

Agriculture By the Numbers

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NDSU Extension Agribusiness and Applied Economics

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Drought and Prevent Planting Crop Insurance

By Ron Haugen, NDSU Extension Farm Management Specialist

Some producers have a misconception that they can collect prevent plant crop insurance proceeds because of drought. Prevent plant crop insurance is for producers who cannot plant because conditions do not warrant it.

Usually, that means wet, mud or excess moisture conditions in which planting cannot occur or will occur after the late planting date. Prevent plant loss claims are a discounted amount from a normal loss.

Drought is not one of those prevent plant conditions. In a drought situation, the producer still is able to plant. It may not be the wisest decision to seed and fertilize in dry conditions when the odds of the crop not germinating are high, but that is the rule.

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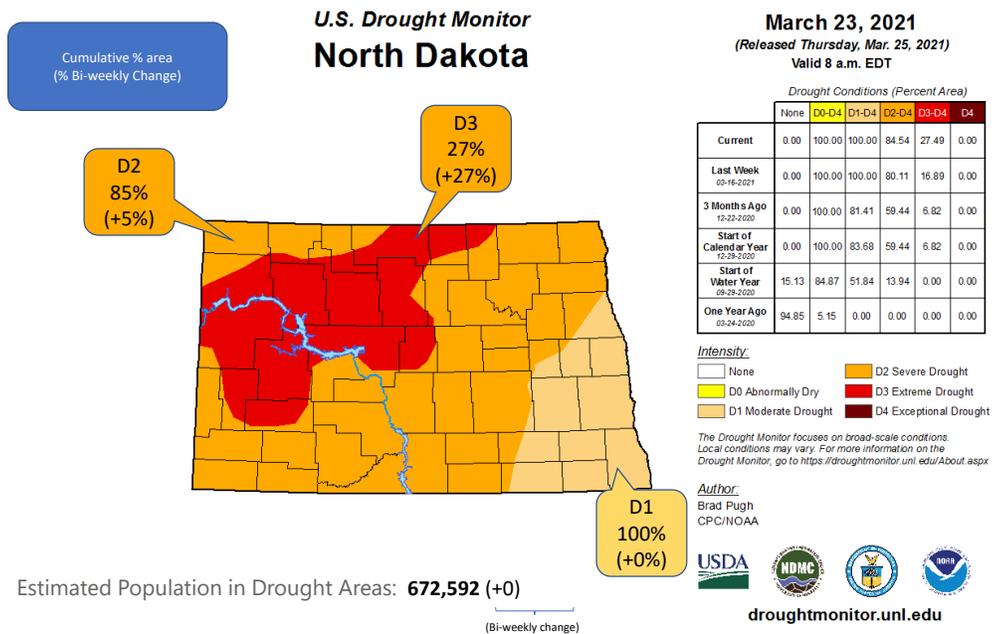
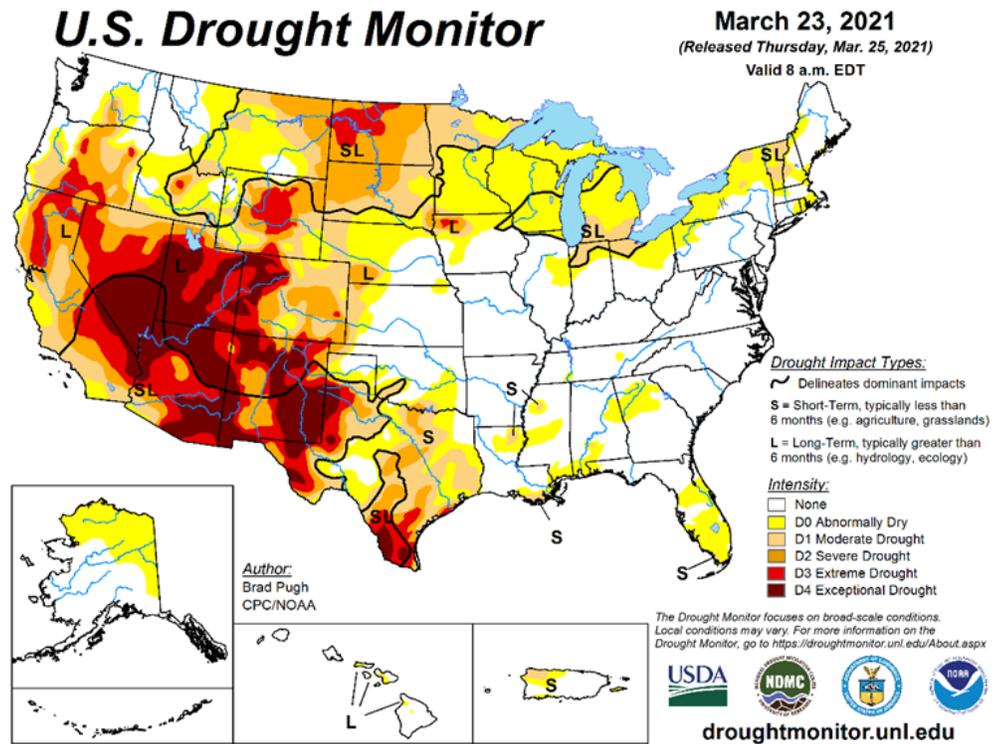
Drought and Prevent Planting Crop Insurance

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According to Risk Management Agency (RMA) guidelines, a producer must use “best practices” in planting, maintaining and harvesting a crop. If seeding and fertilizing a crop in dry conditions is done and the drought persists, producers can file a claim if a loss occurs. Producers can collect regular crop insurance proceeds on a loss and it would offset cash outlays of planting expenses. Producers might be better off this way, depending on their individual situations.

In rare circumstances, the RMA has made drought a prevent plant condition, but it is very rare and conditions must be extreme.

Contact your crop insurance agent for further information.



Production Disruption

By David Ripplinger, NDSU Extension Bioproducts/Bioenergy Economist

As drought conditions worsen across North Dakota, most of the focus is rightly on our state's farmers and ranchers. However, producers are just one part of a much larger agribusiness industry that is dependent on crop and livestock production to meet the food, fiber and energy needs of our nation.

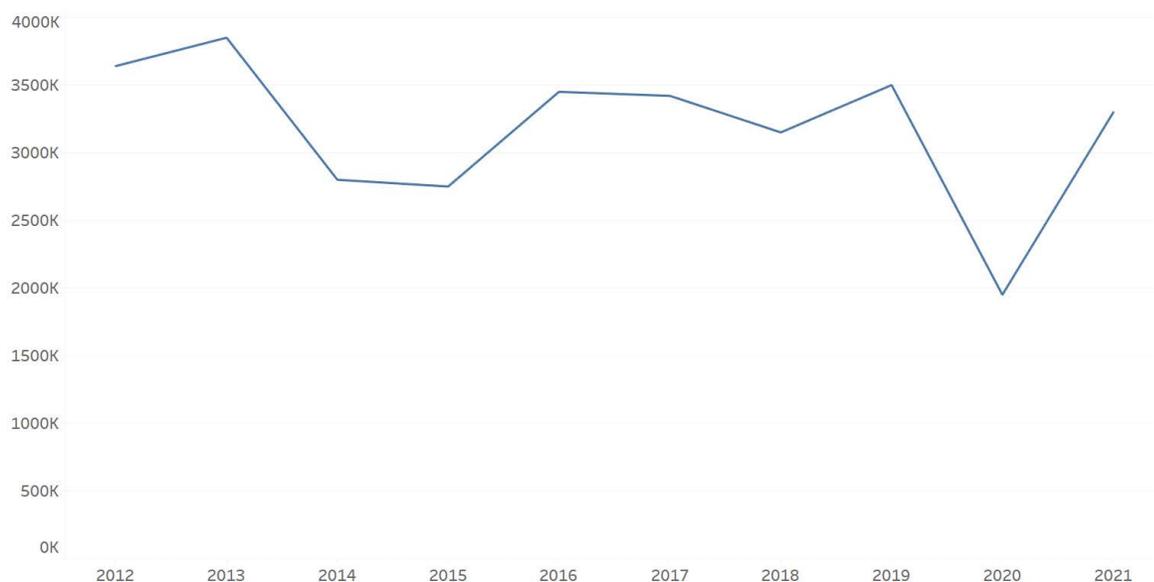
Among the largest in-state users of farm-level production is corn ethanol refiners, including the five in-state refineries that use as much as 40% of our annual corn crop to make ethanol, corn oil and distillers grains. They are also one of the North Dakota corn buyers that need to be concerned with supply risks made worse by the drought.

A few factors play directly into sourcing corn, including existing stocks, expected production and corn markets outside our state's border. And the news is both good and, unfortunately, primarily bad for those in the market for North Dakota corn in the next year.

North Dakota corn plantings, and consequently production, were down considerably in 2020 in large part due to prevented planting acres due to excess moisture. The just under 2 million acres of corn planted were the least planted in the state in

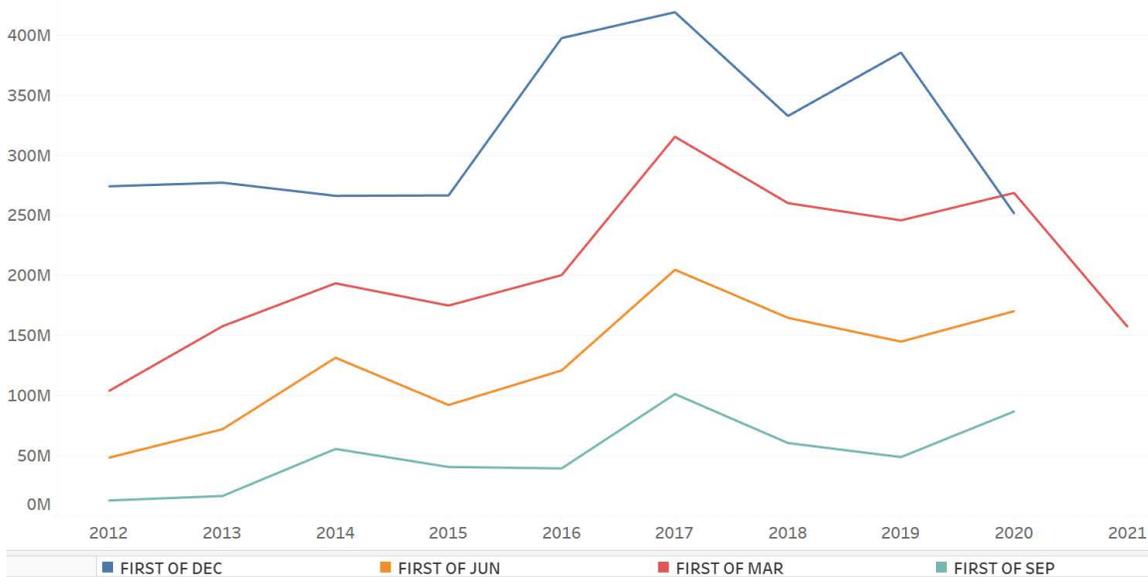
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North Dakota Corn Acres Planted (Actual 2012-2020, Prospective 2021)



Source: U.S. Department of Agriculture/National Agricultural Statistics Service

North Dakota Corn Stocks, 2012-2021 (Million Bushels)



Source: U.S. Department of Agriculture/National Agricultural Statistics Service

more than a decade, and the corn acres drastically expanded following the expansion of the corn ethanol industry that resulted from the passing of the Renewable Fuel Standard.

More recently, corn markets have been bullish, with high prices moving corn from on- and off-farm storage to in-state and out-of-state users. Consequently, our corn stocks are at recent lows.

What is important to recognize is that they are nowhere near historical lows. The March 1 grain stocks numbers for North Dakota are at their lowest since 2013, even as a percentage of available storage, as many farmers have put in significant on-farm storage in the last decade. This storage has served as a buffer to in-state corn users and the opportunity for farmers to carry past production to periods of higher demand like we've seen this winter.

Along with high corn prices has come sizeable prospective corn plantings in 2021. The 3 million acres expected to be planted bring the state's numbers back in line with recent levels. However, we always see differences between what is reported to the USDA and what actually happens.

With trend line yields, North Dakota corn production possibly complemented in with minor levels of imports that would be able to bridge the market as it moves from 2020 low production. But with the drought, all bets are off, with actual acres planted, yield and harvested acres uncertain. The only bright spot for the corn ethanol refineries in the state might be that drought conditions are for the most part concentrated in the state and that the 2021 crop nationally looks OK at least for now.

Implications of U.S. and Canadian Beef Cow Inventories



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By Tim Petry, Extension Livestock Economist

The U.S. Department of Agriculture's National Agricultural Statistics Service released the annual "United States and Canadian Cattle" inventory report on March 4, 2021. It is available at <https://usda.library.cornell.edu/concern/publications/474299142>.

Due to North Dakota's proximity to Canada, comparing beef cow numbers between the two countries is interesting. Inventory numbers for both countries were reported as of Jan. 1, 2021.

U.S. beef cows on Jan. 1, 2021, at 31.16 million head, were down 181,000 from the 31.34 million on Jan. 1, 2020. That was a cyclical decline of 533,100 head or 1.7% in the past two years, but it followed a 2.7 million head cyclical increase from Jan. 1, 2015 to 2019.

A number of factors led to the decline in U.S. beef cows during 2020. Drought spread into much of the western U.S., including North Dakota. Fewer U.S. beef replacement heifers entered the herd and beef cow slaughter was up 2.5%. Some reports of more than normal open cows and narrowing cow-calf profit margins contributed to the liquidation.

Canadian beef cows on Jan. 1 2021, at 3.53 million head, were down 13,200 head from the 3.54 million on Jan. 1, 2020. That was a decline of 154,700 or 4.2% in the last two years, and it followed the general decline since 2006 shown on the chart. The 2021 number was the lowest since the 3.48 million head in 1990.

Canadian beef cow numbers recorded a record high in 2005 at 5.28 million head. Numbers were

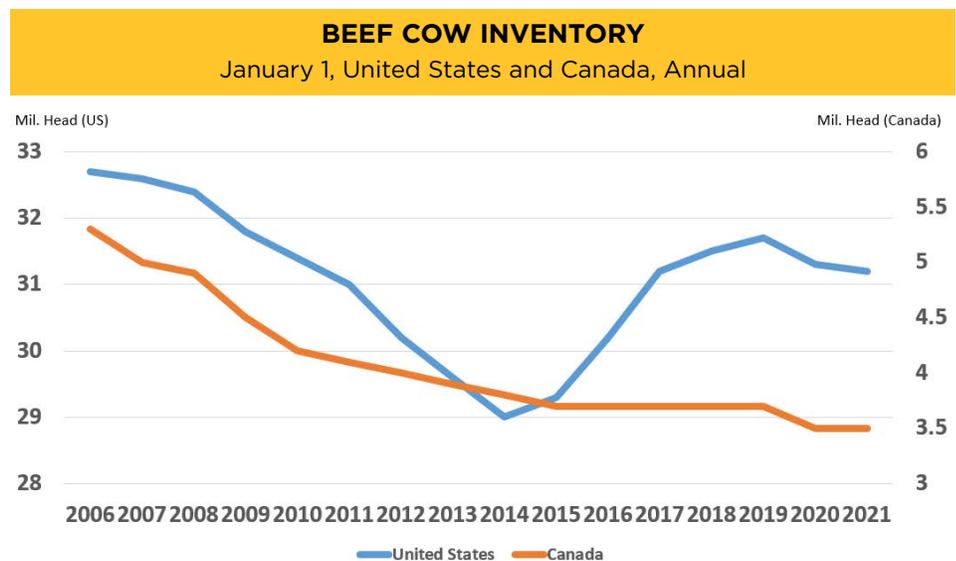
high in 2004-2006 due to the discovery of bovine spongiform encephalopathy (BSE) in a Canadian cow in May 2003.

Prior to BSE, many cull cows were shipped to the U.S. for slaughter. But the U.S. prohibited cow imports after BSE was discovered. That caused very low Canadian cow prices with only limited markets available. So, without a market, many cull cows remained on Canadian farms and ranches.

The V-shaped cyclical U.S. beef cow numbers are evident on the chart. The normal cyclical four-year liquidation from 2006 through 2009 should have ended with 31.7 million head on Jan. 1, 2010.

However, the severe drought in the southern Plains caused an additional four-year forced beef cow liquidation, ending with the Jan. 1, 2014, inventory at just under 29 million head.

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Implications of U.S. and Canadian Beef Cow Inventories

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Very low beef cow numbers were one reason for record high cattle prices in 2014. Normal rainfall returning to the southern Plains fueled a 2.7 million head cyclical increase back up to 2010 levels by 2019.

Canada's beef cow herd is much smaller than in the U.S. For example, on Jan. 1, Texas, the largest beef cow state, had almost 4.7 million beef cows, compared with 3.5 million in Canada. North Dakota, the ninth largest beef cow state, reported 975,000 beef cows, compared with neighboring Manitoba at 375,000, Saskatchewan with 1,091,000 and Alberta, the largest beef cow province in Canada, totaling 1,437,000. Manitoba cow numbers declined about 25,000 head in the past year, with Saskatchewan increasing 17,000.

U.S. and Canadian beef cow herds are expected to stabilize in 2021. Beef replacement heifers were up slightly in the U.S. and up 4% in Canada.

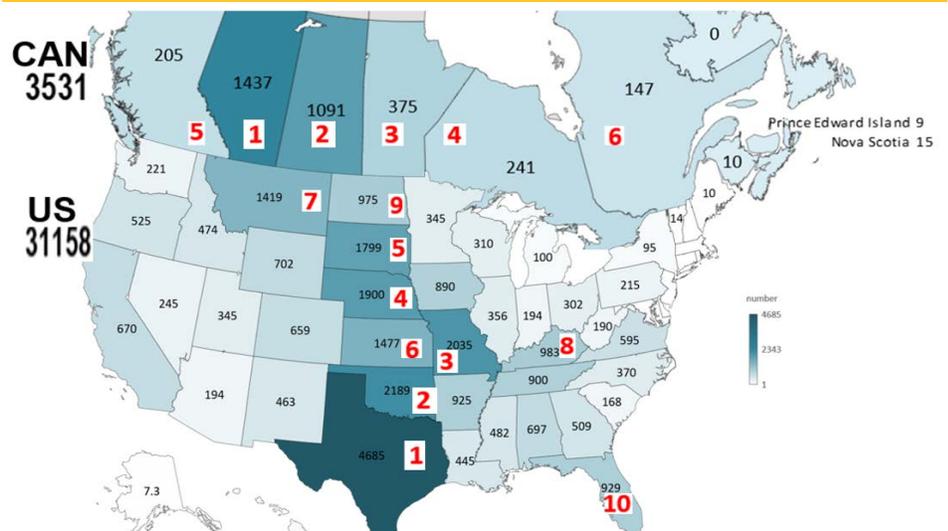
However, weather and summer pasture conditions are always the wild card affecting changes in beef cow numbers. Much of the western U.S. is experiencing drought, with about half the beef cow herd in areas with drought conditions. The entire state of North Dakota is in moderate to extreme drought.

Southern Manitoba, Saskatchewan and central Alberta also are experiencing drought conditions.

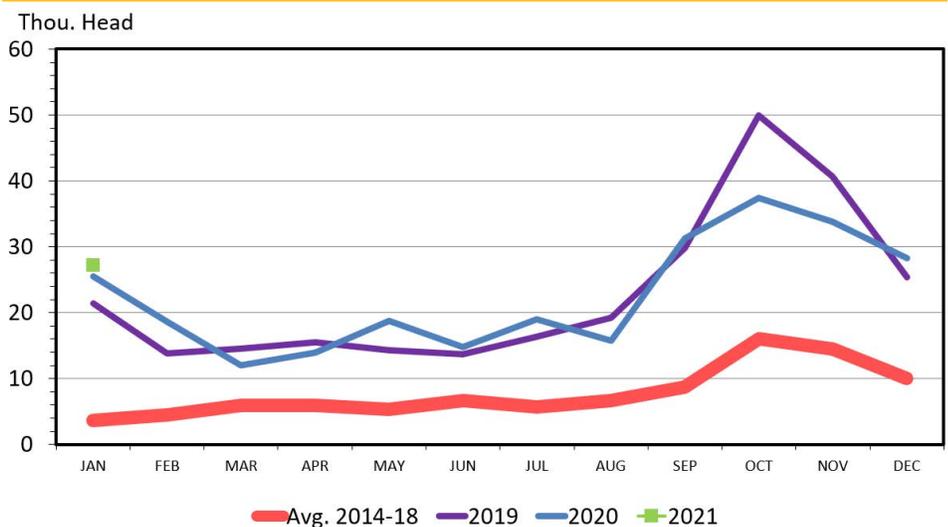
The Canadian beef cow herd decline and cyclically higher U.S. herd have implications for cattle and beef trade. In 2020, U.S. beef exports to Canada increased 6.7% while imports from Canada declined 2.7%.

To help maintain feedlot capacity in Canada, feeder cattle exports to the U.S. declined 30% in 2020. So far in 2021, Canadian feeder cattle exports are down more than 40%.

BEEF COWS, JANUARY 1, 2021 — 1000 Head



U.S. FEEDER CATTLE EXPORTS TO CANADA — Monthly



The chart above shows the historically strong U.S. feeder cattle exports to Canada the last several years, especially during the fall calf marketing season. Many of those calves originate in North Dakota, which is supportive to calf prices here. That trend is expected to continue.

Livestock Forage Program

By Ron Haugen, NDSU Extension Farm Management Specialist

The Livestock Forage Disaster Program (LFP) provides payments to eligible livestock owners and contract growers who have covered livestock and produce grazed forage crop acreage that has suffered a loss of grazed forage due to a qualifying drought during the normal grazing period for the county.

The LFP also provides payments to eligible livestock owners or contract growers who are producers of grazed forage crop acreage on rangeland managed by a federal agency if the eligible livestock producer is prohibited by the federal agency from grazing the normal permitted livestock on the managed rangeland due to a qualifying fire.

An eligible livestock owner or contract grower who, as a grazed forage crop producer, owns or leases grazing land or pastureland physically located in a county rated by the U.S. Drought Monitor as having a:

- D2 (severe drought) intensity in any area of the county for at least eight consecutive weeks during the normal grazing period is eligible to receive assistance in an amount equal to one monthly payment
- D3 (extreme drought) intensity in any area of the county at any time during the normal grazing period is eligible to receive assistance in an amount equal to three monthly payments
- D3 (extreme drought) intensity in any area of the county for at least four weeks during the normal grazing period or is rated a D4 (exceptional drought) intensity at any time during the normal grazing period is eligible to receive assistance in an amount equal to four monthly payments

- D4 (exceptional drought) in a county for four weeks (not necessarily four consecutive weeks) during the normal grazing period is eligible to receive assistance in an amount equal to five monthly payments

The LFP grazing season in North Dakota starts on April 15. A number of counties are in D3 now, so LFP payments will be very likely this year. In 2020, only Burleigh, Oliver and Morton counties qualified for a one month payment. In 2017, more than \$61 million in LFP was paid to North Dakota producers.

Eligible livestock are grazing animals that satisfy the majority of net energy requirement of nutrition via grazing of forage grasses or legumes and include such species as alpacas, beef cattle, buffalo/bison, beefalo, dairy cattle, deer, elk, emus, equine, goats, llamas, reindeer and sheep. Within those species, animals that are eligible include those that are or would have been grazing the eligible grazing land or pastureland:

- During the normal grazing period for the specific type of grazing land or pastureland for the county
- When the federal agency prohibited the livestock owner or contract grower from having livestock graze the normally permitted livestock on the managed rangeland due to fire

NDSU has an LFP spreadsheet tool available online for producers to enter their information. It is at <https://www.ag.ndsu.edu/farmmanagement/tools>.

Contact your Farm Service Agency office for further information.



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Potential for Drought Can Impact Prices and Marketing Plans

By Frayne Olson, NDSU Extension Crop Economist/Marketing Specialist

The most recent U.S. Drought Monitor (<https://droughtmonitor.unl.edu/>), prepared by the National Drought Mitigation Center at the University of Nebraska, shows that North Dakota, most of South Dakota and northwestern Minnesota are experiencing some level of drought conditions. Given tight 2020-21 ending stocks, the grain markets will be watching drought conditions and weather forecasts more closely than normal this year.

However, I am concerned that the information provided by the Drought Monitor maps is being misinterpreted. The Drought Mitigation Center uses a color-coded drought category rating ranging from D0 to D4. Table 1 summarizes some of the key measurement criteria used to define each category.

A rather simplistic way to view the drought categories is to consider how deep the drought has reached within the soil profile. As the drought moves from category D1 to D2 or D3, the drought conditions move from the surface into the deeper soil layers.

The critical questions for crop yields are how much moisture is available within the root zone, temperatures, the timing of rainfall and crop water needs. Drought conditions do not always result in

dramatically lower yields, but well-timed rains and favorable temperatures are needed to maintain yield potential. This is especially true during plant flowering and seed development, when plant water use is high.

Localized drought conditions also can create problems for developing or adjusting farm-level marketing plans. The worst situation for net farm income is to have farm-level yields that are just

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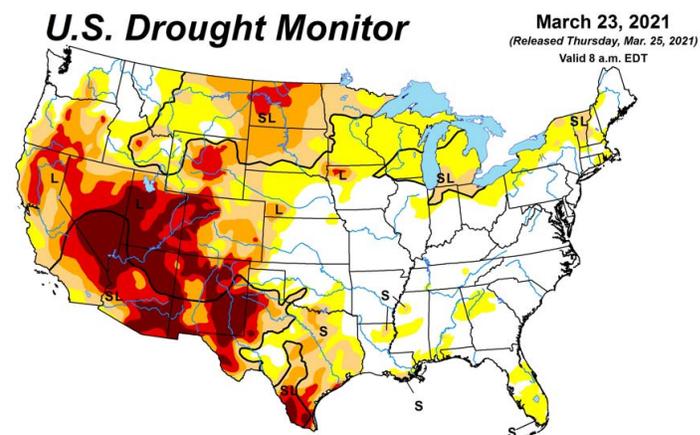


Table 1. Drought Mitigation Center Drought Classifications.

| Category | Description | Possible Implications | Palmer Drought Severity Index (PDSI) | CPC Soil Moisture Model (Percentiles) | USGS Weekly Streamflow (Percentiles) |
|-----------|---------------------|--|--------------------------------------|---------------------------------------|--------------------------------------|
| D0 | Abnormally Dry | <i>Going into drought</i> - short-term dryness slowing planting, growth of crops or pastures. <i>Coming out of drought</i> - some lingering water deficits and pastures or crops not fully recovered. | -1.0 to -1.9 | 21 to 30 | 21 to 30 |
| D1 | Moderate Drought | Some damage to crops, pastures. Streams, reservoirs or wells low, some water shortages developing or imminent. Voluntary water-use restrictions requested. | -2.0 to -2.9 | 11 to 20 | 11 to 20 |
| D2 | Severe Drought | Crop or pasture losses likely. Water shortages common. Water restrictions imposed. | -3.0 to -3.9 | 6 to 10 | 6 to 10 |
| D3 | Extreme Drought | Major crop/pasture losses. Widespread water shortages or restrictions. | -4.0 to -4.9 | 3 to 5 | 3 to 5 |
| D4 | Exceptional Drought | Exceptional and widespread crop/pasture losses. Shortages of water in reservoirs, streams and wells creating water emergencies. | -5.0 to 5.0 | 0 to 2 | 0 to 2 |

A full description available at <https://droughtmonitor.unl.edu/About/WhatistheUSDM.aspx>.

Potential for Drought Can Impact Prices and Marketing Plans

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above crop insurance guarantees, combined with above-average production at the national level, that result in lower overall market prices.

The temptation is to think that because you have drought conditions on your farm, national prices should respond and move higher. In reality, significant drought conditions must impact a large enough area to raise concerns about total supplies.

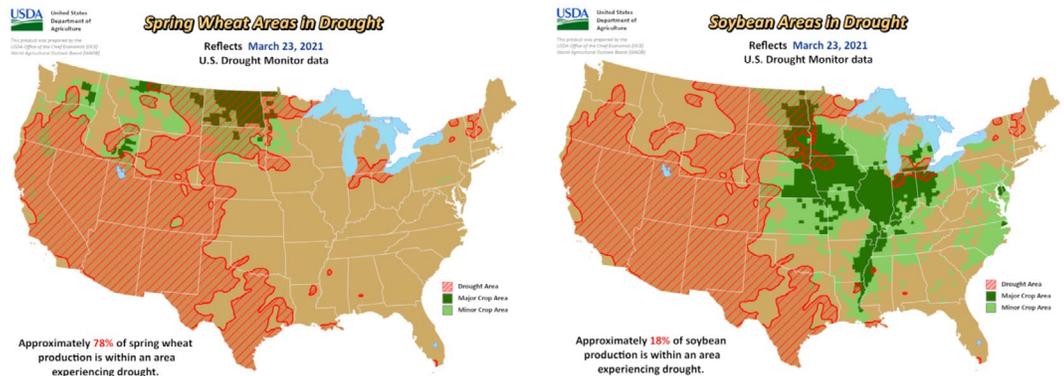
For example, based upon the March 23, 2021, U.S. Department of Agriculture – U.S. Agriculture Drought Monitor (<https://www.usda.gov/sites/default/files/documents/AgInDrought.pdf>), approximately 20% of corn production, 18% of soybean production, 24% of winter wheat production and 78% of spring wheat production are experiencing drought conditions.

Let's look at the potential prices response to drought conditions by comparing soybeans and spring wheat. Approximately 18% of potential soybean production is experiencing drought conditions. However, the projected soybean stocks-to-use ratio, ending stocks divided by total use, for the 2020-21 marketing year is 2.6%, which is equal to the record low set in 2008-09.

Soybean prices likely will be very sensitive to spring and summer weather forecasts. If drought conditions spread and more key productions regions are impacted, very few bushels are available in storage to offset lower yields.

In contrast, the spring wheat market is evaluating the opposite situation. The 2020-21 marketing year stocks-to-use ratio is 42%, which is above average. But approximately 78% of the potential production is experiencing drought conditions.

The odds of below-average yields are strong because of the dry soil conditions, but last year's large inventories can help compensate for lower production this year. The spring wheat markets will be watching weather conditions very closely, but extended dry conditions may need to occur before prices will respond to production concerns.



Local drought conditions can make developing a marketing plan very difficult. New crop market prices are often strong in early spring, trying to influence farmers' planting decisions. However, farm managers are reluctant to forward contract for harvest delivery because they don't know how many bushels can be produced. Farm managers struggle to balance production risk, or lower yields, against price risk, or lower prices.

One approach used to balance these risks is to divide your marketing plan into three time periods: preplant, midsummer and postharvest. The amount of grain priced during each of these periods can change from year to year.

For example, given today's drought conditions in North Dakota, the amount of grain priced during the preplant window may be lower than normal (for example, 15% to 25% of expected production). Additional sales can be made in midsummer, when you can more accurately estimate yield potential and have more information about national production estimates (for example, price an additional 20% to 30% in June or July). The remaining production can be priced after harvest, when final yields and quality are known.

Once again, the amount of grain priced and price targets for each of these three periods can be adjusted from year to year, depending upon weather and market conditions, and may change by crop.