Agriculture By the Numbers

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NDSU EXTENSION

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Byproduct Value Important to Cattle Prices

Tim Petry, Extension Livestock Marketing Specialist

The importance of strong domestic beef demand and U.S. beef exports to U.S. cattle markets has been well documented. Beef exports, on both volume and value, reached record highs in 2022 amid record U.S. beef production, but have since declined. Headwinds include declining U.S beef production and record-high U.S. beef prices.

Beef byproducts are less glamorous, and their importance is sometimes overlooked by cattle producers. However, the value of byproducts, sometimes referred to as “offal” or “drop value,” also plays an important role in cattle prices.

Beef byproducts include all items, both edible and inedible, from harvested cattle that are not part of the dressed carcass. Hides were historically the most valuable byproduct, but have been overtaken by beef tallow and tongues. Other beef byproducts include livers, hearts, oxtails, tripe, and meat and bone meal. Edible byproducts are often called “variety meats.” Inedible byproducts are used for a wide variety of pharmaceutical, cosmetic, household and industrial products.

The value of beef byproduct exports also reached record highs in 2022 and has declined. However, beef byproduct values declined 12.7% compared to beef exports declining 21.2%

Values for individual beef byproducts are influenced by many fundamental supply-and-demand factors. The U.S. is the world’s largest beef producer and beef byproduct producer.

So, export demand is especially important because the amount of U.S. byproducts produced is large in comparison to domestic demand.

Tastes and preferences for traditional beef cuts and variety meats differ throughout the world. Fortunately, some foreign customers actually prefer variety meats such as livers and hearts, unlike many U.S. consumers. Tongues, for example, are popular in Japan. In some countries, particular variety meats are preferred over traditional cuts

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Byproduct Value Important to Cattle Prices

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or even used for medicinal purposes. In other countries, variety meat may be a cheaper source of protein for lower-income consumers.

The leading destinations for U.S. beef byproducts have been Japan, Mexico, Hong Kong, Taiwan and South Korea.

The USDA Agricultural Marketing Service publishes a daily by-product drop value report for fed cattle, available at www.ams.usda.gov/mnreports/ams_2829.pdf.

AMS reports the quantity, price and value for a number of the most important byproducts for a typical 1,400 lb. steer. Values are reported on a per hundredweight (cwt.) live basis.

Currently, the byproduct value for a 1,400 lb. steer was quoted at $14.73/cwt. or $206.22 per head (hd.). AMS reported the market value of an average live steer at $260.50/cwt., so byproducts accounted for about 5.7% of the steer's value. Values of selected individual byproduct items included packer tallow at $3.97/cwt. ($55.28/hd.), tongues at $1.77/cwt. ($24.78/hd.) and steer hides at $1.43/cwt. ($20.02/hd.).

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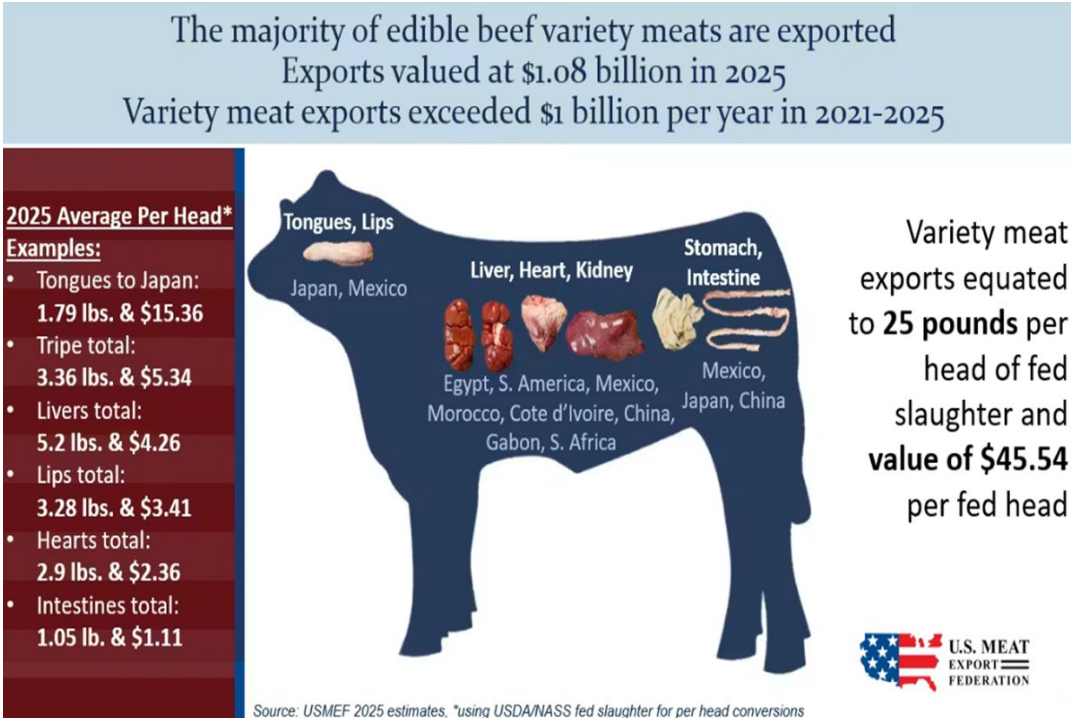
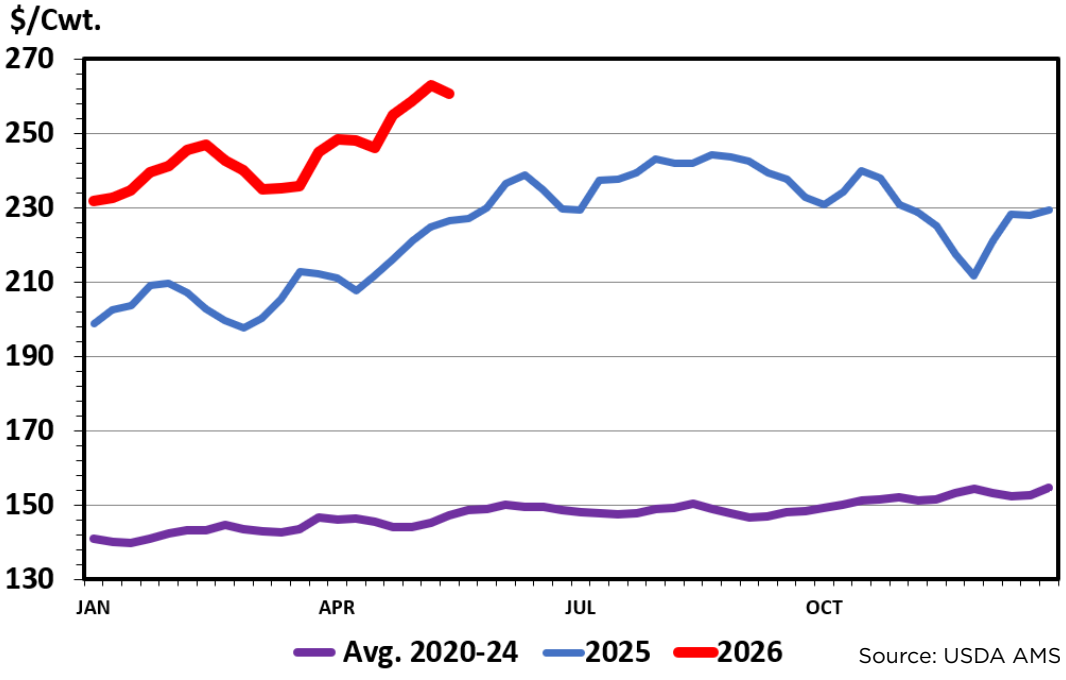


Fed Steer Prices — 5 Market Weighted Average, Weekly



Source: USDA AMS

Byproduct Value Important to Cattle Prices

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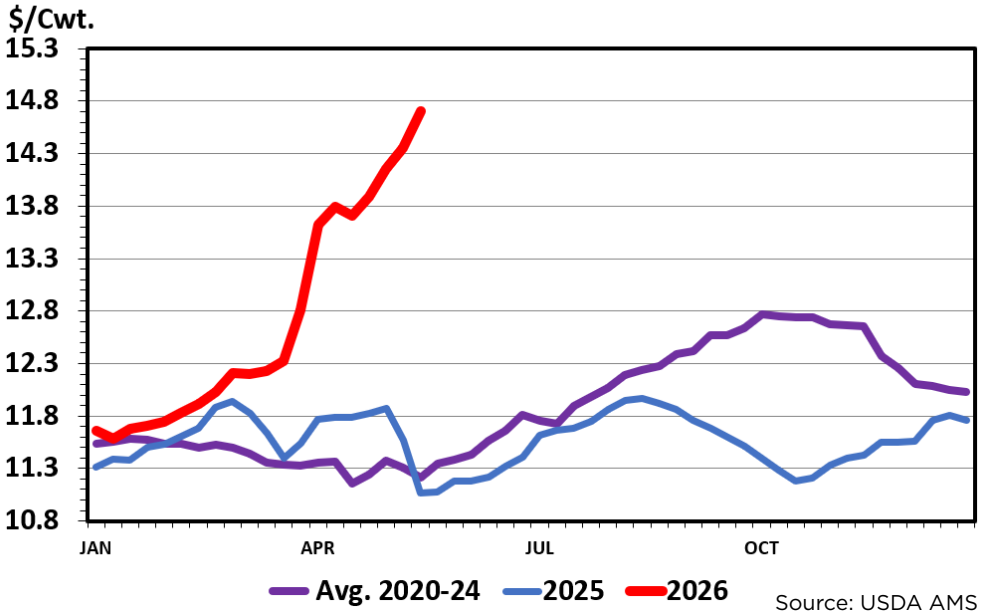
The weekly value of beef steer byproducts has risen rather sharply in 2026 from $11.66/cwt. to start the year at $14.70/cwt. The main driver of the increase has been packer tallow values, which increased from $2.24/cwt. ($31.36/hd.) to the current $3.97/cwt.

The tallow market follows the energy market because it is used in biofuels. The increase in crude oil prices since the start of the war with Iran has supported tallow prices.

An increase in export demand for livers has also bolstered byproduct values. Liver values started the year at $0.27/cwt ($3.78/hd.) and have risen to $0.83/cwt. ($11.62/hd.).

Steer Hide and Offal Value — Live Animal Basis, Weekly



Source: USDA AMS

Hide values, once the leading byproduct value, have continued to decline in 2026, extending a several-year decline. Many hides are exported to overseas customers for processing into leather products. The substitution of synthetics for leather has hurt hide demand.

Both domestic and export supply-and-demand factors will affect beef byproduct values in 2026. Projected lower U.S. fed cattle and cow slaughter, as well as demand for tallow and export demand for variety meats such as livers and tongues, should support byproduct values in 2026.

However, ongoing trade negotiations with major beef byproduct-importing countries could impact demand.

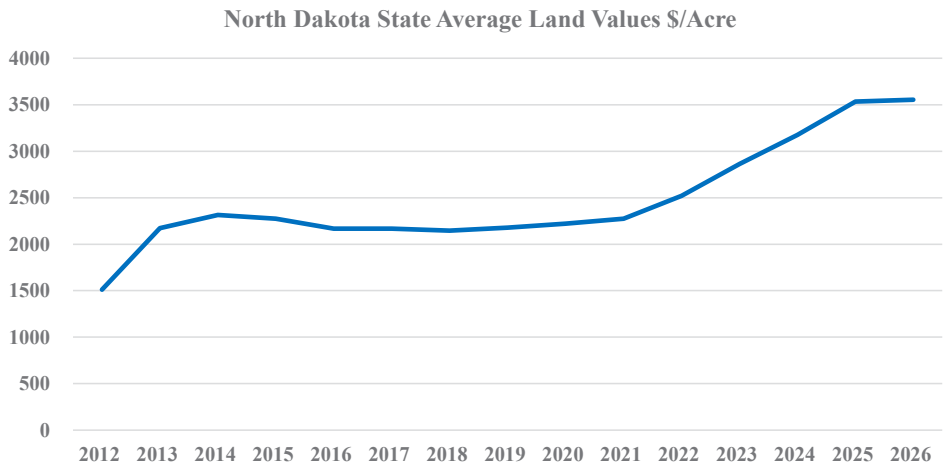
The recent trade summit between President Donald Trump and Chinese President Xi Jinping resulted in China restoring export access to 425 U.S. beef packing plants, which have been excluded from the market since early last year.

Are Slim Margins Beginning to Impact Cropland Values?

Bryon Parman, Associate Professor/Ag. Finance Specialist

After record-high net farm incomes for North Dakota and nationally in 2022, and strong net farm incomes in 2021, the greater farm economy has seen margins shrink over the last three years. While incomes have not been dramatically depressed over the last three years compared to historical inflation-adjusted averages, they have still been much lower than during the last two boom cycles, including 2010-2014 and 2021-2022. And yet, despite the agricultural economy's mediocre state, land prices in North Dakota grew by an average of 46% from 2021 to 2025. During the same recent increase in land values, cash rental rates for farmland rose 19.7% from 2021 to 2025.

Figure 1: North Dakota State Average Cropland Values in 2012 Inflation-Adjusted Dollars



The last comparable increase in cropland values, both nationally and in North Dakota, began around 2007 and leveled off between 2013 and 2014. The driver of this land price increase was high commodity prices stemming from increased ethanol production. When crop prices fell dramatically in 2014 (especially corn and soybeans), net farm incomes fell too, and the cropland price increase at the time halted. From 2014 to 2020, when adjusted for inflation, cropland prices remained mostly flat, if not declining slightly in real dollars. The flattening of land prices from 2014 to 2020 matched a period of average or below-average net farm incomes for almost seven years.

While high crop commodity prices and, subsequently, high net farm incomes coincide with both the previous and the most recent land price increases, the durations of the two are different. The previous period, 2007-2013, lasted much longer than the short two-year 2021-2022 period of high net income and tapered off more quickly. As incomes began to fall in 2013 and then moved down sharply in 2014, land prices adjusted quickly. In the most recent iteration, incomes fell precipitously in 2023, but the increase in land prices persisted through 2025. Certainly, there is a lagged effect where high incomes in 2022 would influence price the following year, but in this case, it persisted for three years.

However, the most recent survey, with weighted data from the North Dakota Department of Trust Lands and North Dakota State University, shows that the lower incomes may be having an effect. The most recent data shows a statewide increase in cropland values of 0.88% in 2026, following a 10.55% increase in 2025. While the data was mixed by region, showing increases in some locations and decreases in others, it supports the Q4 2025 information from the Kansas City Federal Reserve, which showed 0% growth in cropland prices for North Dakota.

Following land prices, rents edged up during both the most recent land price increase and the one occurring over 10 years ago. Rents have increased at a much slower pace, though. When adjusted for inflation, cash rental rates across North Dakota stayed mostly flat from 2015 through 2022. While they have increased since 2022, and were up approximately 2% in the most recent 2026 report, they have grown at less than half the rate of land prices.

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Are Slim Margins Beginning to Impact Cropland Values – continued from page 4

The much slower growth in rental rates, however, is not a new trend. Indeed, the rent-to-value ratio, which is the cash rental rate divided by the average market value of crop land, has been falling since the late 1980s. In the late 1980s and early 1990s, the rent-to-value ratio was just under 9%. The large run-up in land prices a few years after the turn of the century pushed this ratio down to 3%. The recent increase in land prices dropped it down even further to just over 2%. This did not occur because cash rental rates declined; rather, it occurred because land prices have grown much faster in the last 35 years than cash rents have. It should also be noted that the rent-to-value ratio is not a capitalization rate (cap rate) as it does not deduct any opportunity cost, management fee or taxes. When those are included, the cap rate from an income perspective is much lower.

Figure 2: North Dakota State Average Cropland Cash Rental Rates in 2012 Inflation-Adjusted Dollars

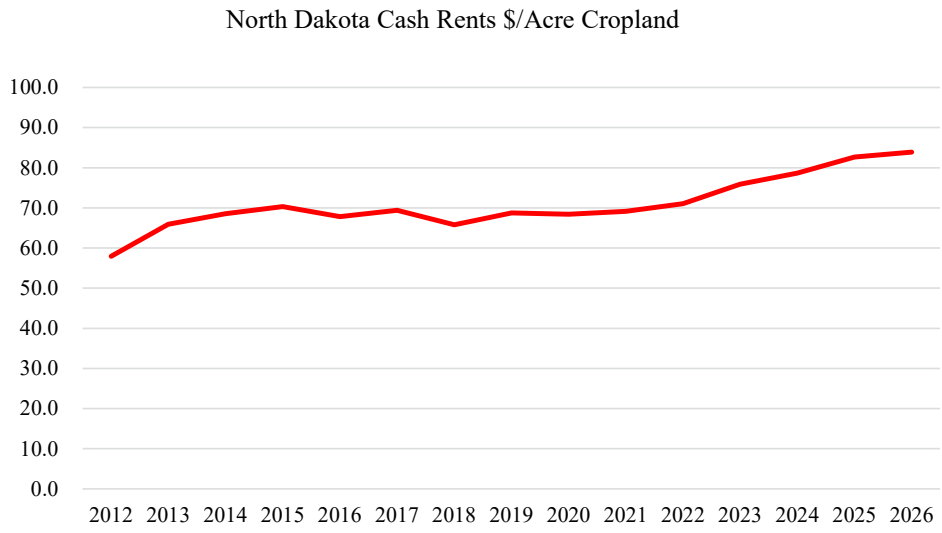
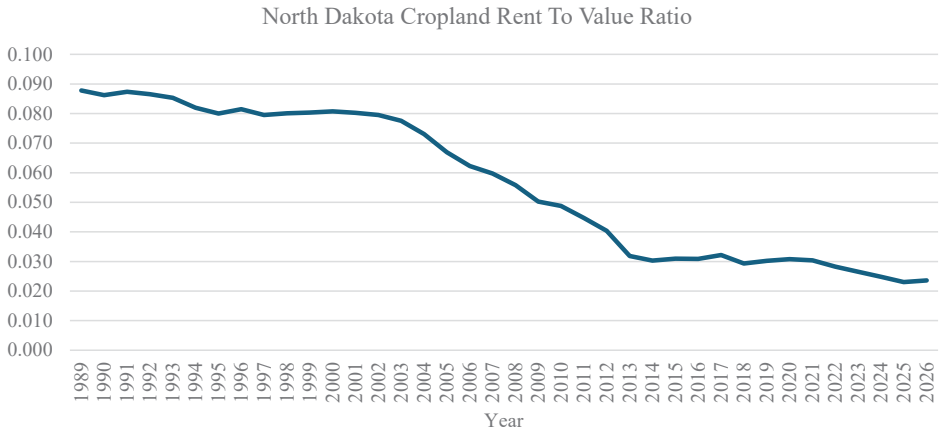


Figure 3: North Dakota Cropland Rent-to-Value Ratio
(Note: not a traditional CAP rate)



While one year is not a trend, the 2026 data showing a larger increase in rents than values is the first time in 10 years that this has occurred. It should also be noted that when the rent-to-value ratio was much higher than it is today, interest rates were as well. While interest rates today are not as high as they were in the early 1990s when they were between 9% and 10%, they are more at the level of the 2005-2008 period of 6%-7%. This not only impacts noncash buyers who have to finance a significant portion of land purchases, but also the returns on other investment options such as bonds and certificates of deposit (CDs), making these options more attractive than farmland.

Crop income and interest rates are likely to dictate the direction of cropland rents and values in the coming years. Should we see a continuation of high production costs and relatively lower commodity prices persist, there is a strong chance we see a period similar to the 2014-2020 flattening in cropland values, perhaps even a modest decline when adjusting for inflation. It will also be worth monitoring the impact interest may have. If rates stay in their current range, will that drive rental rates higher, given that the yearly cost of ownership remains elevated compared to previous years? The coming years may test the strength of this relationship.

Projected Benefits and Costs for a Typical Range-Based Sheep Operation in North Dakota

Jon T. Biermacher, Extension Livestock Development Specialist
Tim Petry, Extension Livestock Marketing Specialist

Sheep production is an important economic activity in North Dakota, especially for larger operations using range-based pastures.

In this article, we provide sources of revenues, production costs and net returns to management and farm overhead for a 250-ewe lamb operation (Table 1). In addition, we provide selected projected (2026) prices for inputs and outputs and selected quantities of production variables with the greatest impact on net returns used in the analysis (Table 2). Furthermore, several assumptions were used to develop the range-based budget. These assumptions were based on past history, current markets, academic publications and opinions from industry and academic experts. The primary assumptions used in the analysis are presented in the following sections.

We assumed that sheep operators will produce feeder lambs with an average weight of 75 pounds with a lambing rate equal to 1.25 lambs/ewe, and culling rates of 10% for ewes and 15% for rams. In addition, North Dakota State University Extension projections for feeder lamb prices for October 2026 are expected to be in the neighborhood of $3.00/lb. We used a mature ewe death loss rate of 6.5% of the flock, a coverage rate of 31 ewes per ram (8 rams/flock) and a 4% transportation shrink in the revenue calculations. Although the current price of wool is $0.90/lb, the cost to transport wool to the closest buyer in Belle Fourche, South Dakota, is expected to be much greater than the value of the wool; we assumed the price of wool is equal $0.0/lb. However, loan deficiency payments for unshorn

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Table 1. Expected sources of revenue, production costs and net returns for a 250-head range-based sheep operation in North Dakota

Gross receipts:	$/ewe	$/flock
Lambs	270.00	67,500
Cull ewes	13.87	3,468
Cull rams	0.88	220
Wool, including loan deficiency payments	10.14	2,536
Total gross receipts	**294.90**	**73,724**
Variable costs:	**$/ewe**	**$/flock**
Pasture	60.00	15,000
Hay	39.34	9,835
PRF rainfall insurance	5.50	1,375
Feed grain	36.88	9,220
Salt and mineral	6.03	1,507
Veterinarian and health	13.66	3,416
Breeding (ram cost per ewe)	6.35	1,589
Marketing and hauling	5.13	1,283
Fuel, lube, repairs and utilities	16.58	4,144
Shearing, ewes and rams	9.01	2,253
Predator control (nonlethal)	2.40	600
Dog food for three sheep dogs	7.88	1,971
ALB checkoff	0.75	189
Operator/family labor	24.30	6,075
Hired labor	2.70	675
Interest on operating capital @ 6.5% APR	8.54	2,133
Total variable costs	**245.06**	**61,262**
Fixed costs:	**$/ewe**	**$/flock**
Machinery, equipment and vehicles	26.58	6,645
Interest on retained livestock	2.57	641
Taxes and insurance	5.50	1,375
Total fixed costs	**34.65**	**8,661**
Total costs	**279.71**	**69,923**
Net return to management and overhead	**15.73**	**3,935**

Projected Benefits and Costs for a Typical Range-Based Sheep Operation in North Dakota

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pelts ($2.59/lamb) and ungraded wool ($0.38/lb) for lambs, ewes and rams were included as sources of revenue.

To calculate the costs for pasture and feed, we assumed that it would require two acres of pasture to support one ewe, and pasture would be grazed for 180 days per year, implying that ewes and rams would be provided feed in a drylot for 185 days during the winter months. In addition, we assumed that sheep would require a daily ration of hay at a quantity equal to 3% of their bodyweight, and require a daily ration of grain-based feed equal to 1.5% of their bodyweight. We also assumed that sheep operators would purchase their hay needs and the $80/ton price would serve as a proxy value for cutting, raking and baling their own hay.

Table 2. Essential output and input prices and quantities used in the analysis

Price variable	$/unit
Feeder lambs ($/lb)	3.00
Cull ewes and rams ($/lb)	0.85
Wool, market ($/lb)	0.00
Wool, unshorn pelt LDP ($/unshorn lamb)	2.59
Wool, ungraded LDP for lambs, cull ewes and rams ($/lb)	0.38
Pasture rental rate ($/acre)	30.00
Stocking rate (acres/ewe)	2.00
Price of hay ($/ton)	80.00
Price of grain-based feed ($/ton)	150.00
Price per round-trip mile ($/mile)	6.50
Distance to market (miles)	50
Operator and hired labor rate ($/hour)	25.00
Interest on operating capital (%)	6.50

NDSU Extension's recommended vaccination and healthcare regimens for lambs, ewes and rams were budgeted using current market prices obtained from local suppliers in May 2026, including an Ovine progressive pneumonia test for ewes ($7/ewe). The annual cost of breeding rams was amortized over five years, assuming a purchase price of $500/ram, a life expectancy of five years and an interest rate for investment capital of 7.5%. In addition, a breeding soundness exam was included at a cost of $75/ram.

We calculated marketing costs, assuming average market rates for auction/commission fees ($2.25/lamb), inspection ($0.15/lamb), yardage ($0.35/lamb), feed ($0.25/lamb) and mandatory checkoff costs for live sheep ($0.007/lb), feeder lambs ($0.53/lamb), cull ewes ($0.05/ewe) and cull rams ($1.58/ram).

Feeder lambs, cull ewes and rams were assumed to be transported using a commercial 48-by-53-feet truck and trailer with an animal capacity of 1,284 square feet. Required spacing for lambs, ewes and rams was assumed to be 2.75, 4.50 and 5.50 square feet, respectively. A 50-mile distance-to-market and round-trip price of $6.5/mile was assumed for transportation cost calculations.

To calculate the cost of shearing, we assumed the shearer would require an initial setup fee of $150 and would charge $7.50/ewe and $15/ram. In addition, lunch and snacks and beverages for breaks would be provided for the shearer (and helper) at a cost of $60. Wool bags priced at $14/bag were used in the calculations for shearing, assuming each bag has a wool capacity equal to that of 32.5 head of sheep.

Cost for hired and family labor were included in the budget assuming 1.5 hours per day per flock on pasture and 3 hours per day per flock in drylot during the winter. It was assumed that the share of hired labor was 10% of total labor hours needed; that is, the family provides 90% of all labor. A wage rate of $25/hour was used to calculate the cost of hired labor and family labor.

In addition to having dogs for herding and protecting sheep on pasture, costs for nonlethal predator control were included at $750/year. There is a $150 federal cost share for nonlethal predator control products, so the total cost was $600/year. The type of nonlethal control was not assumed, but examples of devices qualifying for cost share includes fencing and barriers, light and sound devices, and sheep bells.

Annual fixed costs ($/ewe) were calculated for alternative pieces of machinery and equipment deemed necessary for a commercial range-based

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Projected Benefits and Costs for a Typical Range-Based Sheep Operation in North Dakota

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sheep operation in North Dakota. They include a 90-horsepower 4x4 tractor ($60,000), an all-terrain vehicle ($15,000), a half-ton work truck ($50,000), eight six-panel hay ring feeders ($300/feeder) and three feeders for feeding grain rations ($1000/feeder). We assume all machinery and equipment are purchased new with a seven-year life expectancy and a 30% salvage value for the tractor, truck and ATV. It was also assumed that only 25% of the tractor, truck and ATV would be used for the sheep enterprise. All other buildings, equipment and machinery used for sheep production are considered part of farm overhead.

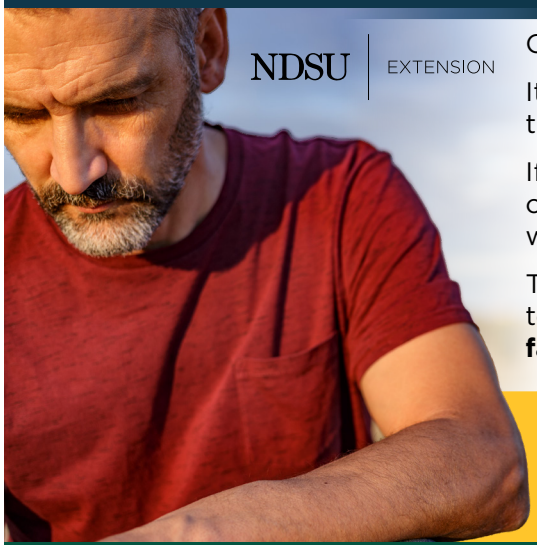
Variable costs for fuel, lubrication and repairs were calculated as 7% of each piece of machinery's initial purchase price, multiplied by the 25% rate machinery was assumed to be used for the sheep operation. In addition, utilities were assumed to be $150/month, taxes were assumed to be 1% of the assessed value of the land on a dollar-per-ewe basis and farm liability insurance was assumed to be $1,000/year, or $4/ewe.

The projected net return of $15.73/ewe ($3,935/flock) is highly sensitive to feeder lamb prices. In fact, the breakeven price for feeder lambs is $2.82/lb (i.e., the price where net return = $0.00/ewe), which is only 6% less than the projected 2026 price of $3.00/lb. The projected net return is also sensitive to the prices of hay and feed, but to a lesser degree than feeder lamb prices. Holding feeder lamb prices constant at $3.00/lb, the breakeven price of hay is $111/ton (an increase of 39%), and the breakeven price of grain-based feed is $214/ton (an increase of 43%). Note the $15.72/ewe projected net return is net of the cost of pastureland and labor (hired and family).

Lastly, the enterprise budget reported in Table 1 is solely based on NDSU projections for revenues and costs for the 2025/2026 production season. However, because every range-based sheep operation differs in size and scope, a decision spreadsheet tool has been developed that allows producers to enter and use their own projections for output and input prices, as well as other important parameters outlined in this article, enabling comparisons between individualized and NDSU projections. The decision tool will be uploaded on our NDSU Extension webpage, which has all of our livestock decision support tools, by the end of June: https://www.ndsu.edu/agriculture/ag-hub/ag-topics/livestock/tools.

Reach out to jon.biermacher@ndsu.edu with any questions.

Farming and Ranching are Stressful



Concerns about production, prices and policy can weigh heavily on us.

It is okay not to be okay in times of high stress, whether during harvest time or when dealing with an uncertain farm economy.

If you feel isolated or overwhelmed, talk to someone — family, friends or a professional. Reaching out for help isn't weakness; it's a sign of wisdom and strength. Recognize that you're not alone.

Take time to connect with resources that can support you and help you to be resilient in tough times. **Find stress management tools made for farmers and ranchers at** ndsu.ag/managingstress**.**

If you or someone you know is struggling or in crisis, help is available. **Call or text 988.**

Drought Impacting U.S. Winter Wheat Production, but Price Response May be Limited

Frayne Olson, Crop Economist/Marketing Specialist

Based upon the May 26, 2026, USDA Crop Progress report, only 26% of the U.S. winter wheat crop was rated in good or excellent condition. This is the lowest good-to-excellent rating for this time of year since reports began in 1986. The majority of the low crop ratings is due to continuing drought conditions in key winter wheat-producing regions. However, frost damage in the High Plains, which runs from southwest Nebraska into the Texas panhandle, is also contributing to the low ratings.

Figure 1 shows the May 26, 2026, U.S. Drought Monitor map. The key hard red winter wheat production regions in Kansas, Colorado, Oklahoma and Texas are rated in Severe Drought (D2) and Extreme Drought (D3).

Figure 2 combines the land area categorized in Moderate Drought (D1) or higher from the U.S. Drought Monitor map and the U.S. winter wheat production regions reported by the USDA. The red hatched area in Figure 2 represents the drought zones, the dark green areas are major winter wheat production regions and the light green areas are minor winter wheat production regions.

The USDA winter wheat production regions include hard red winter, soft red winter, hard white winter and soft white winter wheat classes. The USDA Crop Progress crop ratings for winter wheat combine these same classes.

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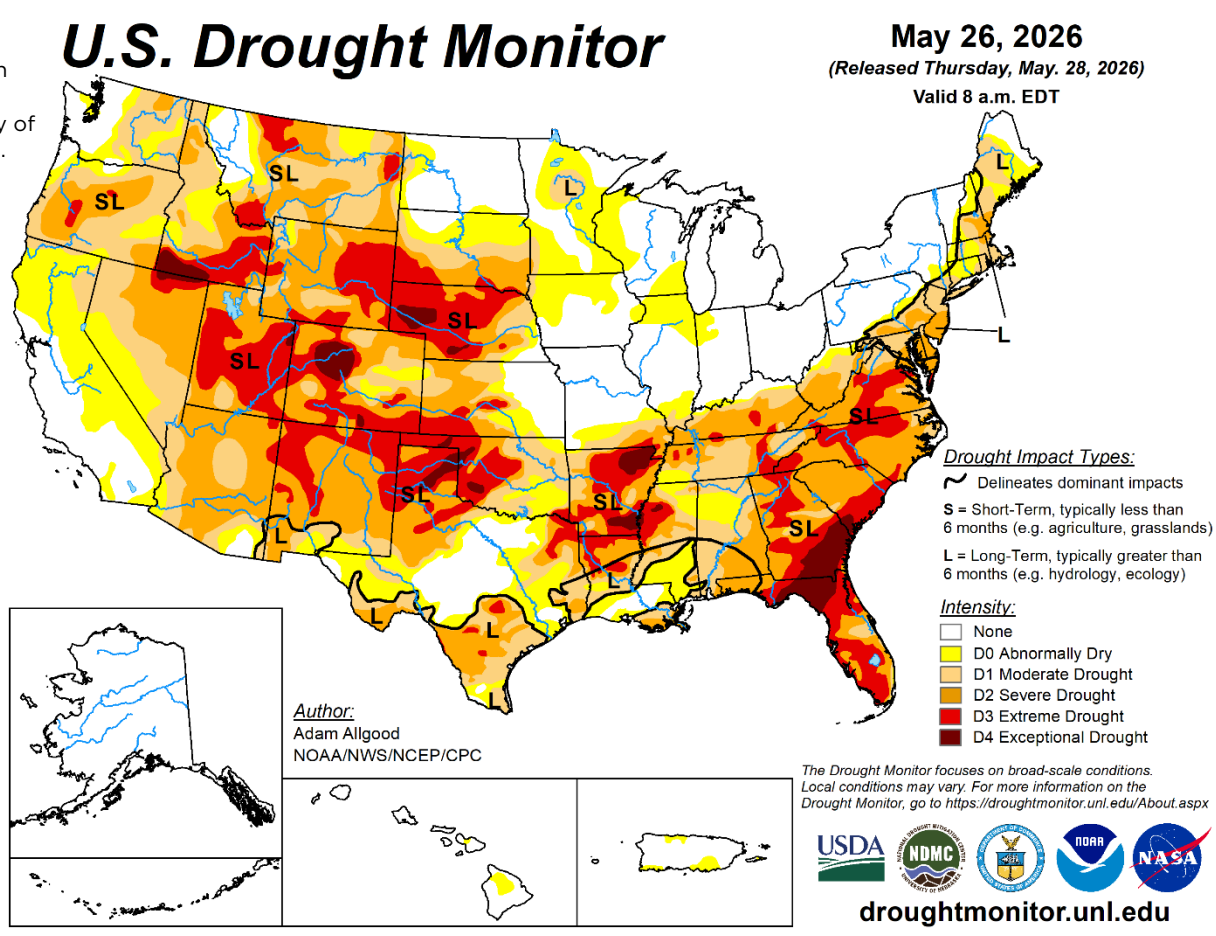
Figure 1 – U.S. Drought Monitor for May 26, 2026

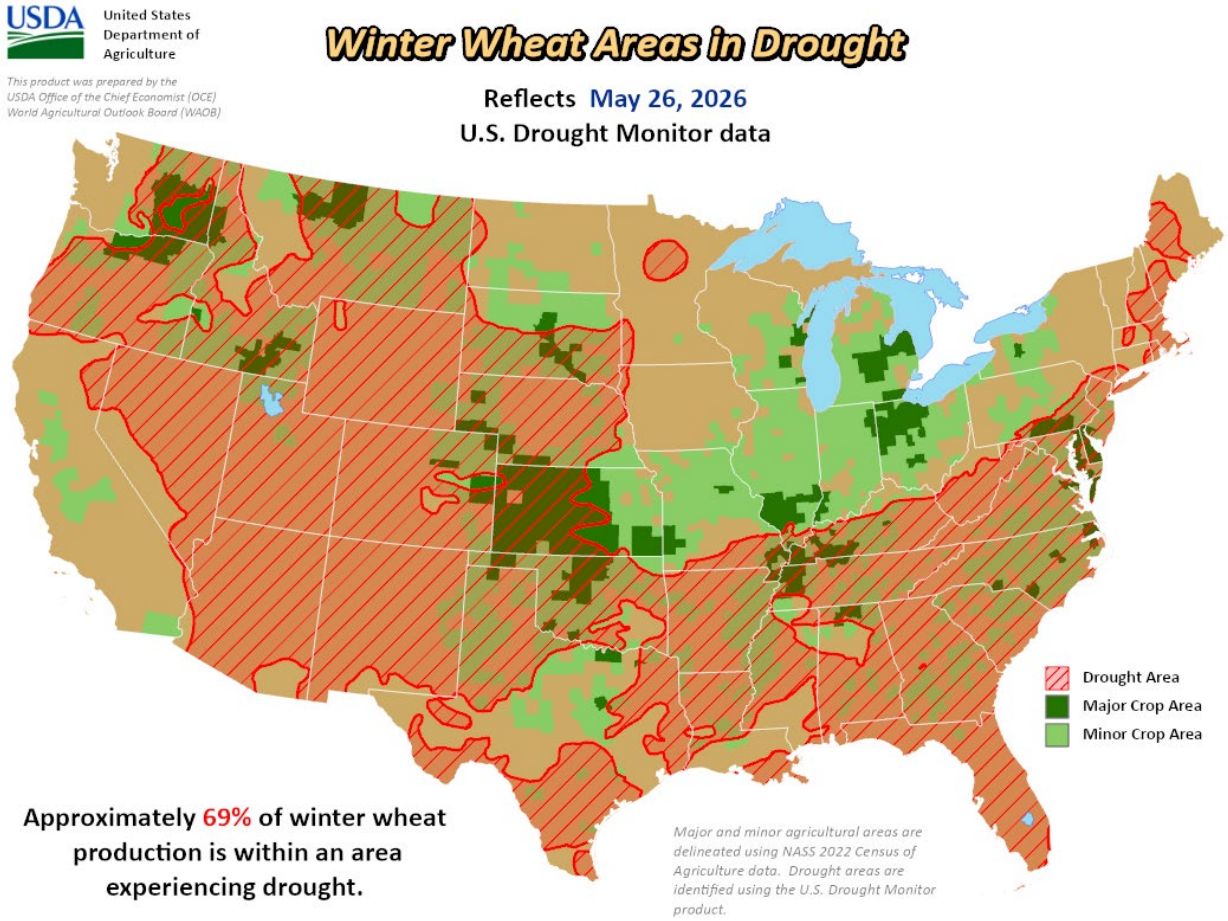
National Drought Mitigation Center – University of Nebraska.



Drought Impacting U.S. Winter Wheat Production, but Price Response May be Limited – continued from page 9

Figure 2 – U.S. Winter Wheat Areas in Drought for May 26, 2026

USDA Office of the Chief Economist and World Agricultural Outlook Board.



The USDA estimates that about 69% of the total expected winter wheat production is in Moderate Drought (D1) or higher conditions. The May 26 USDA Crop Progress report suggests that hard red winter wheat production has the lowest condition ratings. For example, about 15% of the Kansas winter wheat is rated good-to-excellent, Oklahoma winter wheat is rated 12% good-to-excellent, Montana winter wheat is 19% good-to-excellent, Colorado is 7% good-to-excellent and Texas is 14% good-to-excellent.

The soft red winter wheat regions report much better condition ratings. The Illinois winter wheat is rated 70% good-to-excellent, Ohio is rated 68% good-to-excellent and Michigan, which grows both soft red and soft white winter wheat, is rated 58% good-to-excellent.

The soft white winter wheat production area in the Pacific Northwest also shows higher crop condition ratings. The Washington winter wheat is rated 76% good-to-excellent, Idaho soft white and hard red winter wheat is rated 80% good-to-excellent and Oregon's winter wheat is 54% good-to-excellent.

The Wheat Quality Council recently conducted their annual Hard Winter Wheat Tour cross Kansas. The tour participants found highly variable crop conditions and yield expectations. Some fields showed severe drought stress, freeze damage and wheat streak mosaic virus disease damage. Other areas showed minimal drought stress, no frost damage and limited disease pressure. The tour projected total Kansas winter wheat production at 218 million bushels with an average yield of 37 bushels per acre. This is very similar to the USDA's May 12, 2026, Crop Production report estimate for Kansas at 214.6 million bushels and an average yield of 37 bushels per acre.

Hard red winter wheat harvest is just beginning in Texas and Oklahoma. The wheat markets will closely

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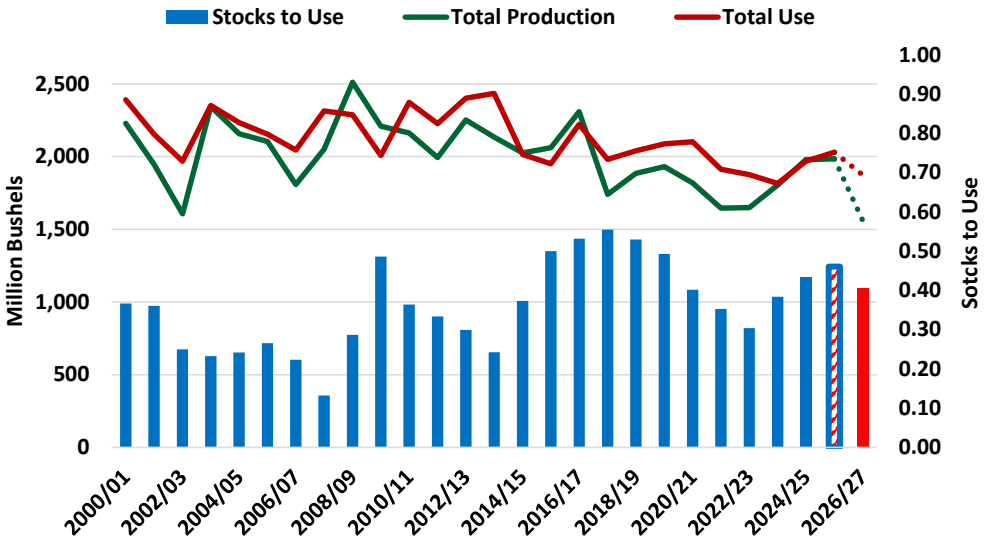
Drought Impacting U.S. Winter Wheat Production, but Price Response May be Limited — continued from page 10

monitor yield and crop quality reports as harvest expands. Another key factor to watch is winter wheat abandonment rates. There are always some winter wheat acres that are abandoned due to winter kill, drought conditions and/or disease pressure. However, the 2026 abandonment rate is expected to be higher than normal. The unanswered question is how high abandonment rates will go.

The combination of lower U.S. wheat plantings in 2026 and dropping winter wheat yield expectations has been supporting market prices for all of the wheat classes. However, the USDA is still forecasting strong U.S. wheat ending stocks.

Figure 3 – Historical U.S. All Wheat Total Production, Use and Stocks-to-Use Ratio



USDA Wheat Yearbook Table 8 and May 12, 2026 World Agricultural Supply and Demand Estimates.

Figure 3 shows the historical total production, use and stocks-to-use ratio for all U.S. wheat classes combined. The blue bars show the stocks-to-use ratio, which represents the percent of U.S. total use that remains in inventory just before harvest. The larger the bar, the larger the preharvest inventory levels. The red bar represents the USDA's projected inventories for the current, or new crop, 2026/27 marketing year.

Even with reduced U.S. wheat plantings and lower projected winter wheat yields, the stocks-to-use ratio is expected to be above the 25-year average. This suggests that wheat prices across all classes will be sensitive to weather, yield and quality reports, but price increases may not be as large as many farm managers expect.

U.S. wheat exports account for about 45% of total use, while domestic milling accounts for about 50% of total use. U.S. wheat must be priced competitively in the global markets to maintain these export levels; otherwise, inventory levels will rise. This means that price increases for U.S. wheat due to lower production will be limited by price competition in the export markets. Farm managers must develop realistic expectations for wheat prices as they revise their 2026 marketing plans.