

## Profit Farms Wheat Marketing Case Study Version 1.2

### **Instructor's Guidelines**

The objective of the marketing case-farm exercise is to allow participants to use alternative cash-based and futures-based wheat pricing methods and to evaluate the effectiveness of these pricing alternatives as a risk management tool under varying market conditions. There is no "right" answer as to how the Profits should market their wheat. The outcome should be judged on how well it met the participant's objectives and whether the marketing tools worked as expected. In the current version of the case farm, the Profits carry Multiple Peril Crop Insurance on the wheat crop. Since the case farm problem starts in January, the closing date for buying MPCl has already past. The decision whether to carry crop or revenue insurance will be an option for participants in a future version of this case farm. They will choose the type and level of coverage.

The marketing case study is composed of the following:

- 1) Case farm background and current market situation
- 2) Wheat marketing ledgers
  - a) New crop wheat pricing status sheet
  - b) Cash sales
  - c) Futures pricing
  - d) Options pricing
- 3) Crop, weather and current market situation reports
  - a) January 15
  - b) March 31
  - c) June 30
  - d) August 15
  - e) October 15
- 4) Crop sales summary sheet
- 5) Income statement

The case study will take at least three hours to complete, allowing time for discussion. Participants should be encouraged to work in teams, but can work independently. Teams should include no more than four participants. Even if they work as a team, participants can utilize different marketing alternatives and track their decisions independently. The case farm description provides background on the Profit Farm. Two *Introduction to Profit Farms* overheads are available to the instructor to introduce the case farm and to summarize the key points. There are overheads for all the worksheets.

The "New Crop Wheat Pricing Status Sheet" should be used to track how much of the projected new crop wheat is priced, how it is priced and how much is unpriced. After participants draw their yield and production, they



can quickly determine whether they over sold and how much wheat will go to on-farm storage. After recording their October sales, they can determine how much wheat will be placed on the end-of-year balance sheet.

The participants should track their wheat pricing decisions using the wheat marketing ledgers. There is a separate sheet for cash-based, futures-based and options-based pricing or sales. Participants should keep the sheets current; recording their sales or pricing decisions before the next market situation report is distributed. Participants will also need to summarize the sales on each sheet. This information will be transferred to the crops sales summary sheet. You should use the overheads for each worksheet to demonstrate how they should be used.

Crop, weather and market information sheets provide current market information at Portland and the local cash market bid. Futures market and option information is also provided. Alternative pricing outcomes can and should be evaluated by the participants on the crop, weather and market information sheets. These sheets are distributed sequentially, allowing 15 to 25 minutes for the participants to make and record their marketing decisions.

Participants do not need to make marketing decisions about the barley crop.

Participants do not need to consider market transaction costs when they calculate the initial gain/loss per bushel for futures and options using the marketing ledger. Hedging transaction costs are calculated on the bottom of the Options Pricing sheet using \$.02 per bushel for futures and \$.01 per bushel for options.

Participants will not know their wheat yield until August. The yields should be drawn from a pool using one or multiple columns from the Crop Yield Sheet, depending on the size of the group. The ten yields in each column of the Crop Yield Sheet roughly match the ten-year yield history provided in the write-up. An alternative to using more than one column of numbers is to assign the same yield when it is drawn to multiple individuals or groups. The Crop Sales Summary Sheet and the Income Statement should be distributed after participants complete their October pricing decisions.

The farm does carry 65 percent Multiple Peril Crop Insurance with a \$3.65 price election. The yield will have to drop below 40 bushels before an indemnity will be paid. Only the 35-bushel yield triggers an indemnity payment.

$$\begin{array}{rcl} \text{Owned Land: } (40 \text{ bu} - 35 \text{ bu}) \times \$3.65 \times 400 \text{ acres} & = & \$7,300 \\ \text{Leased Land: } (40 \text{ bu} - 35 \text{ bu}) \times .67 \times \$3.65 \times 100 \text{ acres} & = & \$1,215 \\ \hline \text{Total Indemnity Payment} & & \$8,515 \end{array}$$

October is the last month in which participants can make a marketing or pricing decision. All unsold wheat will be placed on the ending year balance sheet. The change in the beginning and ending inventory will then be used to calculate an accrual-adjustment to the cash income.

**Market price summary for instructor**

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<b>Cash prices</b>	<b>Jan 15</b>	<b>Mar 31</b>	<b>Jun 30</b>	<b>Aug 15</b>	<b>Oct 15</b>	<b>Dec 30</b>
Portland cash	\$4.05	\$3.80	\$3.95	\$3.45	\$3.50	\$3.95
Local cash	\$3.55	\$3.30	\$3.45	\$2.95	\$3.00	\$3.45
Portland cash forward–Aug.	na	\$3.50	\$3.65			
Local cash forward–Aug.	na	\$3.00	\$3.15			
Local basis–Sept.				–\$10.00		

**CBOT futures**

May				
July				
September	335.00	321.00	331.00	305.00
December	343.00	328.00	339.00	320.00

**CBOT option premiums**

Sep 290 put		\$7.50		.25
Sep 300 put	\$9.25	\$11.50	\$2.50	.50
Sep 310 put	\$13.50	\$15.25	\$5.75	\$5.25
Sep 320 put	\$17.50	\$20.00	\$8.75	\$15.00
Sep 330 put	\$19.50	\$27.00	\$11.75	\$25.00
Sep 340 put	\$25.50	\$36.00	\$18.75	\$35.00
Sep 350 put			\$26.25	\$45.00
Sep 360 put				
Sep 370 put				

**Crop yield Sheet**

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Yld = 35 bu. Total = 16,333 bu.	Yld = 35 bu. Total = 16,333 bu.	Yld = 35 bu. Total = 16,333 bu.
Yld = 45 bu. Total = 21,000 bu.	Yld = 45 bu. Total = 21,000 bu.	Yld = 45 bu. Total = 21,000 bu.
Yld = 55 bu. Total = 25,667 bu.	Yld = 55 bu. Total = 25,667 bu.	Yld = 45 bu. Total = 25,667 bu.
Yld = 55 bu. Total = 25,667 bu.	Yld = 55 bu. Total = 25,667 bu.	Yld = 45 bu. Total = 25,667 bu.
Yld = 65 bu. Total = 30,333 bu.	Yld = 65 bu. Total = 30,333 bu.	Yld = 65 bu. Total = 30,333 bu.
Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.
Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.
Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.
Yld = 85 bu. Total = 39,667 bu.	Yld = 85 bu. Total = 39,667 bu.	Yld = 85 bu. Total = 39,667 bu.

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Note: Total yield does not include landlord's share of wheat production.

## **Purpose**

The purpose of the workshop is to allow you to use and evaluate risk management tools and strategies using a case farm example. You can price wheat using both cash-based and futures-based alternatives. At the end of the workshop you will be asked to assess the effectiveness of these tools in managing price under the scenario presented.

## **Objective**

Your objective is to maximize the net returns from marketing the Profit Farm's wheat crop, while meeting the farm's cash flow needs and preserving the farm's net worth position.

## **Background**

The farm is operated by Max and Marlene Profit. The Profits are both 45 years old, have been married 24 years, and have three children—two sons, age 22 and 15, and a daughter, age 16. The oldest son is a recent college graduate and works off the farm. Marlene teaches part-time at the nearby elementary school.

A winter wheat–spring barley–summer fallow rotation is followed: 500 acres in wheat, 500 acres in barley and 500 acres in summer fallow. The Profits own 1,200 acres and lease an additional 300 on a crop-share basis with the Profits getting two-thirds of the crop and paying two-thirds of the fertilizer and crop insurance costs, and 100 percent of all the remaining operating expenses. Winter wheat yields have averaged 61 bushels over the past 10 years, ranging between 37 and 82 bushels per acre. Barley yields have averaged 53 bushels (1.26 tons) over the past 10 years, varying between 29 bushels (.7 tons) and 88 bushels (2.1 tons).

**Table 1. Profit Farms—Historic yields for winter wheat and barley**

<b>Year</b>	<b>Winter Wheat Bu./Acre</b>	<b>Barley Tons/Acre</b>	<b>Barley Bu./Acre</b>
19X-7	56.0	0.7	29.2
19X-6	73.2	1.4	58.3
19X-5	37.2	1.2	50.0
19X-4	72.2	0.8	33.3
19X-3	48.0	1.3	54.2
19X-2	54.9	0.9	37.5
19X-1	82.0	2.1	87.5
19X0	72.2	1.1	45.8
19X1	57.5	1.3	54.2
19X2	59.6	1.8	75.0
10-yr. Average	61.3	1.26	52.5

The Profit Farm has a strong solvency position with \$925,000 in net worth and a debt-asset ratio of 32 percent. Declining commodity prices have reduced farm income in recent years and projecting a positive cash flow has been difficult. The business is operated as a sole proprietorship. Max and Marlene pay taxes on a cash, calendar year basis. High priority, long-term goals shared by Max and Marlene include: 1) operating the farm at a profitable level, 2) realizing a comfortable standard of living for the family, 3) providing substantial financial assistance for the kids' college education, 4) funding a retirement program, and 5) passing the farm along to the children, should they want the opportunity to farm.

The farm is enrolled in the seven-year farm program. The AMTA payment for the 19X3 crop will be received in 19X3 with an expected payment of \$.63 and \$.24 per bushel for wheat and barley, respectively. This payment is made on the program yield, but applies to only 85 percent of base acreage. The Profit Farm's program yield is 58 bushels on wheat and 48 bushels on barley. The projected AMTA payment is \$19,600.

### **Instructions**

It's mid January 19X3. As the owner/manager of Profit Farm, you will decide when to market the 19X2 wheat crop still held in inventory. You will also determine how and when to price the 19X3 wheat production from 400 owned acres and 100 crop share acres. You can ignore the barley crop. The 50 tons of barley held in inventory will be sold in late January as planned for \$87 per ton (\$4.35 per cwt). Eighty percent of the 624-ton (12,480 bushel) X3 barley crop will be sold at harvest (August).

You have five opportunities to make wheat marketing decisions:

- January 15
- March 31
- June 30
- August 15
- October 15

New market information will be provided for each marketing decision. All wheat not sold on or before October 15 will be placed on the December 31, 19X3 balance sheet inventory and valued at the end-of-year price.

The marketing alternatives on the two wheat crops include:

- 1) Selling 19X2 wheat (inventory)
  - a) cash market on January 15, 0 to 5,020 bushels
  - b) default cash market sale in March, all X2 wheat not sold on January 15th

- 2) Pre-harvest Pricing/Selling 19X3 wheat crop:
- a) cash market on August 15 or October 15.
  - b) forward cash contract in March or June for August 15 delivery
  - c) hedge by selling September futures contract(s) in January, March or June.
  - d) hedge by purchasing a September put option in January, March or June.

Combinations of cash, forward cash and futures can be used to price your expected production. However, you cannot sell/price more than the expected production (31,000 bushels) before harvest using any combination of the various marketing alternatives.

You can lift a hedge prior to harvest by buying back futures contracts and/or selling any put options you purchased prior to the contract/option expiration. **You may not, however, cancel forward cash contracts.**

Forward cash contracts that are in excess of actual production will be settled by purchasing the shortage at the August 15 cash price. Cash forward contracting must be done in 1,000-bushel increments. Hedging and options involve 5,000-bushel contracts. Use of the hedging alternative will cost 2 cents per bushel for commissions and interest on margins. Use of options will involve a 1-cent per bushel commission.

You will not know your actual wheat yield until harvest (August) when you draw a yield from a pool that approximates the historical yields on the Profit's farm. The total yield on the yield slip shows what you can sell since it does not include the landlords share. The farm carries 65 percent yield coverage using Multiple Peril Crop Insurance with a \$3.65 price election.

Each individual or team will track their marketing decisions on worksheets. Record your marketing decisions on the marketing ledger. You will calculate the net selling price for the X3 wheat crop sold in 19X3. You will also calculate accrual adjusted farm income.

Each individual or team will be asked to critique their marketing decisions at the end of the exercise.

“Did you make the best use of the market information available to you?”

“Did your selection of marketing tools do a reasonably good job of managing risk?”

“Did your risk management strategy fit the financial needs of the Profit Farm?”



The following are included for your information:

- The December 31, 19X2 Balance Sheet
- 19X2 Income Statement
- 19X3 Projected Cash Flow Budget
- Cash operating expenses for 19X2
- A wheat enterprise budget for Profit Farms, owned ground
- A wheat enterprise budget for Profit Farms, leased ground
- Market situation reports: January, March, June, August and October
- Current information on new crop wheat market conditions:
  - *current cash prices for Portland and local elevators*
  - *current forward cash contract prices for harvest delivery (if available)*
  - *CBOT September futures prices (if appropriate)*
  - *option premiums for CBOT September puts (if appropriate)*

### **Suggested Procedure**

Evaluate cash flow needs, calculate breakeven prices and yields for wheat, consider marketing alternatives and develop a marketing plan.



**Table 3. Income Statement for Max and Marlene Profit Year Ending 12/31/19**

<b>REVENUES</b>		
Cash grain sales	\$190,812	
Inventory change (Schedule 5)	<u>-39,580</u>	\$151,232
Change in accounts receivable (Schedule 5)		9,000
Government payments:AMTA		<u>21,135</u>
Gross revenue		<u>\$181,367</u>
<b>EXPENSES</b>		
Cash operating expenses (Schedule 6)	\$95,644	
Accrual adjustments: Unused assets (Schedule 7)	-1,719	
Unpaid items (Schedule7)	721	
Depreciation: Machinery	33,643	
Buildings & improvements	<u>2,000</u>	
Total Operating Expenses		\$130,289
Interest: Cash	\$27,139	
Change in accrued interest (Schedule 8)	<u>-772</u>	26,367
Net farm income from operations		\$24,711
Gain/loss sale of farm capital assets		<u>3,500</u>
<b>NET FARM INCOME</b>		<b>\$28,211</b>
Nonfarm income		
Wages	\$15,780	
Interest & dividends	<u>770</u>	
Total nonfarm income		<u>16,550</u>
<b>NET INCOME, BEFORE TAXES</b>		<b>\$44,761</b>
Income & social security taxes, cash	\$4,394	
Change in accrued tax & deferred tax (Schedule 9)	<u>+4,329</u>	<u>-8,723</u>
<b>NET INCOME, AFTER TAXES</b>		<b>\$36,038</b>

**Table 4. Income Statement Supporting Schedules for Max and Marlene Profit Year Ending 12/31/12**

**Schedule 5: Revenue Accrual Adjustments**

Item	Beginning balance sheet	Ending balance sheet	Difference
Stored crops			
Winter wheat	-\$48,750	+\$17,570	-\$31,180
Barley	-12,750	+4,350	-8,400
Total			<u>-\$39,580</u>
Accounts receivable	-0	+\$9,000	+\$9,000

**Schedule 6: Cash Operating Expenses**

Item	\$
Chemicals	\$10,185
Crop insurance	2,325
Fertilizer	31,329
Fuel and lubrication	10,205
Hired labor	5,000
Insurance (property and liability)	2,012
Miscellaneous	10,120
Repairs	3,888
Seed	5,150
Taxes, personal and real estate	15,430
<b>Total</b>	<u><b>\$95,644</b></u>



Table 5. Cash Flow Budget for Max and Marlene Profit Year Ending 12/31/X3

Item	Actual 'X2	Projected 'X3	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. Beginning cash balance	\$9,610	\$21,664	\$21,664	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Operating receipts:														
2. Crops	190,812	147,769	25,315					61,227		61,227				
3. Government payments	21,135	19,000								19,000				
4. Other														
5. Capital receipts: Machinery, real estate	3,500	3,500												3,500
6. Non-farm Income: Off-farm wages	15,780	15,777	1,753	1,753	1,753	1,753	1,753				1,753	1,753	1,753	1,753
7. Interest & dividends	770	1,317	152	165	100	100	100	100	100	100	100	100	100	100
8. <b>TOTAL CASH AVAILABLE</b> (add lines 1-7)	241,607	209,027	48,884	6,918	6,853	6,853	6,853	5,100	5,100	66,327	68,080	25,853	6,853	10,353
Operating expenses:														
9. Chemicals	10,185	10,185				8,125		2,060						
10. Custom									10,721					
11. Fertilizer	31,329	31,329				15,623					4,985			
12. Gas, fuel, oil	10,205	10,205	250	250	250	1,800	250	250	1,105	3,100	2,000	250	250	450
13. Insurance	4,337	4,337			709				1,500	3,500	1,616			2,012
14. Labor hired	5,000	5,000												
15. Marketing & transportation	2,106	2,106	720							693	693			
16. Rents & leases														
17. Repairs	15,430	15,430	2,500	2,500	500	1,000	500	250	250	1,500	3,200	250	480	2,500
18. Seed	10,120	10,120			5,950						4,170			
19. Storage														
20. Supplies	850	850	150	50	50	50	50	50	100	100	100	50	50	50
21. Taxes: real estate & personal property	3,888	3,888				1,944						1,944		
22. Misc.	2,194	2,194	183	183	183	183	183	183	183	183	183	183	183	181
23. <b>Total cash operating expenditures</b> (add lines 9-22)	95,644	95,644	3,803	2,983	7,642	28,725	983	2,793	13,859	9,076	16,947	2,677	963	5,193

**Table 5. Cash Flow Budget** *continued*

Item	Actual 'X2	Projected 'X3	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
24. Capital expenditures: Machinery & equipment		\$15,000												\$15,000
25. Building & improvements														R. weeder
26. Other expenditures: Family living	42,596	43,000	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,587
27. Investments	2,000	2,000		2,000										
28. Income tax & social security	4,394	20,163		20,163	3,240							2,537	14,936	2,717
29. Term debt payments: Principal	24,027	27,395		3,965								13,525	4,274	1,189
30. Interest	23,155	20,892		1,312	592							22,322	23,756	27,686
31. <b>TOTAL CASH REQUIRED</b> (add lines 23-30)	191,816	224,094	7,386	34,006	15,057	32,308	4,566	6,376	17,442	12,659	20,530	22,322	23,756	27,686
32. <b>CASH AVAILABLE LESS CASH REQUIRED</b> (add lines 23-30)	49,791	-15,067	41,498	-27,088	-8,204	-25,455	2,287	-1,276	-12,342	53,668	47,550	3,531	-16,903	-17,333
33. Inflows from savings	0	15,482		15,000							482			
34. Cash position before borrowing	49,791	415	41,498	-12,088	-8,204	-25,455	2,287	-1,276	-12,342	53,668	48,032	3,531	-16,903	-17,333
35. Money to be borrowed: Operating loans		122,783		17,088	13,204	30,455	2,713	6,276	17,342			1,469	21,903	12,333
36. Term debt		10,000												10,000
37. Operating loan payments: Principal		119,148	32,070							44,402	42,676			
38. Interest		4,895	273							4,266		356		
39. Outflows to savings		4,155	4,155											
40. Ending cash balance	21,664	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Loan balances (at end of period):		35,705		17,088	30,292	60,747	63,460	69,736	87,078	42,676		1,469	23,372	35,705
41. Current year's operating loan														
42. Previous year's operating loan	32,070	232,163	249,558	245,593	242,353	242,353	242,353	242,353	242,353	242,353	242,353	239,816	224,880	232,163
43. Term debt loans	249,558	267,868	249,558	262,681	272,645	303,100	305,813	312,089	329,431	285,029	242,353	241,285	248,252	267,868
44. Total loans	281,628													
Consistency check:														
45. Total inflows (8+33+35+36)	48,884	48,884	48,884	39,006	20,057	37,308	9,566	11,376	22,442	66,327	68,562	27,322	28,756	32,686
45. Total outflows (31+37+38+39+40)	48,884	48,884	48,884	39,006	20,057	37,308	9,566	11,376	22,442	66,327	68,562	27,322	28,756	32,686
45. Budgeting error (45-46)		0	0	0	0	0	0	0	0	0	0	0	0	0

**Table 6. Summary of Projected Economic Costs Per Acre for Winter Wheat and Summer Fallow, Owned and Leased Land**

Item	Cost per acre	
	Owned	Leased
<i>Variable costs</i>		
Seed (60 lbs. @ 13.9¢)	\$8.34	\$8.34
Fertilizers:		
Nitrogen, Aqua (70 lbs. @ 31.1¢)	21.77	14.59
Nitrogen, Sol. 32 (10 lbs. @ 47.2¢)	4.72	3.16
Phosphorous, 10-34-0 (10 lbs. @ 46.6¢)	4.66	3.12
Sulfur, 12-0-0-26 (10 lbs. @ 24.6¢)	2.46	1.65
Herbicides:		
Roundup (s.f.) (12 oz. @ 42¢)	5.04	5.04
Harmony Extra (1/3 oz. @ \$16.05)	5.35	5.35
MCPA (1 pt. @ \$2.55)	1.28	1.28
Crop insurance	3.46	2.32
Fuel & lubrication (\$10,205 whole farm x .52 allocation ÷ 500 acres)	10.61	10.61
Repairs (\$15,430 whole farm x .52 allocation ÷ 500 acres)	16.05	16.05
Hired labor (\$5,000 whole farm x .52 allocation ÷ 500 acres)	5.20	5.20
Operator labor (2,500 hrs. x \$10 x .52 allocation ÷ 500 acres)	26.00	26.00
Miscellaneous (\$5,150 whole farm x .52 allocation ÷ 500 acres)	5.36	5.36
Interest on operating capital (total variable costs ÷ 2 x 10%)	6.02	5.41
Total variable costs	<u>\$126.32</u>	<u>\$113.48</u>
<i>Fixed costs</i>		
Depreciation (\$33,643 whole farm x .52 allocation ÷ 500 acres)	\$34.99	\$34.99
Personal property taxes & insurance on machinery ((\$5,255 whole farm x .52 allocation ÷ 500 acres)	5.47	5.47
Real estate taxes (\$3.24 per acre x 2 acres)	6.48	0.00
Interest on debt		
Machinery (\$7,367 total interest x .52 allocation ÷ 500 acres)	7.66	7.66
Land (\$13,525 total interest ÷ 1,200 acres x 2 acres)	22.54	0.00
Interest on equity		
Machinery (\$213,500 mkt. – \$116,651 debt x 10% interest x .52 allocation ÷ 500 acres)	10.07	10.07
Land (\$937,500 mkt. real estate – \$150,000 bldgs. – \$154,575 debt x 4% interest ÷ 1,200 acres x 2 acres)	42.20	0.00
Management (65 bu. x \$3.25 mkt. x 7%)	14.79	14.79
Total fixed costs	<u>\$144.20</u>	<u>\$72.98</u>
TOTAL ECONOMIC COSTS PER ACRE	\$270.52	\$186.46
TOTAL ECONOMIC COSTS PER BUSHEL		
@ 65 bu. owned / 43.3 bu. leased	\$4.16	\$4.31

**Table 7. Summary of Projected Cash Expenditures Per Acre for Winter Wheat and Summer Fallow, Owned and Leased Land**

Item	\$ per acre	
	Owned	Leased
<i>Variable costs</i>		
Seed	\$8.34	\$8.34
Fertilizer	33.61	22.52
Herbicides	11.67	11.67
Crop insurance	3.46	2.32
Fuel & lubrication (\$10,205 whole farm x .52 allocation ÷ 500 acres)	10.61	10.61
Repairs (\$15,430 whole farm x .52 allocation ÷ 500 acres)	16.05	16.05
Hired labor (\$5,000 whole farm x .52 allocation ÷ 500 acres)	5.20	5.20
Miscellaneous (\$5,150 whole farm x .52 allocation ÷ 500 acres)	5.36	5.36
Interest on operating capital loan	5.18	4.71
Total variable costs	\$99.48	\$86.78
<i>Fixed costs</i>		
Personal property taxes & insurance on machinery (\$5,255 whole farm x .52 allocation ÷ 500 acres)	\$5.47	\$5.47
Real estate taxes	6.48	0
Interest on machinery & land debt	30.20	7.66
Total fixed costs	\$42.15	\$13.13
<i>Other expenditures</i>		
Principal on term debt		
Machinery (\$24,858 whole farm x .52 alloc. ÷ 500 acres)	\$25.85	\$25.85
Land (\$2,537 ÷ 1,200 acres x 2 acres)	4.23	0
Personal withdrawals (\$45,000 whole farm x .52 allocation ÷ 500 acres) <sup>a</sup>	46.80	46.80
Total other expenditures	\$76.88	\$72.65
TOTAL CASH EXPENDITURES PER ACRE	\$218.51	\$172.56
TOTAL CASH EXPENDITURES PER BUSHEL		
@ 65 bu. owned / 43.3 bu. leased	\$3.36	\$3.99

<sup>a</sup> Does not include income and social security taxes.

**Form 1. Wheat Marketing Ledger—New Crop Wheat Pricing Status Sheet**

	Pre-harvest			Harvest	Post-harvest	
	January	March	June	August	October	December
<b>Expected production bushels</b>	31,000			—	—	—
<b>Priced: bushels</b>						
<b>Forward cash</b>	NA			—	—	—
<b>Futures</b>				—	—	—
<b>Options</b>				—	—	—
<b>- Total price</b>				—	—	—
<b>= Un-priced: bushels</b>				—	—	—
<b>Actual production</b>	—	—	—			
<b>- Forward cash and August cash sales</b>	—	—	—		—	—
<b>= Storage</b>	—	—	—		—	—
<b>- Cash sales</b>	—	—	—	—		—
<b>= Inventory</b>	—	—	—	—		

**Form 2. Wheat Marketing Ledger—Cash sales**

*Wheat inventory sales (Old crop—19X2)*

Sale month	Bushels	Price	Total
January	_____	\$3.55	\$_____
March	_____	\$_____	\$_____ (D)
<b>Total</b>	5,020		

*Forward cash sales for August delivery (New crop—19X3)*

	March 31	June 30	Total
Bid price	_____	_____	X
Quantity	_____	_____	_____ (E)
Total revenue	_____	_____	_____ (F)

*Cash sales (New Crop—19X3)*

	August 15	Oct. 15	Total
Price	_____	_____	X
Quantity	_____	_____	_____ (G)
Revenue	_____	_____	_____ (H)

**Total 19X3 cash market sales = E + G \_\_\_\_\_ Bu. (I)**

### Form 3. Wheat Marketing Ledger—Futures Pricing

CBOT September 19X3 futures January hedge

	January	March	June	August	Total
<b>Futures price</b>	_____	_____	_____	_____	×
<b>Bushels sold</b>	_____	×	×	×	_____
<b>Bushels bought</b>	×	_____	_____	_____	_____
<b>Gain (loss)/bu.</b>		_____	_____	_____	×
<b>Total gain (loss)</b>		_____	_____	_____	_____ (A1)

CBOT September 19X3 futures March hedge

	March	June	August	Total
<b>Futures price</b>	_____	_____	_____	×
<b>Bushels sold</b>	_____	×	×	_____
<b>Bushels bought</b>	×	_____	_____	_____
<b>Gain (loss)/bu.</b>	_____	_____	_____	×
<b>Total gain (loss)</b>	_____	_____	_____	_____ (A2)

CBOT September 19X3 futures June hedge

	June	August	Total
<b>Futures price</b>	_____	_____	×
<b>Bushels sold</b>	_____	×	_____
<b>Bushels bought</b>	×	_____	_____
<b>Gain (loss)/bu.</b>	_____	_____	×
<b>Total gain (loss)</b>	_____	_____	_____ (A3)

**Total futures gain (loss) = A1 + A2 + A3 \_\_\_\_\_ (A)**

Note: Transaction costs are calculated on the Options price sheet.

**Form 4. Wheat Marketing Ledger—Options Pricing**

*CBOT September 19X3 puts January hedge*

	January	March	June	August	Total
<b>Strike price</b>	_____	_____	_____	_____	×
<b>Premium</b>	_____	_____	_____	_____	×
<b>Bushels bought</b>	_____	×	×	×	_____
<b>Bushels sold</b>	×	_____	_____	_____	_____
<b>Gain (loss)/bu.</b>		_____	_____	_____	
<b>Total gain (loss)</b>		_____	_____	_____	_____ (B1)

*CBOT September 19X3 puts March hedge*

	March	June	August	Total
<b>Strike price</b>	_____	_____	_____	×
<b>Premium</b>	_____	_____	_____	×
<b>Bushels bought</b>	_____	×	×	_____
<b>Bushels sold</b>	×	_____	_____	_____
<b>Gain (loss)/bu.</b>		_____	_____	
<b>Total gain (loss)</b>		_____	_____	_____ (B2)

*CBOT September 19X3 puts June hedge*

	June	August	Total
<b>Strike price</b>	_____	_____	×
<b>Premium</b>	_____	_____	×
<b>Bushels bought</b>	_____	×	_____
<b>Bushels sold</b>	×	_____	_____
<b>Gain (loss)/bu.</b>		_____	
<b>Total gain (loss)</b>		_____	_____ (B3)

**Total options gain (loss) = B1 + B2 + B3 \_\_\_\_\_ (B)**

*Hedging transaction adjustment*

A + B = Hedging gain (loss)	\$ _____
– Futures expense: _____ bu. sold × \$.02 =	\$ _____
– Options expense: _____ bu. sold × \$.01 =	\$ _____
= Net hedging gain (loss)	\$ _____ (C)

**Crop and Weather Situation**

Extremely cold weather persists in the Plains as far south as Oklahoma. Even with limited snow cover in many areas, crop damage is expected to be minimal.

Winter wheat and rye seedings: released January 19X3

*Winter wheat and rye: area seeded, United States, 19X1-X3*

Item	Area seeded			Area seeded as percentage of previous crop year		
	1,000 acres			Percent		
	19X1	19X2	19X3	19X1	19X2	19X3
Winter wheat	51,570	49,250	49,650	101	96	101
Rye	1,495	1,605	1,690	07	107	105

**Market Situation—Portland: \$4.05 Local cash: \$3.55**

January’s WASDE report showed only minor revisions to December’s report. Domestic use is unchanged from December. Projected U.S. exports are down 5 million bushels and production is unchanged, leaving ending stocks higher by a like amount. The range on USDA’s projected average farm level wheat price is down \$.05 from last month at \$3.45 to \$3.65.

*U.S. wheat supply, use and ending stocks. (million bushels)*

	19X2	19X1	19X0	5-year avg.
Supply	2,945	3,036	2,975	2,918
Use	2,435	2,456	2,350	2,395
Ending stocks	510	580	625	523
Stocks-to-use ratio	21%	24%	27%	21.9%

Projected global supplies are up from the previous month, primarily because of a larger projected Australian crop. The damage to Australia’s wheat crop from the late spring frost appears to be less than initially projected. Projected use is also up as China’s imports are projected up 2 million metric tons above December estimates.

*World wheat production, use and ending stocks. (million metric tons)*

	19X2/X3	19X1/X2	19X0/X1	5-year avg.
Production	550	540	535	563.3
Use	548	555	560	565.3
Ending stocks	120	118	133	122.3
Stocks-to-use ratio	22%	21%	24%	21.6%

Decision: Sell wheat in inventory or hold until March.

**Form 5. January 15 continued**

---

Examine pricing opportunities for wheat to be delivered at harvest

Forward cash contract bid: August delivery = na  
 CBOT Sep wheat futures = 335.00  
 Expected basis = -10

Future price + Exp. harvest basis = Exp. net price  
 \_\_\_\_\_

*CBOT options*

<b>Strike price</b>	<b>Put premium</b>
Sep 290	
Sep 300	9.25
Sep 310	13.50
Sep 320	17.50
Sep 330	19.50
Sep 340	25.50

Strike price + Exp. harvest basis - Premium = Exp. net price  
 \_\_\_\_\_  
 \_\_\_\_\_

Should I sell some wheat today? Yes/No Quantity \_\_\_\_\_

How? \_\_\_\_\_

Why? \_\_\_\_\_

### Crop and Weather Situation

- Prospective plantings: Released March 30, 19X3
- Corn growers intend to plant 72.0 million acres of corn for all purposes in 19X3, down 8.9 percent from last year and 1.4 percent above 19X1.
- Winter wheat seeded area totals 49.8 million acres, up slightly from the previous estimate and 1 percent above last year.
- Durum wheat intended plantings are 3.4 million acres, up 21 percent from last year.

### Market Situation—Portland: \$3.80 Local cash: \$3.30

Projected U.S. ending stocks for 19X2/X3 are up 15 million bushels from last month because of a reduction in exports and a slight upward revision in production. The smaller projected exports are due to a slower than expected pace of sales and shipments to date. The projected range on USDA's average farm level wheat price is down 5 cents on each end to \$3.40 to \$3.60.

*U.S. wheat supply, use and ending stocks. (million bushels)*

	19X2	19X1	19X0	5-year avg.
Supply	2,948	3,036	2,975	2,918
Use	2,423	2,456	2,350	2,395
Ending stocks	525	580	625	523
Stocks-to-use ratio	22%	24%	27%	21.9%

The 19X2/X3 world production and ending stocks are up from last month, with a larger Australian crop accounting for most of the gains. Forecast imports are down for Russia and several other countries, but up for Morocco. On the export side, projected exports are higher for Eastern Europe and India, but lower for the EU and the United States.

*World wheat production, use and ending stocks. (million metric tons)*

	19X2/X3	19X1/X2	19X0/X1	5-year avg.
Production	554	540	535	563.3
Use	546	555	560	565.3
Ending stocks	126	118	133	122.3
Stocks-to-use ratio	23%	21%	24%	21.6%

**Form 6. March 31 contin ued**

---

Examine pricing opportunities for wheat to be delivered at harvest

Forward cash contract bid for August 15 delivery

= Portland \$3.50 Local \$3.00

CBOT Sep wheat futures = 321.00

Expected basis = -10

$$\begin{array}{rccccccc} \text{Future price} & & + & & \text{Exp. harvest basis} & & = & & \text{Exp. net price} \\ \hline & & & & & & & & \hline \end{array}$$

*CBOT options*

<b>Strike price</b>	<b>Put premium</b>
Sep 290	7.50
Sep 300	11.50
Sep 310	15.25
Sep 320	20.00
Sep 330	27.00
Sep 340	36.00

$$\begin{array}{rccccccc} \text{Strike price} & + & \text{Exp. harvest basis} & - & \text{Premium} & = & \text{Exp. net price} \\ \hline & & & & & & \hline \hline & & & & & & \hline \end{array}$$

Should I sell some wheat today? Yes/No      Quantity \_\_\_\_\_

How? \_\_\_\_\_

Why? \_\_\_\_\_

**Form 7. June 30**

With planting of 19X3/X4 crops still underway in the Northern Hemisphere and several months away in the Southern Hemisphere, early-season projections in this report are highly tentative. Methods used to project U.S. acreage and yields are noted in the footnotes of each table. Today's National Agricultural Statistics Service forecasts are used for U.S. winter wheat.

*U.S. Wheat Supply and Use<sup>a</sup>*

Item	19X1/X2	19X2/X3 Est.	19X3/X4 Projections	
			May	June
<b>Million acres</b>				
Area				
Planted	72.2	70.0	70.7 <sup>c</sup>	70.5 <sup>c</sup>
Harvested	62.7	61.4	61.4 <sup>c</sup>	60.9 <sup>c</sup>
<b>Bushels</b>				
Yield per harvested acre	38.2	37.8	37.8 <sup>c</sup>	38.5 <sup>c</sup>
<b>Million Bushels</b>				
Beginning stocks	531	580	525	545
Production	2,396	2,321	2,323	2,345
Imports	109	78	100	100
Supply, total	3,036	2,979	2,948	2,990
Food	872	855	875	865
Seed	96	98	98	98
Feed and residual	272	300	250	250
Domestic, total	1,240	1,233	1,233	1,220
Exports	1,228	1,201	1,200	1,200
Use, total	2,456	2,434	2,423	2,420
Ending stocks, total	580	545	525	570
Farmer-owned reserve	6	0		
CCC inventory	150	142		
Free stocks	424	369		
Outstanding loans	67	50		
Average farm price (\$/bu.) <sup>b</sup>	3.26	3.50	3.35–3.65	3.25–3.65

Note: Totals may not add due to rounding

<sup>a</sup> Marketing year beginning June 1.

<sup>b</sup> Marketing year weighted average price received by farmers.

<sup>c</sup> For May planted acres reported in March 31, 19X3, Prospective Plantings. Harvested acres for spring wheat (including durum) projected using harvested-to-planted ratios by state for previous ten years (excluding high and low years). Projected yields are an average for previous ten years (excluding high and low years). For June, winter wheat harvested acreage and yield reported in June 12 Crop Production. Planted and harvested acres for spring wheat have been adjusted because of cold, wet conditions in the Northern Plains.

**Crop and Weather Situation**

Wheat yields in Texas and Oklahoma exceed earlier estimates. Crop conditions in the Northern Plains show 80 percent of the wheat crop rated as good to excellent, and only 4 percent rated poor.

**Market Situation—Portland: \$3.95 Local cash: \$3.45**

Projected 19X3/X4 U.S. wheat supplies are up 42 million from last month because of larger carryin stocks and a slightly bigger 19X3 crop. Projected production is up 20 million bushels from last month, with the survey-based winter wheat forecast up 25 million bushels. A smaller spring wheat crop is projected because of lower planted and harvested acres. The projected range on USDA's 19X3 average wheat price is down 10 cents from last month on the lower end to \$3.25 to \$3.65.

*U.S. wheat supply, use and ending stocks. (million bushels)*

	<b>19X3</b>	<b>19X2</b>	<b>19X1</b>	<b>5-year avg.</b>
Supply	2,989	2,979	3,036	2,918
Use	2,413	2,434	2,456	2,395
Ending stocks	576	545	580	523
Stocks-to-use ratio	24%	22%	24%	21.9%

Projected 19X3/X4 global wheat stocks are up from last month and exceed a year earlier. Global production is up slightly as larger crops in Australia, and Pakistan offset smaller output in China. Global imports are up slightly, with imports up one million metric tons for China and down 500,000 tons for Pakistan.

*World wheat production, use and ending stocks. (million metric tons)*

	<b>19X3/X4</b>	<b>19X2/X3</b>	<b>19X1/X2</b>	<b>5-year avg.</b>
Production	585	560	540	563.3
Use	570	558	555	565.3
Ending stocks	135	121	118	122.3
Stocks-to-use ratio	24%	22%	21%	21.6%

**Form 7. June 30 continued**

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Examine pricing opportunities for wheat to be delivered at harvest  
 Forward cash contract bid for August 15 delivery

CBOT Sep wheat futures = Portland -\$3.65 Local -\$3.15  
 = 331.00  
 Expected basis = -10

Future price + Exp. harvest basis = Exp. net price  
 \_\_\_\_\_

*CBOT options*

Strike price	Call premium	Put premium
Sep 300		2.50
Sep 310		5.75
Sep 320		8.75
Sep 330		11.75
Sep 340		18.75
Sep 350		26.25

Strike price + Exp. harvest basis - Premium = Exp. net price  
 \_\_\_\_\_

Should I sell some wheat today? Yes/No Quantity \_\_\_\_\_

How? \_\_\_\_\_

Why? \_\_\_\_\_

**Crop and Weather Situation**

All wheat production is placed at 2.42 billion bushels, up 2 percent over 19X2. Based on August 1 conditions, the U.S. yield is forecast at 41 bushels per acre, the third highest yield on record.

**Market Situation—Portland: \$3.45 Local cash: \$2.95**

Forecast U.S. 19X3 wheat production is down 4 million bushels from last month, but 41 million bushels above the X2 wheat crop. Forecast imports are down 5 million bushels from last month. The smaller supplies are reflected in reduced 19X3 ending stocks, as use projections are unchanged from July. The projected price range is up 5 cents on each end to \$3.30 to \$3.70 per bushel.

*U.S. wheat supply, use and ending stocks. (million bushels)*

	<b>19X3</b>	<b>19X2</b>	<b>19X1</b>	<b>5-year avg.</b>
Supply	2,987	2,979	3,036	2,918
Use	2,420	2,434	2,456	2,395
Ending stocks	576	545	580	523
Stocks-to-use ratio	23%	22%	24%	21.9%

Projected 19X3/X4 global wheat production, use and ending stocks are down from last month. Global production is down 6 million tons from last month as smaller expected crops in Ukraine, India, Kazakstan and Eastern Europe more than offset larger output in China and Canada. Forecast imports are down 1 million tons for China. Forecast exports are down 0.5 million tons for the EU, India and Ukraine, but up 0.5 million for Canada. Projected ending stocks are 12 million tons below last month's below last month's projection.

*World wheat production, use and ending stocks. (million metric tons)*

	<b>19X3/X4</b>	<b>19X2/X3</b>	<b>19X1/X2</b>	<b>5-year avg.</b>
Production	581	563	540	563.3
Use	573	560	555	565.3
Ending stocks	127	120	118	122.3
Stocks-to-use ratio	22%	22%	21%	21.6%

**Form 8. August 15 continued**

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Examine pricing opportunities for wheat to be delivered at harvest

CBOT Sep wheat futures = 305.00

*CBOT options*

<b>Strike price</b>	<b>Put premium</b>
Sep 300	.25
Sep 310	.50
Sep 320	5.25
Sep 330	15.00
Sep 340	25.00
Sep 350	35.00
Sep 360	45.00

Should I sell some wheat today? Yes/No    Quantity \_\_\_\_\_

How? \_\_\_\_\_

Why? \_\_\_\_\_

**Crop and Weather Situation**

Corn grain production is forecast at 9.4 billion bushels, virtually unchanged from last month and up 4 percent from 19X2. Yields are expected to average 131.0 bushels per acre, unchanged from last month but up 4.0 bushels from a year ago.

**Market Situation—Portland: \$3.50 Local cash: \$3.00**

Forecast U.S. 19X3 wheat production is unchanged from last month, but 39 million bushels above the X2 wheat crop. Forecast imports are unchanged from last month. Ending stocks are down slightly, but stocks-to-use ratio remained unchanged. The projected farm level wheat price range is up 5 cents on each end to \$3.40 to \$3.80 per bushel.

*U.S. wheat supply, use and ending stocks. (million bushels)*

	<b>19X3</b>	<b>19X2</b>	<b>19X1</b>	<b>5-year avg.</b>
Supply	2,986	2,979	3,036	2,918
Use	2,420	2,434	2,456	2,395
Ending stocks	566	545	580	523
Stocks-to-use ratio	23%	22%	24%	21.9%

Projected 19X3/X4 global wheat production, use and ending stocks are down slightly from last month. Global production is down 4 million tons from last month as smaller expected crops in Eastern Europe more than offset larger output in China. Forecast imports are down 1 million tons for China. Forecast exports are down 0.5 million tons for the EU, India and Ukraine, but up 0.5 million for Canada. Projected ending stocks are 5 million tons below last month's projection.

*World wheat production, use and ending stocks. (million metric tons)*

	<b>19X3/X4</b>	<b>19X2/X3</b>	<b>19X1/X2</b>	<b>5-year avg.</b>
Production	575	563	540	563.3
Use	576	560	555	565.3
Ending stocks	119	122	118	122.3
Stocks-to-use ratio	21%	22%	21%	21.6%

**Form 10. Crop Sales Summary Sheet**

*Sales of 19X2 crop*

	<b>Quantity</b>		<b>Price</b>		<b>Revenue</b>
Barley	50 ton	x	\$87	=	\$4,350
Wheat	5,020 bu.			+	\$_____ (D: marketing ledger)
			Total	=	(Y) \$_____

*Forward contract revenue adjustment<sup>a</sup>*

19X3 total wheat production			_____ bu.		
19X3 wheat forward contracted	-		_____ bu. (E: marketing ledger)		
	=		-_____ bu.		
	x		\$2.95		
Forward contract revenue adjustment	=		\$_____		

*19X3 Wheat average sales price (see wheat marketing ledger.)*

Cash sales			\$_____ (H: marketing ledger)		
Forward cash sales	+		\$_____ (F: marketing ledger)		
Forward contract revenue adjustment	+		\$_____ ( <sup>a</sup> adding a negative number)		
Net hedging gain (loss)	+		\$_____ (C: marketing ledger)		
Total revenue received	=		\$_____		
Total 19X3 wheat sold	÷		_____ bu. (I marketing ledger)		
Average price per bushel sold	=		\$_____		

*Sales of 19X3 crop (transfer from above)*

	<b>Quantity</b>		<b>Price</b>		<b>Revenue</b>
Barley	500 ton	x	\$85	=	\$42,500 (J)
Wheat	_____ bu.	x	\$_____	=	\$_____ (K)
		Total	J+K	=	(Z) \$_____

Total grain sales made in 19X3 = Y + Z (W) \$\_\_\_\_\_

<sup>a</sup>Use only if the quantity of wheat you forward contracted exceeded total wheat production.

**Form 11. Income Statement Max and Marlene Profit Year Ending 12/31/19X3**

**REVENUES**

Grain sales (see crop sales summary sheet)		\$ _____ (W)	
Inventory change (see below)	+/-	\$ _____	
Gross revenue from crops			= \$ _____
Insurance indemnity (may not apply)	+	\$ _____	
Change in accounts receivable	+/-	\$ 0	
Government payments: AMTA	+	\$ 19,610	
Gross revenue			= \$ _____ (J)

**EXPENSES**

Cash operating expenses		\$ 93,175	
Crop insurance expense	+	\$ 2,325	= \$ 95,500
Accrual adjustments:			
Change in prepaid expenses	+	\$ 0	
Change in accounts receivable	+	\$ 0	
Depreciation:	+	\$ 35,000	
Total operating expenses			= \$ 130,500
Cash interest paid	+	\$ 26,500	
Change in accrued interest	+	\$ 0	
Total expense			= \$ 157,000 (K)
Net farm income from operations		(J - K)	= \$ _____
Gain (loss) sale of farm capital assets	+	\$ 0	
<b>NET FARM INCOME</b>			= \$ _____
Nonfarm income	+	\$ 16,500	
<b>NET INCOME, BEFORE TAXES</b>			= \$ _____
Term debt principle:		\$ 25,000	
Family living:		\$ 43,000	
Taxes:		?	

*19X3 Crop Inventory*

Crop	Produced <sup>a</sup>	Sales <sup>a</sup>	Inventory <sup>a</sup>	Value of Inventory
Barley @ \$85/ton	624 tons	500 tons	124 tons	\$ 10,540
Wheat @ \$3.45/bu.	_____	_____	_____	\$ _____ <sup>b</sup>

<sup>a</sup> 19X3 wheat production, sales and inventory information is summarized on the New Crop Wheat Pricing Status Sheet

<sup>b</sup> Transfer the wheat inventory value to the table below.

**Form 11. Income Statement Max and Marlene Profit Year Ending 12/31/X3**  
**continued**

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*19X3 Accrual adjustment to revenue based on inventory change*

<b>Stored crops</b>	<b>Beg. bal. sheet value</b>	<b>End. bal. sheet value</b>	<b>Difference</b>
Barley	– \$ 4,350	+ \$10,540	= \$6,190 (a)
Wheat	– \$17,570	+ \$_____	= \$_____ (b)
Total		a + b	= \$_____ <sup>a</sup>

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<sup>a</sup> Transfer to income statement.

