

AGRIBUSINESS MANAGEMENT CONTEST
2010 Career Development Events in Agriculture
Kansas State University, Manhattan, Kansas

PROBLEMS SECTION (200 Points)

For the following problems, place your answer for each question in the corresponding numbered space on the answer card. Computations may be done in the margins or on the back of this paper, but not on the card. Each question is worth five (5) points. There is only one correct answer for each question.

The following definitions should be used while completing the problems sections of this contest:

Two measures of profitability are the rate of return on assets (ROA) and the rate of return on equity (ROE). Definitions for ROA and ROE are:

ROA = (Net farm income from operations plus farm interest expense minus the value of unpaid family and operator labor and management) divided by average total farm assets. Multiply by 100 to express as a percentage.

ROE = (Net farm income from operations minus value of unpaid family and operator labor and management) divided by average farm equity. Multiply by 100 to express as a percentage.

Operating Profit = Net farm income from operations, plus interest expense, minus the opportunity cost of unpaid family and operator labor and management.

**Operating Profit Margin Ratio = Operating Profit divided by Value of Farm Production.
(Multiply by 100 to express as a percentage.)**

Value of Farm Production = Sum of livestock, crop, and other income computed on an accrual basis minus purchased feed. VFP provides a measurement of value added and can be used as a measure of farm size.

Asset Turnover Ratio = Value of Farm Production divided by average total farm assets.

Problem I - BALANCE SHEET AND ANALYSIS

Use the following beginning and ending Balance Sheet for Mr. Ernie A. Livven when answering questions 1 through 12.

Balance Sheet for Mr. Ernie A. Livven, Quick-N-Dirty Farms, Ruraltown, Kansas.

| | 12/31/08 | 12/31/09 |
|--|-------------------|-------------------|
| <u>Assets</u> | | |
| Current Assets | | |
| Cash/Checking | \$ 23,361 | \$ 28,900 |
| Inventories | | |
| Crops and Feed | \$ 152,241 | \$ 165,600 |
| Market Livestock | \$ 6,280 | \$ 0 |
| Supplies | \$ 9,506 | \$ 12,800 |
| Prepaid Expenses | <u>\$ 16,852</u> | <u>\$ 20,600</u> |
| Total Current Assets | \$ 208,240 | \$ 227,900 |
| Non-Current Assets | | |
| Breeding Livestock | \$ 94,250 | \$ 94,250 |
| Machinery and Equipment | \$ 223,992 | \$ 286,593 |
| Buildings and Improvements | \$ 22,570 | \$ 76,500 |
| Land | <u>\$ 565,000</u> | <u>\$ 565,000</u> |
| Total Non-Current Assets | \$ 905,812 | \$1,022,343 |
| Total Farm Assets | \$ 1,114,052 | \$ 1,250,243 |
| <u>Liabilities</u> | | |
| Current Liabilities | | |
| Current Portion of Term Debt | \$ 34,205 | \$ 38,800 |
| Accounts Payable | \$ 0 | \$ 0 |
| Accrued Interest | \$ 4,496 | \$ 0 |
| Operating Loans Payable | \$ 45,305 | \$ 52,000 |
| Current Portion - Deferred Taxes | <u>\$ 17,605</u> | <u>\$ 18,500</u> |
| Total Current Liabilities | \$ 101,611 | \$ 109,300 |
| Non-Current Liabilities | | |
| Breeding Livestock | \$ 6,079 | \$ 0 |
| Machinery | \$ 61,767 | \$ 93,413 |
| Farm Mortgage | \$ 122,564 | \$ 99,878 |
| Non-Current Portion-Deferred Taxes | <u>\$ 48,845</u> | <u>\$ 49,900</u> |
| Total Non-Current Liabilities | \$ 239,255 | \$ 243,191 |
| Total Farm Liabilities | \$ 340,866 | \$ 352,491 |
| Net Worth or Equity | \$ 773,186 | \$ 897,752 |
| Total Liabilities and Net Worth | \$ 1,114,052 | \$ 1,250,243 |

Questions 1 through 12 refer to Mr. Livven's Balance Sheet shown on the previous page. Round ratios to two decimals.

1. With His balance sheet information, Mr. Livven can measure his:
 - A. Rate of Return on Equity
 - B. Profitability and Efficiency
 - C. Liquidity and Solvency
 - D. All of the above
 - E. None of the above

2. What was Mr. Livven's Current Ratio on December 31, 2008?
 - A. 1.60
 - B. 1.82
 - C. 2.05
 - D. 2.09
 - E. 3.09

3. How much working capital did Mr. Livven have on December 31, 2009?
 - A. \$ 89,100
 - B. \$ 118,600
 - C. \$ 137,100
 - D. \$ 157,400
 - E. None of the above

4. What was Mr. Livven's Current Ratio on December 31, 2009?
 - A. 1.60
 - B. 1.82
 - C. 2.05
 - D. 2.09
 - E. 3.09

5. Consider the change in liquidity on Mr. Livven's operation between December 31, 2008 and December 31, 2009. Based on his balance sheet information, was his farm business:
 - A. Less liquid on December 31, 2008
 - B. Less liquid on December 31, 2009
 - C. More liquid on December 31, 2009
 - D. Both A and C
 - E. None of the above

6. Based on the December 31, 2009 balance sheet for Mr. Livven, what percent of all debts (liabilities) as of 12/31/09 were scheduled to be paid during the year 2010?
- A. 9.12%
 - B. 20.00%
 - C. 25.76%
 - D. 31.01%
 - E. 45.16%
7. What was Mr. Livven's Debt-to-Asset Ratio on December 31, 2008?
- A. 26.41%
 - B. 30.60%
 - C. 33.18%
 - D. 48.80%
 - E. 69.40%
8. What percent of Mr. Livven's assets were financed by debt on December 31, 2009?
- A. 28.19%
 - B. 29.81%
 - C. 31.01%
 - D. 45.16%
 - E. 71.81%
9. Mr. Livven wants to know the change in solvency of his operation between December 31, 2008 and December 31, 2009. What measures will he need to determine the change in solvency?
- A. Debt-to-Asset Ratio and amount of Net Worth on December 31, 2009
 - B. Current Ratio and Working Capital from both years
 - C. Debt-to-Asset Ratio and amount of Net Worth on December 31, 2008
 - D. Both A and C
 - E. None of the above
10. On December 31, 2009, Mr. Livven's Equity-to-Asset Ratio was?
- A. 28.19%
 - B. 29.81%
 - C. 31.01%
 - D. 45.16%
 - E. 71.81%

11. What percent of Mr. Livven's assets were financed by equity on December 31, 2009?
- A. 31.01%
 - B. 45.16%
 - C. 69.40%
 - D. 71.81%
 - E. 87.81%
12. Assume the liability values are accurate and the asset values shown on the balance sheet accurately represent the values of the assets if the assets had been sold on the dates specified. If on December 31, 2009, Mr. Livven had sold all of his assets and paid off all of his debts, how much money would he have had left?
- A. \$352,491
 - B. \$929,152
 - C. \$947,652
 - D. \$1,250,243
 - E. None of the above

Problem II - INCOME STATEMENT AND ANALYSIS

Mr. Livven withdrew \$50,000 last year for family living expenses. Use this \$50,000 as the value of Mr. Livven's unpaid family and operator labor and management. Mr. Livven feels that he could earn a 7 percent return on his money in off-farm investments. Use this figure in calculating the opportunity cost of Mr. Livven's assets or equity. Use this information, the balance sheet on page 2, and the following Income Statement for Mr. Livven to answer questions 13 through 19.

2009 Income Statement for Mr. Ernie A. Livven, Quick-N-Dirty Farms, Ruraltown, Kansas

| <u>Revenues</u> | | <u>Expenses</u> | |
|-----------------------------|-------------------|--|-------------------|
| Crop Sales | \$ 196,400 | Purchased Feed | \$ 18,250 |
| Calf Sales | 78,640 | Seed | 19,200 |
| Cull Cows | 3,470 | Fertilizer | 44,800 |
| Custom work | 7,800 | Livestock Expenses | 7,836 |
| Crop Insurance | 629 | Gasoline, Fuel, and Oil | 17,340 |
| Government Payments | 18,088 | Hired Labor | 9,543 |
| Other | 4,575 | Repairs | 24,582 |
| | | Chemicals | 17,846 |
| | | Machine Hire | 8,893 |
| | | Cash Rent | 21,796 |
| | | Insurance | 11,867 |
| | | Real Estate & Property Taxes | 5,215 |
| | | Utilities | 4,800 |
| | | Depreciation | 26,322 |
| | | Interest | 17,360 |
| | | Other | 3,934 |
| | | | |
| Inventory Changes | | Inventory Adjustments | |
| Crops and Feed | \$ 63,359 | Prepaid Expenses | \$ (3,748) |
| Livestock | (6,280) | Account Payable | (0) |
| Accounts Receivable | - | | |
| | | | |
| Total Gross Revenues | \$ 366,681 | Total Expenses | \$ 255,836 |
| | | | |
| | | Net Farm Income from Operations | \$ 110,845 |
| | | | |
| | | Gain/Loss on Sale of Capital Assets | \$ 3,200 |
| | | | |
| | | Net Farm Income | \$ 114,045 |

13. What is Mr. Livven's 2009 net farm income (return to unpaid family and operator labor, equity capital, and management)?
- A. \$ 96,685
 - B. \$110,845
 - C. \$114,045
 - D. \$131,405
 - E. None of the above
14. What is Mr. Livven's 2009 adjusted net farm income (return to unpaid family and operator labor, total capital, and management)?
- A. \$ 96,685
 - B. \$110,845
 - C. \$114,045
 - D. \$131,405
 - E. \$140,948
15. If the value of Mr. Livven's unpaid family and operator labor and management is \$50,000, what is Mr. Livven's ROA? ROUND PERCENTAGE TO TWO DECIMALS.
- A. 2.30%
 - B. 6.62%
 - C. 9.12%
 - D. 10.85%
 - E. None of the above
16. What is Mr. Livven's Value of Farm Production (VFP) for 2009?
- A. More information is needed to compute the 2009 VFP
 - B. 309,602
 - C. 348,431
 - D. 366,681
 - E. 384,931

17. The two balance sheets on page 2 of this exam are market value balance sheets. This means that Mr. Livven's assets are valued at current market value on the date of the balance sheet. Assume the December 31, 2010 market value of all assets is exactly the same as the December 31, 2009 value. However, Mr. Livven's net farm income from operations in 2010 is \$10,000 less than his net farm income from operations in 2009. How will the \$10,000 decrease in net farm income from operations affect Mr. Livven's rate of return on assets (ROA)?
- A. ROA will be smaller on December 31, 2010 than it was on December 31, 2009
 - B. ROA will be the same on December 31, 2010 as it was on December 31, 2009
 - C. ROA will be larger on December 31, 2010 than it was on December 31, 2009
 - D. More information is needed to determine the direction of change in ROA
 - E. None of the above
18. If the value of Mr. Livven's unpaid family and operator labor and management is \$50,000, what is the Operating Profit for Mr. Livven's operation?
- A. \$ 78,205
 - B. \$110,845
 - C. \$114,205
 - D. \$128,205
 - E. None of the above
19. What is Mr. Livven's Asset Turnover Ratio for 2009?
- A. 27.87%
 - B. 29.47%
 - C. 31.02%
 - D. 31.28%
 - E. None of the above
20. What is the Operating Profit Margin Ratio for Mr. Livven's operation in 2009? ROUND PERCENTAGE TO TWO DECIMALS.
- A. 17.46%
 - B. 22.44%
 - C. 31.81%
 - D. 32.73%
 - E. None of the above

Problem III – INVESTMENT ANALYSIS

Use the following information to answer Questions 21 through 23.

Suppose you are considering two alternative investments that each have an initial investment cost of \$18,000 in year 0. Annual net cash flows received at the end of each of the next 5 years are as follows: The discount rate is 10%. Salvage value is zero.

| <u>Year</u> | <u>Net Cash Flow (Dollars)</u> | |
|-------------|--------------------------------|---------------------|
| | <u>Investment A</u> | <u>Investment B</u> |
| 1 | 5,000 | 7,000 |
| 2 | 5,000 | 7,000 |
| 3 | 5,000 | 5,000 |
| 4 | 5,000 | 5,000 |
| 5 | 5,000 | 3,000 |

You want to use the following information about the present value of \$1.00 with 10% interest compounded annually using the formula, $Pv = 1/(1+r)^N$.

| <u>Year</u> | <u>10%</u> |
|-------------|------------|
| 1 | 0.9091 |
| 2 | 0.8264 |
| 3 | 0.7513 |
| 4 | 0.6830 |
| 5 | 0.6209 |

21. What is the net present value of Investment A?
- A. \$7,000
 - B. \$25,000
 - C. -\$953.30
 - D. \$0.00
 - E. \$ 953.30
22. What is the net present value of Investment B?
- A. \$9,000
 - B. \$27,000
 - C. -\$1,235.70
 - D. \$3,182.70
 - E. -\$3,182.70
23. If the goal is to maximize the present value of net cash flows, which investment is preferred?
- A. Investment A is preferred
 - B. Investment B is preferred
 - C. The decision maker is indifferent between Investment A and Investment B
 - D. All of the above
 - E. None of the above

Problem IV – CROP MARKETING

For questions 24 through 28, refer to the following information.

A wheat farmer sells 3 standard KCBOT wheat contracts in January. At harvest, the farmer offsets the hedge by buying the KCBOT wheat contracts and selling cash grain on July 1. Assume no commissions and zero interest cost on margins and premiums.

| Date | Cash | Futures |
|------------|------------------------------------|----------------------------|
| January 15 | \$5.50 (cash forward contract bid) | \$6.05 (sells 3 contracts) |
| July 1 | \$4.50 (sells cash wheat) | \$5.15 (buys 3 contracts) |

24. The farmer sold how many bushels of wheat on January 15 on the KCBOT?
- A. 333
 - B. 3,000
 - C. 5,000
 - D. 15,000
 - E. 30,000
25. What is the wheat basis on January 15 at the farmer's local delivery location?
- A. \$0.55
 - B. \$8.50
 - C. -\$0.55
 - D. \$9.05
 - E. None of the above
26. By July 1 when the hedge was offset, what happened to the wheat basis at the local delivery location?
- A. No change
 - B. Changed to -\$0.15/bu
 - C. Weakened
 - D. Strengthened
 - E. None of the above.

27. What is the net result of the futures hedging portion of the marketing strategy?
- A. Break-even
 - B. \$1.00/bu loss
 - C. \$1.00/bu gain
 - D. \$0.90/bu loss
 - E. \$0.90/bu gain
28. What is the net price the farmer received for the wheat on July 1 (again ignoring commission and interest)?
- A. \$5.40/bu
 - B. \$5.50/bu
 - C. \$4.50/bu
 - D. \$5.15/bu
 - E. \$6.05/bu

Problem V - LIVESTOCK MARKETING

For questions 29 through 34, refer to the following information. In March, a Kansas cattle producer buys a June CME Live Cattle Put Option with a \$90.00/cwt strike price for a \$1.25/cwt premium. Assume the producer's local basis when the cattle are sold is -\$0.50/cwt. Assume no commissions and zero interest cost on margins and premiums.

29. What is the producer's expected minimum price he will receive for the cattle?
- A. \$90.00
 - B. \$88.25
 - C. \$88.75
 - D. \$89.50
 - E. None of the above
30. Assume the June Live Cattle Contract was trading at \$98.50 when the cattle were sold, and that actual local basis was -\$0.25/cwt. What is the net price received for the cattle?
- A. \$89.50
 - B. \$88.75
 - C. \$89.75
 - D. \$88.50
 - E. \$90.00

31. Assume the June Live Cattle Contract was trading at \$90.50/cwt when the Put Option was purchased. The Put Option is best described as
- A. At-the-money
 - B. In-the-money
 - C. Out-of-the-money
 - D. Worthless
 - E. None of the above
32. If the underlying futures contract is trading at \$90.50, and the \$90.00 put option strike price is \$1.25, then \$0.50 of the strike price is _____ and \$0.75 is _____.
- A. Time value and intrinsic value
 - B. Residual value and maturity value
 - C. Speculative value and hedging value
 - D. Intrinsic value and time value
 - E. None of the above
33. Assume the June Live Cattle Futures Contract is at \$87.00/cwt when the producer's option expires. What would the Put Option be worth?
- A. \$ 0.00/cwt
 - B. \$ 2.00/cwt
 - C. \$ 3.00/cwt
 - D. \$97.00/cwt
 - E. \$95.75/cwt
34. Using a put option rather than selling a futures contract as a marketing strategy--
- A. Left the upside market potential open
 - B. Assured there would be no additional margin calls
 - C. Locked in a known "cost" of the risk management strategy
 - D. All of the above
 - E. None of the above

Problem VI – ENTERPRISE BUDGETING

Attached at the end of the exam is a four-page Farm Management Guide entitled, “Wheat Cost-Return Budget in North Central Kansas” that was prepared by Daniel M. Obrien, Stewart R. Duncan, and Brian L.S. Olson, Kansas State University, December 2009. The budget used projected 2010 input and output prices for illustrative purposes, prepared in the Fall of 2009. Budgets for two alternative production systems, each assuming three different yield potentials, are shown on pages 18 and 19. Explanatory information regarding the preparation of the example budgets is included in the text and tables on pages 16 and 17. Use the information in the guide as necessary to answer questions 35 through 40, though most of the questions can be answered without reference to this specific guide.

35. Gross Income per acre is impacted by...
- A. The price of fertilizer
 - B. Wheat prices only
 - C. Yields only
 - D. Yields, wheat prices, and government payments
 - E. None of the above
36. One would expect a “no-till” crop budget to have higher _____ costs, and lower _____ costs.
- A. Fertilizer - Herbicide
 - B. Herbicide - Fertilizer
 - C. Machinery - Herbicide
 - D. Herbicide - Machinery
 - E. None of the above
37. Which of the following could be non-cash expenses for a wheat enterprise?
- A. Depreciation on facilities and equipment
 - B. Labor expense
 - C. Land rent
 - D. All of the above
 - E. None of the above

38. If you have no money borrowed, you should ...
- A. Zero out the interest charge lines because they are not relevant for your operation
 - B. Include a value in the interest charge lines because they represent opportunity cost
 - C. Borrow money at the bank so you will have an interest charge
 - D. Feel good because you will always be more profitable than someone who pays interest
 - E. None of the above.
39. The land charge (line 12) increases for the higher assumed yield levels because:
- A. Higher yield goals are associated with higher quality land, which has a higher rental value
 - B. If you pay more for the land you are guaranteed a higher yield
 - C. If you get higher yields you will go to the landlord and pay them more rent
 - D. That is the way it should be for rented land, but it would be different for owned land
 - E. None of the above
40. Assuming you own and operate your entire machinery line and do not hire any custom operations done, how will line (9) (custom hire/machinery expense) change on your budget?
- A. You would include only cash expenses such as fuel, since everything else is paid for.
 - B. You would include all of your own machinery operation and ownership expenses.
 - C. You would include only ownership costs such as depreciation, taxes, and insurance.
 - D. You would use the lower value of either your actual operation and ownership costs, or custom rates
 - E. None of the above

Wheat Cost-Return Budget in North Central Kansas

Department of Agricultural Economics — www.agmanager.info



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The state of Kansas ranks first in the nation in total bushels of wheat production. Wheat is also the leading crop in terms of total acreage statewide and in the north central region of the state. Traditionally, wheat production in north central Kansas was predominantly under wheat-fallow and continuous wheat production systems. However, wheat production patterns have changed over time as producers have switched from traditional wheat-fallow rotations and continuous wheat production systems to more intensive crop production systems. This transition has been encouraged by increased planting flexibility in the 1996 Federal Agricultural Improvement and Reform Act and by the increased adoption of technology allowing for less tillage and more rotation with crops such as grain sorghum, corn, and soybeans.

While wheat-fallow production systems have declined substantially in the region, both continuous wheat and rotation wheat cropping systems currently exist in north central Kansas. The presence of both production systems suggests that neither system is "best" in all situations, but may be dependent on soil productivity, moisture availability, and other growing and management considerations. An advantage of continuous wheat is that it requires less management than a rotation involving various fall-harvested crops. With continuous wheat, labor requirements tend to be confined to several key times throughout the year, such as at planting and harvest. This can be either an advantage or a disadvantage depending on the particular operation. Another characteristic of continuous wheat is that it typically involves tillage operations because of weed and disease problems that can build up in a no-till mono-crop environment. For producers that

prefer not to use herbicides, a cropping system that relies on tillage is attractive. However, a potential disadvantage of a cropping system that relies heavily on tillage is that labor availability may be an issue. This is especially true for producers wanting to increase the size of their operation because labor availability is often a constraint.

Wheat produced in rotation with other crops can produce increased yields compared to continuous wheat cropping systems. K-State research studies over time have consistently found yield increases for wheat grown in rotation compared to continuous wheat cropping systems, except when following grain sorghum, where several factors could potentially reduce yields. Although wheat grown in rotation may be higher yielding, it may also have higher input costs, due to increased seeding and fertility rates. However, other costs could be reduced due to reduced tillage compared with continuous wheat.

It is important to recognize that both continuous wheat and rotation wheat have their advantages and disadvantages. When comparing costs and returns from the two budgets, it is necessary to account for the differing yield levels and input requirements for wheat production and also the costs and returns from whichever crop may be grown in rotation with wheat. Ultimately, the cropping system individual producers will choose depends on their unique set of capital and management resources.

Income Per Acre

Crop production costs per unit and net returns are highly dependent on yields. The following estimated budgets include

Table 1A. Production Inputs — Rotation Wheat

| Item | Yield Level (bu) | | | |
|-------------------------|------------------|-----|-----|------------|
| | 45 | 57 | 70 | |
| Seed, lbs | 90 | 100 | 100 | \$0.13/lb |
| Fertilizer: | | | | |
| N (anhydrous) | 0 | 0 | 0 | \$0.24/lb |
| N | 47 | 69 | 92 | \$0.39/lb |
| P | 25 | 32 | 39 | \$0.44/lb |
| K | 0 | 0 | 0 | \$0.59/lb |
| Lime | 500 | 500 | 500 | \$0.01/lb |
| Herbicide | | | | |
| Finesse | 0.3 | 0.3 | 0.3 | \$16.63/oz |
| + Surfactant | 1.0 | 1.0 | 1.0 | \$1.00/a |
| Insecticide / Fungicide | | | | |
| Headline | 9 | 9 | 9 | \$2.92/oz |

Table 1B. Production Inputs — Continuous Wheat

| Item | Yield Level (bu) | | | |
|-------------------------|------------------|-----|-----|------------|
| | 40 | 52 | 65 | |
| Seed, lbs | 90 | 90 | 90 | \$0.13/lb |
| Fertilizer: | | | | |
| N (anhydrous) | 33 | 52 | 73 | \$0.24/lb |
| N | 6 | 9 | 11 | \$0.39/lb |
| P | 23 | 29 | 37 | \$0.44/lb |
| K | 0 | 0 | 0 | \$0.59/lb |
| Lime | 500 | 500 | 500 | \$0.01/lb |
| Herbicide | | | | |
| Finesse | 0.3 | 0.3 | 0.3 | \$16.63/oz |
| + Surfactant | 1.0 | 1.0 | 1.0 | \$1.00/a |
| Insecticide / Fungicide | | | | |
| Headline | 9 | 9 | 9 | \$2.92/oz |

three different yield levels, which are intended to represent expected yields for land of varying quality for a given level of management. Yield levels are based on historical data from Kansas Agricultural Statistics Service and the North Central Kansas Farm Management Association, adjusting for trends over time. Based on K-State research findings, the yield for wheat in rotation is estimated to be higher than for continuous wheat. Land values and government payments have been adjusted for alternative yield levels in this budget. In customizing a budget to your farm, attention should be given to using land values representative of your farm's productive capacity as well as government payments specific to your land.

Price per bushel represents an expected harvest price in Beloit, KS, accounting for government marketing loan price support levels. Wheat producers in other areas of north central Kansas should use an expected price that is representative for their location. Typically, a reasonable forecast for price is to use the futures market adjusted by the historical basis

for a particular location, where basis equals cash price minus futures price.

Crop insurance was not included as an input expense in this budget because yields reflect an average of all years (good and bad). If crop insurance is included as an input expense, then an expected value for indemnity payments should be included in the returns section.

Costs Per Acre

Production costs at the three production levels are shown on lines 1 through 13. Kansas Custom Rates for specific field operations are used to represent fuel and labor costs as well as machinery repair, depreciation, and interest expenses in these budgets. Tables 1A and 1B identify the typical seed, fertilizer, herbicide, and insecticide requirements (rate and cost/unit) for continuous wheat and rotation wheat cropping systems, respectively. Since wheat planting follows the harvest of a fall-harvested crop in rotation systems, seeding rates are assumed to be higher under rotation to accommo-

Table 2A. Machinery and Land Resources — Rotation Wheat

| Item | Yield Level (bu) | | | Custom Rate |
|--|------------------|---------|---------|-------------|
| | 45 | 57 | 70 | |
| Tillage/Planting/Chemical Applications: | | | | |
| Chisel | 0 | 0 | 0 | \$9.78/a |
| Disk | 0 | 0 | 0 | \$7.88/a |
| Field cultivate | 0 | 0 | 0 | \$7.82/a |
| No-till drill | 1 | 1 | 1 | \$12.00/a |
| Anhydrous application | 0 | 0 | 0 | \$8.91/a |
| Fertilizer application | 1 | 1 | 1 | \$4.34/a |
| Herbicide application | 1 | 1 | 1 | \$4.38/a |
| Insecticide/fungicide application | 1 | 1 | 1 | \$4.43/a |
| Harvest | | | | |
| Base charge | 1 | 1 | 1 | \$18.92/a |
| Extra charge for yields exceeding | 21 | 21 | 21 | \$0.184/bu |
| Hauling | 45 | 57 | 70 | \$0.173/bu |
| Non-machinery labor | 0.49 | 0.53 | 0.57 | \$13.00/hr |
| Land charge/rent | \$45.60 | \$57.00 | \$68.40 | |
| Interest on capital | | | | 7.5% |

Table 2B. Machinery and Land Resources — Continuous Wheat

| Item | Yield Level (bu) | | | Custom Rate |
|--|------------------|---------|---------|-------------|
| | 40 | 52 | 65 | |
| Tillage/Planting/Chemical Applications: | | | | |
| Chisel | 1 | 1 | 1 | \$9.78/a |
| Disk | 1 | 1 | 1 | \$7.88/a |
| Field cultivate | 1 | 1 | 1 | \$7.82/a |
| Drill | 1 | 1 | 1 | \$9.69/a |
| Anhydrous application | 1 | 1 | 1 | \$8.91/a |
| Fertilizer application | 0 | 0 | 0 | \$4.34/a |
| Herbicide application | 1 | 1 | 1 | \$4.38/a |
| Insecticide/fungicide application | 0 | 1 | 1 | \$4.43/a |
| Harvest | | | | |
| Base charge | 1 | 1 | 1 | \$18.92/a |
| Extra charge for yields exceeding | 21 | 21 | 21 | \$0.184/bu |
| Hauling | 40 | 52 | 65 | \$0.173/bu |
| Non-machinery labor | 0.68 | 0.75 | 0.79 | \$13.00/hr |
| Land charge/rent | \$45.60 | \$57.00 | \$68.40 | |
| Interest on capital | | | | 7.5% |

date planting dates that may be later than with continuous wheat. Fertilizer requirements are higher for rotation wheat than for continuous wheat, corresponding with higher yield expectations. Herbicide requirements include both pre-crop and in-crop treatments.

Tables 2A and 2B outline the machinery and land resources used for wheat in these alternative cropping systems. Each tillage, planting, and harvest operation is identified. Given the increasing level of no-till adoption across Kansas, the rotation wheat budget is assumed to be a no-till system. Due to the increased reliance on tillage for continuous wheat production, that system is assumed to include some tillage operations.

Other Wheat Production Management Resources

K-State Research and Extension has a number of resources available relating to wheat production and marketing. The *Kansas Wheat Production Handbook, C-529*, provides information on recommended wheat production practices. More information on wheat variety performance, insect, weed and disease management, market prospects, wheat residue and yield estimation, and other wheat production and marketing information can be obtained through K-State Research and Extension Offices or via the K-State Research and Extension Wheat Web site, www.ksre.ksu.edu/wheatpage/agronomy.htm.

COST-RETURN PROJECTION — ROTATION WHEAT — NORTH CENTRAL KANSAS

| | Yield Level (bu) | | | Your Farm |
|---|------------------|-----------|-----------|-----------|
| | 45 | 57 | 70 | |
| INCOME PER ACRE | | | | |
| A. Yield per acre..... | 45 | 57 | 70 | |
| B. Price per bushel | \$ 4.81 | \$ 4.81 | \$ 4.81 | |
| C. Net government payment..... | \$ 13.03 | \$ 14.16 | \$ 15.29 | |
| D. Indemnity payments | \$ | \$ | \$ | |
| E. Miscellaneous income..... | \$ | \$ | \$ | |
| F. Returns/acre ((A × B) + C + D + E)..... | \$ 229.48 | \$ 288.33 | \$ 351.99 | |
| COSTS PER ACRE | | | | |
| 1. Seed | \$ 11.70 | \$ 13.00 | \$ 13.00 | |
| 2. Herbicide | 5.99 | 5.99 | 5.99 | |
| 3. Insecticide / Fungicide | 26.28 | 26.28 | 26.28 | |
| 4. Fertilizer and Lime | 34.21 | 45.83 | 57.85 | |
| 5. Crop Consulting | | | | |
| 6. Crop Insurance | | | | |
| 7. Drying | | | | |
| 8. Miscellaneous..... | 6.25 | 6.25 | 6.25 | |
| 9. Custom Hire / Machinery Expense..... | 56.27 | 60.56 | 65.20 | |
| 10. Non-machinery Labor | 6.36 | 6.84 | 7.37 | |
| 11. Irrigation | | | | |
| a. Labor | | | | |
| b. Fuel and Oil..... | | | | |
| c. Repairs and Maintenance | | | | |
| d. Depreciation on Equipment and Well..... | | | | |
| e. Interest on Equipment..... | | | | |
| 12. Land Charge / Rent..... | 45.60 | 57.00 | 68.40 | |
| G. SUB TOTAL | \$ 192.65 | \$ 221.75 | \$ 250.33 | |
| 13. Interest on ½ Nonland Costs | 5.51 | 6.18 | 6.82 | |
| H. TOTAL COSTS | \$ 198.17 | \$ 227.92 | \$ 257.15 | |
| I. RETURNS OVER COSTS (F - H) | \$ 31.31 | \$ 60.41 | \$ 94.84 | |
| J. TOTAL COSTS/BUSHEL (H ÷ A) | \$ 4.40 | \$ 4.00 | \$ 3.67 | |
| K. RETURN TO ANNUAL COST (I + 13) ÷ G | 19.11% | 30.03% | 40.61% | |

COST-RETURN PROJECTION — CONTINUOUS WHEAT — NORTH CENTRAL KANSAS

| | Yield Level (bu) | | | Your Farm |
|---|------------------|----------|-----------|-----------|
| | 40 | 52 | 65 | |
| INCOME PER ACRE | | | | |
| A. Yield per acre | 40 | 52 | 65 | |
| B. Price per bushel | \$ 4.81 | \$ 4.81 | \$ 4.81 | |
| C. Net government payment | \$ 13.03 | \$ 14.16 | \$ 15.29 | |
| D. Indemnity payments | \$ | \$ | \$ | |
| E. Miscellaneous income..... | \$ | \$ | \$ | |
| F. Returns/acre ((A × B) + C + D + E) | \$ 205.43 | \$264.28 | \$327.94 | |
| COSTS PER ACRE | | | | |
| 1. Seed | \$ 11.70 | \$ 11.70 | \$ 11.70 | |
| 2. Herbicide | 5.99 | 5.99 | 5.99 | |
| 3. Insecticide / Fungicide | 26.28 | 26.28 | 26.28 | |
| 4. Fertilizer and Lime | 25.27 | 33.61 | 42.91 | |
| 5. Crop Consulting | | | | |
| 6. Crop Insurance | | | | |
| 7. Drying | | | | |
| 8. Miscellaneous..... | 6.25 | 6.25 | 6.25 | |
| 9. Custom Hire / Machinery Expense..... | 77.80 | 86.51 | 91.15 | |
| 10. Non-machinery Labor | 8.79 | 9.78 | 10.30 | |
| 11. Irrigation | | | | |
| a. Labor | | | | |
| b. Fuel and Oil..... | | | | |
| c. Repairs and Maintenance | | | | |
| d. Depreciation on Equipment and Well..... | | | | |
| e. Interest on Equipment..... | | | | |
| 12. Land Charge / Rent..... | 45.60 | 57.00 | 68.40 | |
| G.SUB TOTAL | \$ 207.67 | \$237.11 | \$ 262.98 | |
| 13. Interest on ½ Nonland Costs | 6.08 | 6.75 | 7.30 | |
| H. TOTAL COSTS | \$ 213.75 | \$243.86 | \$270.27 | |
| I. RETURNS OVER COSTS (F - H) | \$ -8.32 | \$ 20.42 | \$ 57.67 | |
| J. TOTAL COSTS/BUSHEL (H ÷ A) | \$ 5.34 | \$ 4.69 | \$ 4.16 | |
| K. RETURN TO ANNUAL COST (I + 13) ÷ G | -1.08% | 11.46% | 24.70% | |

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-2158

December 2009

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