



The Economic Potential of Wheat Production in 2022/23

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This fall, producers will begin field preparations for next year's wheat crop. Over the past year, wheat prices have been elevated by historical standards due to the Russian/Ukraine war. Recently, wheat futures contracts for 2023 harvest months have settled near \$8.00 per bushel. For growers considering wheat, a farm management decision tool was developed to provide an estimate of the per-acre net returns from producing the crop subject to pricing conditions.

The LSU AgCenter notes that planting dates for Louisiana wheat depend on location and variety. For southern and central Louisiana optimal planting dates range from November 1st through November 30th. Optimal planting dates for northern Louisiana are slightly earlier, ranging from October 15th through November 15th. Early-heading varieties should generally be planted after the mid-date, while late-heading varieties can be pushed a little on the early side of the planting window.

Nitrogen fertilization of wheat can be a challenging aspect of production. Total *N* application should normally range from 90 to 120 pounds per acre, but this will vary depending on soil type and rainfall after applications. Timing of *N* application depends on several factors. The wheat crop needs adequate *N* in the fall and early winter to establish ground cover and properly tiller; however, excessive levels of fall *N* can result in rank growth and increased lodging potential, as well as a higher probability of spring freeze damage from early heading. If the wheat crop is following soybeans, soil residual or mineralizable *N* should be adequate for fall growth, and no pre-plant *N* is needed. However, if the wheat crop follows corn, sorghum, rice or cotton, the application of 15 to 20 pounds of *N* per acre would typically be beneficial. Where the wheat crop is planted later than optimum, additional *N* may be necessary to ensure adequate fall growth prior to winter conditions. Phosphorus, *K*, and micronutrients should be applied in the fall based on soil test reports.

However, given the cost structure of wheat production in Louisiana, it can be a viable enterprise for a farming operation. Compared to corn, cotton, and soybeans, wheat is a less-intensive crop. The majority of production costs for wheat are associated with fertilizer and its application. Fertilizer rates of 90-40-40 (*N-P-K*) are assumed in the LSU AgCenter's enterprise budgets but soil fertility needs can vary farm-to-farm. Figure 4. Therefore, the cost of fertilizer can have a significant impact on the cost and, hence, the associated net returns of wheat. Any input price increases for *N*, *P*, and/or *K* will result in a proportionate share increase. Vice-versa, an absence of fertilizer input price volatility can strengthen wheat's net return potential, all things equal.

Using the "Custom Wheat Enterprise Budget" developed in Microsoft® Excel, producers can evaluate their return margin and cost structure for the upcoming wheat crop via a detailed costs and returns spreadsheet. Cells containing [blue numbers](#) can be changed by the producer to reflect their share rent percentage, production situation, and price/yield expectations. Figure 1. Formulas used to calculate landlord and producers' (tenant) shares are embedded in the file. The producer can elect to enter their

expected price, yield, and share rental percentage in cells C7, D7, and F7. For a situation where the farm operator is the owner/operator, 0% can be entered. The opportunity is also presented to a tenant producer to indicate what, if any, production costs are shared between themselves and the landowner. Direct expense categories for custom applications, fertilizers, herbicides, insecticides, seed, hauling, labor, diesel fuel, repair, and interest on capital are listed in the farm management tool and intended to be specified on a unit cost and corresponding quantity basis. Total direct expenses are calculated based on the tenant's share of the associated production costs per acre (summed in cell H43). The tenant's share of production is compared to their share of direct expenses so as to calculate the returns above direct expenses (cell H44). The same procedure is used to calculate the tenants' share of fixed production expenses (e.g. ownership cost for machinery) for implements, tractors, and combine harvester. The values contained in the farm management tool are default values. It is suggested that the producer update the input prices and/or amount to reflect current farm input prices and their localized production situation. Total fixed expenses and specified expenses are summed in cells H50 and H51. The tenant's share of total returns above total specified expenses are calculated in cell H52.

Figure 1. Example of user interface of the wheat enterprise budget for Louisiana producers.

	A	B	C	D	E	F	G	H
1	Estimated costs and returns per acre							
2	Wheat, Produced on Alluvial Soils, Non-irrigated Practice							
3	Louisiana							
4							Landlord	Tenant
5	ITEM	UNIT	PRICE	QUANTITY	Total Amount	Share %	Share	Share
6	INCOME							
7	Wheat	bu	\$ 8.00	60.00	\$ 480.00	20.0%	\$ 96.00	\$ 384.00
8	TOTAL INCOME				\$ 480.00		\$ 96.00	\$ 384.00
9	DIRECT EXPENSES							
10	CUSTOM SPRAY							
11	App by Air (5 gal)	appl	\$ 7.00	1.00	\$ 7.00	0.0%	\$ -	\$ 7.00
12	App by Air (3 gal)	appl	\$ 5.60	2.00	\$ 11.20	0.0%	\$ -	\$ 11.20
13	FERTILIZERS							
14	Phosphate	lb	\$ 1.08	40.00	\$ 43.20	0.0%	\$ -	\$ 43.20
15	Potash	lb	\$ 0.83	40.00	\$ 33.20	0.0%	\$ -	\$ 33.20
16	Nitrogen	lb	\$ 1.02	90.00	\$ 91.80	0.0%	\$ -	\$ 91.80
17	HERBICIDES							
18	Harmony Extra	oz	\$ 12.02	0.45	\$ 5.41	0.0%	\$ -	\$ 5.41
19	INSECTICIDES							
20	Surfactant	pt	\$ 1.75	0.20	\$ 0.35	0.0%	\$ -	\$ 0.35
21	Mustang Max	oz	\$ 1.48	4.00	\$ 5.92	0.0%	\$ -	\$ 5.92
22	Karate Z	oz	\$ 1.41	2.13	\$ 3.00	0.0%	\$ -	\$ 3.00
23	SEED/PLANTS							
24	Wheat Seed	lb	\$ 0.28	90.00	\$ 25.20	0.0%	\$ -	\$ 25.20
25	CUSTOM FERTILIZE							
26	Lime (Spread)	ton	\$ 59.00	0.33	\$ 19.47	0.0%	\$ -	\$ 19.47
27	HAULING							
28	Haul	bu	\$ 0.26	60.00	\$ 15.60	0.0%	\$ -	\$ 15.60
29	OPERATOR LABOR							
30	Harvester	hour	\$ 15.30	0.08	\$ 1.25	0.0%	\$ -	\$ 1.25
31	HIRED LABOR							
32	Implements	hour	\$ 11.88	0.11	\$ 1.30	0.0%	\$ -	\$ 1.30
33	Tractors	hour	\$ 11.88	0.28	\$ 3.31	0.0%	\$ -	\$ 3.31
34	DIESEL FUEL							
35	Tractors	gal	\$ 5.00	2.91	\$ 14.55	0.0%	\$ -	\$ 14.55
36	Harvester	gal	\$ 5.00	1.20	\$ 6.02	0.0%	\$ -	\$ 6.02
37	REPAIR & MAINTENANCE							
38	Implements	acre	\$ 4.38	1.00	\$ 4.38	0.0%	\$ -	\$ 4.38
39	Tractors	acre	\$ 1.91	1.00	\$ 1.91	0.0%	\$ -	\$ 1.91
40	Harvester	acre	\$ 3.47	1.00	\$ 3.47	0.0%	\$ -	\$ 3.47
41	INTEREST ON OP. CAP.	acre	\$ 3.96	1.00	\$ 3.96	0.0%	\$ -	\$ 3.96
42	TOTAL DIRECT EXPENSES				\$ 301.50		\$ -	\$ 301.50
43	RETURNS ABOVE DIRECT EXPENSES				\$ 178.50		\$ 96.00	\$ 82.50
44	FIXED EXPENSES							
45	Implements	acre	\$ 8.33	1.00	\$ 8.33	0.0%	\$ -	\$ 8.33
46	Tractors	acre	\$ 11.29	1.00	\$ 11.29	0.0%	\$ -	\$ 11.29
47	Harvester	acre	\$ 12.87	1.00	\$ 12.87	0.0%	\$ -	\$ 12.87
48	TOTAL FIXED EXPENSES				\$ 32.49		\$ -	\$ 32.49

*Note: Cells containing **blue numbers** can be changed by the producer to reflect their share rent percentage, production situation, and price/yield expectations. Formulas used to calculate landlord and producers' (tenant) shares are embedded in the file.*

The wheat farm management tool also contains an area for sensitivity analysis on the potential net returns above direct costs (per acre) that may be obtained. This analysis presents the tenant's share of net returns over a range of price and yield combinations. The base parameters for price and yield, as entered in cells C7 and D7, provide the basis for the analysis (as highlighted in yellow). Figure 2. In this example, the net returns above direct production expense accrued to the grower under a 20% share rent is \$82.50 per acre; assuming a \$8.00 wheat price and a 60 bushel per acre yield. Prices are set to range \pm \$0.20 per bushel and yield is set to range \pm 20 bushels per acre from the producer-specified parameters. For an owner-operator, given a producer's direct production expenses of \$301.50 per acre coupled with a wheat price of \$8.00 per bushel; any yield above 37.7 bushels per acre would equate to a positive margin-less total specified expenses.

Figure 2. Estimated range of net returns above direct production expenses (dollars per acre) to the tenant grower from the Custom Wheat Enterprise Budget tool.

Returns Above Variable (Direct) Production Expenses to the Grower (with share rent)									
Yield	Wheat Price								
	\$ 7.80	\$ 7.85	\$ 7.90	\$ 7.95	\$ 8.00	\$ 8.05	\$ 8.10	\$ 8.15	\$ 8.20
40.00	\$ (51.90)	\$ (50.30)	\$ (48.70)	\$ (47.10)	\$ (45.50)	\$ (43.90)	\$ (42.30)	\$ (40.70)	\$ (39.10)
45.00	\$ (20.70)	\$ (18.90)	\$ (17.10)	\$ (15.30)	\$ (13.50)	\$ (11.70)	\$ (9.90)	\$ (8.10)	\$ (6.30)
50.00	\$ 10.50	\$ 12.50	\$ 14.50	\$ 16.50	\$ 18.50	\$ 20.50	\$ 22.50	\$ 24.50	\$ 26.50
55.00	\$ 41.70	\$ 43.90	\$ 46.10	\$ 48.30	\$ 50.50	\$ 52.70	\$ 54.90	\$ 57.10	\$ 59.30
60.00	\$ 72.90	\$ 75.30	\$ 77.70	\$ 80.10	\$ 82.50	\$ 84.90	\$ 87.30	\$ 89.70	\$ 92.10
65.00	\$ 104.10	\$ 106.70	\$ 109.30	\$ 111.90	\$ 114.50	\$ 117.10	\$ 119.70	\$ 122.30	\$ 124.90
70.00	\$ 135.30	\$ 138.10	\$ 140.90	\$ 143.70	\$ 146.50	\$ 149.30	\$ 152.10	\$ 154.90	\$ 157.70
75.00	\$ 166.50	\$ 169.50	\$ 172.50	\$ 175.50	\$ 178.50	\$ 181.50	\$ 184.50	\$ 187.50	\$ 190.50
80.00	\$ 197.70	\$ 200.90	\$ 204.10	\$ 207.30	\$ 210.50	\$ 213.70	\$ 216.90	\$ 220.10	\$ 223.30

Input prices contained in the decision tool represent midpoint-estimates for fertilizer and fuel obtained from the USDA Agricultural Marketing Service (AMS) Production Cost Report from August 2022.

An additional worksheet (“LSU Wheat Budget blank fields”) is provided in the Excel file to allow producers create their own farm-specific costs and returns model if one is desired. The “LSU Wheat Budget” worksheet can also be edited. This material can be accessed at <https://lsuagcenter.com/sitecore/content/lsuagcenter/topics/crops/wheatoats/budget>

Authors note: To download the farm management tool, right click on the Microsoft® Excel file icon and select the download option. Once the file is opened, please be sure to select the ‘enable edit’ message on the ribbon that appears on the top of the spreadsheet. Once the edit feature is enabled, changes can be made to the input parameters. Remember that only those cells containing blue numbers can be changed.

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