UNL TAPS
TESTING AG PERFORMANCE SOLUTIONS

2022 Farm Management Competition Report

N EXTENSION

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Thank you Nebraska Wheat Board for your support of this competition!

NEBRASKA WHEAT

TAPS Wheat 2021/22 Overview

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Mission Statement

To fully engage agriculturalists, scientists, educators, students, and industry in an innovative endeavor, to TAP into the University of Nebraska's potential to facilitate and create an environment for all stakeholders to work together in finding solutions through innovation, entrepreneurialism, technological adoption, new managerial applications, improved techniques and cutting edge methodologies for farms, farm businesses, and farm families to maintain profitability, sustainability, and productivity.

Executive Summary

The TAPS wheat contest was created out of the need to incorporate and engage agricultural research, agricultural technology, industry, and producers in an interactive real-world way to increase productivity, sustainability, and profitability. TAPS is an acronym that stands for Testing Ag Performance Solutions. With the many challenges related and faced by agricultural production there is a need for a deeper level of engagement among all the stakeholders. Not surprisingly, many entities have contributed in many different ways, to the program's development. The University of Nebraska-Lincoln Research and Extension personnel and facilities act as the common ground and hosts the program. This structure provides the needed oversite and neutrality needed to maintain a healthy objective environment for producers, researchers, and industry suppliers to innovate, test, adopt, learn about, and develop new technologies, try new management practices and techniques and make the needed adjustments in the efficient and profitable production of hard red winter wheat.

The TAPS program is based on a competitive model where participants (individuals and/or groups) compete in the production and marketing of wheat. Each team or farm competes for three possible awards, the most prestigious being the most profitable farm, followed by an efficiency for nitrogen use award, and finally an award for productivity (highest yield). Competitors make many input and management choices which include, crop insurance selection, planting choices of both population and variety, all marketing decisions, fertilizer timing, amount, and type, and fungicides. Unlike a typical yield contest, the close proximity of competing team's farms allows for comparisons of management decisions among teams competing on the same soil and conditions. Opportunities for stakeholders to meet and discuss outcomes, challenges, and to share their experiences are a large part of the contest. We look forward to a new year where communication, learning, and innovation are enhanced by continuous communication and direct yearlong interaction of all those involved in the program as well as the publication and sharing of the project results and take-home lessons which are shared year-round.

This program's design has many benefits including; 1) University researchers and Extension professionals are in direct competition with farmers under real world conditions, 2) Farmers are able to explore new production and marketing methods and serve as role models and teachers, and 3) The industry people become observers of technology application and its many interactions leading to further development of technology making all three groups an active part of the innovative and problem solving team.

We thank all those who have actively participated and given of their time and efforts. We look forward to what the fourth year of the contest will bring and anticipate the discovery of many new friends, innovations, and solutions that come from such an effort.

Sincerely,

TAPS Leadership Team

Program Overview

The 2021/22 TAPS Wheat contest was conducted at the University of Nebraska-Lincoln High Plains Ag Lab (HPAL) near Sidney, NE under dryland conditions. The competition included 12 outside competitor teams and 7 University of Nebraska-Lincoln (UNL) managed teams[1]. Each team was randomly assigned a set of six randomized plots, 5 feet wide by 30 feet long. HPAL personnel managed the competition plots. The yields and costs from each farm were amplified to represent 2,000 acres of production; however, certain fixed costs (i.e., machinery) assumed a farm size of 5,000 acres. This amplification provided for the opportunity to market an amount of grain that is more representative of a modern size farm and made it easier to recognize the effect of smaller decisions related to costs. Participants had control over six parameters:

1. Variety selection – selected one of the available varieties or provided one
2. Seeding rate – number seeds, bushels, or pounds per acre
3. Fertility – application time, fertilizer type, amount
4. Crop insurance – selected yield and/or price protection as well as hail and wind insurance
5. Fungicide – could select to apply at flag leaf
6. Grain marketing - Used various marketing tools to price grain from September 2021 - November 2022

All other management decisions, such as pesticide use, tillage, residue management, etc., were fixed by UNL and were the same for all teams (farms). The actual physical management such as the operation of machinery, application of chemicals, and harvesting was conducted by the HPAL staff. Participants were allowed to observe, install their own equipment and/or collect additional data from their plots throughout the growing season at their own expense and risk. However, no additional inputs, such as fertilizers, additives, etc. were allowed to be applied to the individual plots.

The basic cost of production was outlined for each farm. Each of the inputs had a listed price or per unit cost depending on the type of input. The input costs for variable inputs, based on use such as fertilizer, fungicides, etc., were based on actual use or yields. Some of the inputs were limited in the timing, application method, and quantities as outlined in the rules. The base cost per acre was $274.30 per acre.

Timeline

The competition started on the first week of September 2021. Each individual/team received a confidential Farm ID#. Participants were introduced to the competition website (www.TAPS.unl.edu), which was the primary method for communication between HPAL personnel and the competitors. HPAL personnel regularly took photos and collected data for each farm. Individual farm decisions and farm specific information for each farm was only available to that team. Photos and ancillary data, including weather, crop status (e.g., growth stage advancement) was uploaded to the website as it was collected.

Description of Awards[1]

The competition had three awards, 1) Most Profitable Farm, 2) Highest Input Use Efficiency, and 3) Greatest Grain Yield. For each category, award winners will receive an honorary plaque. Description of each award is presented below.

[1] UNL teams were ineligible to win awards.

1. Most Economically Profitable – included average yield from each team's five plots minus any hail damage assessed and amplified to 2,000 acres, marketing decisions, and costs of production (variable and fixed) based on the UNL budget costs and the teams prescribed management choices.

2. Highest Input Use Efficiency

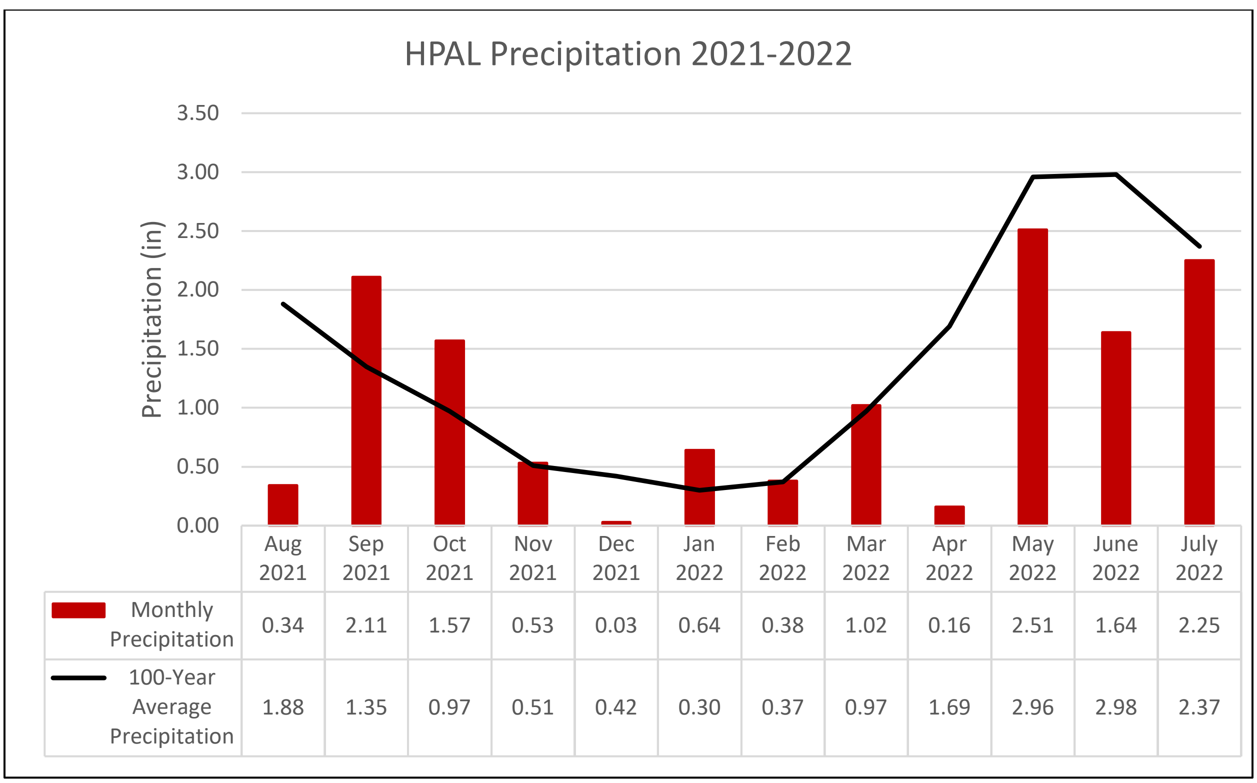
$$Efficiency\ Index = \frac{(Grain\ yield\ \times Protein\ Nitrogen\ Content)}{\begin{bmatrix} Aboveground\ Nitrogen\ Uptake\ of\ Unfertilized\ Treatment \\ +\ Fertilizer\ Nitrogen \end{bmatrix}}$$

3. Greatest Grain Yield - Adjusted by the winner's percent of total possible profit. Total possible profit is the range of difference between the most and least profitable farms.

Synopsis of Competition

Weather Conditions

Below average precipitation was available at the beginning of the contest but was followed by above average rainfall in September and October. Below average precipitation persisted in April through the remainder of the contest (Figure 1). A significant freeze event occurred in late May that severely damaged wheat and reduced yields. Early maturing varieties were impacted more and had lower yields as a result. Many late tillers were observed at harvest that were still green and likely increased harvest moisture.



	Aug 2021	Sep 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	June 2022	July 2022
Monthly Precipitation	0.34	2.11	1.57	0.53	0.03	0.64	0.38	1.02	0.16	2.51	1.64	2.25
100-Year Average Precipitation	1.88	1.35	0.97	0.51	0.42	0.30	0.37	0.97	1.69	2.96	2.98	2.37

Figure 1. Precipitation patterns at HPAL in 2021 and 2022 vs. 100-year averages.

Variety Selection & Seeding Rate

Participants were responsible for selecting their own variety. Participants had the option of selecting a variety offered by UNL personnel or they could supply their own seed. The option of treated seed was available, and contestants were allowed to choose whether their seed was treated seed. If treated seed was used, the cost was accounted for in the total profitability.

Participants selected a seeding rate using any method they preferred (pounds per acre, seeds per acre, seeds per foot of row, or bushels per acre). Plots were seeded using a no-till drill with a 10-inch row spacing.

Total seed cost per acre ranged from $18.97 per acre (treated Whistler at 850,000 seeds per acre) to $37.23 per acre (treated WB4462 at 950,000 seeds per acre) and averaged $26.26 per acre.

Table. 1 Wheat Variety Selection and Seeding Rate by Team

Team	Wheat variety	Seeding rate
1	Ruth (treated)	900k s/a
2	Ruth (treated)	900k s/a
3	Ruth (treated)	900k s/a
4	Ruth (treated)	900k s/a
5	Ruth (treated)	900k s/a
6	Ruth (treated)	900k s/a
8	Whistler (treated)	900k s/a
9	Whistler (untreated)	1.05m s/a
10	Langin (treated)	60 lb/a
11	Spur & Denali (treated)	35 & 25 lb/a
12	WB4418 (treated)	900k s/a
13	Ruth (treated)	1.2m s/a
14	WB4595 (treated)	92 lb/a
15	WB4792 (untreated)	100 lb/a
16	WB4462 (treated)	950k s/a
17	SY Wolverine (treated)	75 lb/a
18	WB4418 (untreated)	80 lb/a
19	Cowboy (treated)	750k s/a
20	Whistler (treated)	850k s/a

Fertility Management

Participants decided on the amount of fertility applied at planting and/or in-season in the fall or spring.

Pre-plant fertility decisions had to be submitted by the end of the first week of September. Fertility options applied at planting (dry formulations applied with the seed) included 46-0-0, 11-52-0, 40 Rock, elemental sulfur (90%), zinc (35.5%), and potassium (60%). Teams could only apply up to 20 pounds of N at planting to avoid injuring the seedlings. Once wheat had emerged and plots were visually discernable, any fall surface applications of these same nutrients or liquid UAN (32-0-0) could be applied to the soil surface. Eighteen teams applied some fertility in the fall. Of those who applied fertilizer, costs ranged from $12.03 to $78.65 per acre.

In the spring between Feekes stages 3 and 5, the same options listed above for fall surface applications could be applied. A late season nitrogen application at flag leaf was also an option. Sixteen teams applied spring fertilizer. The cost ranged from $13.83 per acre to $76.07 per acre.

A custom application cost of $9.00 per acre was charged for the fall and spring surface applications.

Maximum N uptake in wheat occurs after tillering and before flowering. Nitrogen accumulated during these growth stages is used primarily to establish yield potential. Nitrogen accumulated after flowering has little effect on yield but can increase grain protein content under favorable conditions. Thus, the extra protein in wheat accumulates in the grain when plant uptake of N exceeds that required for yield.

Fungicide Application

Participants had the option to select a fungicide application in the fall, early spring, and/or when the flag leaf was visible. Participants were made aware of available fungicides for each application timing. Two teams applied fungicide at a cost of $5.47 per acre. A custom application cost of $9.00 per acre was also charged for application.

Crop Insurance

Participants had the opportunity to select from three types of crop insurance policies, a range of coverage levels, the unit type (i.e., size of the insured parcel: optional or enterprise) and an additional coverage option. Participants could also choose to purchase hail and wind insurance. Available types of policies were Revenue Protection, Revenue Protection with Harvest Price Exclusion or Yield Protection. Available coverage levels were: 60, 65, 70, 75, or 80%. Lower selected coverage levels come with a lower premium and require a larger loss to trigger indemnity payments. Participants could also select the "Added Price Option" (APO), which is a supplemental insurance product that covers a bushel shortfall at harvest.

Yield Protection policies use yield to determine if a loss (indemnity) exists. The yield guarantee is calculated by taking the APH, multiplied by the producer's selected coverage level.

Crop insurance indemnity payments are made if the farm's actual yield falls below the yield guarantee. Table 2 shows the yield guarantees for the contestants at each possible insurance coverage level.

Table 2. Yield Guarantee by Coverage Level

Coverage Level	60%	65%	70%	75%	80%
Yield Guarantee	25.8	27.95	30.1	32.25	34.4

The Indemnity is calculated by multiplying the bushel shortfall by the crop insurance projected price. Winter wheat prices for crop insurance policies are based on the Kansas City September Hard Red Winter Wheat futures contract (KEU22 for 2022). The projected price is the average of the contract from August 15 to September 14. For 2022, the projected price was $7.11 per bushel.

Yield Guarantee = APH X Coverage Level

If actual yield is below, the yield guarantee, then:
Yield Guarantee – Actual Yield = Bushel Shortfall

Crop Insurance Indemnity Payment = Bushel Shortfall X Projected Price

An additional selection farms had to make was to purchase enterprise units or optional units. Optional units allow the policy holder to break land into smaller pieces, based on different production practices or USDA FSA Farm Serial Number (FSN). Enterprise units allow the farm to insure all of a crop in a county under a single policy. Enterprise Unit premiums will cost less as the insured parcel is a summation of fields, resulting in less variability than insuring fields individually. Enterprise units will therefore have a lower probability of triggering a crop insurance indemnity payment. The decision between optional units and enterprise units outside of the competition, largely depends on the size of the farm, and how spread out the fields are and the individual's perception of whether a hail event will occur.

Premium rates were from the HPAL farm, with an estimated Actual Production History (APH) of 43 bushels per acre. Insurance choices were finalized by September 30.

Insurance Choices
One team purchased crop insurance. They selected a Yield Protection policy with optional units at the 70% coverage level. It cost the team $8.63 per acre. This policy provided the farm a yield guarantee of 30.1 as shown in table 2 above. No indemnities were paid, as no loss was experienced by this team.

The management decision costs for each farm are summarized in figure 2. The total management decisions selected by each team cost $23.88 per acre to $159.43 per acre. These costs were added to the base cost of $274.30 per acre to determine the total cost per acre, shown at the end of each bar in the graph in Figure 2.

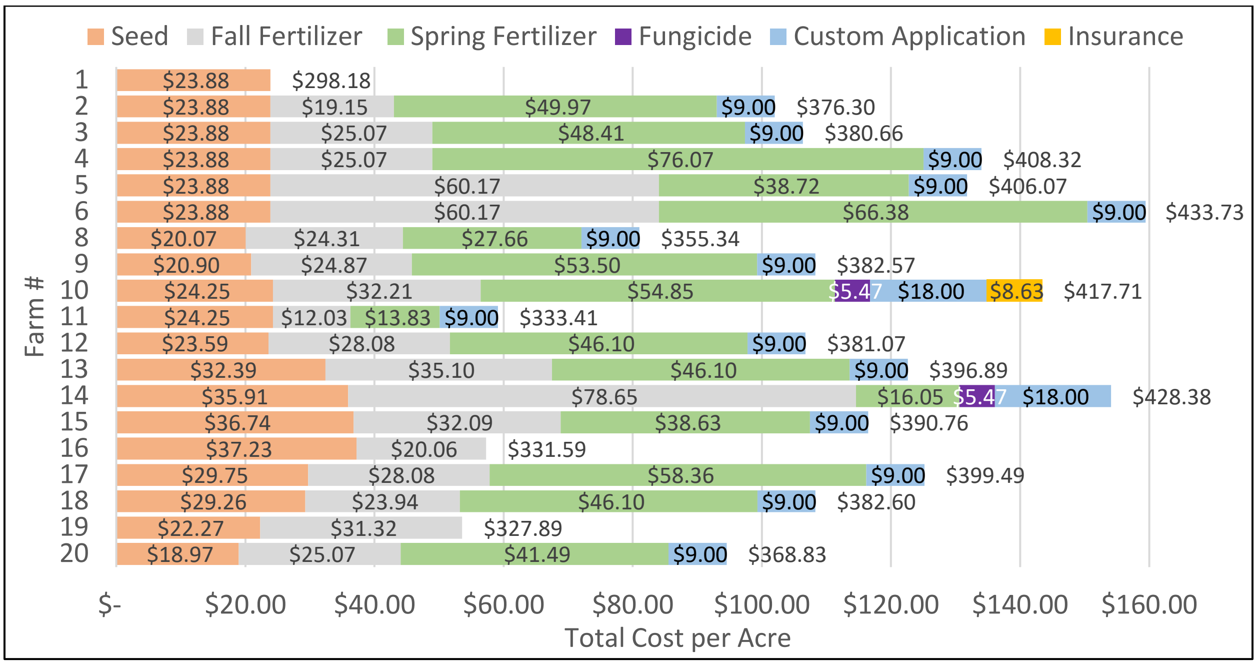


Figure 2. Total Per Acre Costs (2021-22)

Marketing Grain

All marketing choices had to be made between September 1, 2021 and November 1, 2022. The simulated production is the actual plot yields adjusted to an acre basis multiplied by 2,000. The simulated total was adjusted for any losses observed during the growing season. The APH for the simulated farms for planning and marketing purposes was 43 bushels per acre, making the total expected yield of 86,000 bushels of grain for each simulated farm. Final farm productivity was calculated based on the average of the six plots managed according to each teams' specifications. Total quantity marketed was limited to a good faith estimate of total production.

Any contracts or sales had to be reported at the time of initiation, including delivery, price, time, date, and place and any other conditions related to the event needed to verify and validate the price and quantity sold. (Transactions were dated and time stamped within 24 hours of being submitted on the website. Once submitted, transactions were final and non-negotiable).

Sale types were limited to the methods listed below.

- **Spot (Cash) Sales**: This is the cash sale at harvest or before the final date of November 1, 2022.
- **Forward Contract**: Contract cash price for July delivery at any location that offers new crop prices and any number of bushels. If the contestant forward contracted more bushels than produced (due to hail, wind, etc.) a $0.10 per bushel buy-back fee for the oversold bushels was assessed.
- **Basis Contract with Delivery at Harvest**: Used to set basis for number of bushels at a given location for July delivery. Price per bushel (futures price for July) is set at a different time. In this case, once a basis contract is made, any July futures price between when basis contract is made and July 31, 2022, last day to trade July wheat futures settlement price will become the default price if no other is chosen.
- **Simple Hedge to Arrive** (no roll over etc.): Allows the seller to lock in the futures market portion of a cash grain contract. This is usually done with the local elevator. Any number of bushels may be contracted and are tied to a specific delivery point at the time of harvest. Any Basis not determined before harvest will be charged at the harvest basis on July 31, 2022.
- **Special Contracts**-Allows the seller to price bushels using local elevator special contracts, i.e. Seasonal Average ($0.05 per bushel fee), ProHedge ($0.10 per bushel fee).

Futures and presales were legitimate alternatives and had the same stipulations of being reported as cash sales. All transactions had to be completed and specified at the time of harvest. Any unsold grain was “sold” for the cash price posted by Scoular Grain in Sidney on November 2, 2022. All forward contracts and future contracts had to be completed or terminated by July 31, 2022.

Market Conditions

Cash price = futures price + basis

Cash grain prices can be broken down into two components, futures and basis. Each day cash grain prices change. In examining both components of cash prices, the futures price moves constantly throughout the day, reflecting changing world conditions, whereas buyers (who could be elevators, processors, etc.) may only change basis once a day, reflecting a generally stable local demand. Understanding and monitoring both futures price and basis are important to an effective grain marketing strategy.

Futures Price

The futures portion is determined by buyers and sellers of futures contracts, and often represents factors influencing global supply and demand.

On average, 50 percent of U.S. wheat production is exported. This dependence on a global consumer, combined with several global competitors makes the U.S. wheat market very responsive to changes in global production and consumption. The variability created by changing global supply and demand conditions, leaves the July Kansas City Hard Red Winter Wheat Contract without a reliable historical seasonal price pattern. Unlike corn and soybeans, Hard Red Winter Wheat does not have a timeframe that consistently produces a market rally. This fact has both positive and negative connotations. Without historically seasonally consistent price movement, producers are left to look for pricing opportunities year-round. While at the same time this lack of seasonality removes some of the market predictability making it harder to gauge what a “good” price might be. Therefore, wheat producers must be more attuned with the market throughout the year to take advantage of any opportunity to price their wheat.

Figure 3A shows the price movements of the July Kansas City Winter Wheat Contract, in other words the "pre-harvest" portion of the marketing window, September 1, 2021, to July 14, 2022. Russia's invasion of Ukraine, in late February of 2022 pushed futures market prices higher through the spring. These prices were sustained through June but dropped off during harvest. The July Kansas City Winter Wheat Contract price closed above $11.00 per bushel 56 out of 218 trading days. The highest closing price was $13.68 per bushel.

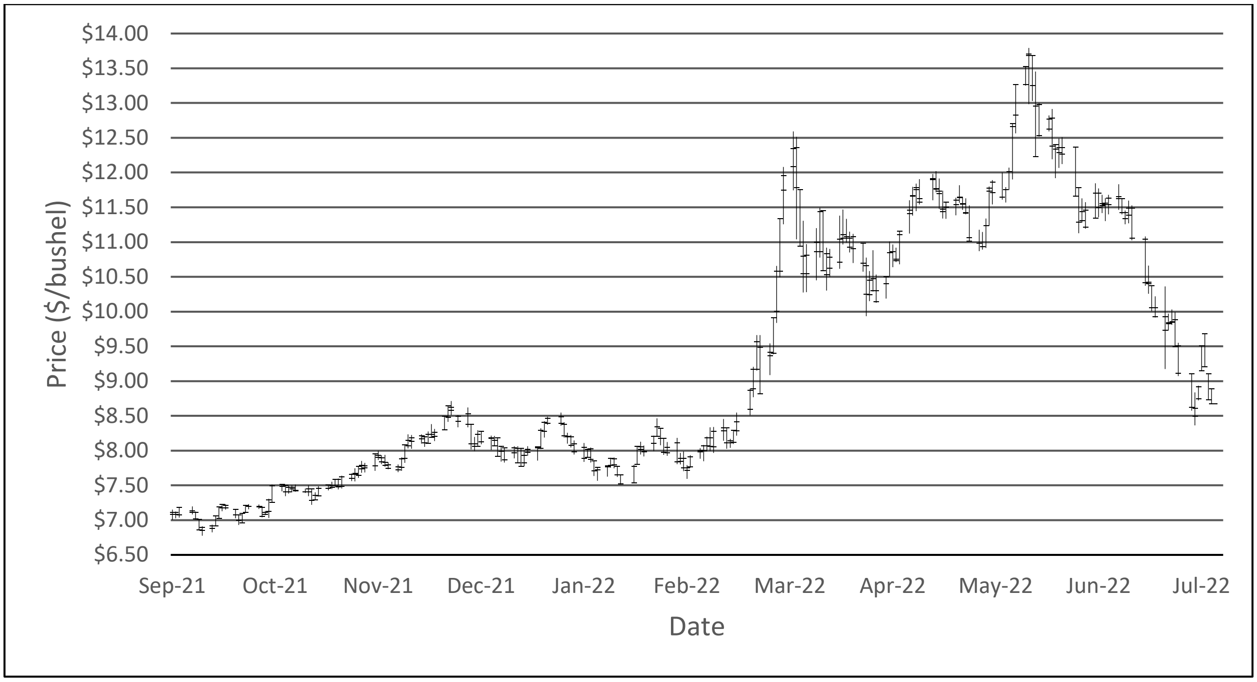


Figure 3A. Daily Futures Price for the July Kansas City Winter Wheat Contract (KEN22).

New this year, participants had the opportunity to market grain after harvest. Contestants could sell grain after harvest until November 1, 2022. Elevators base daily bid prices on the nearby futures contract, from the end of harvest until August 31, 2022, local prices were determined by the September Kansas City Winter Wheat Contract (KEU22). From September 1, 2022 until the end of the contest, local prices were determined, using the December Kansas City Winter Wheat Contract (KEZ22). Futures prices during this time ranged from $8.075 to $10.375 per bushel. Figures 3B and 3C show the price movements during the respective time period.

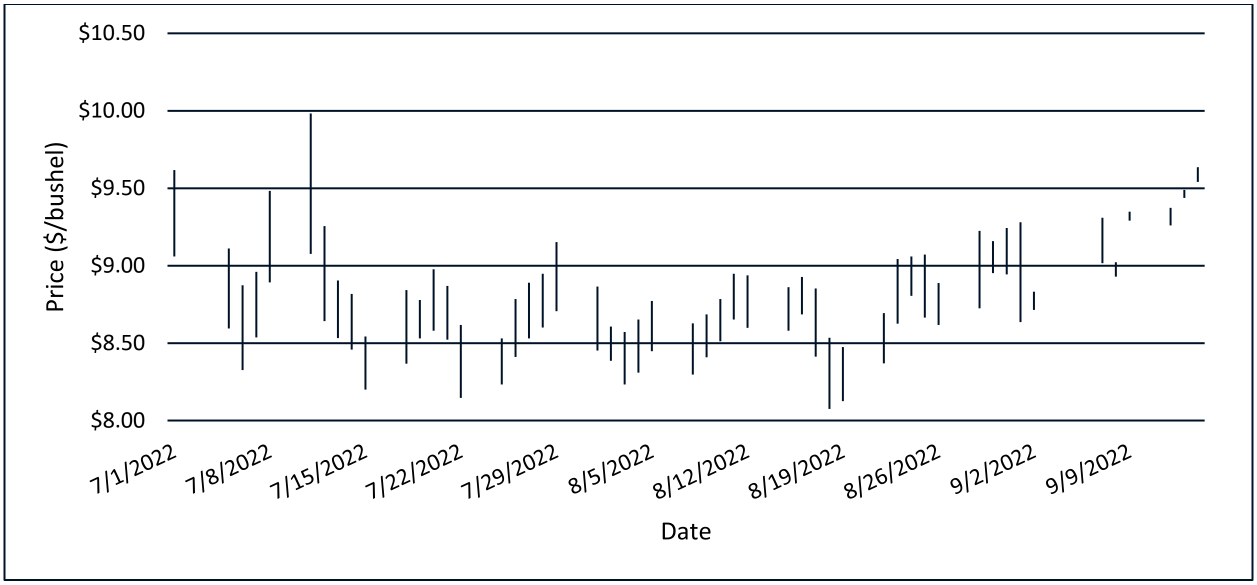


Figure 3B. Daily Futures Price for the September Kansas City Winter Wheat Contract (KEU22).

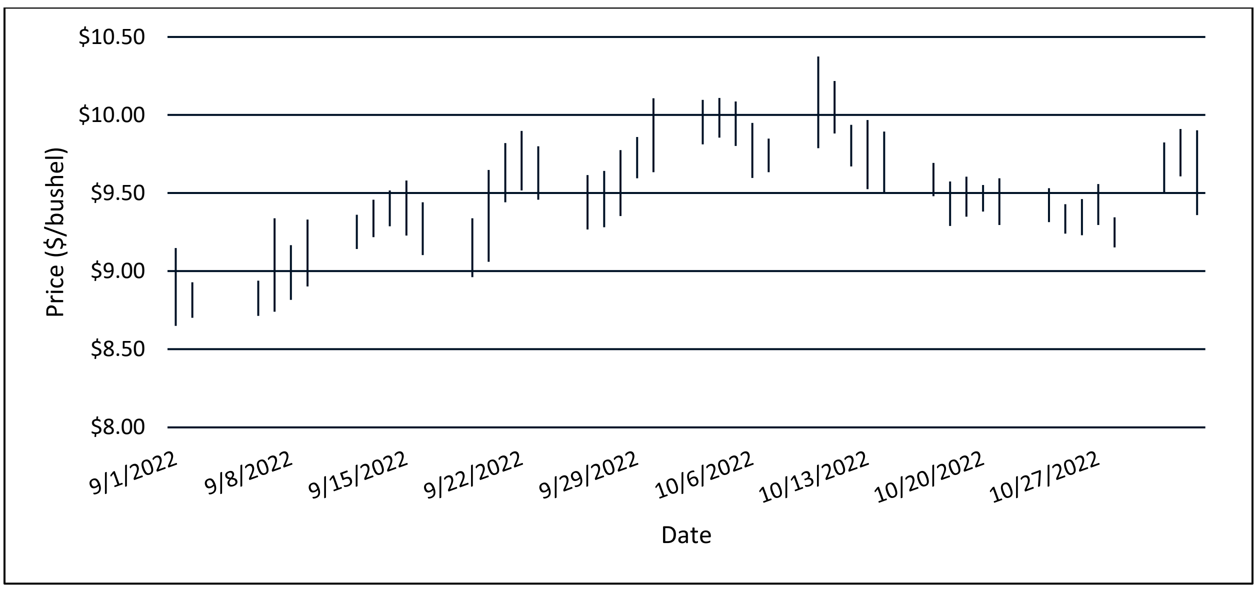


Figure 3C. Daily Futures Price for the December Kansas City Winter Wheat Contract (KEZ22).

Basis

The basis portion of a grain price represents factors influencing local demand. Basis is the difference between the cash price and the futures price. Basis is essentially the fee that grain buyers charge farmers for handling their grain. Many factors influence basis values, including the local supply and demand, transportation costs, quality of the grain, and the cost of doing business. Changes in basis are important to a farmers' financial well-being. Changes in basis values directly impact the farmer's bottom line. The more negative the average basis value is, the less revenue the farmer receives. Basis values may vary by elevator. In this contest, participants have a choice to deliver to any elevator in the region.

Participants sold to four different elevators throughout the competition with a basis ranging from -$2.00 to -$0.50 per bushel.

Marketing Choices

Marketing plays a key role in profitability as bushels are converted into dollars by attaching a price. In this contest, seven farms submitted pre-harvest sales. The average price per bushel, after fees, premiums and discounts were accounted for ranged from $7.42 to $10.56 per bushel, a $3.14 per bushel spread.

One of the challenges of pre-harvest marketing is knowing how much to sell. The quantity of bushels sold during the growing season ranged from 0 to 100,000 bushels (up to 116% of expected production).

This year, 318,500 bushels of grain were marketed during the growing season. Cash forward contracts were used to market 81% of pre-harvest marketed bushels the remaining 19% was marketed using HTA contracts . Sixteen percent of pre-harvest contracted bushels were initiated in November, 1% in January, 30% in February, 13% in March, and 32% in April.

Some pre-harvest marketing strategies came at a cost. Farms paid various fees including trucking expenses ($0.0075 per bushel per loaded mile) for grain not delivered to Scoular in Sidney, and contract fees for HTAs ($0.03 per bushel).

This year, no protein premiums or discounts were available to producers.

Notable marketing scenario:

Team 14 had a particularly aggressive marketing strategy, cash forward contracting 100,000 bushels of production (116% of expectation) on April 13, 2022, at $10.62 per bushel, less trucking to Frenchman Valley Coop in Kimball for a final expected price of $10.34 per bushel. The futures price that day ranged from $11.445 to $11.84, Frenchman Valley had a -$0.95 basis. Outside of the limitations of the contest, this cash forward contract would have resulted in a positive outcome for this team. However, since the contest is limited to 14 months, the final outcome of this strategy is not realized by the results of the contest.

When engaging in forward contracting as a seller, you know your contracted price, but the futures price will continue to evolve until the contract expires. At contract expiration, the final futures price may be higher or lower than your contract price. If you forward contract more bushels than you produce, the elevator typically does one of the following at contract expiration:

a. If the final futures price is higher than your contract price, the grain buyer may charge you a buyback fee for undelivered bushels and require you to pay the shortfall.
b. If the final futures price is lower than your contract price, the grain buyer may agree to “roll” your contract forward to the next new crop. When “rolling” between contracts in this case, the elevator will keep the contracted futures price, benefiting the seller.

Luckily for Team 14, the price at expiration was higher than their contract price. By the limitations of the contest, they delivered their production, 89,735 bushels, to Frenchman Valley Coop in Kimball (less the trucking). No buyback fee was charged for the oversold bushels. If this had been a real marketing decision, the remaining 10,265 bushels of production would have been “rolled” to a July 2023 (KEN23) contract for a gain to the seller of $3.17 per bushel as shown in Table 3.

For 2022, forward contracts created from around March 1, 2022 and onwards resulted in a sold price higher than the expiration price. Thus, creating a potential gain for those who forward contracted more bushels than they produced.

While a gain from over contracting was realized this year, not every year will turn out the same. In some years, the contract price will be less than the price at expiration, resulting in a loss. The results from forward contracting on April 12 in each of the past four years is presented in Table 2. While gains are made in two years, losses are experienced in the other two years. In this short sample, gains are much higher than the losses.

The conundrum the producer faces is twofold, first, the data presented here is four years and of course, we remember the past year the most as it is the most recent. Second, the future is unknown, maybe we will hit one of those years when the price at expiration is substantially higher than the contract price.

Table 3. Marketing Performance Over the Past Four Years

	Suppose the Year Is			
	2022	2021	2020	2019
Contract Date: 12-Apr	$ 11.78	$ 5.93	$ 5.01	$ 4.41
Price at Expiration: 14-Jul	$ 8.67	$ 6.18	$ 4.38	$ 4.61
Gain/Loss	$ 3.11	$ (0.25)	$ 0.63	$ (0.20)

The ultimate result of a seller's satisfaction with a roll may not be realized until harvest. For example, if wheat is trading higher than 11.84 at harvest of 2023 they may not be pleased with their marketing decision in April of 2022.

Team 14 did have the highest revenue in the contest and was ultimately profitable. However, they placed 5th in the overall profitability contest, due to their high cost of production per bushel.

Results of the 2021/22 TAPS Wheat Contest[2]

Grain Yield

Harvest occurred when the majority of varieties neared 12% moisture content. Any wheat over 13.5% moisture was docked using a standard dockage scale. Individual wheat farm grain yields ranged from 36.2 to 46.5 bushels per acre with an average of 41.4 bushels acre. The lowest yield farm, Farm 1, was the UNL managed farm that used untreated Ruth seed and no additional inputs. The highest yield farm, Farm 9, was also a UNL managed farm which tested the maximum input using increased fertility rates and fungicide.

Grain yield was most highly correlated with variety selection followed by fertility inputs. Varieties well adapted to the region and the growing conditions did well. Popular varieties such as Ruth and Whistler performed well. Teams that also selected higher seeding rates or used an aggressive approach to fertility also benefited from the timely rains and higher yield potential. Overall, yields were strongly correlated to input choices and indicate the importance of proper management to achieve maximum yield. Moving

[2] Farms 1-6 and 13 were managed by the University of Nebraska – Lincoln and were not eligible for awards.

forward, carefully consider varieties that are better adapted to handle drought conditions since we are likely to stay in a dry pattern for a while. In addition, rising input costs require careful consideration when deciding which inputs will provide a return.

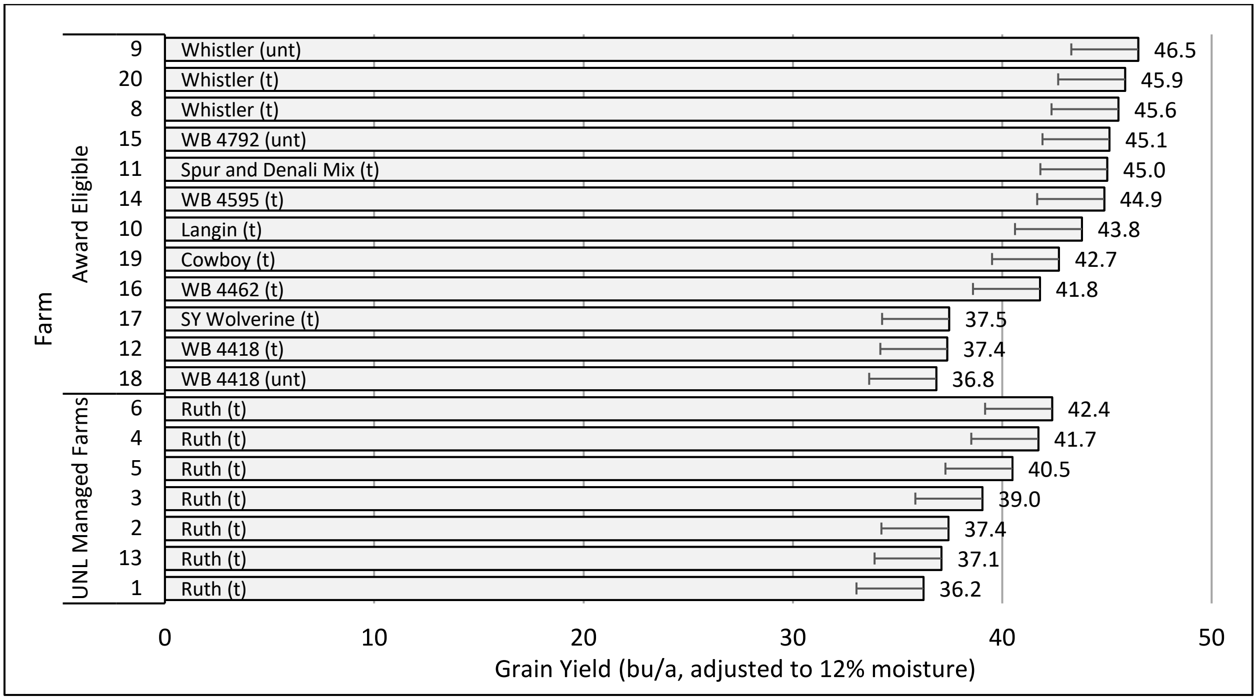


Figure 4. Actual grain yield (bu/acre)

Most Input Use Efficient

The Input Use Efficiency Index was used to quantify the nitrogen use efficiency and the results are reported in Figure 5. This is calculated using the equation:

Efficiency Index = (Grain Yield * Protein Nitrogen Content) / (Aboveground Nitrogen Uptake of Unfertilized Treatment + Applied Nitrogen Fertilizer)

The control (untreated) is a baseline that is used to measure the effect of any added nitrogen fertilizer. Team one was the untreated plot and as such had the greatest efficiency at 0.114 primarily due to the fact that no additional nitrogen was applied. Teams 16 and 19 applied some fertility in the fall but did not add any additional nitrogen in the spring which helped them score high in efficiency at 0.110 and 0.104 respectively.

Managing nitrogen is important to maximize yield and achieve desired protein levels, while also balancing input costs. Soil sampling to determine residual nitrogen levels and having realistic yield goals is critical to achieving sustainability and profitability.

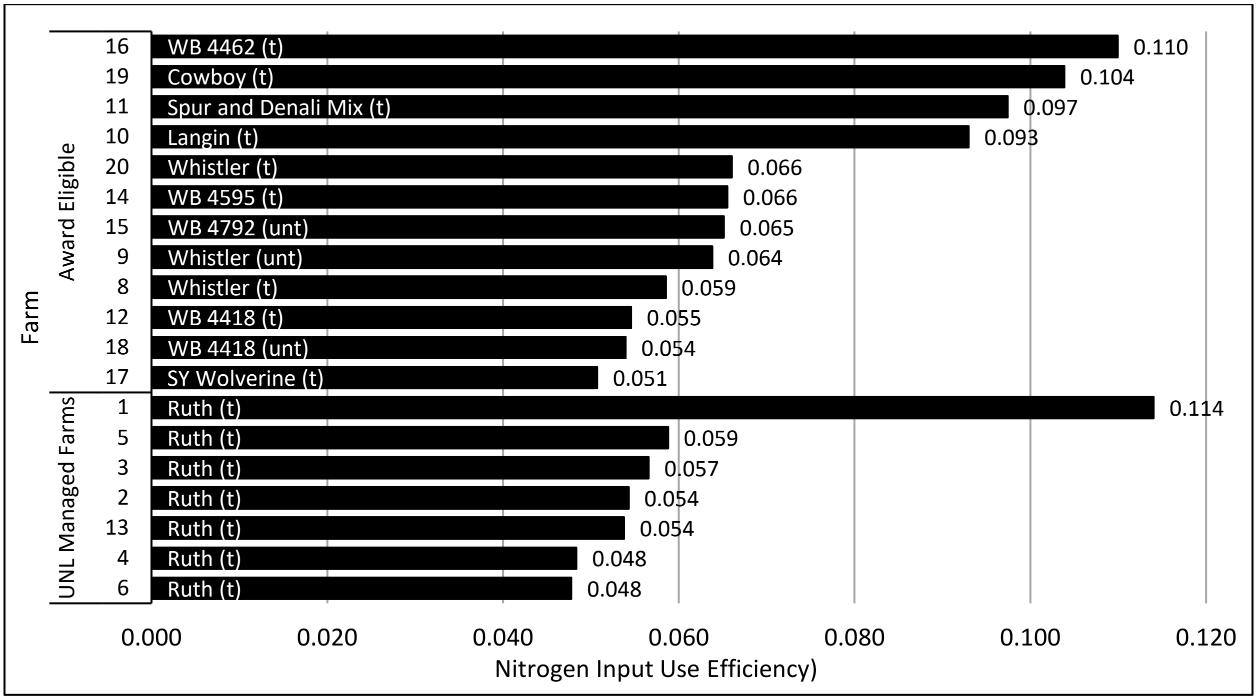


Figure 5. Input use efficiency

Most Profitable Farm

Farm profitability is a balance of controlling costs, productivity, and marketing. With these three factors, there exists many different combinations of achieving profitability.

The most profitable team, Farm 11, had a cost per bushel of actual production of $7.41 per bushel. This farm, had the 5th highest ranking yield at 45 bushels per acre, but the lowest actual bushel of production. This team was the only team to pick a treated mix of Spur and Denali as their planted variety. They had the lowest fall fertilizer cost, and the second lowest cost spring fertilizer package. They did not pre-harvest market any grain.

Farm 8 was the second most profitable farm, with a cost of production $0.39 per bushel higher than this year's winner at $7.80 per bushel. Farm 8 opted for higher input costs, that were slightly offset by the 3rd highest yield of the contest at 45.6 bushels per acre. Farm 8 was more aggressive in their marketing strategy pre-harvest marketing 14,000 bushels using cash forward contracts, with the price per bushel ranging from $7.67 to $10.56 per bushel (averaging $8.41 per bushel). They also took advantage of the post-harvest marketing window, selling an additional 10,000 bushels in October. Their final 67,104 bushels were sold at harvest.

Farm 16 was the third most profitable. Similar to this year's winner it relied on low production costs, coming in at $7.93 per bushel. This farm opted for more expensive seed and fall fertilizer but did not opt for a spring fertilizer package. It's yields ranked 10th overall, proving yield is not necessarily equivalent to the most profitable farm.

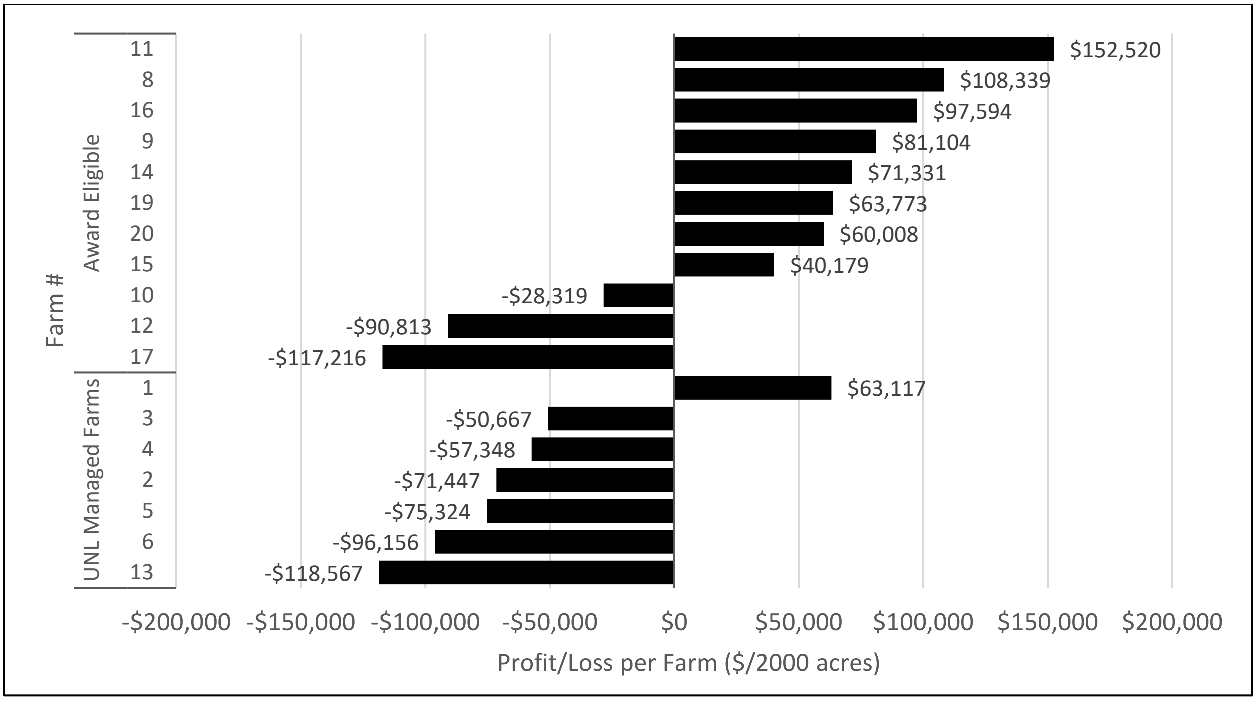


Figure 6. Profit per 2,000 acre farm