

The Wheatfields

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The **Wheatfields** is a wheat/fallow non-irrigated farming operation in southwestern Nebraska. Production practices, costs of production, market prices, weather, and other information are based on data from the region to provide a realistic setting. The probabilities of risk events were calculated using actual data, when available. However, modifications were sometimes made to maintain the workability and realism of the game.

The Wheatfields farm 6000 acres of non-irrigated cropland in a wheat/fallow rotation. Normal annual wheat yield is 70 bushels per acre on 3000 harvested acres. Production costs, including fallow costs, are \$280.00 per acre harvested. Overhead and land taxes add another \$50 per acre in fixed cost to the operation for a total cost of \$330 per acre. When you begin the simulation, there is no wheat in inventory.

This will also be the case at the end of the simulation as all wheat will be sold before calculating your final bank balance. The initial cash market price for wheat is \$5.32 per bushel.

Wheat Production	
Total Crop Land	6000 acres
Land in Annual Production	3000 acres
Normal Annual Yield	70 bushels per acre
Total Costs	\$330.00 per acre
Initial Market Price	\$5.32 per bushel

The Wheatfields also run 300 mother beef cows with annual cash productions costs of \$425 per cow. Calving typically occurs in March-April and weaned calves are sold in October. The Wheatfields historically have a 90 percent weaning percentage and replace 15 percent of their cows. This leaves 225 calves (100%-10%-15%) to sell, weighing 540 pounds (average for steers and heifers combined). Cull cows weighing 1,200 pounds are sold at the end of each year for \$65.00 per hundredweight. Hay must be purchased as feed for the cows during the winter months. Under normal circumstances, 495 tons or 1.65 tons per cow is needed on an annual basis. The simulation begins with no hay in inventory and a market price for hay of \$120 per ton. The maximum amount of hay allowed in inventory is limited to 1,000 tons.

Beef Cattle Production	
Quantity	300 head
Production costs per unit	\$425 per cow
Weaning Percentage	90%
Average Net Sale Weight	540 pounds per weaned calf
Initial Market Price	\$170.00 per hundredweight
Annual Hay Consumption	1.65 tons per cow
Replacement percentage	15%
Sale weight per cull unit	1,200 pounds per cow
Net Sale Price	\$65.00 per hundredweight

The Wheatfields farm expects to sell 210,000 bushels of wheat, 225 weaned calves, and 45 culled cows on an annual basis. Including an annual government payment of \$15,000, this will generate \$1,373,850 in revenue

Expected Annual Net Ranch Income			
Expected Revenues		Expected Expenses	
Weaned Calves	225 head = \$206,550	Wheat	3000 acres = \$990,000
Cull Cows	45 head = \$35,100	Cows	300 cows = \$127,500
Wheat	210,000 bushels = \$1,117,200	Hay	495 tons = \$59,400
Government Payment	\$15,000		
Annual total:	\$1,373,850	Annual total:	\$1,176,900
Net Return = \$196,950 per year			

each year. The Wheatfields will have \$990,000 in expenses for producing 3000 acres of wheat. They also expect \$127,500 of expenses for the cow herd plus \$59,400 for purchased hay. The Wheatfields expect their farm to generate \$196,950 of net return each year or \$393,900 over the two years in which the game is played.

DECISIONS

Year 1		
Period 1	Risk and Probability of Occurrence	Impact
Oct. 1 to Dec. 31	<u>U.S. planted wheat acres report</u> Higher than expected (25%) As expected (50%) Lower than expected (25%) <u>U.S. corn production</u> Higher than expected (20%) As expected (55%) Slightly lower than expected (20%) Much lower than expected (5%)	<ul style="list-style-type: none"> • A high number of acres planted to wheat will decrease the cash market price for wheat in anticipation of increases in future supply. • Otherwise, wheat prices increase due to normal market price seasonality. • A low number of acres planted to wheat will increase the cash market price for wheat in anticipation of decreases in future supply. <p style="text-align: center;">.....</p> <ul style="list-style-type: none"> • Hay prices decrease and calf prices increase when production of a competitive feed alternative (corn) increases. • There is no impact on calf prices and hay prices increase slightly due to seasonal effects when corn production is as expected. • Hay prices increase and calf prices decrease if corn production falls below expected levels.
Risk Management Strategy Decisions		
Decision 1: Buy hay You can buy hay now at the current cash price. Consider the amount of hay you currently have in inventory and your upcoming feeding needs. The maximum amount of hay you may have in inventory is 1,000 tons. For simplicity, all hay fed to cattle during the winter is subtracted from inventory during the period from January to March of each year.		
Period 2	Risk and Probability of Occurrence	Impact
Jan. 1 to Mar. 31	<u>Winter conditions</u> Severe winter (20%) Normal winter (60%) Milder than normal winter (20%) <u>Global production reports</u> High wheat and corn numbers (10%) Normal wheat, high corn numbers (30%) Normal wheat and corn numbers (50%) Low wheat and corn numbers (10%)	<ul style="list-style-type: none"> • In severe winters, hay prices increase due to greater demand. Weaning percentages decrease due to increased death losses. • If it is a normal winter, hay prices decrease due to normal market price seasonality. • In a mild winter, hay prices decrease further due to reduced demand. <p style="text-align: center;">.....</p> <ul style="list-style-type: none"> • High global production numbers will decrease crop prices. • Low global production numbers will increase crop prices.
Risk Management Strategy Decisions		
Decision 1: Forward price wheat You may forward price up to 100% of this year's expected wheat crop for harvest delivery at the current contract price. Any forward priced wheat must be delivered at harvest. If you forward contract more than you produce, the simulation will purchase what you need at current prices to fulfill the contract. Decision 2: Buy hay		
Period 3	Risk and Probability of Occurrence	Impact
Apr. 1 to Jun. 30 (cont.)	<u>Risk of late freeze</u> Late freeze (12%) No late freeze (88%) 	<ul style="list-style-type: none"> • A late freeze is a local weather condition that can severely impact your yield and have a mild impact on prices. <p style="text-align: center;">.....</p>

Period 3	Risk and Probability of Occurrence	Impact
Apr. 1 to Jun. 30 (cont.)	<u>Wheat crop condition report</u> Poor crop conditions (17%) Average crop conditions (66%) Excellent crop conditions (17%)	<ul style="list-style-type: none"> • The crop condition report is a national report that heavily influences prices. • Poor crop conditions will increase crop prices and decrease calf prices. • Excellent crop conditions will decrease crop prices and increase calf prices.
Risk Management Strategy Decisions		
Decision 1: Forward price calves You can forward price up to 100% of the calves you expect to wean in October for delivery in October at the current contract price. If you forward contract more than you produce, the simulation will purchase what you need at October cash prices to fulfill the contract. All non-contracted calves will be sold in October on the cash market. Decision 2: Forward price wheat. Decision 3: Buy (+) or sell (-) hay. You can buy or sell hay at the current cash price. Consider your current hay inventory and your upcoming feeding needs. The maximum amount of hay you may have in inventory is 1,000 tons. For simplicity, all hay fed to cattle during the winter is subtracted from inventory during the period from January to March of each year. You start the simulation with no hay inventory, so any hay left in inventory at the end of the simulation is sold at market price.		
Period 4	Risk and Probability of Occurrence	Impact
Jul. 1 to Sep. 30	<u>Late hail storm</u> Severe hail (6%) Scattered hail damage (17%) No hail (77%) <u>National export news</u> Good export numbers (15%) Mixed export numbers (30%) Average export numbers (40%) Poor export numbers (15%)	<ul style="list-style-type: none"> • Hail is a local weather condition that can severely impact crop yield and affect prices. • Better than expected export numbers can have a positive influence on market prices. • Poor export numbers will have a negative influence on market prices. • Price seasonality trends downward.
Risk Management Strategy Decisions		
Decision 1: Forward price wheat. Decision 2: Forward price calves. Post Period Decision: Sell wheat. You can sell wheat that you have in on-farm inventory at the current cash price.		
Year 2		
Period 5	Risk and Probability of Occurrence	Impact
Oct. 1 to Dec. 31	Same as Year 1.	Same as Year 1.
Risk Management Strategy Decisions		
Decision 1: Buy (+) or sell (-) hay. Decision 2: Purchase crop insurance for wheat. You can choose from among seven crop insurance alternatives for your wheat crop in Year 2. The default choice of 65% Crop Revenue Protection is included in expenses and was in place for Year 1 of the simulation. You can keep it in Year 2 with no change in expenses. Crop insurance alternatives that reduce protection will reduce expenses in Year 2 by the negative amounts shown and alternatives that increase protection will increase expenses in Year 2 by the positive amounts shown.		
(cont.)		

Period 5	Risk Management Strategy Decisions	
Oct. 1 to Dec. 31 (cont.)	Decision 3: Apply supplemental Nitrogen fertilizer. You can add extra nitrogen fertilizer to your wheat crop. Yield impact will depend upon precipitation levels during the period from April to June. With average to good precipitation, extra fertilizer will add three to seven percent to wheat yield. Poor precipitation may decrease yields one to two percent.	
Period 6	Risk and Probability of Occurrence	Impact
Jan. 1 to Mar. 31	Same as Year 1. Risk Management Strategy Decisions Decision 1: Forward price wheat Decision 2: Buy (+) or sell (-) hay. Decision 3: Sell wheat. Post Period Decision: Sell wheat.	Same as Year 1.
Period 7	Risk and Probability of Occurrence	Impact
Apr. 1 to Jun. 30	<u>Precipitation risk</u> Poor precipitation (15%) Average precipitation (69%) Good precipitation (12%) Too much precipitation (4%) <u>Corn planting intentions</u> Higher than expected (17%) As expected (66%) Lower than expected (17%)	<ul style="list-style-type: none"> • Poor precipitation will have a negative impact on crop yields and a positive impact on prices. • Good precipitation will have a positive impact on crop yields and a negative impact on prices. • Yield impact will be affected by fertilizer rates. • Too much precipitation causes diseases. • High corn planting intentions will negatively influence the price of alternative feeds and positively influence calf prices. • Low corn planting intentions will positively influence the price of alternative feeds and negatively influence calf prices.
	Risk Management Strategy Decisions Decision 1. Forward price calves. Decision 2: Forward price wheat Decision 3: Buy (+) or sell (-) hay. Post Period Decision: Sell wheat.	
Period 8	Risk and Probability of Occurrence	Impact
Jul. 1 to Sep. 30	Same as Year 1. <u>U.S. wheat production</u> Higher than expected (10%) As expected (60%) Slightly lower than expected (25%) Significantly lower than expected (5%)	Same as Year 1. <ul style="list-style-type: none"> • Better than expected production numbers will have a negative influence on wheat prices. • Poor production numbers will have a positive influence on wheat prices. • Price seasonality trends upward for hay.
	Risk Management Strategy Decisions Decision 1. Forward price calves. Decision 2: Forward price wheat Decision 3: Buy (+) or sell (-) hay.	
Game End	Hay, wheat, and calf inventories are automatically adjusted to zero by selling (or buying) at the ending cash price.	



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