



Finding Financial Success in Uncertain Times

By Jonathan LaPorte, Farm Management Educator

The 2019 growing season will likely be looked on as a year most producers want to forget. As extreme weather impacted spring planting, overall growing conditions, and even harvest, there was plenty we'd like to put out of our minds. Unfortunately, the reality is that these conditions could occur again. As we turn the calendar to 2020, we should take time to consider lessons learned from this past year and how we can use them to better prepare against similar situations down the road.

One of the most important takeaways from 2019 was that we were collectively unprepared. We simply were not ready for the tremendous amount of rainfall and wet conditions that we faced at the start of the planting season. This situation left many farms trying to quickly understand what their best options were, and then which one met their needs. The factors that go into those decisions serve as a roadmap and guide on how to better prepare for these types of situations. Let's take a look at the stops along that roadmap:



Stop One: Importance of Farm's Financial Status

The first place to start is to understand that each farm was at a different place financially when the rain started to fall. Some farms opted to plant as many acres as they could. Others took advantage of their crop insurance policies and left many fields untouched. Despite how different the choices were, they all had one central theme in common - "What option gave the best opportunity to make enough revenue to cover expenses?"

The answer to this question was different for each farm. One key difference was that some farms were working through this year's expenses and some of last year's as well. Unpaid bills that remained from losses in recent years still loomed over many producers and affected their decisions. It was a difficult scenario of trying to cover all of those expenses or not have significantly more unpaid bills going into the next year.

As we look to move into 2020, there will undoubtedly be more farms trying to weigh through this same situation. It is important that each farm understand where their financial starting point is for the 2020 year. To achieve this, MSU Extension recommends conducting a financial analysis using the farm's records.

Farm records are routinely thought about for two reasons: for managing income taxes or for getting a farm loan. When a tax return is prepared, it focuses on only cash income and expense transactions within a calendar year. However, that doesn't necessarily reflect all of the financial activities that happened for the production year. The financial picture is incomplete.

Let's look at an example farm:

Cash Income	\$150,000
- Cash Expense	\$110,000
- Depreciation	\$10,000
= Schedule F Income	\$30,000



Looking at this farm’s IRS tax return, did they make or lose money? According to the tax return the answer is yes, but did the farm really make \$30,000? What about adjustments for crops stored in the grain bin, both at the beginning and end of the year? Some of those bushels weren’t part of the year’s production, but weren’t part of the year’s cash transactions. This is where a financial analysis starts to put the pieces together and show the whole picture for a farm.

Let’s take another look at the previous example and start to add in all the components of a financial analysis.

Cash Income	\$150,000
- Cash Expense	\$110,000
- Depreciation	\$10,000
= Schedule F Income	\$30,000
- Beginning Inventory (Crops in Bin)	\$45,000
+ Ending Inventory (Crops in Bin)	\$5,000
= Net Change (subtracted from income)	-\$40,000
Net Farm Income (NFI)	-\$10,000

The changes from grain inventories between the beginning and end of the year can be thought of as changes to the farm’s income. Instead of \$150,000 in cash income, the actual income level would be closer to \$110,000. However, to better track these adjustments in a financial analysis, the “net change” between inventories is made against the overall net farm income. In this example, changes in inventories results in the farm having actually experienced a loss of \$10,000.

There are similar adjustments for other activities on the farm. For example, what is the impact of pre-paid expenses that were purchased?

Cash Income	\$150,000
- Cash Expense	\$110,000
- Depreciation	\$10,000
= Schedule F Income	\$30,000
Beginning Inventory (Crops in Bin)	\$45,000
Ending Inventory (Crops in Bin)	\$5,000
= Net Change (subtracted from income)	-\$40,000
Beginning Pre-Paid Expense (Seed & Chems)	-\$10,000
Ending Pre-Paid Expense (Seed & Chems)	+\$25,000
= Net Change (subtracted from expenses)	+\$15,000
Net Farm Income (NFI)	\$5,000

Pre-paid expenses can be thought of as changes to the farm’s total expenses for the year. The purchase of \$10,000 was made in the previous year, but were intended for this year’s production. While purchases of \$25,000 were made at the end of this year, but for next year’s production. This means that the net change is \$15,000 less expense for the year than what was reported in the checkbook.

The true (or accrual) net farm income is then \$5,000, which is far less than the \$30,000 shown on the IRS tax return. This significantly changes how much the farm actually has in a “typical year” to make loan payments, pay taxes, and possibly make additional purchases. It also highlights the importance of maintaining accurate balance sheets, which often hold the information for a farm’s inventories, pre-paid expenses, and other potential adjustments to net farm income.



This is why good, well-kept farm records are so critical. Using all of the information and not just the cash transactions in a financial analysis gives the whole picture for the production year. It adds in the missing pieces not seen on an IRS Tax Return and more fully explains where the farm is financially.

Knowing where the farm is financially becomes the foundation for you to begin making better-informed financial decisions. It also leads to the next stop on our roadmap: Cost of Production.

Stop Two: Cost of Production

Often times, the real factors driving the risks or concerns on the farm are largely unknown or not immediately understood. This was often the case this past year, as we experienced a lot of uncertainty and unknowns that influenced the decisions made by many farm managers. Many of those situations were benefited by those farms who had a good understanding of their operation's cost of production.

The phrase "cost of production" is commonly thought to focus almost exclusively on operating activities. This is often narrowed even further to what specifically went into raising livestock or producing a crop. Producers focus on yield and in the profitability generated by that production, which is what drove many of the decisions made this past year. However, if operating activities are the only focus, then we start to make decisions without looking at all the pieces, and our picture isn't whole. Not unlike what we described in the first part of our series, when making decisions using just the information in a farm's IRS tax returns.

While it certainly takes into account the activities from the farm's production, a complete review of a farm's cost of production looks at other activities as well (i.e. fixed, financing, opportunity, etc.). Looking at all activities allows producers to understand which ones add or take away from the farm's income. It also begins to reveal where the concerns or risks really are and, most importantly, what steps or actions can be taken to minimize their potential impact.

This is also another benefit of the financial analysis. It provides the starting point to begin identifying potential risks through an "enterprise analysis." An enterprise refers to each individual production area within the farm. An analysis begins by separating out incomes and expenses for each production area. Once everything is allocated to an individual enterprise, we can look at the specific risks or concerns that need to be addressed in order for each one to be successful.

The key is being able to look at the details of each enterprise and understand whether the information you're seeing should be a concern or considered reasonable for that production area. One of the best ways to determine if there's an area of risk is to compare the farm's cost of production against farms of similar size. Each year MSU Extension Telfarm publishes a benchmarking report that provides a comparison of similar size farms across Michigan.

(<https://www.canr.msu.edu/telfarm/business-analysis-summaries/>).

Another resource is the Farm Financial Management Database or FINBIN through the University of Minnesota. This database is a collection of benchmarking reports from across the Midwest for farms to compare against (<https://finbin.umn.edu/>). MSU is a partner and contributor to the database project.

Once risks are identified, we can think about potential changes to make in order to eliminate or at least minimize their impacts. If fertilizer costs are too high, can we achieve the same or similar yields with a different fertilizer plan? Or, if weed resistance could be a major concern, how does the cost of different chemical programs impact the farm's bottom-line? Comparison of the enterprise analysis to other benchmarks can also help to determine if the risks are even within the farm's ability to manage.

Finally, once we have identified our risks and our intentions to address them, we organize them into a plan of action. This is our guide for the direction we'll take the farm in the next year and helps consider what resources are needed. Do we have the materials or the knowledge to make our intended changes? If not, where can we get them or who can we enlist to help us address our risks? Most importantly, does this plan have the same potential to be profitable as what the farm was doing before?



One tool that can help look at the potential profitability is the Crop Budget Estimator Tool available through MSU Extension. This is a Microsoft Excel based tool designed for producers to use their own records in building a budget that can be used for marketing decisions, comparing chemistry and fertilizer programs, evaluating capital purchases, and other important farm management decisions. The tool can be located at: (https://www.canr.msu.edu/farm_management/budgets-cost-of-production)

Knowing what our cost of production was last year helps build the plan toward a better next year. It also leads to the next stop on our roadmap: Break-evens.

Stop Three: Break-Evens

Break-even is that point at which costs equal revenues. The farm has made no money, but at the same time it has not lost money either. This is the scenario farms want to achieve when the potential for profits seem unlikely. As the 2019 season progressed, much of the focus switched from earning profits to earning enough revenue to break-even. This change in strategy emphasizes the importance of knowing your farm's cost of production, which is linked and often used interchangeably with the concept of break-evens.

Crop Budget Estimator											
Template by: Jon LaPorte, Farm Management Educator Michigan State University Extension 120 N. Broadway, Suite 116, East Lansing, MI 48824 Phone: (269) 445-4458 Email: jlaporte@msu.edu											
Corn				Soybeans				Wheat			
After Soybeans				After Corn				After Soybeans			
INCOME											
Gross Revenue											
(Enter Below)											
Cash Price	\$18.85			\$9.47			\$4.95				
Expected Yield	153.72	Bushels		43.01	Bushels		85.88	Bushels			
Acres	295	Acres		245	Acres		98	Acres			
Government Payments	\$ 15.17			\$ 16.68			\$ 11.98				
Crop Insurance Indemnity Payments	\$ 14.56			\$ 12.39			\$ 10.74				
Total Gross Revenue	Per Acre \$ 621.55	Total Acres \$ 183,357.84		Per Acre \$ 436.37	Total Acres \$ 106,911.80		Per Acre \$ 446.84	Total Acres \$ 43,789.93			
EXPENSES											
Direct (Variable) Expenses											
(Enter Below)											
Seed	\$ 94.87		\$ 27,986.65	\$ 64.29		\$ 15,751.05	\$ 73.89		\$ 7,241.22		
Fertilizer											
Nitrogen	\$ 57.84		\$ 17,062.80	\$ -		\$ -	\$ 12.40		\$ 1,175.30		
Phosphorus	\$ 23.67		\$ 6,982.65	\$ -		\$ -	\$ 18.70		\$ 1,832.60		
Potassium (Potash)	\$ 20.05		\$ 5,914.75	\$ 29.89		\$ 7,323.05	\$ 15.12		\$ 1,481.76		
Sulfur	\$ 10.42		\$ 3,073.90	\$ 8.23		\$ 2,016.35	\$ 11.50		\$ 1,127.00		
Limestone	\$ -		\$ -	\$ -		\$ -	\$ -		\$ -		
Other Fertilizer (i.e. micronutrients, etc.)	\$ -		\$ -	\$ -		\$ -	\$ -		\$ -		
Crop Chemicals											
Herbicides	\$ 31.46		\$ 9,870.70	\$ 30.56		\$ 7,487.20	\$ 34.60		\$ 2,410.80		
Fungicides	\$ -		\$ -	\$ -		\$ -	\$ 14.12		\$ 1,383.76		
Insecticides	\$ -		\$ -	\$ -		\$ -	\$ -		\$ -		
Crop Insurance	\$ 10.57		\$ 3,118.15	\$ 11.03		\$ 2,702.35	\$ 7.11		\$ 696.78		
Crop Miscellaneous	\$ 28.20		\$ 8,319.00	\$ 4.54		\$ 1,112.30	\$ 0.57		\$ 55.86		

When thinking about break-evens, there are typically two types that farms focus on: one for price and one for yield. The break-even for price takes the cost of production and divides it by the expected yield. The break-even for yield takes that same cost of production and divides it by the expected price.

Understanding the farm's break-evens can help in two distinct ways: 1) determine if the market price offered will maximize revenue and 2) determine if the price for inputs is favorable to justify purchasing (i.e. lock-in).

Let's examine a farm where the expected yield will be 180 bushels per acre and the expected price is \$4.00 per bushel:

Break-even Price (corn)	
Direct Expense	\$350
Overhead Expense	\$225
Total Dir & Overhead Exp	\$575
Expected Yield	180 bushels
Break-even	\$3.19/bu

Break-even Yield (corn)	
Direct Expense	\$350
Overhead Expense	\$225
Total Dir & Overhead Exp	\$575
Expected Price	\$4.00/bushel
Break-even	144 bushels

The example illustrates that at the expected yield and prices, the break-evens are both positive and the farm is capable of covering expenses. Should we consider taking out a marketing contract on some of our expected grain? Or purchasing some of the inputs at the given price? Remember, cost of production doesn't stop at just Net Farm Income. We have to include Cash Flow and Net Worth into this equation as well.

What do our break-evens look like if we add in debt payments of \$100 per acre?

Let's take a closer look at our example farm with debt payments now added to the picture:



Break-even Price (corn)	
Direct Expense	\$350
Overhead Expense	\$225
Debt Payments	\$100
Total Dir & Overhead Exp	\$675
Expected Yield	180 bushels
Break-even	\$3.75/bu

Break-even Yield (corn)	
Direct Expense	\$350
Overhead Expense	\$225
Debt Payments	\$100
Total Dir & Overhead Exp	\$675
Expected Price	\$4.00/bushel
Break-even	169 bushels

With just the inclusion of an additional \$100, the break-evens for this example farm change significantly. The break-even price rose from \$3.19 up to \$3.75, while the break-even yield rose from 144 to 169 bushels per acre. This means there are increasing demands on the farm to reach the expected yield and for market prices to stay steady.

This helps farm managers to consider the impact input costs and market prices have on potential farm revenues. How would the example values change if fertilizer or seed expense caused direct expenses to increase another \$25? And a rise in land rent increased overhead expenses by another \$50?

We have seen increases like these in recent years and have even asked what changes should be considered by the farm? This is often a struggle for most farm managers. Sometimes the factors that need to be changed are not completely within our control (i.e. market prices). We encountered situations like these routinely this past year. The uncertainty of the weather caused added concern about expected yields and market prices. Even in some cases where we felt we had decent market prices, the uncertainty of yield caused farms to hesitate and not pursue contract opportunities.

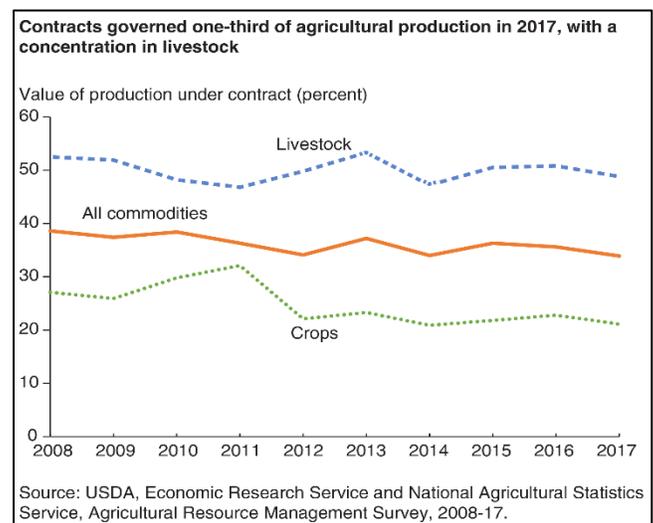
How are farms expected to be prepared for the uncertainty of a poor yield or a significant change in the prices offered on the market? The answer revolves around a set of tools and services that most farms already pay for, but seldom fully utilize in their decision-making. It's also the next stop on our roadmap: Crop Insurance as a Marketing tool.

Stop Four: Crop Insurance as a Marketing tool

As planting windows narrowed this past spring, the ability to cover a farm's cost of production became a central concern. Cash flow projections compared whether to raise a crop or take preventative planting options through insurance. The main worry on most farms was whether they could produce enough crop at the market prices offered to meet their financial needs. There was a significant amount of hesitation and unease about whether it was safe to take out even a single contract.

As we look to better prepare ourselves for the future, we have to keep in mind that marketing is all about confidence. Confidence that the price on the futures board will cover the farm's costs and return a profit for the farm as well as confidence that the yield will be there to ensure contracts can be met. Understanding what cost of production and break-evens are helps us to feel confident about the market price. We feel secure in our knowledge that the price with the right yield will cover our financial responsibilities. But what about that same confidence in yield?

The USDA's Economic Research Service reports only 21% of the crop production grown in 2017 was sold under contract. Corn was contracted at approximately 12%, while soybeans were a bit better at 18%. According to the report, those values have





hardly changed over the last 20 years. One reason that producers have not taken out more contracts is a lack in confidence in the yield they'll have in order to fill those obligations.

What has changed over the course of the last two decades? More producers have been taking out crop insurance policies that actually include a tool that can help decide how much grain to safely contract. In fact, as of December 31st, 2019, the USDA's Risk Management Agency reports that over 69% of producers with crop insurance use this policy. They simply don't utilize it to its fullest potential ([USDA RMA Summary of Business Report](#)).

What is this policy? Revenue Protection.

Revenue Protection has been around for a few decades. It operates by protecting yield and price concerns. Prices are set using the futures market and yield is based on a percentage of the farm's historical production. This is the component about the policy that is relatively well known as producers think of the insurance it provides. But how does this same policy help decide how much grain to contract? How can we use it to feel more secure and confident in our production numbers?

Let's look at an example farm that raises 600 acres of soybeans and has an actual production history (APH) of 40 bushels per acre. They've taken out a 75% policy with their Revenue Protection. That means they are insured for 18,000 bushels.

Revenue Protection Example	
Soybean Acres	600 acres
APH Yield	40 bushels
Revenue Coverage	75%
600 x 40 x 75% =	18,000 bushels

The farm historically has been able to raise 40 bushels of soybeans per acre and should feel confident in its ability to raise 75% of its average production, or 18,000 bushels. It should then feel reassured in its ability to take out market contracts for the same number of bushels.

However, what about years where we experience a weather event that reduces yields below what we need to meet contracts? What if prices also go up because of that event and the soybeans we need to buy are more expensive? The Revenue Protection policy has that covered.

What if there's no yield and prices go up?	
Pre-harvest market of 18,000 bushels at \$9.54	\$171,720
Purchase 4,800 bushels at \$11.00	-\$52,800
Crop Insurance Indemnity Payment 4,800 bushels at \$11.25 (futures price)	+\$54,000
Gross Return to the Farm	\$172,920

Prior to harvest, the example farm contracted the 18,000 bushels for \$9.54, but only was able to produce 13,200. That's 4,800 bushels that will need to be purchased to fill the contract and market price has risen to \$11.00 per bushel.

Producers with this insurance will remember that their policy considers the harvest price and will adjust the revenue guarantee if that future's price is higher. The indemnity payment that is received in this example is \$54,000 and can be used toward the purchase of the bushels needed to fill the outstanding market contracts. This illustrates how a farm can use its crop insurance to determine the bushels available to market and secure its ability to fulfill their contracts.

Remember, although it may not feel like it at times, you do have the resources and resiliency to manage through uncertain times. By understanding and using tools like these, by utilizing your farm's records to find your cost of production and know your break-evens, you can provide a means to lock-in farm revenues and secure the best opportunities for a successful season.

For assistance in performing a financial analysis or for assistance with farm management topics like these, contact the MSU Extension Farm Management educator in your area: https://www.canr.msu.edu/farm_management/experts.