreports/nw_ls196.txt](https://www.ams.usda.gov/mnreports/nw_ls196.txt)) for the week ending 8-21-2021, 8.3% of carcasses graded Prime, with 72.14% grading Choice and 30.79% of cattle grading in the upper 2/3 of Choice. We are in a market where the demand for high-marbling cattle is reflected in the price differences between grades. Looking at Yield Grade 3 carcasses between 600 and 900 pounds from the USDA beef carcass price equivalent index value report on September 1, 2021 ([https://www.ams.usda.gov/mnreports/nw_ls410.txt](https://www.ams.usda.gov/mnreports/nw_ls410.txt)), Choice carcasses were worth $254.73/cwt, and Select carcasses were worth $226.97/cwt, a Choice/Select spread of $27.76/cwt. Additionally, even with 8.3% Prime carcasses, the value of those Prime carcasses was $276.04/cwt, a $21.31/cwt premium over Choice, and $49.07/cwt premium over Select. With a 900-pound carcass, that would make a Prime carcass worth $2484.36 versus a Choice carcass at $2292.57, and a Select carcass at $2042.73. The message is clear that managing cattle in a way that does not lessen their ability to have high-marbling carcasses is crucial to economic profitability.
The ultimate goal of a weaning management strategy should be to avoid stress on the calf, as stress increases sickness. Since respiratory disease is known to negatively impact average daily gain, hot carcass weight, and carcass characteristics, management and nutrition practices that keep cattle from becoming sick are very important, because diagnosis of cattle with respiratory diseases is very difficult. Pre-weaning programs are becoming standard in alliance programs, with feedlots wanting a minimum of six weeks post-weaning prior to feedlot arrival. Gardner et al. (1999) reported that lung lesions from respiratory disease at weaning were present in 33% of their steers at harvest. Steers with lung lesions had lower average daily gains, lighter carcass weights, deposited less internal fat and marbling, and had less tender steaks than animals without lung lesions. This emphasizes the need to carefully monitor individual cattle, and to manage cattle in a way that prevents disease outbreaks. Research at MARC (Wittum et al., 1996) concluded that if an animal was sick enough to be identified as having a respiratory illness and treated, performance reducing lung damage had already occurred. If a calf gets a respiratory disease, tissue damage occurs, and metabolic changes associated with inflammation occur (Gifford et al., 2012) with nutrients being diverted from lean growth and marbling toward repair of the damaged tissue. Therefore, to ensure that an animal’s health and management history did not limit its ability to deposit marbling or to grow to its potential, practices to avoid stress must be used.

Weaning calves abruptly typically results in calves walking a fence line for up to 5 days, while bawling, and during this period, feed and water consumption is low, maintenance requirements increase, and susceptibility to respiratory disease increases. Fenceline weaning has gained popularity recently, and Price et al. (2003) reported that ‘fenceline contact with dams at weaning minimizes losses in weight gain in the days following separation. Totally separated calves did not compensate for these early losses in weight gain even after 10 wk.’ In this weaning management strategy, calves and cows have nose-to-nose contact, as well as visual and auditory access, but suckling is not possible. Boyles et al. (2007) investigated ‘three weaning strategies: 1) weaned at trucking, 2) weaned 30 d before trucking and confined in drylot, and 3) weaned 30 d before trucking and pastured with fence-line contact with their dams.’ Steers from the drylot weaning strategy lost 1.3 lb/d the first week in the feedlot, whereas steers from the truck weaning and pasture- weaning treatments gained 1.1 and 0.9 lb/d, respectively (P = 0.01). Weaning effects on incidence of morbidity also were detected (P = 0.03), with only 15% of the pasture weaned calves requiring treatment for respiratory disease. This incidence was doubled for truck-weaned calves and nearly 2.5 times greater for calves weaned in drylot.

Another low-stress option is two-stage weaning, utilizing devices attached to the muzzles of calves to prevent nursing. Haley et al. (2005) used this method, now commercially marketed under the name QuietWean http://quietwean.com/, to
investigate the impact of placing a device in the nose that allows the calf to stay with the cow, but not suckle, for a period of time up to two weeks prior to weaning. 'In the two-stage treatment, calves were prevented from nursing their dam for a period (Stage 1) before their separation (Stage 2). Control calves nursed from their dams until they were separated. Calf weights and behavior were recorded before and after the separation of cows and calves. Following separation, calves weaned in two stages vocalized 96.6% less (P = 0.001) and spent 78.9% less time walking (P = 0.001), 23.0% more time eating (P = 0.001), and 24.1% more time resting (P = 0.001) than control calves’ (Haley et al., 2005).

In conclusion, in an industry where feed efficiency, hot carcass weight, and high-marbling carcasses are important, weaning management is an important step in reducing stress and thus reducing the incidence of bovine respiratory disease.

Literature Cited


provides the foundation of Trumbull SWCD’s overall programs and operations. The planning process broadly defines the vision of the District’s future and focuses in on the steps that are needed to address identified goals and objectives.

The mission of Trumbull SWCD is to provide leadership in the promotion, enhancement, and protection of the natural resources by providing conservation technical, educational, and financial assistance to meet the needs of the people of our county. Because each SWCD develops its own programs to suit the needs of the people in its county, local citizens and District partners play an important role in shaping the overall goals of the Conservation District.

Please participate in the planning process by completing the Trumbull SWCD Strategic Planning Surveys. Part 1 defines your relationship to Trumbull SWCD and what programs you think are most important. Part 2 provides an opportunity to share your thoughts on the opportunities and challenges the District faces. Part 1 can be found at https://www.surveymonkey.com/r/JFMD2HB and Part 2 is available at https://www.surveymonkey.com/r/JGZNHHD

For more information or for a copy of the survey, please contact Amy Reeher, District Administrator/Watershed Coordinator at amy@trumbullohswcd.org or 330-637-2056, ext. 8624
Deadline for completion of surveys is November 29, 2021.
Are you looking to improve your records for your agribusiness? Many people would like to keep better records, but don’t know where to start. The Farm Record Keeping 101 program can be that first step towards keeping better records, having a cleaner office, and making more informed management decisions. The program is designed for both those starting out and those who want to improve their current records system.

During this program we will discuss the importance of keeping good records on your farm or agribusiness. We will also go over best practices and record keeping strategies, as well as what to avoid. No matter your current style of record keeping we will provide ways to improve it. Online, digital, and paper resources will all be discussed.

**Location:** Ashtabula County Extension Office – 39 Wall Street, Jefferson, OH 44047

**Cost:** There is no cost to attend this event

**Registration and Contact information:** As seating may be limited and to plan for handouts, please RSVP by **December 7th**. To register for this event, please contact the Ashtabula County Extension Office at 440-576-9008, or email Andrew Holden at Holden.155@osu.edu
Beef Quality Assurance Certification

Monday December 13th • 4-5PM

BQA covers a multitude of topics, including carcass quality, injection protocol, and animal handling, and will ultimately impact your success at marketing. Join us December 13th to gain your BQA Certification or to recertify your existing Certification.

DATE: December 13th
TIME: 4 – 5PM
LOCATION: Portage Soil and Water, 6970 St. Rt 88 Ravenna, OH 44266
COST: $10

To Register: 330-269-6432 or go to https://go.osu.edu/portagebqa

Registration Information: Registration includes program and handouts. Please mail to 705 Oakwood St. Suite 103 Ravenna, OH 44266 The Program is filled on a "first come, first serve basis".

Name: ____________________________
Address: ____________________________

Email: ____________________________ Phone: ____________________________

Number Attending ($10): ____________