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FAPRI Beginning Farmer and Rancher Development Project

North Central Feedgrain and Cow/Calf Representative Farm

FAPRI-MU Report #13-10

Providing objective analysis for over 25 years

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FAPRI Beginning Farmer and Rancher Development Project –
North Central Feedgrain and Cow/Calf 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 Parman Green, Agriculture Business County Program Director - Carroll County & Central Missouri in the North Central region of the state. The panel consists of 7 producers from the counties of Carroll and Saline. Panel members have been farming for 4 months to 7 years with an average of 3.33 years farming. The panel members own between 0-100 acres, cash lease 0-700 acres, share lease 0-800 acres, and lease 0-150 acres of hay/pasture. All of the panel members are planting a 50/50 crop mix of corn and soybeans. The producers' cattle operations range from 0-40 cows and background their own calves from 0-90 days. 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, tillage, taking care of someone else's cattle, spraying, and working for extended families' farms.

Baseline Representative Farm:

The baseline farm consists of corn and soybeans planted on 500 acres of cropland and 15 cow/calf pairs on 45 acres of pasture. The farm was started in 2006 with the purchase of the 85 acres of land: 80 acres of cropland and 5 acres of non-productive land. The farm owns 15% of the 550 total acres. The 420 acres of leased crop acres are half cash leased (210 acres), at $150/acre, with the remaining 210 acres share leased in a 50/50 share lease arrangement. The crop acres are split between corn (50%) and soybeans (50%). The calves are sold straight off the cow at weaning with steer calves sold at 500 lbs and heifer calves sold at 450 lbs. The farm does not put up any hay and purchases hay each year. 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 use of equipment that is not owned by this 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 $507,000. The baseline farm starts the simulation period (2007) with 89% debt on land and 50% debt on machinery. The farm averages $57,800 per year return to family living ($106.11/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)			
Operator assets	$587,000	Cash risk score	2010-11 2012-14
Total cash receipts	$256,900		
Net cash farm income	$81,500		
Return to family living	$57,800		

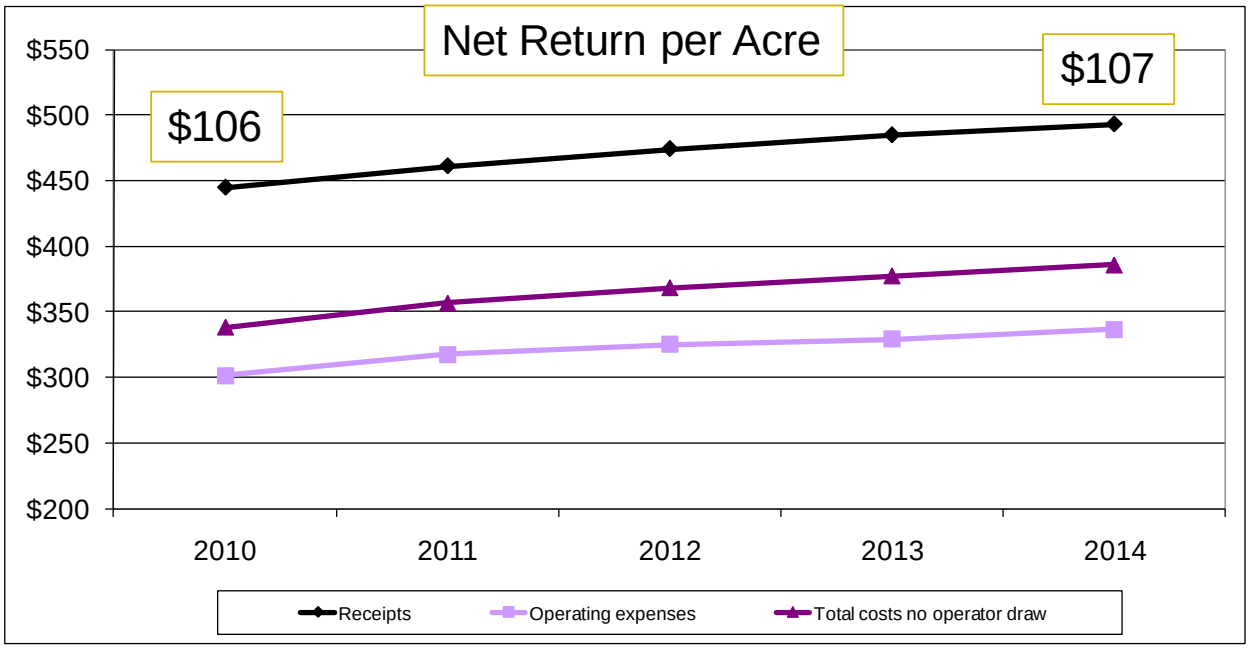
Prob. Of Deficit*	Color Score	Risk Score
Under 25		Low
25 to 50		Moderate
50 to 75		High
Over 75		Severe

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

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 yellow category (25-50% probability of a cash flow deficit) in both time periods. Therefore, each year the farm has a 25%-50% chance that it will NOT have enough cash to cover all cash costs. This is not the best positions for a producer, but also not the worse. This farm would be categorized as having moderate 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 $104.33/acre in 2011 and a high of $107.10/acre in 2013.

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 200 acres of cash rented crop acres in 2010 and an additional 200 acres in 2012

This alternative starts with the baseline farm. Beginning in 2010, the farm leases an additional 200 acres of cash rented crop land at $200/acre. The acres are planted to corn (100 acres) and soybeans (100 acres). Then, in 2012, the farm leases an additional 200 acres of cash rented crop land at $200/acre. The acres are planted to corn (100 acres) and soybeans (100 acres). Crop production costs, yields and prices from the baseline farm are used on the additional acres.

Fixed Costs:

- Labor: Add $400/yr in 2010 & 2011 and $800/yr in 2012-2016
- Repairs,/Maintenance/Supplies: Add $3,500/yr in 2010 & 2011 and $7,000/yr in 2012-2016
- Insurance: Add $1,250/yr in 2011 & 2012 and $2,500/yr in 2012-2016
- Fuel: Calculate fuel cost/acre in baseline based on 500 tillable acres and adjust it to 700 tillable acres in 2011 & 2012 and 900 tillable acres in 2012-2016
- Accounting & Legal: Add $50/yr in 2011 & 2012 and $100/yr in 2012-2016

Machinery:

- Trade up tractor in 2010 to 250HP FWA; $75,000, 8 yr life, used
- Trade up planter in 2012 from a 16 row row, split row planter; $70,000 cost, 8 year life, used
- Purchase Anhydrous bar (16 shank) in 2010; $20,000 cost, 20 year life, used
- Purchase tillage equipment in 2012; $25,000 cost, 10 year life, used
- Purchase semi truck and trailer in 2011; truck $20,000 cost, 5 year life, used; trailer $20,000 cost, 15 year life, used
- Purchase row shut offs for planter in 2012; $10,000 cost, 8 year life; new
- Purchase tractor GPS in 2010; $5,000 cost, 8 year life, new

Cut hauling cost in half beginning in 2011 when the semi and trailer are purchased.

The table below includes summary financials for Alternative 1 over the projection period (2010-2014). Total assets rose relative to the baseline farm ($587,000) to an average of $738,000. Alternative 1 started the simulation period with the same 89% debt on land and 50% debt on machinery as the baseline. Under Alternative 1, return to family living decreases to an average of $25,200/year ($31.92/acre), a decrease of $32,600/year. The cash risk rating also suffers under Alternative 1 when compared to the baseline. Alternative 1 increases the cash flow risk. The alternative is ranked as having high cash flow risk compared to the moderate risk rating of the baseline.

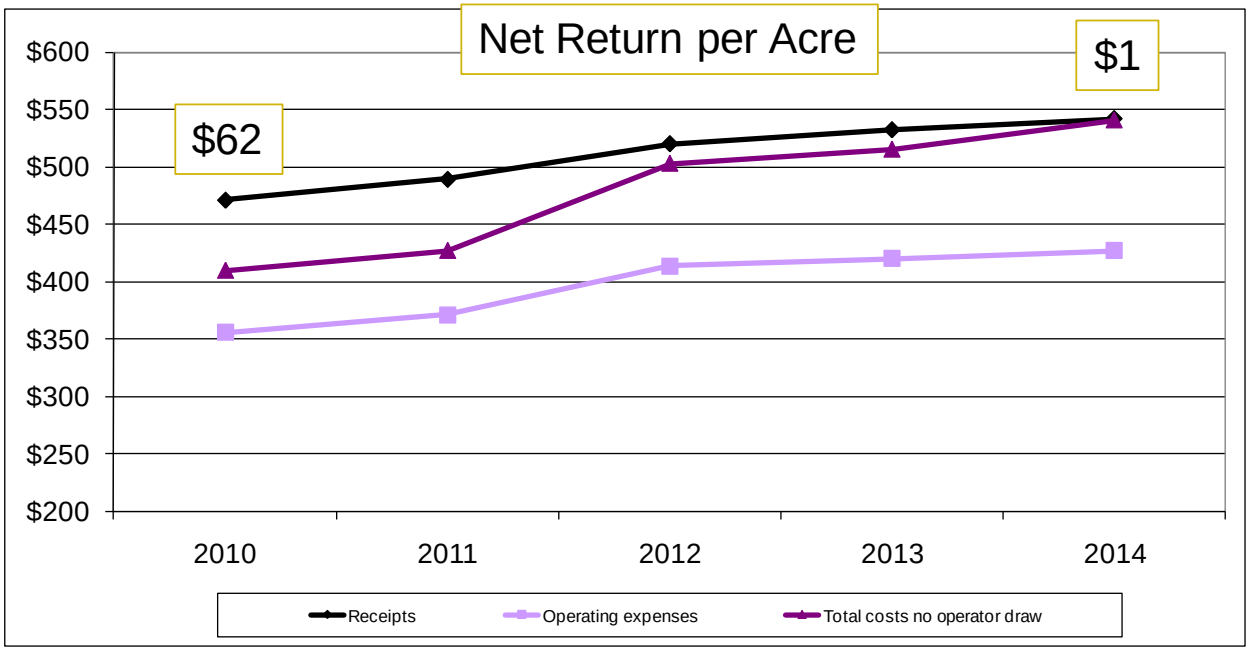
FINANCIALS (2010-14)			
Operator assets	$738,000	Cash risk score	2010-11 2012-14
Total cash receipts	$444,200		
Net cash farm income	$97,800		
Return to family living	$25,200		

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.

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 decreases net returns per acre when compared to the baseline. Net returns per acre range from $62.34/acre in 2011 to $1.20/acre in

2014. Alternative 1 averages $74.19/acre LESS in net returns per acre over the 2010-2014 period when compared to the baseline.



Alternative 2: Add grain bins (25,000 bu) in 2010 and 2012, add 400 acres of cash rented crop acres in 2012

This alternative starts with the baseline farm. Beginning in 2010, the farm puts up a 25,000 bu grain bin at a cost of $37,500 ($1.50/bu). Changes are made to both fixed and variable costs and are highlighted below. In 2012, the farm puts up another 25,000 bu grain bin at a cost of $37,500 ($1.50/bu), adds sensors to the new grain bin at a cost of $4,500 ($0.18/bu), and rents an additional 400 acres of cash rented crop land at $200/acre. The acres are planted to corn (200 acres) and soybeans (200 acres). Crop production costs, yields and prices from the baseline farm are used on the additional acres. Changes to costs are as follows:

Variable costs:

- Storage cost: take off ¼ of storage cost beginning in 2010 and an additional ¼ of baseline storage cost in 2012.
- Corn Price: add $0.25/bu to ½ of corn productions price beginning in 2010 and a total of 2/3 of the corn production beginning in 2012
- Corn Drying Cost: cut corn drying cost in ½ beginning in 2010 and cut it to 2/3 of original cost starting in 2012
- Hauling Cost: cut hauling cost in half beginning in 2010

Fixed Costs:

- Utilities: increase 25% ($450/yr) beginning in 2010 and add an additional $300/yr beginning in 2012
- Insurance: add $200/yr beginning in 2010 and an additional $2,500/yr beginning in 2012
- Accounting & Legal: add $100/yr in 2012-2016
- Labor: add $800/yr in 2012-2016
- Repiars/Maintenance/Supplies: add $7,000/yr in 2012-2016

- Fuel: Calculate fuel cost/acre in baseline based on 500 tillable acres and adjust it to 900 tillable acres in 2012-2016

Machinery:

- Purchase semi truck and trailer in 2010; truck $20,000 cost, 5 year life, used; trailer $20,000 cost, 15 year life, used
- Trade up tractor in 2011 to 250HP FWA; $75,000, 8 yr life, used
- Purchase tractor GPS in 2010; $5,000 cost, 8 year life, new
- Trade up planter in 2012 from a 16 row, split row planter; $70,000 cost, 8 year life, used
- Purchase row shut offs for planter in 2012; $10,000 cost, 8 year life; new

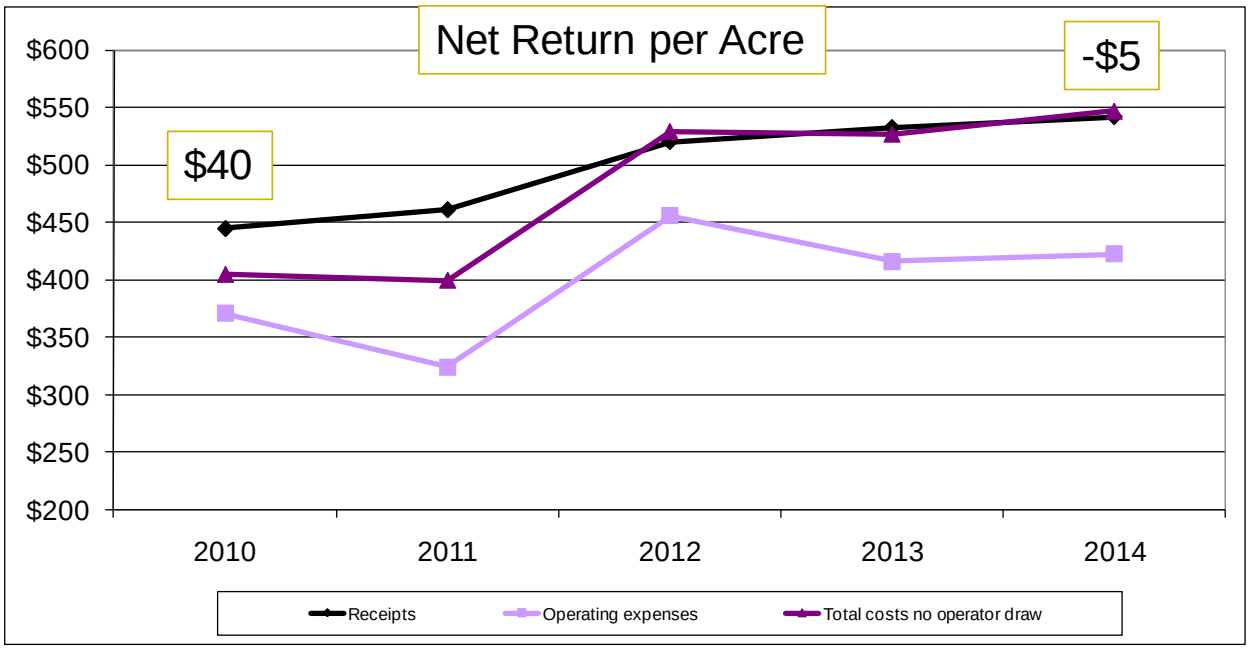
The table below includes summary financials for Alternative 2 over the projection period (2010-2014). Total assets rose relative to the baseline farm ($587,000) to an average of $736,000. Alternative 2 started the simulation period with the same 89% debt on land and 50% debt on machinery as the baseline. Under Alternative 2, return to family living decreases to an average of $9,500/year ($18.69/acre), a decrease of $48,300/year. Alternative 2 increases the cash flow risk over time. The alternative is ranked as having high and severe cash flow risk compared to the moderate risk rating of the baseline.

FINANCIALS (2010-14)			
Operator assets	$736,000	Cash risk score	2010-11 2012-14
Total cash receipts	$399,800		
Net cash farm income	$79,700		
Return to family living	$9,500		

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.

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 lower net returns per acre on average when compared to the baseline. Net returns per acre range from -$9.05/acre in 2012 to $61.91/acre in 2011. Alternative 2 average $87.42/acre less in net returns per acre over the 2010-2014 period when compared to the baseline.



Alternative 3: Purchase 90 calves and background for 120 days

This alternative starts out with the baseline farm. Beginning in November of 2009, the farm purchases 90 calves at an average weight of 550 lbs and backgrounds them for 120 days, selling in March of 2010. The calves will gain an average of 2lbs/day and be sold at an average weight of 790 lbs. This will be repeated every year through the remainder of the simulation. The farm will plant a cover crop on 160 acres of crop ground (80 acres owned and 80 acres of rented ground) to provide grazing for the calves.

Feed:

- Corn: 2 lbs/hd/day for 90 days = 16,200 lbs = 289.3 bu = 3.21 bu/hd
  5 lbs/hd/day for 30 days = 13,500 lbs = 241.1 bu = 2.67 bu/hd
- Hay: 30 lbs/hd/day for 30 days = 81,000 lbs = 40.5 tons = 0.45 tns/hd

Non-Feed Costs:

- 1/3 of calves will be doctored @ $10/hd = $3.33/hd
- Hauling charge of $4/hd

Machinery/Facilities:

- Purchase hay un-roller in 2010; $800 cost, 10 yr life, used
- Working facilities in 2010; $10,000 cost, 5 yr loan

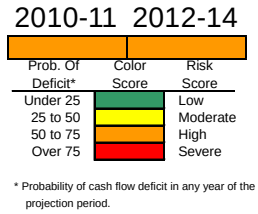
Fixed Costs:

- Insurance: increase $500/yr beginning in 2009
- Repairs/Maintenance/Supplies: Increase $500/yr beginning in 2010
- Fuel: Add another 100 gallons @ $2/gallon beginning in 2009
- Labor: Add another $300/yr (30 hrs @ $10/hr) beginning in 2009

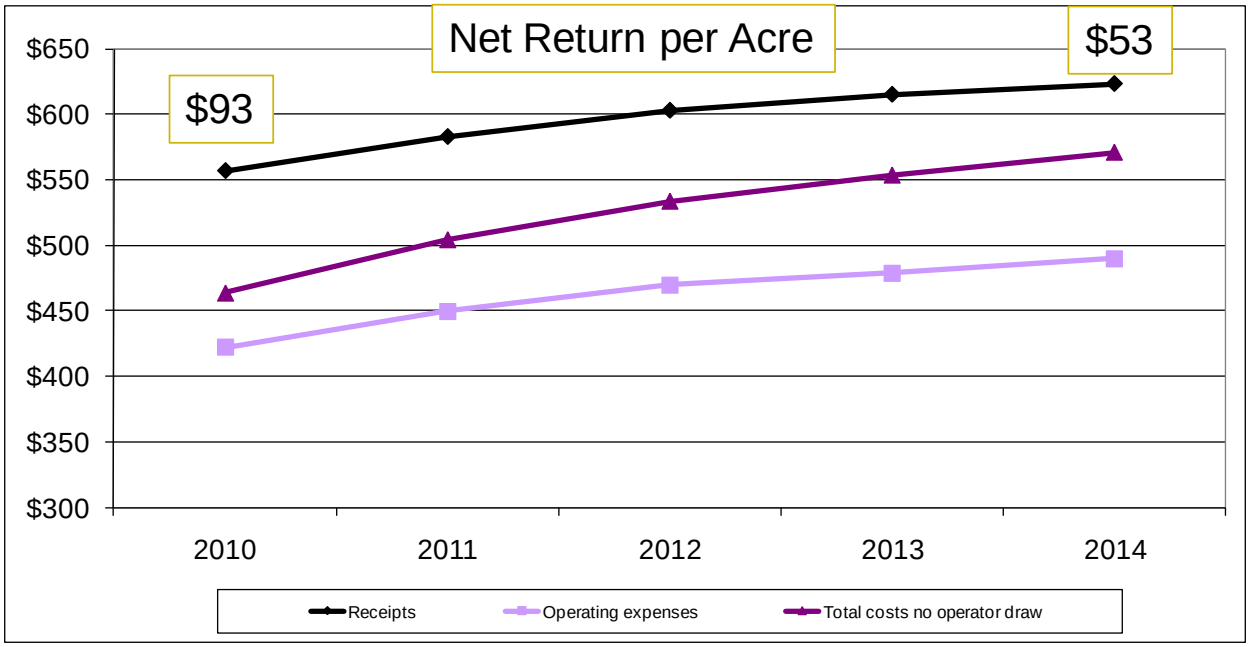
The table below includes summary financials for Alternative 3 over the projection period (2010-2014). Total assets rose relative to the baseline farm ($587,000) to an average of $605,000. Alternative 3 started the simulation period with the same 89% debt on land and 50% debt on machinery as the baseline. Under Alternative 3 return to family living decreases to an average of $38,600/year ($70.87/acre), a decrease of $19,200/year. Alternative 3 increases the cash flow

risk over time. The alternative is ranked as having high cash flow risk compared to the moderate risk rating of the baseline.

FINANCIALS (2010-14)			
Operator assets	$605,000	Cash risk score	
Total cash receipts	$324,900		
Net cash farm income	$73,000		
Return to family living	$38,600		



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 has lower net returns per acre on average when compared to the baseline. Net returns per acre range from $52.53/acre in 2014 to $92.70/acre in 2010. Alternative 3 averages $35.24/acre less 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 and receipts increase for the three alternatives when compared to the baseline. Net cash farm income increases for Alternative 1, but decreases for Alternatives 2 and 3, while return to family living decreases for all three alternatives.

The panel was very aggressive when coming up with their alternatives. While all three alternatives were focused on growing the operation, they may have been too aggressive which

results in lower returns for all three alternatives when compared to the baseline. The alternatives increase number of cash leased crop acres (Alternatives 1 and 2), add grain storage bins (Alternative 2), purchase additional equipment (Alternatives 1, 2, and 3), and purchase calves to background (Alternative 3) which result in the increases in assets and receipts.

	Baseline	Alternative 1	Alternative 2	Alternative 3
Operator Assets	$587,000	$738,000	$736,000	$605,000
Total Cash Receipts	$256,900	$444,200	$399,800	$324,900
Net Cash Farm Income	$81,500	$97,800	$79,700	$73,000
Return to Family Living	$57,800	$25,200	$9,500	$38,600

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

The three alternatives all increase the cash flow pressure when compared to the baseline. The increase in revenue (due to increases in acres or calves) is not sufficient to meet the additional expenses, primarily the purchase of additional machinery. When compared to the baseline, Alternative 1 increases the probability of cash flow deficit by an average of 24%, Alternative 2 increases the probability of cash flow deficit by an average of 33%, and Alternative 3 increases the probability of cash flow deficit by an average of 21% 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.