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FAPRI Beginning Farmer and Rancher Development Project

West Central Feedgrain Representative Farm

FAPRI-MU Report #14-10

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FAPRI Beginning Farmer and Rancher Development Project – West Central Feedgrain Representative Farm

Intro to Project:

This representative farm was built as part of a three year project funded through the USDA Beginning Farmer and Rancher Development program. In the first year of the project, four panels of beginning farmers (farming 10 years or less) were selected to build farms that are representative of beginning farmers in their area, review how the representative (baseline) farm would perform financially over the next five years, and identify 2-3 alternative scenarios that are simulated and compared to the baseline. This report is a summary of the first year of one of these four panels. In the second year of the project, the panel members will have the option to model their individual operations, look at how they perform over the next five years, identify 2-3 changes they are contemplating for their operation and see how they compare financially to the baseline. In the third year of the project, financial tools will be distributed via the internet to beginning farmers and ranchers across the U.S.

Representative Farm Panel Process:

The representative farm approach treats a farm business unit as a unique system characterized by local features and resources to which the farm manager adapts. Local conditions are internalized in the creation and simulation of each farm.

To build a representative farm a local facilitator takes the lead in putting together a panel of 4-8 producers in the area that are similar in size, structure, and type of farming operation. For this project, a local University of Missouri Extension Specialist agreed to build a panel of local producers that fits the USDA definition of a beginning farmer or rancher. Primary data is initially developed and continuously validated by Missouri producers via a consensus process. Producers establish farm structure, size, farming practices, costs of production and associated financial requirements for the representative farm based on their individual operations. Business size, structure and management practices are held constant for the simulation period, 2007-2014.

For simulation, actual yield, price, and operating costs data is used for the years 2007-2009. The historical period provides some perspective of financial performance with known values and sets a footing for simulation over the five-year projection period. Farm financial statements are generated using the Farm Level Income and Policy Simulation Model (FLIPSIM), property of the Texas Agricultural Experiment Station, maintained at the Agricultural and Food Policy Center, Texas A&M University. National price estimates, generated by the FAPRI consortium at the University of Missouri and Iowa State University, are utilized for the 2010-2014 simulation.

The financial statements (income statement, cash flow, balance sheet) are used by the panel to make sure the farm is performing financially as it should over the three year historical period. After the panel validates the historical data, projections of financial statements for 2010-2014 are used to see how the farm will perform financially in the future.

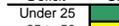
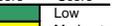
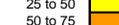
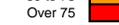
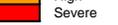
Background of Panel:

This panel is facilitated by Whitney Wiegel, Agriculture Business Specialist – Lafayette County in the West Central region and Mary Sobba, Agriculture Business Specialist - Audrain County in the Central region. The panel consists of 4 producers from Lafayette County. Panel members have been farming for 1 to 9 years, with an average of 5.5 years farming. The panel members own between 0-240 acres, cash lease 250-600 acres, share lease 0-100 acres, and lease 0-150 acres of hay/pasture. Primary crop mix is 50/50 corn and soybeans with very a small amount of wheat and double crop soybean acres. The producers are 50%-80% no-till. None of the producers work a full time job outside of agriculture. However, all of the panel members do some custom work in addition to their own farming operation. This custom work consists of custom haying, planting, dirt work, spraying, combining, crop insurance selling and adjusting.

Baseline Representative Farm:

The baseline farm consists of corn, soybeans, wheat and double crop soybeans planted on 400 acres of cropland. The farm was started in 2003 with the purchase of the 88 acres of land: 80 acres of cropland and 8 acres of non-productive land. The farm owns 20% of the 408 total acres. The 320 acres of leased crop acres are all cash leased at \$145/acre. The crop acres are split between corn (50%), soybeans (45%), and wheat/double crop soybeans (5%) This farm is associated with a larger farming operation, primarily an extension of a multi-family operation, and thus receives benefits of that larger operation. One of those benefits is the farm owns a share of several pieces of equipment with the larger family operation.

The table below includes summary financials for the baseline farm over the projection period (2010 – 2014). The farm has total operator assets, including land, machinery, and cattle of \$759,000. The baseline farm starts the simulation period (2007) with 67% debt on land and 20% debt on machinery. The farm averages \$14,700 per year return to family living (\$36.77/acre). This number is the surplus the owner/operator has left over after paying all cash costs and uses to pay themselves for their management and labor.

FINANCIALS (2010-14)				2010-11	2012-14
Operator assets	\$759,000	Cash risk score			
Total cash receipts	\$237,400				
Net cash farm income	\$49,800				
Return to family living	\$14,700				

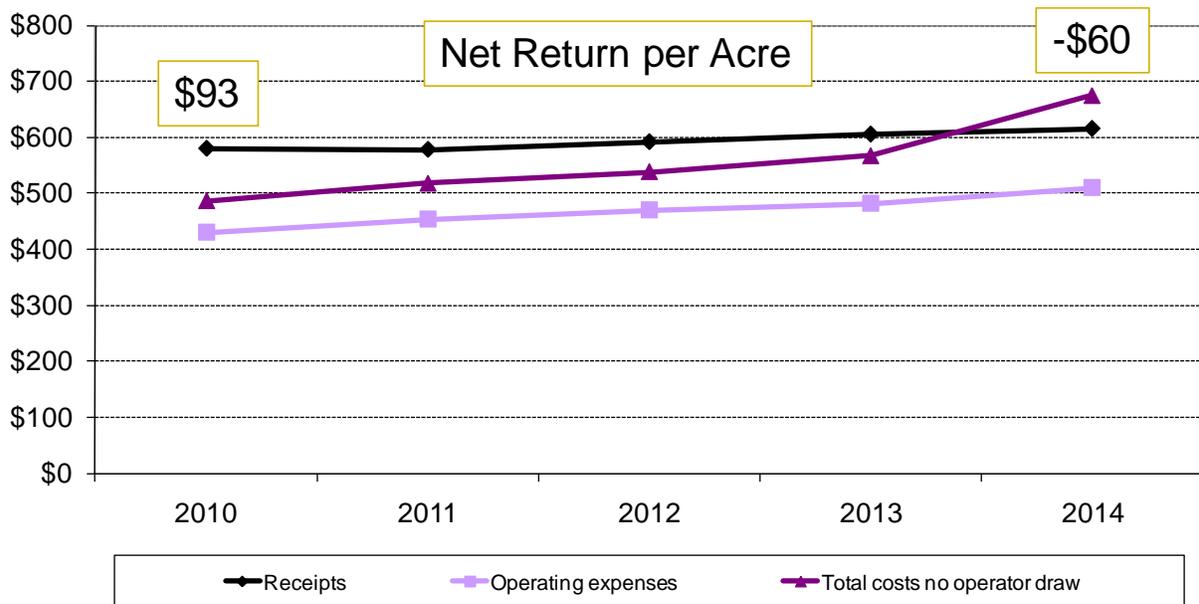
Prob. Of Deficit*	Color	Risk Score
Under 25		Low
25 to 50		Moderate
50 to 75		High
Over 75		Severe

* Probability of cash flow deficit in any year of the projection period.

Another measure of the overall performance of the operation is the probability or likelihood that the farm will face a cash flow deficit. A farm faces a cash flow deficit when there is not enough cash available to cover all cash costs incurred by the operation throughout the year. Costs include variable production expenses, fixed costs, principal and interest payments, taxes, and family living. The table above shows the baseline farms cash risk score for two different time periods: 2010-2011 and 2012-2014. This farm scores in the orange category (50-75% probability of a cash flow deficit) in the near term (2010-11), and red (greater than a 75% probability of cash flow deficit) in the intermediate term (2012-14). Therefore, in at least one of

the two years in the near term the farm has a 50%-75% chance that it will NOT have enough cash to cover all cash costs. The farms cash risk increases in the intermediate term and the farm has at least one year where there is greater than a 75% chance the farm will NOT have enough cash to cover all cash costs. This would not be a good situation for an agricultural producer. This farm would be categorized as having high and severe cash risk.

The graph below contains three lines: operating expenses per acre, total costs per acre (not including any payment to the owner/operator for their management and labor), and cash receipts expressed on a per acre basis. The net return per acre is the difference between total receipts per acre and total costs per acre. This is the amount of cash per acre that is available for the owner/operator to pay themselves for their management and labor of the operation.



Over the projection period, the baseline farm is facing increasing costs and receipts. Net return per acre for the baseline farm ranges from a low of -\$60.07/acre in 2014 and a high of \$93.25/acre in 2012. The farm faces a negative net return/acre in 2014 because of scheduled machinery replacement. In 2014, the farm is scheduled to replace their primary tractor and grain cart.

Alternatives:

The panels, with assistance from the local facilitator, were asked to come up with two to three alternative scenarios that they would like to see simulated and compared back to the baseline. Many of these options are changes that the panel members are considering for their individual operations or changes that they have seen others in the area implement. The panel was then presented with the results and how they compared to the baseline.

Alternative 1: Add 40 acres of cash leased cropland every other year starting in 2010 (2010, 2012, and 2014)

This alternative starts with the baseline farm. Beginning in 2010, the farm cash rents an additional 40 tillable acres for \$145/acre, then another 40 tillable acres for \$165/acre in 2012, and another 40 tillable acres in 2014. By 2014, the farm has gone from 400 tillable acres to 520 tillable acres. The farm now owns 17% and cash leases 83%. Each time the farm rents an additional 40 acres, the acres are split 50/50 between corn and soybeans. Therefore, by 2014 the farms crop mix is 260 acres of corn (50%), 240 acres of soybeans (46%) and 20 acres of wheat/double crop soybeans (4%). Changes to fixed costs are as follows:

- Part Time Labor: Add \$400 in 2012, 2013, and 2014.
- Fuel: Determine fuel cost per tillable acre beginning in 2010 and increase the total to match the new acres
- Repairs, Maintenance & Supplies: Determine cost per tillable acre beginning in 2010 and increase the total to match the new acres

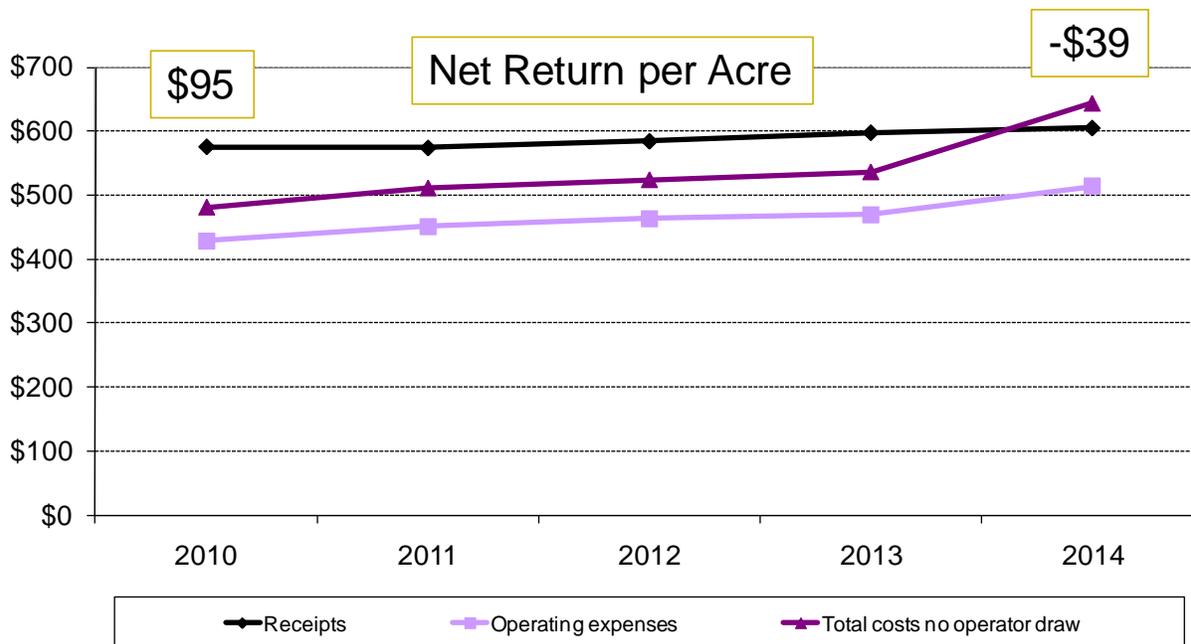
The farm also added a grain bin in 2014 as follows:

- 20,000 bu grain bin at a cost of \$1.50/bu for a total cost of \$30,000
- Purchased using an FSA loan with a 3% interest rate and 20% down payment (\$6,000 down and a loan balance of \$24,000) with a loan life of 7 years.

The table below includes summary financials for Alternative 1 over the projection period (2010-2014). Total assets rose relative to the baseline farm (\$759,000) to an average of \$770,000. Alternative 1 started the simulation period with the same 67% debt on land and 20% debt on machinery as the baseline. Under Alternative 1 return to family living increases to an average of \$21,700/year (\$48.38/acre), an increase of \$7,000/year. The cash risk rating remains the same under Alternative 1 as the baseline. While the rating remains the same, Alternative 1 does reduce cash flow risk, just not enough to move to a higher category. The alternative is ranked as having high and severe cash flow risk.

<u>FINANCIALS (2010-14)</u>		Cash risk score																
Operator assets	\$770,000	2010-11	2012-14															
Total cash receipts	\$277,600																	
Net cash farm income	\$57,200	<table border="1"> <thead> <tr> <th>Prob. Of Deficit*</th> <th>Color</th> <th>Risk Score</th> </tr> </thead> <tbody> <tr> <td>Under 25</td> <td>Green</td> <td>Low</td> </tr> <tr> <td>25 to 50</td> <td>Yellow</td> <td>Moderate</td> </tr> <tr> <td>50 to 75</td> <td>Orange</td> <td>High</td> </tr> <tr> <td>Over 75</td> <td>Red</td> <td>Severe</td> </tr> </tbody> </table>		Prob. Of Deficit*	Color	Risk Score	Under 25	Green	Low	25 to 50	Yellow	Moderate	50 to 75	Orange	High	Over 75	Red	Severe
Prob. Of Deficit*	Color	Risk Score																
Under 25	Green	Low																
25 to 50	Yellow	Moderate																
50 to 75	Orange	High																
Over 75	Red	Severe																
Return to family living	\$21,700	<small>* Probability of cash flow deficit in any year of the projection period.</small>																

The graph below shows operating expenses, total costs with no operator draw for management and labor, and receipts on a per acre basis. Alternative 1 increases net returns per acre when compared to the baseline. Net returns per acre range from -\$38.75/acre in 2014 to \$95.02/acre in 2010. Alternative 1 averages \$11.61/acre more in net returns per acre over the 2010-2014 period when compared to the baseline.



Alternative 2: Purchase 80 acres of cropland (70 acres tillable) in 2011

This alternative starts with the baseline farm. In 2011, the farm purchases an 80 acre parcel of land (70 acres tillable) as follows:

- Purchase price of \$3,500/acre for a total cost of \$280,000
- Down payment of 20% or \$56,000
- Loan: \$224,000 with an interest rate of 6.5% for 25 years

Beginning in 2011, the farm now has 488 acres of which 470 acres are tillable. The farm now owns 168 acres (34%) and cash rents the additional 320 acres (66%). The additional 70 tillable acres are split equally between corn (35 acres) and soybeans (35 acres). The resulting crop mix consists of 235 acres of corn (50%), 215 acres of soybeans (46%) and 20 acres of wheat/double crop soybeans (4%). Changes to fixed costs are as follows:

- Part Time Labor: add \$400/year beginning in 2011
- Insurance: add \$100/year beginning in 2011 for liability insurance on new owned acres
- Real Estate Taxes: determine tax per tillable acre beginning in 2011 and increase the total to match the new acres
- Fuel: Determine fuel cost per tillable acre beginning in 2010 and increase the total to match the new acres
- Repairs, Maintenance & Supplies: Determine cost per tillable acre beginning in 2010 and increase the total to match the new acres

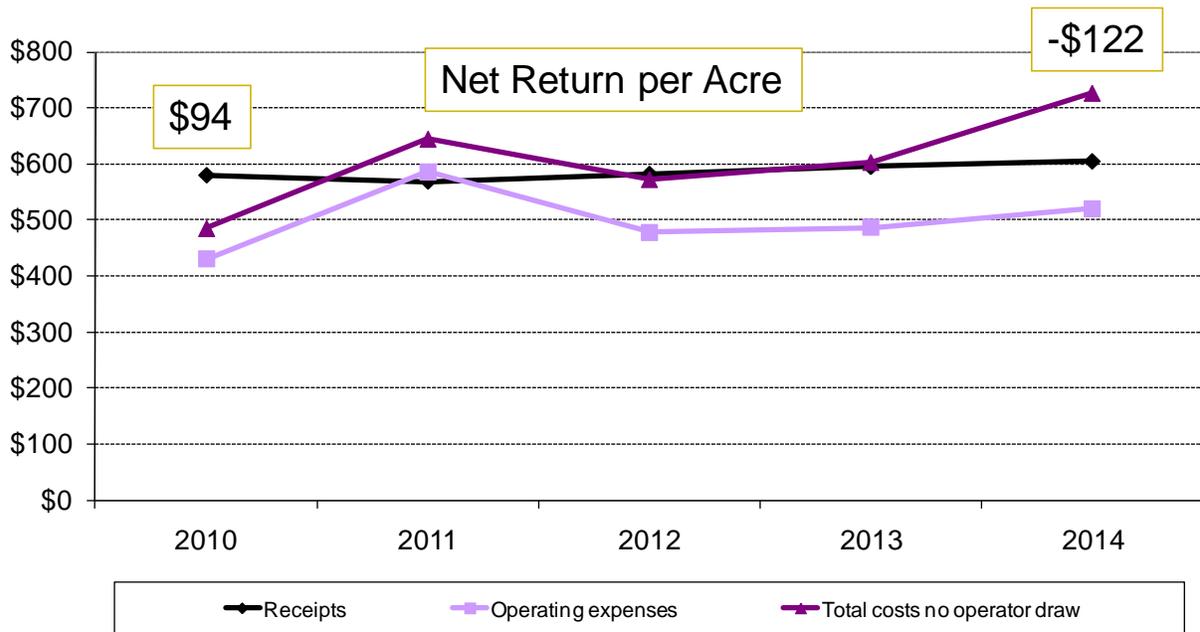
The table below includes summary financials for Alternative 2 over the projection period (2010-2014). Total assets rose relative to the baseline farm (\$759,000) to an average of \$931,000. Alternative 2 started the simulation period with the same 67% debt on land and 20% debt on machinery as the baseline. However, this alternative increases long term debt significantly in 2011 (\$224,000) with the purchase of 70 acres of tillable cropland. Under Alternative 2 return to family living declines to an average of -\$11,100/year (-\$20.90/acre), a decrease of \$25,800/year.

The cash risk rating is the same as the baseline in the intermediate term (2012-14) and declines in the near term (2010-14). Alternative 2 increases the cash flow risk significantly over time. The alternative is ranked as having severe cash flow risk compared to the high and severe risk rating of the baseline.

<u>FINANCIALS (2010-14)</u>		Cash risk score	
Operator assets	\$931,000	2010-11	2012-14
Total cash receipts	\$267,200	Prob. Of Deficit*	Color Score
Net cash farm income	\$38,200	Under 25	Low
Return to family living	-\$11,100	25 to 50	Moderate
		50 to 75	High
		Over 75	Severe

* Probability of cash flow deficit in any year of the projection period.

The graph below shows operating expenses, total costs with no operator draw for management and labor, and receipts on a per acre basis. Alternative 2 has much lower net returns per acre on average when compared to the baseline. Net returns per acre range from a low of -\$121.85/acre in 2014 to a high of \$93.88/acre in 2010. Alternative 2 averages \$57.67/acre less in net returns per acre over the 2010-2014 period when compared to the baseline. The farm is not able to generate enough cash to cover the additional principal and interest payments on the new land purchased in 2011.



Alternative 3: Add 160 acres (140 acres tillable) of cash leased cropland in 2011 that is adjacent to the existing operation

This alternative starts out with the baseline farm. Beginning in 2011, the farm cash rents an additional 140 tillable acres for \$185/acre. Beginning in 2011, the farm has gone from 400 tillable acres to 540 tillable acres. The farm now owns 16% and cash leases 84%. The additional acres are split 50/50 between corn and soybeans. Therefore, beginning in 2011 the

farms crop mix is 270 acres of corn (50%), 250 acres of soybeans (46%) and 20 acres of wheat/double crop soybeans (4%). Changes to fixed costs are as follows:

- Part Time Labor: Add \$700/year beginning in 2011
- Fuel: Determine fuel cost per tillable acre beginning in 2011 and increase the total to match the new acres
- Repairs, Maintenance & Supplies: Determine cost per tillable acre beginning in 2011 and increase the total to match the new acres

Changes to variable costs are as follows:

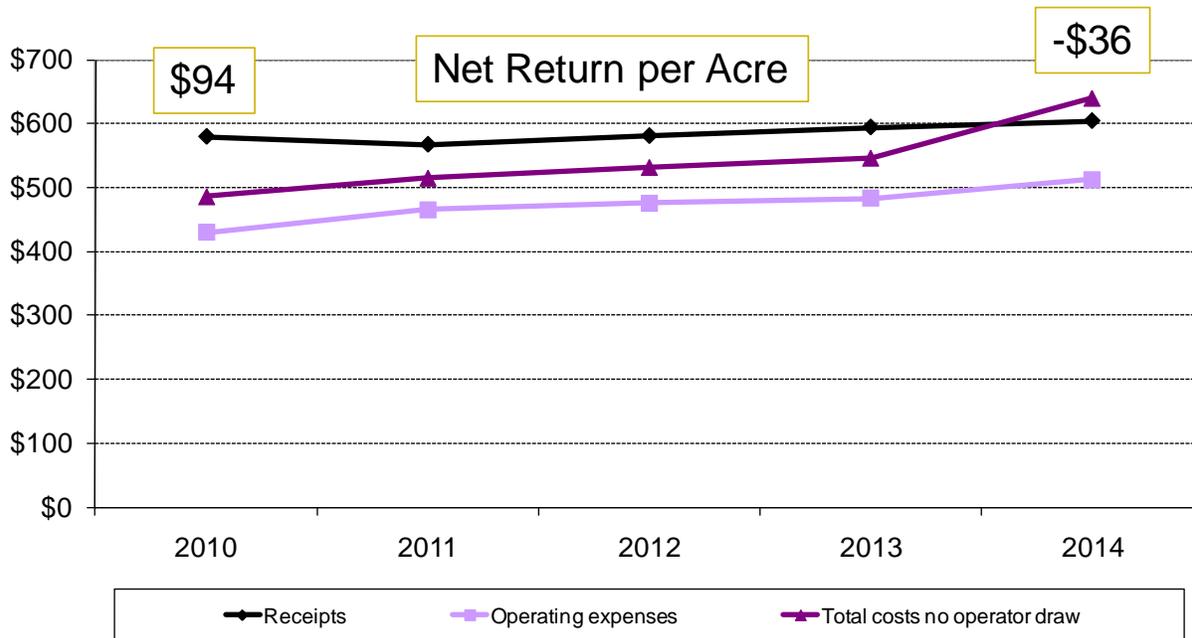
- Storage Cost for Corn:
 - o Beginning in 2011, 1/2 of the new acres of corn production (35 acres * 150 bu/acre = 5250 bu.) will be pre sold for delivery at harvest with the other half (5250 bu.) will be stored for 5 months @ \$0.04/bu = \$0.20/bu storage cost
- Drying Cost for Corn:
 - o Beginning in 2011, dry 2 pts (\$0.05/pt) @ the local elevator for all of the new corn production (70 acres * 150 bu/acre = 10,550 bu; \$0.10/bu * 10,550 bu = \$1,050)

The table below includes summary financials for Alternative 3 over the projection period (2010-2014). Total assets rose relative to the baseline farm (\$759,000) to an average of \$768,000. Alternative 3 started the simulation period with the same 67% debt on land and 20% debt on machinery as the baseline. Under Alternative 3 return to family living increases to an average of \$19,800/year (\$41.45/acre), an increase of \$5,100/year. The cash risk rating remains the same under Alternative 3 as the baseline. While the rating remains the same, Alternative 3 does reduce cash flow risk, just not enough to move to a higher category. The alternative is ranked as having high and severe cash flow risk.

FINANCIALS (2010-14)				2010-11 2012-14																
Operator assets	\$768,000	Cash risk score																		
Total cash receipts	\$299,700		<table border="1"> <thead> <tr> <th>Prob. Of Deficit*</th> <th>Color</th> <th>Risk Score</th> </tr> </thead> <tbody> <tr> <td>Under 25</td> <td>Green</td> <td>Low</td> </tr> <tr> <td>25 to 50</td> <td>Yellow</td> <td>Moderate</td> </tr> <tr> <td>50 to 75</td> <td>Orange</td> <td>High</td> </tr> <tr> <td>Over 75</td> <td>Red</td> <td>Severe</td> </tr> </tbody> </table>	Prob. Of Deficit*	Color	Risk Score	Under 25	Green	Low	25 to 50	Yellow	Moderate	50 to 75	Orange	High	Over 75	Red	Severe		
Prob. Of Deficit*	Color	Risk Score																		
Under 25	Green	Low																		
25 to 50	Yellow	Moderate																		
50 to 75	Orange	High																		
Over 75	Red	Severe																		
Net cash farm income	\$56,200																			
Return to family living	\$19,800																			

* Probability of cash flow deficit in any year of the projection period.

The graph below shows operating expenses, total costs with no operator draw for management and labor, and receipts on a per acre basis. Alternative 3 increases net returns per acre when compared to the baseline. Net returns per acre range from a low of -\$35.91/acre in 2014 to a high of \$93.88/acre in 2010. Alternative 3 averages \$4.68/acre more in net returns per acre over the 2010-2014 period when compared to the baseline.



Summary:

The table below summarizes assets, receipts, net cash farm income, and return to family living for the baseline, Alternative 1, Alternative 2, and Alternative 3. Assets, receipts, and expenses increase for the three alternatives when compared to the baseline. The alternatives increase number of cash leased crop acres (Alternatives 1 and 3) and owned crop acres (Alternative 2) which result in the increases. Alternatives 1 and 3 result in an increase in average returns to family living, or net returns. The purchase of 80 acres of crop land (Alternative 2) results in a decrease in average return to family living. The income generated by the additional 80 acres of owned land is not enough to cover the additional principal and interest payments.

	Baseline	Alternative 1	Alternative 2	Alternative 3
Operator Assets	\$759,000	\$770,000	\$931,000	\$768,000
Total Cash Receipts	\$237,400	\$277,600	\$267,200	\$299,700
Net Cash Farm Income	\$49,800	\$57,200	\$38,200	\$56,200
Return to Family Living	\$14,700	\$21,700	-\$11,100	\$19,800

Overall, this beginning farmer representative farm struggles to meet all cash obligations under baseline conditions resulting in high and severe risk ratings (see table below) over the next five years. The panel of beginning farmers identified three alternative scenarios, two that improve and one that hurts the financial outlook over the next five years.

The three alternatives all follow the trend of high and severe cash flow pressure as the baseline. Alternatives 1 and 3 decrease the probability of cash flow deficit slightly. When compared the baseline, Alternative 1 decreases the probability of cash flow deficit by an average

of 7 percent, and Alternative 3 decreases the probability of cash flow deficit by an average of 6% over 2010-2014. Alternative 2 results in more cash flow pressure than the baseline, an increase of 9% over 2010-2014.

Risk Ratings

	2010-2011	2012-2014
Baseline		
Alternative 1		
Alternative 2		
Alternative 3		

Prob. Of Deficit*	Color Score	Risk Score
Under 25		Low
25 to 50		Moderate
50 to 75		High
Over 75		Severe

* Probability of cash flow deficit in any year of the projection period.

Reference Notes

The summary financial tables always refer to the annual average of the variable for the five projection years 2010–2014.

Cash receipts is total gross revenue from all sources, including cash sales in the market, insurance indemnities and government payments for crops that may not be planted. This figure also includes income from custom farming activity.

Cash risk rating is scored based on the probability of cash flow deficit over two time periods. Near term are the calendar years 2010 and 2011. Intermediate term is the period 2012-2014. Low risk is less than a 25 percent chance of cash flow deficit in *any* year of the time period; moderate risk is 25 to 49 percent, high risk is 50 to 74 percent, and severe risk is greater than a 75 percent probability of a cash flow deficit.

Net cash farm income is total cash receipts less all farm *operating* expenses including interest payments on all outstanding debt. Cash costs not included are principal payments on liabilities, cash down payment for capital replacement, income taxes, and owner withdrawal.

Return to family living is the farm's after-tax bottom line for the given year. It is the residual after all other cash expenses are deducted from current year receipts. This calculation includes carryover debt, but not carryover cash from prior years.

Probability of cash flow deficit is the chance that total receipts will be less than total cash expenses as a result of price and production risk. Alternatively, it is the chance that returns to family living will be less than the minimum owner withdrawal.