IOWA STATE UNIVERSITY
Extension and Outreach





FIELD&FEEDLOT a monthly agriculture publication for Northwest Iowa

## April 2022

**In this Issue:**



## Online References

**Ag Decision Maker**
www.extension.iastate.edu/agdm/

**Iowa Beef Center**
www.iowabeefcenter.org

**Manure Management Action Group**
www.agronext.iastate.edu

**Iowa Pork Industry Center**
www.ipic.iastate.edu/

**ISU Extension Dairy Team**
www.extension.iastate.edu/dairyteam

**Locate a County Office**
https://www.extension.iastate.edu/countyservices/

## Numbers to Know

**AnswerLine** 800-262-3804
**Beginning Farmer Center** 877-BFC-1999
**Iowa 2-1-1** 211
**Iowa Concern** 800-447-1985
**Iowa Healthy Families** 800-369-2229
**Teen Line** 800-443-8336

# Looking Forward to Spring Field Work

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*I had to sit down and write this article for April's Field & Feedlot well in advance of the deadline this month. On this March morning, my thermometer read close to zero. However, the ten-day forecast is warmer, and it has me "thinking spring" for the purpose of the article.*

Last year we had a big window of opportunity to get the crop planted in a timely manner. The dry winter has us thinking we will have plenty of opportunity again this year. But sometimes, like we experienced in 2013, the systems change, and we don't have as wide of a window. If you remember, we left a dry 2012 behind, and in April and May of that year Northwest Iowa weather stations reported about 6 to 10 more inches than normal. That narrowed our window of opportunity a lot!

Planning for spring is one of those things you need to do at this time of year, and I encourage two plans. One plan would include what you will do if we have a "normal" spring. The other is if we have a short window again. In order to do that, I will review what "normal" is from a couple of different perspectives.

"When is the last frost in the spring?" seems to be a common question. There is no exact date for that because we are dealing with weather, so we can never be certain. However, if you accumulate the data over time, there are charts that give you the odds of when certain temperatures last appear in the spring. For example, at the Castana Experiment farm in Monona County, the average date of the last 32-degree temperature is April 27. But that means half the time it occurs after that date. Maybe a better number is the chance that 32 degrees only happens later than this date one out of ten years – which would be May 12. You might argue that 32 degrees wouldn't cause significant damage to many crops – we need to look at 28 degrees instead. At that site the 50 percent chance date for 28 degrees is April 15, and the 1-in-10 date would be April 29.

Compare that to a couple of towns further north. The 32-degree 50 percent date for Le Mars would be April 29, and the 10 percent chance date averages May 13. At 28 degrees, those dates are April 20 and May 6, respectively. Sibley's weather station would have dates of May 5 and May 18 for the 32 degree 50 and 10 percent occurrence dates, while the 28-degree dates would be April 26 and May 10. It is obvious why we use earlier season corn hybrids as we move to Minnesota!

How many suitable days in the field can we expect by week? Data from the Iowa Crop Report summaries from previous years can also give us those averages. In the Northwest Crop Reporting District's data from 1964–2019, we average 1.1 day of suitable field work weather during the first week of April, followed by 2.7 in week two, 3.1 in the third week of April, and 3.5 in week four. May averages about 3.8 days of suitable field work per week, but it approaches 5 days suitable for field work by the end of the month. Think about those numbers when you calculate how rapidly you need to progress to be timely in your planting process.

ISU's Ag Decision Maker webpage, https://www.extension.iastate.edu/agdm/, under the crops/machinery tab, has more information on matching equipment to the needs you have for being timely at planting time. One is titled *"Days Suitable for Fieldwork in Iowa."* Check them out!

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# Higher Fertilizer Prices May Make Manure a More Valuable Option

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*Article credit to writers Kristina TeBockhorst, Agricultural Engineering Specialist, and Daniel Anderson, Extension Agricultural and BioSystems Engineering Specialist.*

Last fall, fertilizer prices were trending higher, and with supply change issues and soaring fuel prices, that trend has continued into the spring. Even with potentially higher crop prices, this offers challenges to finding ways to increase or maintain farm profitability. However, one available option is to explore the use of manure. Many livestock owners have long known the value manure has to offer. With skyrocketing commercial fertilizer prices, this offers the opportunity to make even better use of the manure resources.

Farmers who historically have relied on synthetic fertilizer, and even those who have used manure, but have limited experience with spring application, should consider using some manure this spring. While there is never a guarantee of what fertilizer prices will do in the future, current prices are unprecedented. Until 2021, most years showed a lower average price in the fall than in the spring. Even if your manure resources are limited and applying some manure this spring means you won't be able to cover as much ground next fall, it still represents an opportunity to save some money now since fertilizer prices haven't stabilized.

**Why apply manure in the spring?**
Aligning nutrient availability with crop nutrient demands is good for the farm's bottom line and downstream water quality. Research has shown that applying nitrogen closer to when the crop needs it can reduce the risk of nitrogen loss to the environment. Fall nitrogen applications can pose a risk for nitrogen loss to the environment, especially when manure is applied earlier in the fall. With a longer period between manure application and crop nitrogen use, there is a higher likelihood that some nitrogen conversion and leaching will occur.

Especially with high nitrogen fertilizer prices, it can pay to apply manure in the spring. Across multiple research studies in Iowa and Minnesota, significant corn yield benefits (average of 33 bushels per acre) have been seen by delaying manure application from late fall when soils are 50 degrees Fahrenheit and cooling until spring. With 2022 futures corn prices, yield improvement can easily total over $200 an acre in value.

Cost savings can also add up fast with today's fertilizer prices. The nitrogen value in manure can often account for half of the manure's total fertilizer value. In typical swine finishing manure with 50 pounds N per 1,000 gallons and applied at a rate of 4,500 gallons per acre, the nitrogen value alone can sum up to over $200 per acre. How much of that $200 is available to the crop and how much leaches out depends on manure application practices and weather.

**Factors at play include**: (1) The length of time between crop nitrogen use and manure application. (2) The soil temperature that the manure is exposed to during this time. (3) The amount of moisture that moves through the soil.

Applying in the spring will ensure you're getting most of that $200 value without needing to spend money on other nitrogen fertilizer sources.

Spring can be a busy time, the window for fieldwork can be short, and spring rainfall can keep soils wet, leading to compaction concerns. However, there can be some clear economic and environmental advantages to applying manure in the spring. With much of the state rated as either abnormally dry or in moderate drought conditions as of March 10, conditions might be more favorable for spring manure application this year.

Similarly, this may be a good time to reexamine the nitrogen application rates you select. Manure management plans typically utilize the yield goal method to set nitrogen application rate maximums, intended for environmental protection, not to maximize profit. Rate selection tools, like Maximum Return to Nitrogen, can be used to determine rates that will help you maximize your manure fertility value and typically will help you stretch the manure across more acres.

**Best practices for spring application:**
- Prioritize fields with well-drained soils, adequate drainage, good soil structure.
- Consider reducing manure load sizes to limit axle loads to less than 10 tons, which will help reduce the risk of deep compaction.
- Check for proper tire inflation. Consider reducing tire pressure to less than 20-35 psi and using flotation tires to reduce the risk of surface compaction.
- Limit field traffic by designating sacrifice paths.
- Agitate manure well for a more uniform nutrient application and sample manure for nutrient content to know what you are applying.
- Check and calibrate application equipment for application rate uniformity and good injection or soil incorporation.
- Watch the weather forecast closely and avoid manure application before rainfall events.

**Working with New Grain Farmers to Utilize Manure**
Farms that have not historically used manure in the past may be more interested in purchasing manure due to either inability to obtain other fertilizers or because of the high prices. If you are working with someone new to using manure, you can do a few things to help facilitate the exchange.

- Set a price that works for both sides. Manure has value, and the value moves with the price of other fertilizer sources. Can selling some manure now potentially help you obtain acres for manure application in the future? If you are selling manure, look for fields that can utilize the N, P and K to maximize value and price.

*(Continued on next page)*

## Higher Fertilizer Prices May Make Manure a More Valuable Option, *continued*

- Know your regulations. Suppose the manure is coming from a confinement animal feeding operation. In that case, it needs to be applied by a certified applicator. Unless it is sold under Chapter 200A, through an independent manure broker, the field needs to be in a manure management plan (and have appropriate soil tests and erosion assessment).
- Share the experiences you had in what helps you get the most value and best benefits of your manure. Discuss improvements to soil health, all the nitrogen won't be available right away, and then state how the injection units will leave the field or best practices you've found to make planting a success.

Higher fertilizer prices make getting the most from your manure essential. Spring application has consistently shown similar or improved yields. Moreover, with the high fertilizer prices, getting manure nutrients to the right field at the right time makes manure more valuable than ever.

## Let's Talk Milk Components

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The Central Milk Market Order has tracked the components of milk in the central marketing area, including Iowa, for over twenty years; this past week they released the data through 2021. The Central Federal Milk Order specifies minimum payments to producers based on the volume of milk marketed – the producer price differential (PPD) plus payments based on the amount of components in milk marketed. Component payments to producers include those for butterfat, protein, and other solids, as well as an adjustment based on the somatic cell count (SCC) of marketed milk.

Annual butterfat tests were relatively flat over the first few years being in 2000 before beginning an overall downward trend that persisted through 2010. Average annual butterfat tests bottomed out at 3.603 percent in 2010, and have exhibited substantial upward movement since then, posting an all-time high of 3.984 percent in 2021. Annual butterfat averages have been on an upward trend over the last 11 years, increasing every year except 2014.

Average monthly butterfat tests indicate a distinctive seasonal trend. Over the past 22 years, butterfat tests have bottomed out in July at an average of 3.575 percent, while continuing to increase in value each month through December's 3.883 percent peak. Conversely, the average butterfat content decreased each month between December and July during this time frame. This is a distinctive and consistent "stair-step" up and down pattern each year.

Although changes in protein and butterfat content in producer milk typically follow similar patterns, the data indicates that this correlation is far from perfect. Average annual protein tests have exhibited an overall increasing trend in this area, with a few "bumps" along the way. Protein tests were relatively flat during the early 2000s (2000-2005) and again from 2006 through 2010, with the latter period at an overall higher plateau. Protein tests have increased in nine of the eleven years since 2010, peaking at 3.244 percent in 2021.

The seasonal trend for protein is similar to butterfat. The lowest monthly average protein test over the past 22 years occurred in July, identical to butterfat, however protein tests have peaked a month earlier than butterfat in November. Similar to butterfat, protein tests decline each month after the peak and bottom out in July. July's protein test over this timeframe has averaged 2.980 percent, while the November peak has averaged 3.216 percent.

The solids-not-fat portion consists of protein (primarily casein and lactalbumin), carbohydrates (primarily lactose), and minerals (including calcium and phosphorus). Milk also contains significant amounts of riboflavin and other water-soluble vitamins. The variation in other solids content is smaller than the variance for butterfat or protein. The highest average other solids test occurred in 2020 at 5.789 percent, while the low of 5.696 percent was recorded in 2000. This reveals a high to low variance of just 0.093 percentage points compared with 0.381 for butterfat, and 0.213 for protein during this time frame. Annual other solids tests have also demonstrated a persistent increasing tendency.

Monthly other solids tests reveal a seasonal pattern dissimilar to those for butterfat and protein. The peak month for other solids tests over the past 22 years has been May at 5.758 percent, while October registered the lowest average at 5.728 percent.

The trend in somatic cell counts (SCCs) has been substantially downward over the past 22 years. After starting the new millennium with several years in excess of 300,000, SCCs decreased substantially through 2012. Annual averages hovered around 220,000 during the 2012 through 2016 time period but have declined during four of the last six years, falling to an all-time low of 192,000 in 2020.

The pattern for average monthly SCCs is substantially different from butterfat, protein, and other solids. Comparing the SCC pattern with the one for other solids reveals test changes moving in opposite directions during many months. SCCs have peaked during hot summer months, while are at their lowest during late fall and early winter.

Without fat, protein, and other solids, milk has little economic value. The February statistical uniform price announcement for the central area shows the butterfat price at $3.0218 per pound; protein at $2.3168 per pound; other solids at 59.83 cents per pound; nonfat solids price at $1.5450 per pound and the SCC adjusted rate at .00095 cents. The producer price differential is $1.07. All factors combined, the statistical uniform milk price is $21.98 per cwt.

The complete report can be found here - https://www.fmmacentral.com/PDFdata/msb202203.pdf.