Agriculture By the Numbers

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North Dakota Producers Add Value to Heifers

By Tim Petry, Extension livestock marketing economist

North Dakota cattle producers typically background many calves as a value-added enterprise.

Auction market receipts for calves increase in October and November as cattle move off pastures and ranges. In mid-October, the United States Department of Agriculture-Agricultural Marketing Service (AMS) data for North Dakota livestock auction markets indicate that only 30% of feeder cattle receipts weigh over 600 pounds, and heifers account for 31% of receipts.

AMS records also show that the seasonal low in calf prices usually occurs in mid-October. That was the case in the last four years. In 2021, average prices for 550-600-pound steers increased from a mid-October low of $164/cwt. to $190 in mid-January 2022. Most calves sold in October are not weaned and just off pasture, which is part of the reason for the low price.

Interestingly, the AMS records also show that the largest calf receipts of the marketing season usually occur in the second, third and fourth weeks of January, unless winter storms impact sales. By that time many are weaned, 70% weigh over 600 pounds, and heifer receipts are about 40%.

By mid-April, 80% of receipts are over 600 pounds. Since many backgrounded steers have been sold, heifer receipts increase to 60%. The heifer category does not receive its share of attention, so that will be the focus for the rest of the article.

U.S. heifers held as beef cow replacements follow the beef cow inventory cycle. Widespread drought in much of the western U.S., along with volatile prices and relatively low returns due to several black swan events, caused beef cow herd liquidation for three straight years.

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North Dakota State University
Fargo, North Dakota

North Dakota Producers Add Value to Heifers

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The U.S. beef replacement heifer inventory on Jan. 1, 2022 at 5.6 million head declined 191,600 head (3.3%). That was the lowest number since 2014. The number of bred beef heifers expected to calve in 2022 was 3.4 million, down 3% from last year.

North Dakota cattle producers both background and develop many replacement heifers, and numbers do not follow the U.S. trends. The 2021 North Dakota calf crop was 910,000 head, and on Jan 1, 2022, there were 192,000 beef replacement heifers and 210,000 other heifers on North Dakota ranches. About one-half of the replacement heifers were bred heifers from the previous year's calf crop.

Despite a severe drought in 2021, the 192,000 head of North Dakota replacement heifers were still the eighth largest ever, with records dating back to 1920. In the past couple decades, North Dakota producers have been developing more beef replacement heifers as a value-added enterprise.

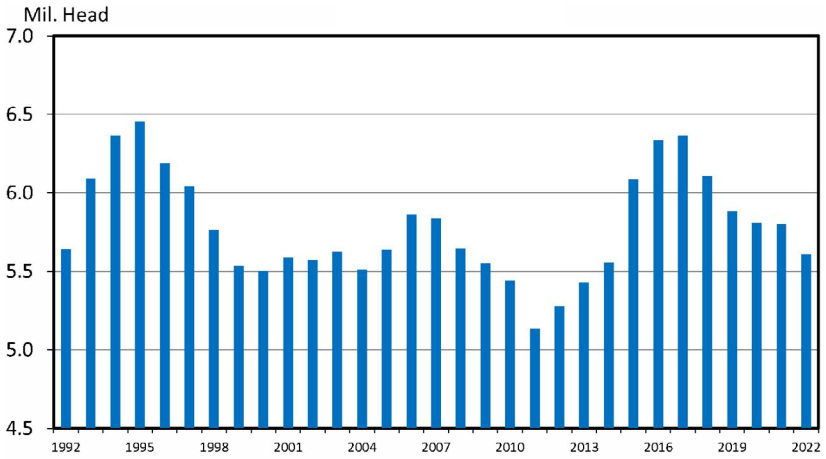
The 200,000 head in 2021 was the sixth largest number of replacement heifers on record, with 2017 the fourth highest, and 2013 in third place, surpassed only by numbers in the mid-1960s and 1970s. Six of the last 10 years have seen top 10 numbers of beef replacements ever.

There are a number of reasons why many heifers are retained in North Dakota. Lightweight heifers receive $30/cwt. or more price discounts to steers in the fall but continue to gain in price relative to steers as weights increase. Fed steer and heifer prices are identical.

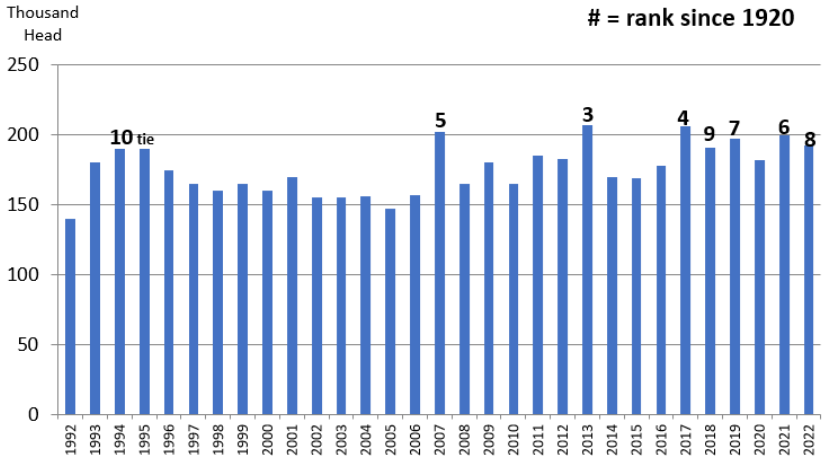
Retaining heifers provides marketing flexibility. They can be marketed in the spring as feeder cattle, or kept and bred in the summer depending on weather and market conditions.

AMS North Dakota market reports show that in the spring, high quality, bangs-vaccinated heifers can bring equal or even premium prices to their steer counterparts.

Heifers Held as Beef Cow Replacements
January 1, U.S.



Heifers Held as Beef Cow Replacements
January 1, North Dakota



North Dakota-developed replacement heifers are in demand not only in North Dakota but in other states as well due to the high quality. Heifers must withstand North Dakota's cold winter and hot summer weather while gaining weight and attaining a successful pregnancy, and some of the highest-quality genetics is available here in the state.

Currently, 60% of the U.S. beef cow herd is in a drought-impacted area. Unless moisture conditions improve soon, 2022 will be the fourth year of beef cow liquidation. Cattle prices have increased cyclically back up to 2015 levels. Cyclically higher prices are expected for the next several years.

So, when U.S. moisture conditions return to normal, beef replacement heifers will be in demand to rebuild the herd.

NDSU Photo

Current Crop Prices Include Several Risk Premiums

Frayne Olson, NDSU Extension crop economist/marketing specialist

The grain and oilseed markets have seen an impressive price rally that began in early January 2022. Current crop futures market prices reflect rapidly changing supply and demand conditions but also a risk premium for the high level of uncertainty in global political and weather conditions. These risk premiums offer good sales opportunities for farm managers but can also disappear quickly if conditions stabilize. Let's briefly review how we got to this point.

The current price rally began with concerns about hot and dry growing conditions in the main soybean production regions of Brazil and Argentina. In the Dec. 9, 2021 World Agricultural Supply and Demand Estimates (WASDE), the U.S. Department of Agriculture was forecasting Brazilian soybean product at 144.0 million metric tons (mmt) and Argentine production at 49.5 mmt. By April 2022, the USDA had dropped its projections to 125.0 mmt and 43.5 mmt, respectively, a significant reduction in global oilseed supplies.

On Feb. 23, 2022, Russian President Vladimir Putin announced a special military operation and began an invasion of Ukraine. The Ukraine-Russia war is causing significant logistical problems for delivery of old crop wheat, barley, corn and sunflower oil into the global markets from both countries, which are major exporters. In addition, many questions remain about Ukraine's ability to produce and market a crop in 2022 and Russia's ability to be a reliable supplier given limited commercial shipping in the Black Sea. The war has raised significant concerns about the availability of wheat, feed grain and vegetable oil supplies from the region.

And now, as the U.S. begins the 2022 planting season, the weather in the Corn Belt and Northern Plains remains cool and wet, with early planting progress behind the five-year average. It is still too early in the planting season to become overly concerned about possible acreage changes or reduced yield potential, but the crop markets are paying attention. In addition, the Southern Plains continue to experience drought conditions, raising concerns about hard red winter wheat acreage abandonment and production prospects.

Adverse weather conditions often result in a risk premium being included in crop prices, especially in the futures markets. However, political uncertainty can also create risk premiums. Both are true today.

Typically, these risk premiums continue to grow as long as the underlying concern continues. For example, crop prices often increase when spring planting is delayed. The futures and cash markets are trying to provide incentives for farm managers to keep planting even though field conditions may be less than ideal or yield potential is falling late in the planting window. Prices often continue to rise until either the weather conditions improve and farmers catch up on planting progress or the planting window closes.

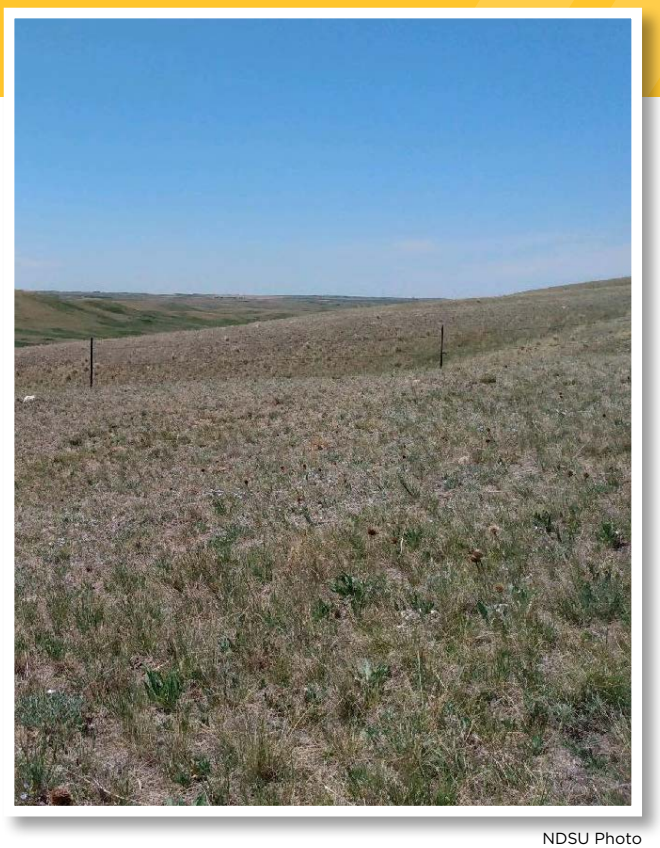
A similar situation is occurring in Ukraine. There is a high level of uncertainty about how many acres Ukrainian farmers will be able to plant this spring, what the yield potential may be and how well their logistics system can handle the bushels or pounds that are produced. This uncertainty leads to price premiums being included in global commodity prices.

As noted earlier, these premiums can quickly fade if conditions change. For example, a few weeks of favorable weather can lead to very quick planting progress, especially given today's farm equipment. A cease-fire or negotiated truce between Ukraine and Russia could allow more crop acres to be planted in Ukraine or allow more grain and oilseed shipments from both countries.

The main point is that global grain and oilseed supplies are tight, and there are no historical references that can be used to help guide decision making. The current high prices have begun to change buying behavior and ration consumption, signaling a possible short-term top in the markets. Price volatility, both higher and lower, is expected to continue throughout the summer and into harvest.

Updated Spreadsheets Available from NDSU Extension

Ron Haugen, farm management specialist



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With the two dichotomies of climate situations in North Dakota, a drought in the west, and flooding, late planting and the possibility of prevent planting in the east, two North Dakota State University Extension spreadsheets have been updated.

LFP Calculator

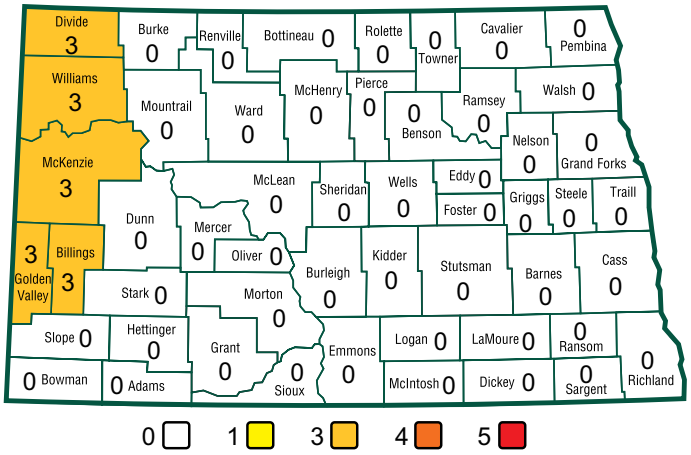
The Livestock Forage Disaster Program (LFP) provides assistance to producers for grazing losses caused by drought. Eligibility rules include but are not limited to: producers must own, lease or be a contract grower of covered livestock during the 60 days prior to the qualifying drought, and they must provide owned or leased grazing land for the livestock in a county affected by drought. This tool provides an estimate of LFP payments under a generalized situation.

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 calculator can be found at: **www.ndsu.edu/agriculture/ag-hub/2022-lfp-calculator**

North Dakota LFP Monthly Payments 4-22-22



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Updated Spreadsheets Available from NDSU Extension — continued from page 4

Prevented Planting Analysis Tool

NDSU Extension developed this tool to help with the prevented-planting decision. The program uses partial budgeting to compare the economics of prevented planting with either late planting the crop for which a prevented-planting payment could be received or planting some other crop. Producers enter estimated crop production costs, prices, yields, crop insurance types, APHs, coverage levels, and land maintenance costs.

The Prevented Planting Analysis Tool can be found at:

www.ndsu.edu/agriculture/ag-hub/ag-topics/crop-production/tools/2022-prevented-planting-analysis-tool

Inputs for each situation should be entered to help make the decision. A typical example output is shown below.

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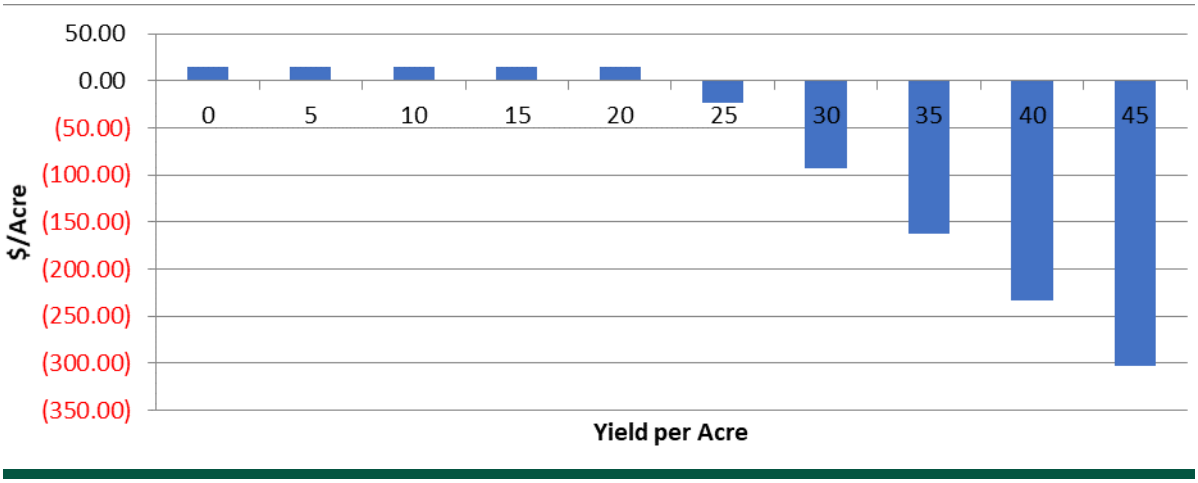
Estimated Gain (Loss) per Acre Prevented Planting Spring Wheat Compared to Planting Soybean at Various Yields

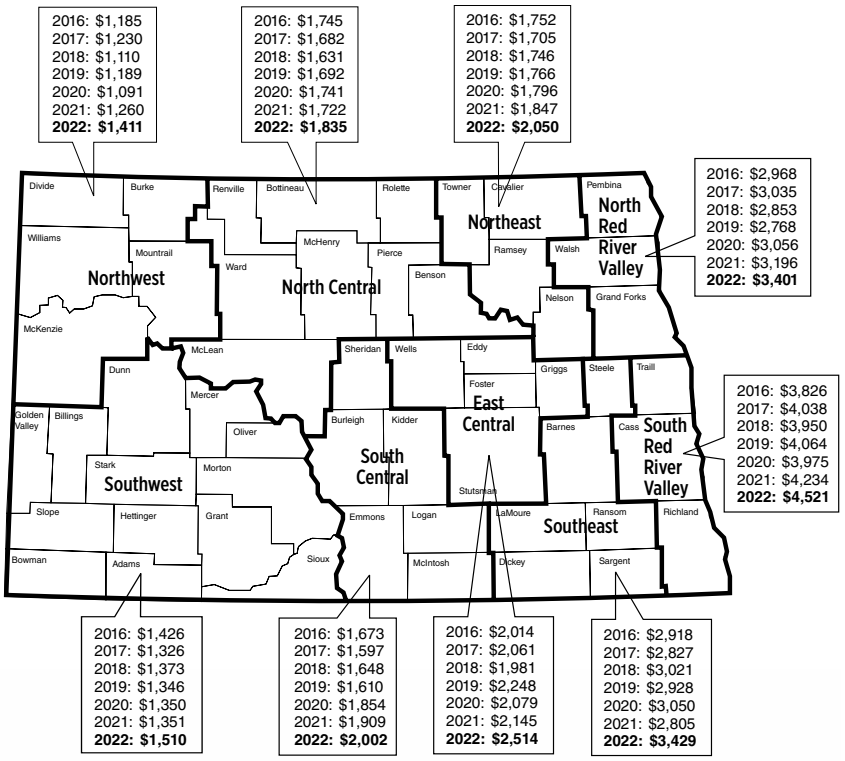


Crop and Pastureland Values Make Double Digit Gains While Rents Slower to Adjust

Bryon Parman

Higher commodity prices in 2021 and substantial CFAP (Coronavirus Food Assistance Program) payments in 2020 left many North Dakota farmers and ranchers with higher net farm incomes than in the previous six or seven years. This is despite a widespread drought in 2021 across much of the state. While some producers used that income to pay down existing debt or replace aging equipment, others decided to acquire more farmland. From 2021 to 2022, North Dakota statewide average cropland prices increased 10.9% while pastureland prices increased 11.5%. This puts the average pastureland price in North Dakota at $1,080 per acre and North Dakota cropland prices at $2,519 per acre. Cash rents and land prices for the NDSU Extension regions are from the North Dakota Department of Trust Lands surveys at the county level and then are combined into a weighted average for each NDSU Extension region.

Figure 1. Estimated Average Per-acre Values of Cropland in North Dakota from 2016 to 2022



The increase in cropland prices is the first significant increase since 2014 when statewide average land prices increased 8.5%. For the years in between, cropland prices increased nearer to the low single digits or essentially stayed flat. When adjusting for inflation, cropland prices actually declined slightly over that period before increasing in 2022 by 10.9%. The recent price spike is indicative of some pent-up demand with producers waiting to be in a solid financial position before making a purchase. Figure 1 shows the regional average cropland prices for the nine NDSU Extension regions from 2016 to 2022.

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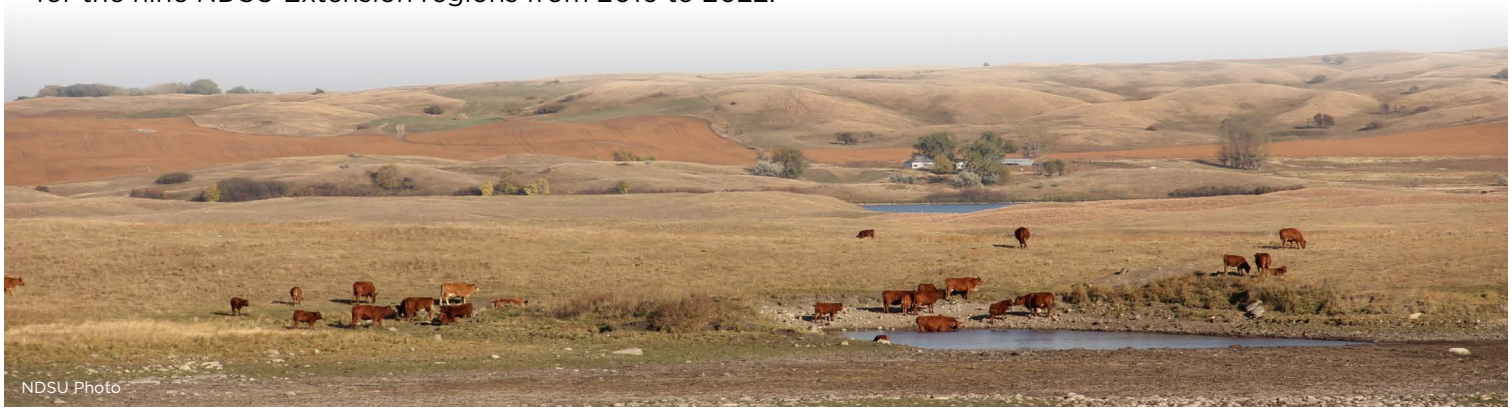

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Crop and Pastureland Values Make Double Digit Gains While Rents Slower to Adjust — continued from page 6

Pastureland prices according to the surveys and weighted averages also showed a significant increase. However, pastureland prices have historically been a bit more volatile. With price increasing in each region that is tracked, it is highly likely that the 11.5% price increase statewide does indicate that pastureland prices have, in fact, increased. However, given the swings that pastureland prices typically experience each year, the 11.5% statewide average may not represent the "true" increase as pastureland data is a bit sparser, and a small number of responses can sway the averages a great deal. Pastureland prices for the NDSU Extension regions are shown in Figure 2. Note that values for the Northeast, North Red River Valley and South Red River Valley are not shown due to insufficient data.

Rental rates across the state, however, moved much more modestly. With respect to cropland rents, the state average increase was 3.1%. In fact, many regions didn't see much of an increase at all in cash rental rates. The likely reason for the big move in land values and the small change in rental rates is the production costs for the 2022 crop year. Fertilizer prices are up over 100% or even 200% in some cases, diesel prices are up as much as 100%, other crop chemicals such as herbicides and pesticides are more expensive, and equipment costs are considerably higher. Thus, despite strong commodity prices, producers are less willing to enter into a new rental contract 10% or 12% higher.

Land prices or land purchases are evaluated differently from rental contracts. A land purchase has the potential to payoff, even if it is possibly overpriced relative to income due to capital gain as well as equity buildup. Additionally, with interest rates still very low and likely rising soon, people expect that now may be a good time to buy and lock in lower rates. In five years, a 5.5% fixed rate may very favorable compared to the rates being offered later. However, rents need to cash flow every year. With the high production costs, and the concern that commodity prices might fall, rents are

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Figure 2. Estimated Average Per-acre Values of Pasture in North Dakota from 2017 to 2022

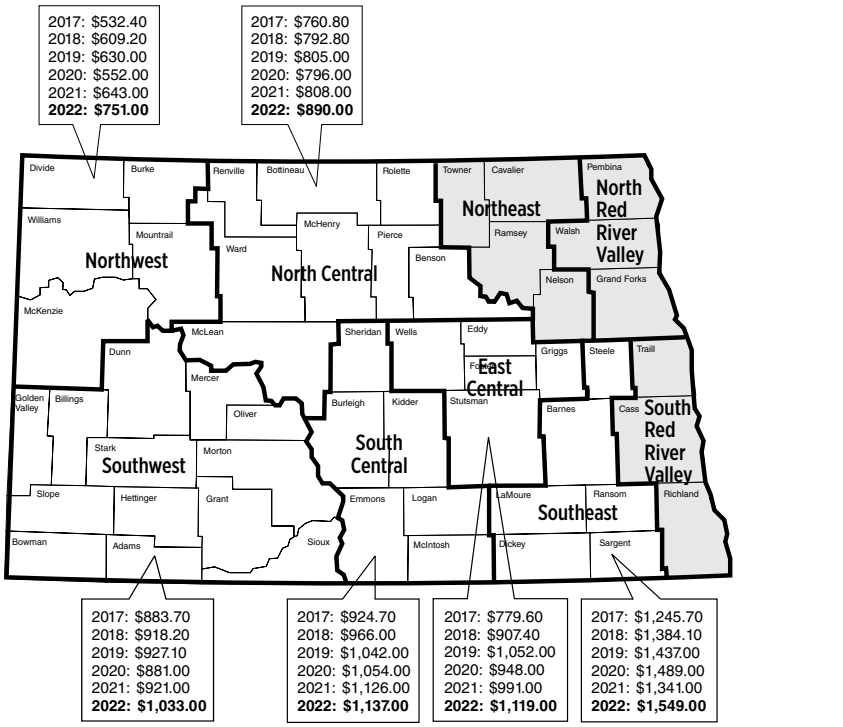
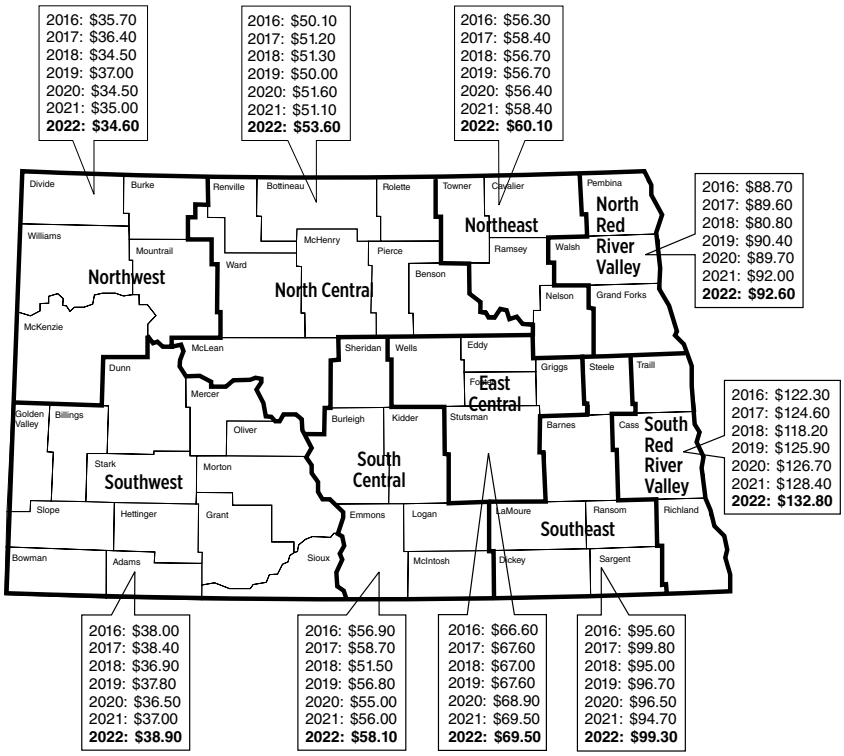


Figure 3. Estimated Average Cash Rent Per-acre of Cropland in North Dakota from 2016 to 2022



Crop and Pastureland Values Make Double Digit Gains While Rents Slower to Adjust — continued from page 7

more reluctant to move higher since there is no advantage of possible capital gain or equity buildup for the tenant.

Similarly, pastureland rents failed to move at the same rate as pastureland values. In fact, pastureland values, on average across North Dakota, held steady at nearly 0% change from 2021 to 2022. The lack of change in overall statewide pasture land rents may be due in part to the drought and the availability of forage. While fall and spring rains across the state have the potential to bring crop production in 2022 back to "normal," it can take years of average to above-average moisture for pastures to recover from extreme drought and overgrazing. Because pasture rents are valued in dollars per acre and not dollars per AUM (animal unit months), the effective rental rate following a drought might increase. If the AUM decreases but the dollars per acre remains the same, then the cost to graze each animal increases for the tenant.

With a strong outlook for commodity prices in 2022, it is expected that land prices will retain the recent gains into 2023. Especially if fall of 2022 sees a reduction in production costs for agricultural chemicals and energy. This would also pressure rents to increase. The other thing that may push rental rates up is a significant increase interest rates. Over the last 7 years or so, the rental rate to land value ratio in North Dakota has been between 2.5 – 3 % (also called the CAP rate). Historically this CAP rate is about 1 – 1.5 % below the prime rate for borrowers which has been about 4 – 4.5% across North Dakota for the last 6 or 7 years. If the prime rate increases to 7 or 8% in the next year or so, either rents have to increase or land values fall to retain that relationship. Since it appears unlikely now that land prices would come down considerably, an increase in rents would be needed to keep the CAP rates around 1 or 1.5% below the prevailing interest rate.

Figure 4. Estimated Average Cash Rent Per-acre of Pasture in North Dakota from 2017 to 2022