

# Agriculture By the Numbers

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**NDSU Extension Agribusiness and Applied Economics**

Cattle Prices Start 2022 Higher

Production Costs are Pressing Issues in 2022

The Best of Times

Potential Impacts of a Russia-Ukraine Conflict on Grain Prices

How are Social Security Benefits Calculated?

## Cattle Prices Start 2022 Higher

By Tim Petry, NDSU Extension livestock marketing economist

The cattle market in the last several years has been plagued with multiple events and issues which have caused relatively low and volatile prices. So, it is nice to have 2019, 2020 and 2021 in the rear-view mirror!

Without a doubt, the most challenging event was the COVID-19 pandemic which hit both the U.S. and world early in 2020 and is still lingering.

Other notable challenges include the Tyson packing plant fire in August 2019, the trade war and trade agreement restructuring, increasing corn prices, winter storm Uri and the severe drought in the Western U.S., including N.D.

The proverbial “light at the end of the tunnel” for cattle prices seems to have finally been seen. A number of important fundamental supply and demand factors are signaling higher prices ahead.

On the supply side, the beef cow herd declined in 2019 and 2020. Further liquidation occurred in 2021 with drought forced sales of beef cows and replacement heifers.

So, smaller calf crops and declining beef production will be supportive to prices for the next several years.

The U.S. Department of Agriculture (USDA) is also forecasting lower pork production for the second straight year but chicken production is expected to continue increasing. Total meat supplies are expected to be lower in 2022 which also will support meat complex prices.

On the demand side, domestic consumer beef demand was very good in 2021. By some measures demand was the best in several years. The U.S. stock market, an important barometer of the economy, increased throughout the year to end at record high levels.

High unemployment levels in 2020 declined throughout 2021 to about 4%, just slightly above pre-pandemic levels of 3.6%. “Help Wanted” signs are prominent at many businesses.

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# Cattle Prices Start 2022 Higher — continued from page 1

The other important component of beef demand is the export market, which set a record high in 2021. Previous annual record beef exports occurred in 2018. 2021 beef exports were strong to our top customers: Japan, South Korea, Mexico and Canada. Newcomer China really sparked volumes with record amounts going there. China became our third best customer by the end of 2021.

The value of fed steer byproduct (hide, tongue, etc.) value also surged in 2021 and was driven by the export market. USDA calculated a \$70 per head annual increase in byproduct value based on a 1,400 pound steer.

2021 beef exports were up 20% from 2020 on a volume basis and increased 35% on a value basis with the higher beef prices. Strong exports are expected to continue in 2022 and may set records again especially on a value basis.

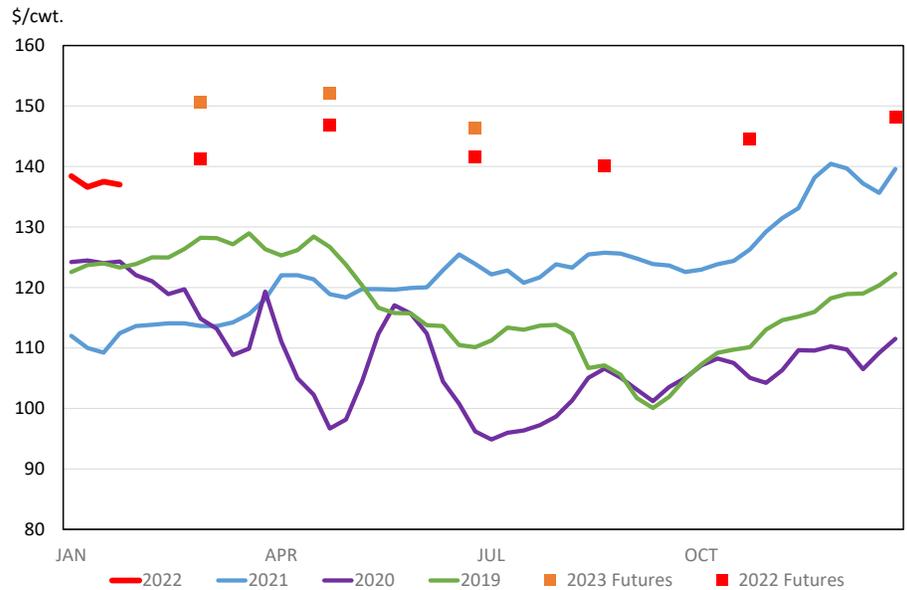
So, fed cattle prices in 2021 were supported by strong demand, and prices in 2022 also will be buoyed by smaller beef and total meat supplies.

Cattle prices gradually increased throughout 2021. By mid-year fed cattle and feeder cattle prices rallied to go ahead of the previous three years (2018, 2019, 2020).

Fed cattle prices in 2021 increased from \$110 per hundredweight (cwt.) in January to \$125 mid-year when they leveled off seasonally. The last three months saw prices increase up to \$140 cwt., the highest level since 2015. Current live cattle futures prices are signaling just under a \$140 cwt. average for 2022, compared to an annual average of \$122 in 2021.

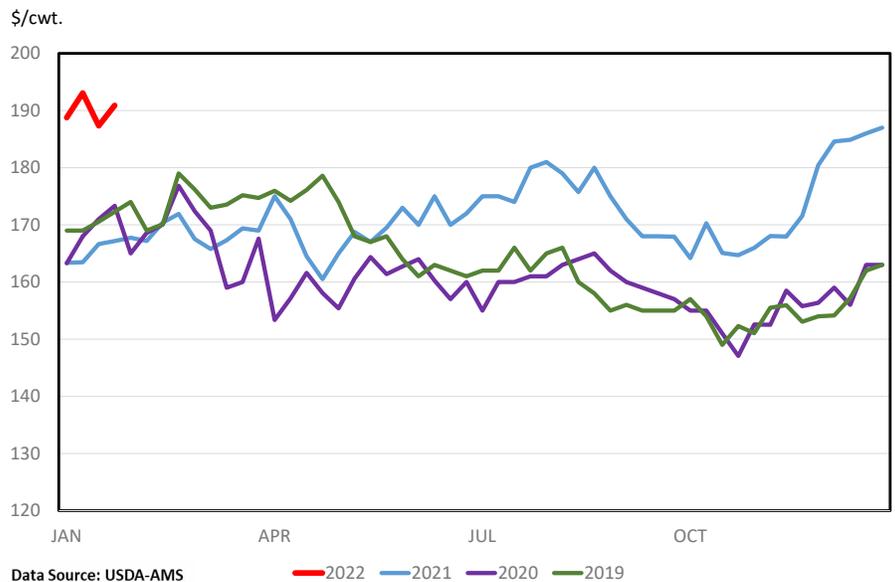
Higher fed cattle prices are supportive to calf and feeder cattle prices. Smaller calf crops are helping calf prices, but higher corn prices have somewhat held prices in check. Remember the adage – a 10 cent per bushel change in corn prices will cause a \$1 per cwt. change in calf prices in the opposite direction.

## Fed Steer Prices — 5 Market Weighted Average, Weekly



Data Source: USDA-AMS

## Medium and Large Frame #1 Steer Calf Prices 550-600 Pounds, N.D., Weekly



Data Source: USDA-AMS

N.D. average 550 to 600 pound calf prices were seasonally low in mid-Oct. 2021 at \$165 per cwt. but rallied to \$190 to start 2022.

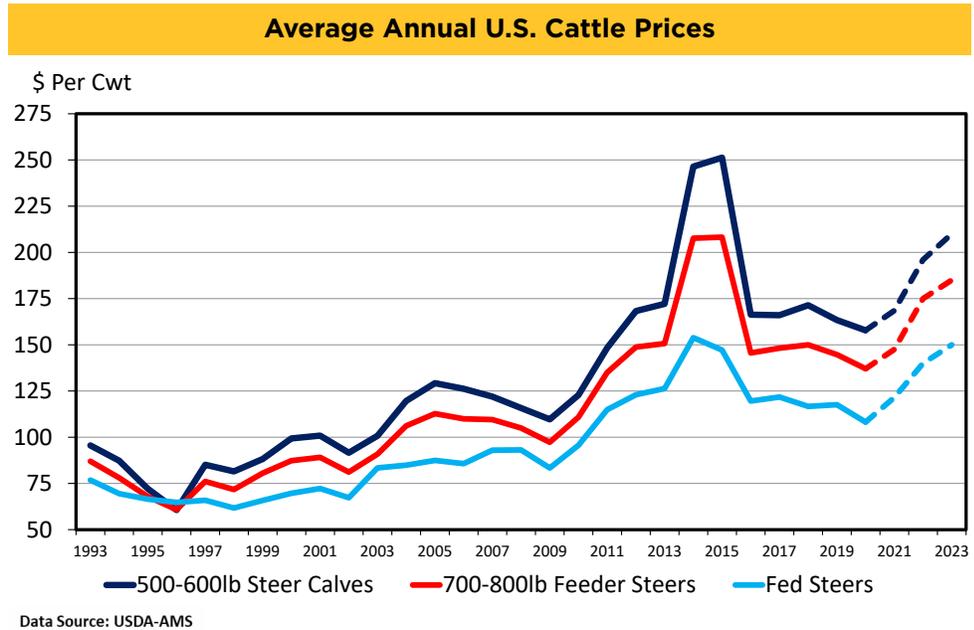
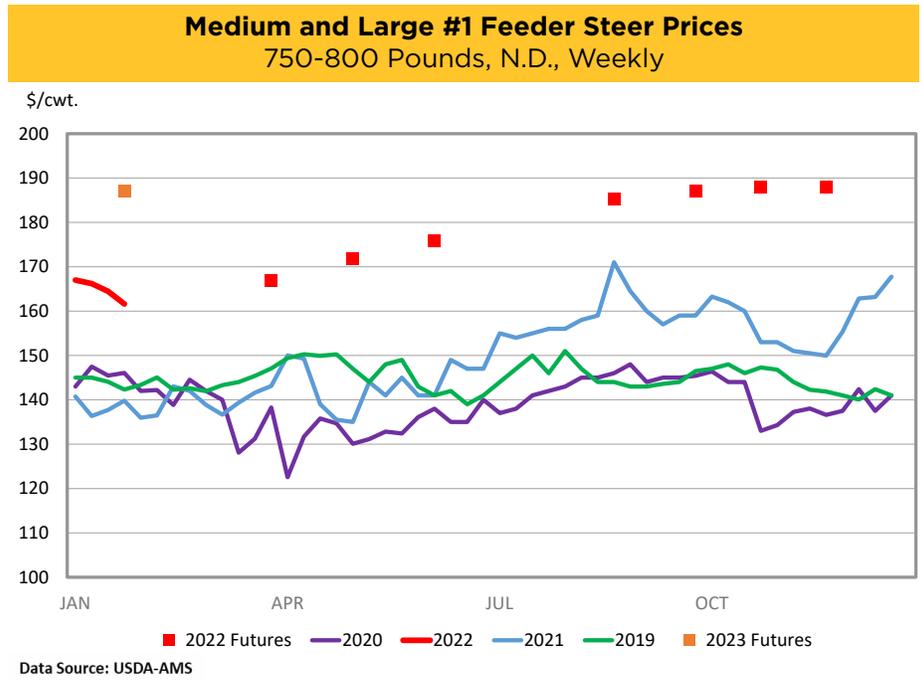
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# Cattle Prices Start 2022 Higher — continued from page 2

At the same time, 750 to 800 pound steers also rallied from \$150 per cwt. to \$167 to start 2022. Late spring 2022, feeder cattle futures prices at \$170 per cwt., and fall futures prices at \$180 signal improving prices throughout the year.

Cattle prices are expected to move cyclically higher for the next several years, buoyed by smaller calf crops and strong demand.

Although higher cattle prices seem probable, there are always risks. The pandemic is still with us, drought conditions linger, next year's corn crop is unknown and could be affected by high input costs and weather, and the export market can change abruptly especially with geopolitical issues.



# Production Costs are Pressing Issues in 2022

By Bryon Parman, NDSU Extension agricultural finance specialist



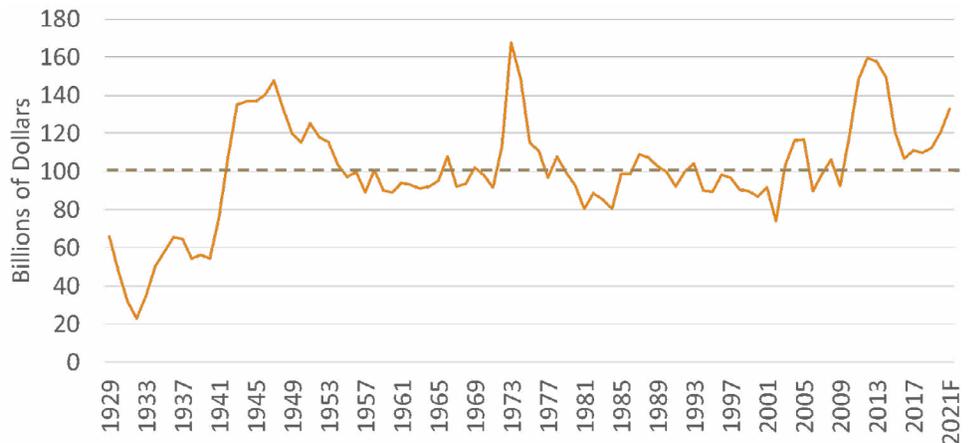
The U.S. Department of Agriculture (USDA) is projecting that the inflation-adjusted “real” net cash farm income for 2021 will be the highest in nearly seven years (Figure 1) and well above the long-run average. Though the data for 2021 will not be made official for a few months, it appears that the income projections for the first time in several years were strong due to higher commodity prices and adequate yields.

However, while yields and commodity prices are always of concern to farmers, this year’s pressing issue is production costs. Prices for most major crops and livestock prices remain strong. Dealing with the uncertainty of weather is a reality every year, but farmers may be facing record high costs to produce most major crops. Figure 2 shows the farmer price index from the USDA through November of 2021.

As of now, the index for all items will be the highest on record, tightening margins for 2022. One of the biggest drivers of the rise in overall production costs are fertilizer prices. As of the time of this writing, the national average price for anhydrous ammonia

Continued on page 5.

**Figure 1. Real Net Cash Farm Income**



Data from USDA National Agricultural Statistics Service. 2021 Net Cash income is unofficial. The long run average nationally is 100 billion dollars.

**Figure 2. Paid Indexes by Month, All Items and Production Items — United States: 2011 = 100**

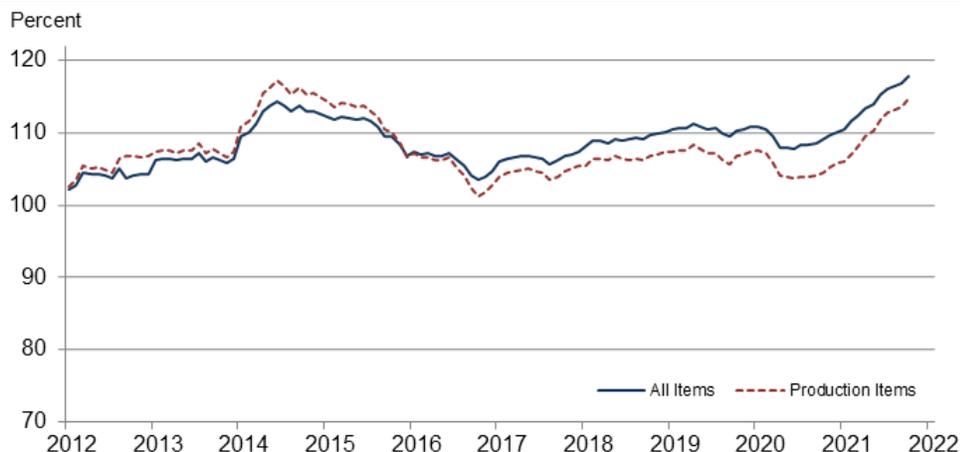
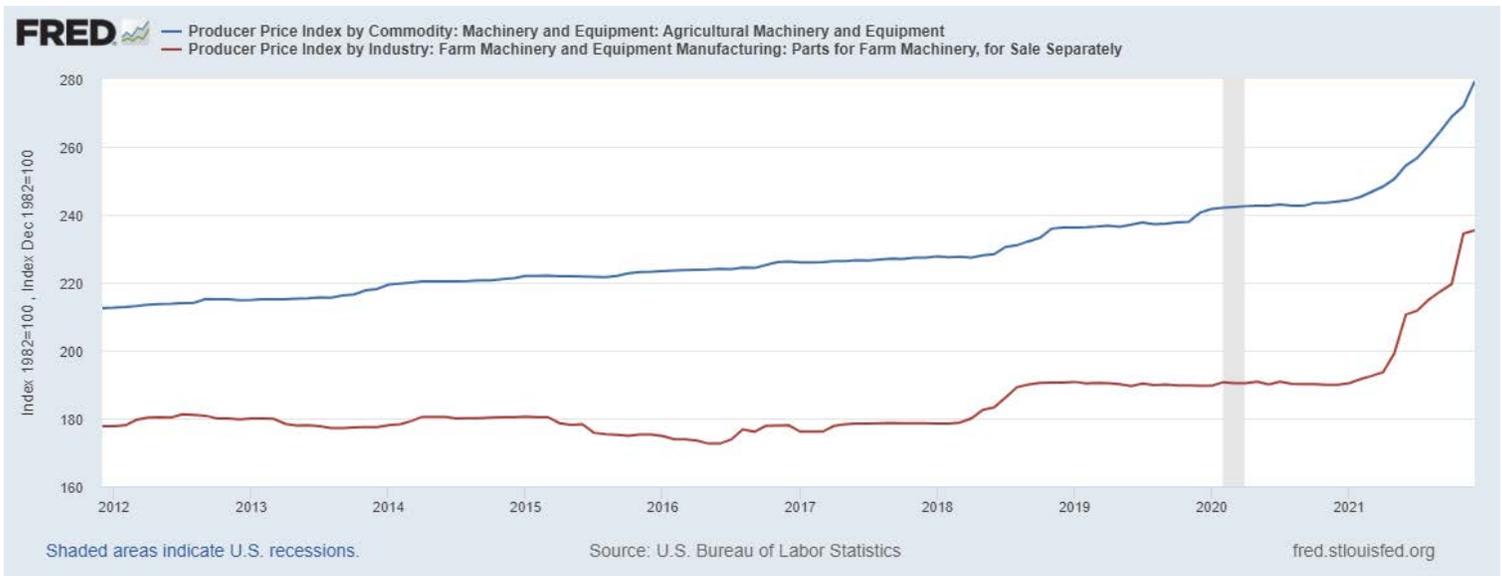


Figure from the USDA-National Agricultural Statistics Service

## Production Costs are Pressing Issues in 2022 — continued from page 4

was \$1,492 per ton with urea averaging \$910 per ton, potash averaging \$814, with monoammonium phosphate (MAP) and diammonium phosphate DAP averaging \$936 and \$877 per ton, respectively. For nitrogen fertilizers and potash prices have increased more than 100% compared to a year ago while phosphorus prices (MAP and DAP) are closer to 80% higher than a year ago.

Equipment prices also are higher for both new and used equipment as well as repair parts. Figure 3 from the St. Louis Federal Reserve shows the farmer price index for new farm machinery as well as parts sold separately. The index for both has increased remarkably from a year ago putting further pressure on the cost of production. Additionally, there have been many reports of parts shortages and backorders for key components such that new equipment buyers are on waiting lists for many months for some self-propelled equipment items.



The high costs are not only of concern to farmers, but also retailers selling those products. Agribusiness retailers are put in a tough spot with fertilizer prices at record highs across the country. Retailers want to ensure that they have purchased enough to fill spring planting needs for their customers for the coming season. However, with the high costs wholesale, they run the risk of purchasing high priced fertilizer, and if prices fall, selling it at a loss. As high as prices are right now, even a 5% decline would lead to a large nominal loss per ton which could be financially costly and possibly catastrophic for local retailers.

Farmers do have some opportunity to protect themselves to a degree by contracting some of 2022's crop locking in prices while they remain elevated. This ensures that farmers do not pay high production costs in the spring with the possibility of falling commodity prices in the fall. Additionally, soil testing this year will be important making sure no more fertilizer is applied than necessary.

# The Best of Times

By David Ripplinger, NDSU Extension bioproducts/bioenergy economics specialist

As the U.S. economy continues to be unevenly recovering from the impacts of COVID-19, the domestic corn-ethanol industry just finished its best year ever.

U.S. passenger travel has all but recovered from the collapse of spring 2020, with November vehicle miles traveled being the highest ever for the month, almost 2% higher than in November 2019 (Figure 1). While our fleet continues to become more fuel efficient, motor gasoline use also has recovered along with domestic ethanol use.

Readers should be familiar with the almost universal use of ethanol as an oxygenate in the U.S. gasoline supply, that is ethanol is used primarily as a fuel additive to prevent 'knock' as opposed to a fuel where energy content is the driver of value.

There has been a battery of bad news for the ethanol industry, with the Environmental Protection Agency's (EPA) decision to allow year-round E15 overruled by the U.S. Supreme Court, to biofuel use requirements being adjusted to be about 10% of gasoline use, to the Supreme Courts decision that the EPA was correct in allowing small refineries to be granted waivers from participating in federal regulations that mandate biofuel use. There was even bad news (for ethanol refineries, not farmers) in the markets, with high corn prices soaring in 2021.

However, these negatives have been no match for the resurgence in gasoline use and higher fuel prices that American motorists have been willing to spend. Ethanol prices collapsed to less than one dollar per gallon in spring of 2020 as COVID-19 caused a dramatic reduction in vehicle miles traveled as people stayed home from work and school, and generally reduced if not completely stopped taking trips. By the end of summer, ethanol prices had recovered.

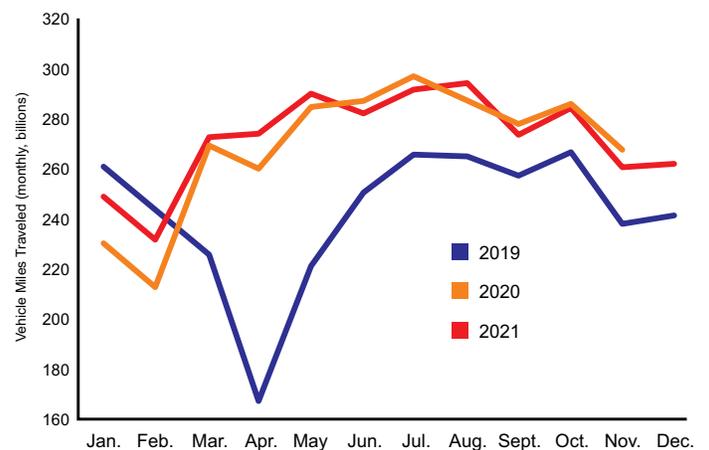
Beginning with the turn of the New Year, it was becoming more apparent that fuel demand had recovered, and that the ethanol industry would need to run at high capacity to keep up with expected usage, especially in light of relatively low stocks.

These conditions have persisted to the present. In combination with strong exports and tighter supplies than expected, the price of corn reached an eight year high in the spring of 2021. While this impacted ethanol

refining margins, demand was still large enough to support historically high margins in the fall and early winter.

2021, and what might be the best year ever for corn ethanol, may be over, but there are many reasons for optimism for the sector. Exploding demand for low-carbon fuels, proposed CO<sub>2</sub> pipelines, and renewed interest in sustainable aviation make for a pretty bright future.

**Figure 1. Vehicle Mile Traveled**



Data: U.S. Department of Transportation

**Figure 2. Corn-Ethanol Prices and Crush (Gallon of Ethanol Basis)**



Data: U.S. Department of Agriculture/Agricultural Marketing Service, Bloomberg

# Potential Impacts of a Russia-Ukraine Conflict on Grain Prices

By Frayne Olson, NDSU Extension crop economist/marketing specialist



Growing political tensions between the Russian Federation, Ukraine and the North Atlantic Treaty Organization (NATO) are raising concerns for global agricultural and energy markets.

Russia is the world's largest natural gas and wheat exporter, second-largest crude oil and sunflower exporter, and third-largest barley exporter. Ukraine is the world's largest sunflower exporter, second-largest barley, third-largest wheat and fourth-largest corn exporter. The greatest concern is that increased political pressure will lead to military action resulting in supply chain disruptions or economic sanctions.

No one can predict the future or anticipate all the potential implications of the escalating situation. However, it is important to understand the structure of Russian and Ukrainian grain exports, and how shifting conditions might impact grain flows and prices.

Figure 1 shows the major Ukrainian and Russian grain export locations in the Black Sea region. The two Ukrainian export locations are Odesa and Mykolaiv, identified with red stars. The Russian locations of Novorossiysk, Rostov-on-Don and Tuapse are identified by blue stars.

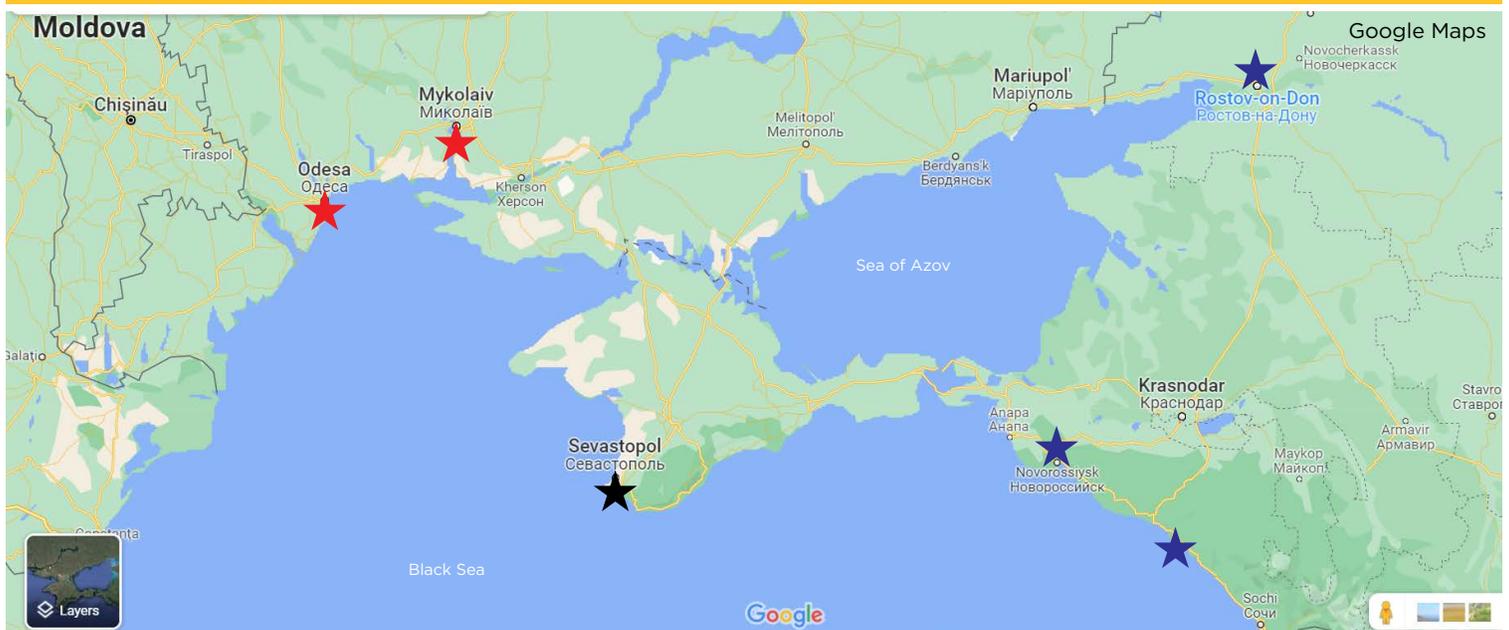
Wheat is a major export for both Russia and Ukraine. While both countries produce a range of wheat classes, the majority of their exports would be classified as hard red winter wheat using the U.S. grading system. The five largest wheat buyers from Russia are Egypt, Turkey, Bangladesh, Azerbaijan and Sudan, listed from highest to lowest. The five largest wheat buyers from Ukraine are Egypt, Indonesia, Bangladesh, Pakistan and Turkey. While the specific transportation systems for these exports could not be determined, it is likely the majority of Russian and Ukrainian wheat is shipped by ocean vessels through the Black Sea.

The Sevastopol Naval Base, labeled with a black star in Figure 1, is the site of the Russian Black Sea Fleet and is located in the disputed Crimean Peninsula. In addition, the Strait of Istanbul, or Bosphorus, Turkey, is currently the only way ships can move between the Black Sea and the Mediterranean Sea to reach most export destinations.

If there are economic sanctions imposed on Russia or Ukraine, it is likely that grain flows from the Black Sea region will continue. The unknown is whether

Continued on page 8.

**Figure 1 - Major grain export locations in Ukraine and Russia**



# Potential Impacts of a Russia-Ukraine Conflict on Grain Prices

— continued from page 7



the trade volumes will be impacted. However, if military actions occur, there is a high probability that grain flows using ocean vessels will be significantly reduced or halted. The location of the Sevastopol Naval Base and the ability to blockade the Strait of Istanbul makes it easy to restrict or halt commercial ship movements.

A similar situation exists for Ukraine's corn exports. The top five buyers of Ukrainian corn are China, Netherlands, Egypt, Spain and Turkey, listed from highest to lowest. While some of these corn exports might be delivered by railroad, the cost would be significantly higher than by ocean vessel. If economic sanctions are imposed, corn shipments could continue, but if military actions occur shipments will likely be significantly impacted.

Any interference with wheat or corn shipments from Ukraine or Russia will increase global corn and wheat prices. The amount of the price increase will be heavily impacted by the level of trade disruptions and the length of those disruptions. The more the trade flows are limited and the longer these limitations are in place, the more global prices will increase.

It is also unclear whether limited Black Sea wheat or corn shipments will increase U.S. wheat or corn export sales. Many of the countries buying wheat from Russia and Ukraine are very price-sensitive and may look to other wheat suppliers like the European Union, Australia or Argentina for lower-priced winter wheat. The U.S. may be able to increase corn exports because U.S. corn is typically very competitively priced with Brazilian and Argentine corn. Brazil and Argentina are the second and third largest corn exporters, respectively, behind the U.S., which is the largest global corn exporter.

If there are economic sanctions or military actions resulting from the Russia, Ukraine and NATO tensions, there is a high probability crude oil and natural gas prices will increase. We have already seen a risk premium entering the global crude oil and natural gas markets. This could lead to higher U.S. gasoline, diesel fuel, natural gas and fertilizer prices, especially if trade disruptions last many months. Higher energy prices could increase U.S. inflation rates and likely increase the cost of production for farmers and ranchers.

As noted at the beginning of this article, no one can predict the future. However, understanding the potential implications of escalating political tensions in the Black Sea can help farm and ranch managers adjust to the changing economic conditions more rapidly.

# How are Social Security Benefits Calculated?

By Ron Haugen, NDSU Extension farm management specialist

➤ **Question One:** “How are social security benefits calculated?”

## Here is the formula:

You find the highest 35 years of earnings adjusted for inflation.

Add these together and divide by 420 to get total average monthly indexed earnings (AIME).

Now apply three factors (based on 2021 values) to get at your primary insurance amount (PIA):

1. The first \$996 is valued at 90%. This is called the “bend point”.
2. The amount between \$996 and \$6,002 is valued at 32%.
3. Any earnings above \$6,002 is valued at 15%.

## Example:

Let’s assume a producer has an AIME of **\$8,000** (\$96,000 of average inflation adjusted annual income times 35 years divided by 420).

The first \$996 is valued at 90% or \$896.40.

The amount between \$996 and \$6,002 or \$5,006 is valued at 32% or 1,601.92.

The amount above \$6,002 (\$8,000 less \$6,002) or \$1,998 is valued at 15% or \$299.70.

The PIA would be \$896.40 plus \$1,601.92 plus \$299.70 totaling **\$2,798**.

Most producers would receive benefits at age 67. The PIA would be reduced if benefits are taken early between age 62 and 67. After age 70 an extra 24% could be earned. There is no extra benefit to wait until after age 70.

➤ **Question Two:** “Should I maximize my social security earnings as I get close to retirement age?”

## Answer:

Every situation is different, but generally paying extra social security taxes probably wouldn’t help to increase your benefits, especially if you are in the higher bracket (the extra would only be worth 15%). Even if you have an extraordinarily high income in a year close to retirement (one of your high 35 years), it would only contribute one thirty-fifth to the calculation. As always, review any retirement plans with your tax advisor.

Check out the social security website to get your earnings record. The website is: **[www.ssa.gov](http://www.ssa.gov)**

## Interesting Fun Fact:

*New babies get social security numbers. The Social Security Administration keeps track of baby names. You can search their website for the most popular baby names by gender, year and state.*