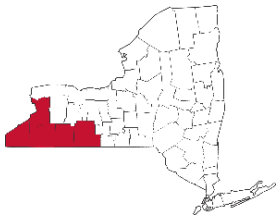
COWS CROPS & CRITTERS



A partnership between Cornell University & the CCE Associations of Allegany, Cattaraugus, Chautauqua, Erie & Steuben Counties.

Cornell Cooperative Extension | Southwest New York Dairy, Livestock & Field Crops Program

APRIL 2026
VOL 7 | ISSUE 4

Photo by: Katie Callero

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COWS CROPS & CRITTERS

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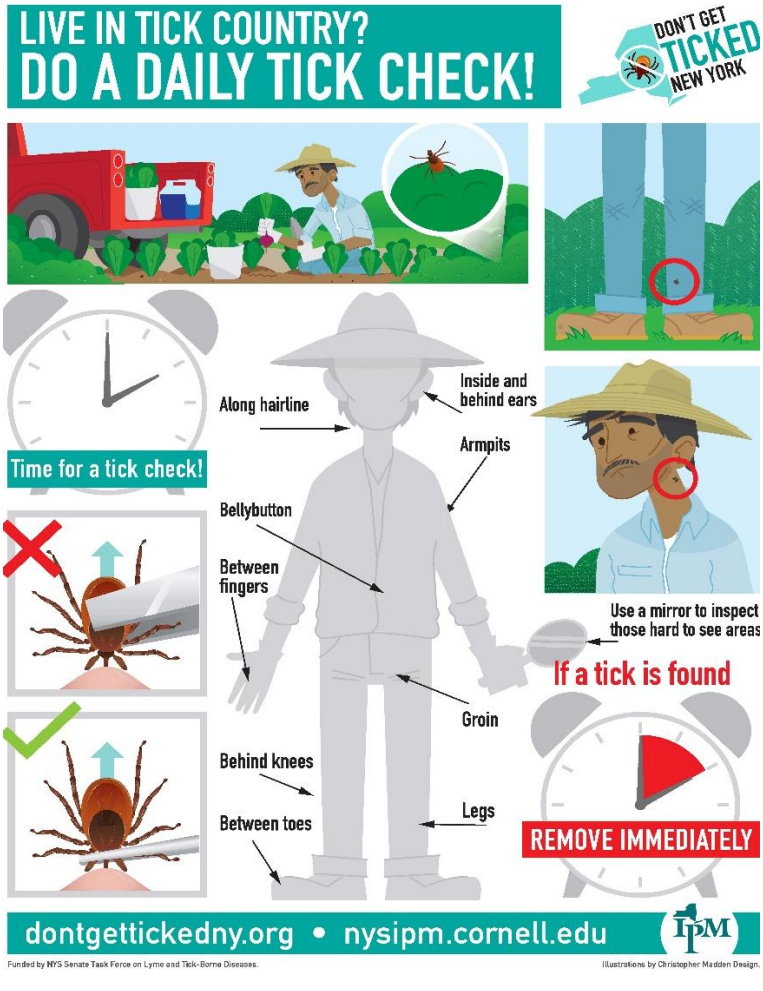

THE DAIRY MARKET TODAY

By Kate McDonald Polakiewicz

Dairy continues to be the backbone of New York agriculture, accounting for around two thirds of total farm revenue in the state. Investment in the sector remains high with roughly $3 billion in current or planned investment in dairy processing. However, milk prices are lower in 2026 than they were in 2025 by ~$2.50 - $3.00/cwt on average across the US, making margins tight. Abundant milk supply combined with prices going down reduces farm profitability.

For NY dairy farmers, these challenges are particularly relevant. High input costs like labor, feed costs, and financing amidst low milk prices result in farms operating at or below the breakeven point in unideal months. Milk prices are susceptible to volatility due to global supply swings and trade patterns. Smaller dairy farms in our region continue to face structural pressure in the form of consolidation of many small to fewer large-scale farms over time.

Despite these challenges, there is room for cautious optimism tied to investments made in processing infrastructure. Increased processing capacity of New York milk means more availability and demand of locally produced milk. Demand for milk exported internationally to Canada and Mexico also remains strong. US-wide consumer market demand for high protein milk products like cheese and yogurt predicts long-term growth in the dairy sector.

To stay the course during down cycles like the one we're experiencing now, be proactive in mitigating risk, stay diligent on tracking your costs, and employ flexibility in milk production and marketing. Track your cost of production monthly (not annually) and have a working idea of your breakeven milk price. Look to reliable data sources to inform your decisions, like the USDA's Farm Service Agency's Dairy Margin Coverage tool. Tracking profit margins (milk price – feed cost) gives a more realistic picture of profitability vs. just tracking the price of milk alone. With feed costs being a major cost of production, feeding smarter and more efficiently (improving forage quality, storage, etc.) and reducing feed waste can pay off over time. It's also wise to delay big purchases like new, non-essential equipment to times when we have climbed out of a down market. Finally, don't skip out on relying on others during tough times. Your lender, technical service providers like CCE, NY FarmNet, and other farmers going through it along with you are all sources to lean on.

References

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- https://www.ams.usda.gov/mnreports/dywweeklyreport.pdf

TRACK YOUR COST OF PRODUCTION TO HAVE A WORKING IDEA OF YOUR BREAKEVEN MILK PRICE.

COWS CROPS & CRITTERS

YOUR PROFIT MARGINS GIVE A MORE REALISTIC PICTURE OF PROFITABILITY VS. MILK PRICE ALONE.

MANAGING FIELD CROPS IN WET SPRINGS

By John Pirrung, SWNYDLFC Technician

It's no secret that last year's spring was a particularly cold and wet one. We saw fields soaked all spring, and many growers had to delay planting until late June. For growers who did manage to plant earlier, they often saw increased pest damage and likely ended up with some nasty tire rutting and soil compaction.

Unfortunately, this type of volatility isn't going away any time soon, with Upstate New York expected to see more extremes on both ends: More heavy rain events and late spring freezes early on, and more dry summers and heat stress later into the season. While it seems like this spring should be warming up and drying out sooner than last year, it's still important that we know how to stay flexible in chaotic conditions and make the right management decisions for our short and long-term goals. Here's some of the main things to keep in mind.

Soil Compaction

There's many trade-offs to consider when working in wet fields, and soil compaction is probably the biggest one. On one hand, if your fields are wet but not completely inaccessible, then it's tempting to want to plant no matter the cost. However, using heavy equipment on wet fields is almost guaranteed to give you some compaction issues, especially if you have narrow tires and high tire pressure. Excessive compaction can leave plant roots struggling to penetrate the soil to find water and nutrients. It can also make tilling more difficult, and if you try to till already-compacted soils in very wet conditions, then you could end up making it worse and compacting it further instead. In almost all cases, "mudding in" a crop early like this creates more problems than it solves.

Yield Penalty Timing

Back to the other side of the trade-off, after a certain point you simply can't afford to delay planting without risking yield loss by the end of the season. With our short northern growing season, every week of delay past the optimal date can see measurable yield reductions. As you could imagine, actual specifics depend quite a bit on the varieties you're planting and on local climate conditions. Research in Indiana found that there was indeed a negative relationship between late planting and overall yield, however it also found that this was by no means a perfect relationship. Other factors, such as pest pressure, can have an even more significant impact on yield regardless of planting time. So, remember that late planting yield losses aren't the only yield loss risks to consider.

Nitrogen Management

Regardless of when you plant, if your fields were saturated for long enough, you've probably lost a good amount of nitrogen. Nitrogen can leave the soil through leaching (water moving through soil) or denitrification (microbes converting soil N to gas); both of these can happen quickly if your fields stay wet for long periods of time, especially in sandy soils. According to research from both the University of Nebraska and the University of Illinois, when soil temperatures are between 55 and 60°F, you can see 1-2% of your soil nitrogen lost per day, with daily losses doubling if your soil is warmer than 70°F. This is all to say that cool, wet soils can be depleted of nitrogen pretty quickly, and that warm, wet soils can be depleted very quickly. So, what's the management response? If you feel like you're losing a lot of pre-season nitrogen, factor that into a split or sidedress application. If you're willing, you can also opt for some soil tests, including the Pre-Sidedress Nitrate Test (PSNT) to identify exactly what your nitrogen needs are.

A Note on Slugs

If you planted early last spring, then you almost certainly encountered some slug damage. Slugs thrive in the cool, wet fields we had last year, especially in fields with lots of residue. If you have no-till, cover-cropped, or residue-heavy fields, then expect to see them again this year. If slugs have been an issue for you in the past, then it's certainly worth scouting for them and applying control methods (like slug pellets) depending on pressures.

Long-Term Infrastructure

If you're interested in playing the long game and want to invest into your land, then installing new or additional tile drainage systems can help reduce flooding after major rain events, especially if you have clay-heavy soils. You can also try to build up more soil organic matter in your fields to assist drainage, or you can incorporate cover crops. As mentioned in last month's newsletter, cover crops can help you remove excess water through transpiration and can improve soil structure to prevent ponding. In any case, if you want to improve the long-term resilience of your fields against excessively rainy springs, then focus on drainage systems and soil structure.

Going Forward

Whether you're focused on the short-term decisions you'll be making this month, or the long-term sustainability of your farm in the face of increasingly volatile weather, it's always wise to lay out all the trade-offs you're dealing with. Consider the biggest threats a wet spring creates for you. Whether it's inaccessible fields, nitrogen losses, or an army of hungry slugs, there are still many ways to respond to each issue. If last year's late plantings taught us anything, it's that remaining flexible is key to making the best out of a muddy situation.

PLANTING LATE GIVES LOW BUT PREDICTABLE YIELDS; PLANTING IN WET SOILS IS MUCH LESS PREDICTABLE.

WET SOILS CAN LOSE NITROGEN AT A FASTER RATE THAN YOU'D EXPECT, ESPECIALLY IN WARMER TEMPERATURES.

SOUTHWEST NEW YORK BEEF UPDATE: WHAT WE'RE SEEING RIGHT NOW

By Amy Barkley, Livestock Specialist, SWNYDLFC

With all that's going on in the world right now, some beef producers are asking, "what happens next". While it's likely that none of this will come as a surprise, it's worth stepping back and looking at the bigger picture, the regional lens, and what this means for moving forward. The Beef Council reports that demand for beef is still strong, even with higher prices at the supermarket. They're finding that beef is relatively inelastic, meaning that consumers still want beef, even when it's at some of its highest retail prices to date. This is because we're dealing with a classic case of supply and demand. Nationally, the cattle herd is the smallest it's been since 1951, largely due to the ripple effects of drought in the Midwest over the past several years.

Here at home in Southwest New York, demand for beef is holding steady too. More and more folks are looking to buy directly from farms they know and trust. Selling quarters, halves, and whole animals continues to be one of the most affordable options for consumers—and a solid marketing route for many of you. Individual cuts provide a way to meet even more consumers while allowing the flexibility to sell beef at farmers markets and local farm stores as well as from the farm, extending your reach.

How are My Costs Being Affected by World Events?

Input costs are expected to rise, further putting the crunch on our local farmers. Diesel and fertilizer cost increases will impact farmers now and will likely impact grain prices later this year if prices stay high. Calf prices are proving a unique challenge to beef producers, with both dairy bull and beef-type calves hitting record highs since they started climbing in 2022. Because of this, operations that purchase in calves to raise and finish vs producing them on the farm are seeing a more significant impact to their bottom line, and many may consider raising meat prices as a result. These unprecedented calf prices are also in large part a reflection of the national beef herd shortage.

That said, there are certainly positives of high cattle prices. Not only are live animal prices up for beef animals, but dairy farmers are also realizing increased value in their cull dairy cows, which are also selling at record highs. Cull dairy does move into the beef market, after all (: This adds additional value to the dairy sector in addition to increased prices for bull calves and the new common co-product of the dairy sector: beef on dairy cross calves.

Processing accessibility continues to be a challenge, especially for those who are looking to sell individual cuts or sell beef over state lines. Processing facilities, whether custom or USDA, have long wait lists, and some farms must travel over an hour to bring their cattle to market. We are generally seeing a trend where processing facilities are reducing the number of head they're processing, adding to the problem. That said, there are facilities that are transitioning over to USDA and/or being brought online as either custom exempt or USDA certified to help improve the bottlenecks around processing. In September 2025, a new NYS Department of Labor Butcher Trade was launched to increase awareness to the potential job opportunities and training of qualified butchers. While it's too early to understand the impact of this program, it is gaining traction across the state.

Staying Ahead

With everything going on, now's a good time to really know your numbers. Take a hard look at your cost of production and make sure your pricing is keeping up with input costs. If you need to raise prices, think about where it makes the most sense. Maybe that looks like raising the price on steaks while keeping ground beef steady. Perhaps it looks like providing value added products like jerky or hot dogs that you can charge a premium for. Other times, raising prices across the board on your offerings may be the solution. Cornell's Meat Pricing Calculator can help you with some of these decisions, and our team can help you with using the tool.

Also think about where small management changes could make a difference. Could better quality stored forage or pasture help you cut back on grain during backgrounding and finishing? Can you tweak your calf processing program to reduce stress and wean at a higher weight? Can you improve your vaccination program to reduce the incidence of common diseases to make sure every animal performs at their best? Those decisions are going to look a little different on every farm. Sometimes, it's hard to see where we can make changes, and a second set of eyes can be helpful. Whether it's your local extension agent or another producer, another person can help you spot opportunities to improve efficiency.

The Big Takeaway

Like most things we're experiencing, this incidence of increased production costs is part of the cyclical nature of agriculture. We won't stay in this exact spot forever. In the meantime, focusing on efficiency, knowing your markets, and keeping your product consistent will go a long way toward keeping customers coming back and keeping dollars in your pocket.

BEEF IS AT RECORD HIGHS – IT'S TIME TO RE-EVALUATE YOUR COSTS AND PRICING.

COWS CROPS & CRITTERS

MAKING SMALL MANAGEMENT CHANGES CAN IMPROVE GROWTH RATES AND FEED EFFICIENCY.

NY FarmNet Tax Tips for Farmers

April 2026

As we head into the 2025 income tax filing deadline, it is time to start thinking about tax year 2026. We hope this helps you to explore tax planning with the changes that are coming into place.

2026 One Big Beautiful Bill Act (OBBA)
Pay attention to tax law changes. The One Big Beautiful Bill Act (OBBBA) added deductions for certain qualified tips and overtime, raised the SALT (State and Local Tax deduction) limit, and made the QBI (Qualified Business Income) deduction permanent among other changes. One hundred percent Bonus Depreciation was also made permanent. The important point here is to stay abreast of changes and work with your tax professional to be proactive, not reactive.

Capital Gains Installment Payments
Another provision of the OBBB is that beginning in tax years after July 4, 2025, you have the the ability to pay certain capital gains taxes in four equal annual installments for sales or exchanges of farmland located in the United States. There are several conditions to be met and/or documented to be able to implement this installment payment plan.

- The seller must have used the farmland or leased the farmland to a qualified farmer for a substantial amount of time for 10 years prior to the sale date.
- A qualified farmer is someone actively engaged in farming.
- Likewise, the land must be used as a farm for farming purposes for 10 years after the qualified sale or exchange.
- A covenant agreement or other legally enforceable agreement must be associated with the sale or exchange stating the land is to be used for farming for at least 10 years following the sale.
- The first installment payment (calculated as the total net income tax impacted by the capital gains from the sale or exchange and divided by 4) is due by the tax due date of the year of the sale or exchange. (No extension is allowed for this payment).

Empire State Child Credit
New York State (NYS) has increased the amount of the Empire State Child Credit (ESCC) when you file a 2025 NYS income tax return. The benefit is for children up to age 16. To be eligible as a tax filer, you must be a full-year NYS resident with at least one child under 17 years on December 31, 2025. Credits are up to $1,000 per child under age 4 and for children age 4-16 up to $330. There are credit phase-outs based upon income. You must provide a valid Social Security number (SSN) or individual taxpayer identification number (ITIN) for you and each child by April 15, 2026.

You must file a NYS return to claim the credit and are eligible even if your income is under $4,000. The credit is refundable so you can receive the credit even if you owe no NYS tax. For more information: otda.ny.gov/Child/Credit

Farm Transition Tax Planning
Farm transitions are complicated, and planning the best outcome takes time and effort. If you are considering a transition in 2027, you should be planning for that right now. Installment sales have many tax advantages which you should explore in greater detail with your tax advisor.

NYS Investment Credit
New York State tax laws also have significant impacts on farm operations. The 20% Investment tax credit is due to expire at the end of 2027, so if you are planning a large investment, you may want to consider that. In addition, many NYS tax provisions are more restrictive than federal tax laws (for example, estate taxes).

** NY FarmNet does not give legal nor tax advice; we provide you with information and strongly encourage you to seek out and work with legal and/or tax professional.*

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Like several tax provisions, be sure to read all of the definitions and requirements to be eligible. Depending on your facts and circumstances, other types of tax mitigation strategies may be worth looking into before using this provision. Also, be aware that New York State's treatment of the farmland sale or exchange is different from the federal tax regulations.

Partnerships
Partnerships are a common business entity for many farms. If you are a member of a partnership, look at your partnership capital account and the profit percentages on K-1 forms that are filed with your personal tax return.

- Are the profit percentages what you agreed to?
- Do the profit percentages need to be adjusted as the senior generation steps back, and the next generation takes over?
- Does the partnership operating agreement need to be updated to reflect retirements, changes in duties, or other business changes? We recommend updating operating agreements at least every five years.

Children Working on the Farm
You can pay your children who work for you. If you are a sole proprietor or a married couple operating a farm, you do not need to withhold self-employment taxes for children under the age of 18. One strategy is to open a Roth IRA for your child and invest their earnings to provide a college fund. The Roth IRA will grow until the child needs the money. Talk to your tax professional and get their advice regarding this or other strategies as your personal facts and circumstances will impact your decision.

ENERGY-RELATED AGRICULTURAL BEST PRACTICES

For Dairy Farms

Make your farm operation more energy efficient with equipment upgrades that pay for themselves

Energy-related agricultural best practice recommendations are now available in a variety of formats, including booklets, webinars, podcasts, and videos. These cost-saving resources are available for download at nyserda.ny.gov/ag-best-practices and provide farms with:

- Recommendations for energy-efficient technologies
- Alternate modes of operation
- Conservation practices to optimize energy use
- Easy access to funding resources

Energy-Saving Dairy Technologies

The following is a sampling of energy-efficient upgrades that reduce energy use and may qualify for incentives and rebates.

Energy Use	Energy Saving Equipment	Typical Installation Cost	Typical Payback (Years)
Lighting	Light Emitting Diode (LED)	$	2.5
Milk Cooling	Milk Pre-cooler	$$	2.0
Milk Cooling	VFD Milk Transfer Pump	$$	4.5
Milk Cooling	Scroll Compressor	$$$	6.0
Ventilation	High Efficiency Fans	$$	8.0
Water Heating	Compressor Heat Recovery	$$	2.0
Milk Harvesting	VFD Vacuum Pump	$$$	3.5

Notes: Actual project cost and savings may differ due to site specific conditions. VFD Milk Transfer Pump only recommended with a Milk Pre-Cooler.

$ = Less than $500 $$ = Greater than $500 but Less than $3,500 $$$ = Greater than $3,500

SCAN ME

Learn how to access energy-efficient technologies and available incentives.

visit: nyserda.ny.gov/ag-best-practices
call: 1-800-732-1399
email: AgBestPractices@nyserda.ny.gov

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AG-bpdairy-fs-1w2 6/22

BUCKLE UP: VOLATILE NITROGEN PRICING

By Katelyn Miller, Field Crop and Forage Specialist, SWNYDLFC

You don't need me to tell you that the price of nitrogen fertilizer, most notably urea, has skyrocketed in the last month (along with other inputs like fuel). At the beginning of March, we saw urea increases of $150/ton above February pricing, which feels minor compared to some quotes farmers have shared with me as of late. It's unclear at this time what prices will continue to do, especially as we enter a period of heavy N usage nationwide, but if current prices are any indicator, you should stay buckled up for continued volatile N pricing.

Recently, I have been hearing questions about why the price increase happened so rapidly, considering that (in theory) most of the N should have already been in transit, if not already located in ports before geopolitical developments. *I feel like this is a great time to remind you that I have absolutely no control over this but will attempt to provide some context for why this might be happening.* According to the American Farm Bureau Federation, the U.S. relies on domestic production and imports to meet fertilizer demand, with an estimated 97% of potassium, 13% of phosphate, and 18% of our N being imported. The Strait of Hormuz is a major shipping channel, accounting for transportation of approximately 25% of all globally traded N. Additionally, because of natural gas reservoirs, the Persian Gulf is a hub for fertilizer production and exports, as the countries in this region account for nearly 50% of global urea exports. Though we may not be importing large quantities of fertilizer from this region, domestic markets will still respond to price movements because of both production and transportation impacts.

Knowing that we will likely continue to experience volatile N pricing, coupled with less than stellar commodity prices, it's a critical time to evaluate your nutrient management strategy. I've seen some articles out of the Midwest discussing the potential of shifting crop acreage more to soybeans, as they are less subject to such volatile shifts in fertilizer pricing. Unfortunately, this doesn't work great for a majority of SWNY as much of our acreage is forage for livestock. It's not like you can just go without purchasing any fertilizer, so what can you do to ensure that you maintain crop yields while also protecting your bottom line?

The key theme of this article is efficiency, as managing increasing fertilizer costs cannot effectively be managed by just generally reducing inputs. The goal should be applying nutrients in such a way that generates the greatest economic return. Every year, I get asked how much N should be applied to meet crop needs, and while blanket recommendations technically exist, nutrient needs depend on many factors: crop, variety, historical yield, crop rotation, soil test results, weather, soil texture, and additional inputs like manure. Remember that every field, and their nutrient requirements are different.

The foundation of nutrient management is soil testing, and I wouldn't be a proper Extension agent if I didn't continue to stress its importance. Reports provide us with an understanding of the availability of macronutrients, micronutrients and soil pH. An additional soil sample includes the pre-sidedress nitrate test, which can be used to determine if additional N is needed by estimating the soil's nitrate supplying potential, and if it's enough to meet crop needs. Tissue testing serves as an additional tool to understand in-season trends, diagnose deficiencies, or measure end-of-season uptake.

Pairing crop needs with results will allow you to fine tune nutrient applications, reducing the need for 'insurance' applications. These applications are not efficient, nor cost effective, and at times, additional nutrients will not result in a yield response, also known as a yield response curve. Consider the timing of your cropping rotation, implemented practices like cover crops that improve soil health, and soil available N through channels such as organic matter and the nutrient credits you will receive for these.

One of the most recognized management strategies of nutrients, especially as it relates to fertilizer, is the 4R Nutrient Stewardship principle, designed to help improve nutrient use efficiency while reducing losses. The 4R's stand for applying fertilizer (or nutrients in general) at the right rate, right time, right place, while using the right source. Each of these pieces allow for the best nutrient utilization.

Photo by: Kelly Torrey

FOR MORE INFORMATION OR FOR ACCESS TO TOOLS, CONTACT KATELYN MILLER.

COWS CROPS & CRITTERS

IT'S A CRITICAL TIME TO EVALUATE YOUR NUTRIENT MANAGEMENT STRATEGY.

I cannot finish this article without touching on an important nutrient source – manure. There is recognition that managing large volumes at time can be a hinderance, having to consider application timing and nutrient regulations, field access, labor, equipment, fuel costs and much more. Regardless, it's an incredibly useful waste product. With such volatile pricing swings, manure management will likely play a large role in meeting nutrient requirements. However, there is the question around what's more cost effective: hauling manure versus purchasing fertilizer? The Cornell Nutrient Management Spear Program developed a tool that can help us determine that, and more specifically:

1. What is the fertilizer equivalent value of a manure application?
2. What is the break-even hauling distance for hauling my manure?
3. What are the operating and ownership costs for my manure machinery?
4. What is the value (in terms of fertilizer replacement) and cost of exporting manure?
5. How much time (clock hours as well as machinery and labor) will it take to spread manure?

For those looking to manure to help bridge the gap amidst volatile fertilizer swings, this Excel tool can help bridge the gap and give you a thorough understanding of the tradeoffs between manure hauling and fertilizer purchasing. If you are interested in the tool, you can visit the NMSP website under the tools tab, or email Katelyn.

Fertilizer prices, especially N, are quite volatile, with no clear outlook. Efficiency as it relates to nutrients will be a major factor in maintaining your crop yields while also protecting your bottom line. Understanding crop needs, your costs, and employing various nutrient management strategies can help your farm navigate volatile fertilizer pricing. Don't forget that you have access to friendly service providers who are here to help.

Resources:
• American Farm Bureau Federation. (2026). Middle East Tensions Raise Spring Planting Concerns. https://www.fb.org/
• Cornell Nutrient Management Spear Program. (2010). Manure Cost, Value and Time Management Calculator. http://nmsp.cals.cornell.edu/publications/factsheets/factsheet53.pdf

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MANAGING INCREASING FERTILIZER COSTS CANNOT EFFECTIVELY BE MANAGED BY JUST GENERALLY REDUCING INPUTS.

COWS CROPS & CRITTERS

UNDERSTANDING HOW TO INTERPRET FECAL EGG COUNTS CAN HELP YOU MAKE IMPACTFUL MANAGEMENT DECISIONS.

WATER: THE FORGOTTEN NUTRIENT IN DAIRY PRODUCTION

By Katie Callero, Dairy Management Specialist, SWNYDLFC

Water is one of the most consumed nutrients by dairy cows and yet it is often overlooked. Lactating dairy cows can drink anywhere from 20 to 40+ gallons a day depending on the weather and how much milk they are producing. Water access and quality directly impacts milk production, health, and overall performance. The reason is simple enough when you look at the composition of milk itself. Typically, we focus on components like fat and protein because they drive milk price, but milk itself is about 85-90% water. Water is also helpful in promoting normal rumen function, helping with proper digestion and nutrient uptake, as well as temperature regulation. Given these important roles, water intake becomes a key management consideration.

Water Requirements

According to The University of Nebraska-Lincoln Extension guide on Water Quality and Requirements for Dairy Cattle, "Even a small limitation in water intake will decrease dry matter intake by 1–2 pounds daily, which could limit peak milk production by 2–5 pounds. Lactating dairy cows require 4.5–5 pounds of water per pound of milk produced. This equates to roughly one-half gallon of water for every pound of milk secreted. As an example, a cow producing 100 pounds of milk daily could consume as much as 50 gallons of water. Remember that daily water intake comes from both drinking and moisture (water) in the consumed ration. For example, if a ration contains 40 percent moisture, it contains 40 percent water. That means a cow eating 80 pounds of this ration daily would be consuming 32 pounds of water (80 pounds × 40 percent moisture = 32 pounds of moisture, or water)." They also published a very useful table on the expected daily water intake for the different classes of dairy cattle which I have included below.

Table 1. Drinking water requirements of dairy cattle.[1]

Livestock class	Age or Production	Gallons/day[2]
Calves	1 month	1.3 to 2.0
	2 months	1.5 to 2.4
	3 months	2.1 to 2.8
	4 months	3.0 to 3.5
Heifers	5 months	3.8 to 4.6
	15 to 18 months	5.9 to 7.1
	18 to 24 months	7.3 to 9.6
Holstein cows	Lactating	18.0 to 40.0
Dry cows	Pregnant, 6 to 9 months	9.0 to 13.0

1. Table published by Kononoff & Clark, 2017. Water Quality and Requirements for Dairy Cattle. University of Nebraska Extension and adapted from: Swistock, B. 2016. Interpreting Drinking Water Tests for Dairy Cows. Pennsylvania State University. https://extensionpubs.unl.edu/publication/g2292/na/html/view

2. Higher levels of water intake apply for an all-hay ration (greater than or equal to 80 percent dry matter).

Water Availability & Access

As a dairy cow behavior enthusiast, I enjoy spending time observing cows and their routines. One pattern I frequently noticed was that cows often drank immediately after being milked, usually alongside feed intake. Fortunately, this observation isn't just something I noticed on my own and research in the dairy literature strongly supports it. These are important considerations when thinking about your watering infrastructure. Pennsylvania State Extension published the following infrastructure recommendations:

- 2 to 4 inches of perimeter space per cow
- Optimal water tank height ranges from 24 to 32 inches
- Water depth should be a minimum of 3 inches
- At least 2 watering locations per pen to prevent dominant cows from guarding the waterer
- Provide enough space at the waterer so that 20% of the cows in a group can drink at once
- Water tank located within 50 feet of the feed bunk or at every crossover in a freestall barn
- Water should be immediately accessible after returning from milking
- Heifers should have access to one appropriately sized water space per 20 animals

They emphasized that these recommendations also apply to cows on pasture, although there are additional considerations when it comes to water access in pasture systems.

Pasture Considerations

Water placement is incredibly important when you are grazing cows. Table 2 below shows how the distance cows have to travel for fresh water can have a dramatic impact on their forage consumption. Research from the University of Missouri Forage Systems Research Center states that the goal would be to have water access within 900 feet which can be difficult to achieve in a lot of systems. From my experience, many farmers have had success working with their local Soil and Water offices to get water to all parts of their pastures.

Table 2. How distance from water affects grazing. [1]

DISTANCE FROM WATER (MILES)	% OF FORAGE CONSUMED
0-0.5	50
0.5-1	38
1-1.5	26
1.5-2	17
2-2.5	12

1. Table published in book "Managing Pasture" by Dale Stricker (2019) and adapted from: R. K. Lyons and R. V. Machen. "Livestock Grazing Distribution: Considerations and Management." Texas Agrilife Extension Bulletin L-5409 2001

Water Quality

Cows are very sensitive to water contamination and will drink less if their water contains manure or even certain dissolved minerals. The Farmers Assuring Responsible Management (F.A.R.M.) 2023 Animal Care Standards Reference Manual states that, "water that is significantly soiled and/or contaminated with feces, dirt, mud, or manure, and/or has algae growing would be considered too dirty. For calves, milk contaminates fresh drinking water." These are the baseline welfare standards for farms participating in the F.A.R.M. program. While visibly dirty water is important to avoid, it is also important to be aware of water quality issues that are not visible to the human eye. University of Nebraska-Lincoln recommends testing your cow's water supply yearly for coliforms, pH, nitrate and nitrites, and total bacteria. They created a handy reference seen in Table 3 which can be helpful when interpreting your water test results.

TEST THE QUALITY OF YOUR COW'S WATER SOURCE YEARLY.

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COWS WILL DRINK LESS WATER IF IT IS CONTAMINATED WITH MANURE.

Table 3: Analysis of water supplies[1]

Item	Average	Expected[2]	Possible Cattle Problems
pH	7.0	6.8–7.5	Under 5.5; over 9
	(ppm)	(ppm)	
Dissolved solids	368	500 or less	Over 3,000
Total alkalinity	141	0–400	Over 5,000
Sulfate	36	0–250	Over 2,000
Fluoride	0.23	0–1.2	Over 2.4
Calcium	60.4	0–43	Over 500
Magnesium	13.9	0–29	Over 125
Iron	0.8	0–0.3	Over 0.3 (taste)
Manganese	0.3	0–0.05	Over 0.5 (taste)
Copper	0.1	0–0.6	Over 0.6 to 1.0
Arsenic	—	0.05	Over 0.20
Cadmium	—	0–0.01	Over 0.05
Mercury	—	0–0.005	Over 0.01
Lead	—	0–0.05	Over 0.10
Nitrate as NO_3	33.8	0–10	Over 100

1. Table published by Kononoff & Clark, 2017. Water Quality and Requirements for Dairy Cattle. University of Nebraska Extension and adapted from: Swistock, B. 2016. Interpreting Drinking Water Tests for Dairy Cows. Pennsylvania State University.
2. Based primarily on criteria for good water for human use.

To sum it up, good water management goes a long way. Make it a routine to clean waterers, check that they are refilling quickly, and test water quality from time to time. Keep an eye on your cows as well. It's not always easy to slow down when there's so much to do, but those moments when you can step away and just watch cows being cows are often the best ones, not only for the brief reprieve from the hustle and bustle of the day, but also because paying attention to these details can make a noticeable difference in cow health and milk production.

Resources:
https://extensionpubs.unl.edu/publication/g2292/na/html/view
https://extension.psu.edu/the-value-of-water
"Managing Pasture" by Dale Stricker (2019)

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