VIRGINIA TECH

BUSINESS STRATEGIES FOR ROW CROP OPERATIONS

How partial budgets, enterprise budgets, and contracts can guide profitable decisions

Meet the Agrifood Finance Fellows

Colby Crutchfield

Miru Yim

Disclaimer: The financial tools in this presentation were developed by Kohl Centre Agri-Food Finance Fellows as part of a series of agribusiness workshops on value-added enterprises and product differentiation in Virginia. It is intended to illustrate the use of financial planning tools- including partial budgets, enterprise budgets, and income statements- in strategic decision-making. The information provided is for educational purposes only, based on assumptions reflecting recent market conditions, and does not represent actual financial results or professional advice.

Agenda

SPECIALTY MARKET OVERVIEW	PARTIAL BUDGET	ENTERPRISE BUDGET	CONTRACTS
The What and Why of Value-Added and Specialty Market Initiatives	Case Study of Switching Conventional for High-Oleic Soybeans	Conventional vs. Organic Corn Case Study with 6-Year Forecast	Optimizing Corn Prices: The Value of Contracts

Value-Add Overview

What counts as “Value-Add” and Why Consider It?

Raw products → Higher-value items

Packaging, branding, manufacturing, new processes

Why Now?

Tight margins

Price premiums

Changing consumer demands

Portfolio diversity

Risk spreading

Per-acre profitability > Expansion

Trade-Offs

Adoption lags

Associated Costs

VA Row Crop Snapshot

~39,000 farms statewide, covers ~7.3M acres (NASS)

Avg farm size ~187 acres (NASS)

2022: VA farms sold ~5.5B in agricultural products

Soybeans & corn are top “field-crop cash-receipts” in many regions (USDA)

Per-acre profitability matters more than scale; value-added/specialty contracts can boost returns through premiums, without adding acreage

Diversify portfolio strategy to mitigate risks of price swings, inputs cost inflation, export uncertainty

VIRGINIA TECH

VIRGINIA TECH

HIGH OLEIC SOYBEAN OIL STEALS THE SHOW DURING 2025 WORLD FOOD CHAMPIONSHIPS

BROWNFIELD
POWERED BY LEARFIELD

MSU-led research shows how feeding dairy cows high oleic soybeans can cut feed cost, boost milk quality and spark economic growth — allowing one southwest Michigan dairy farm to add more than $1 per cow per day in income over feed cost.

MICHIGAN STATE UNIVERSITY
AgBioResearch

Specialty Grains Might Boost Profits

Surveying his farmer-clients, Ken Ferrie compiled a list of ways to increase profit margin. Specialty crops, such as popcorn; non-GMO corn and seed corn and soybeans; food-grade oybeans; and organic crops top the list.

FARM|JOURNAL AGWEB

Organic farmers find profitable niche

Crystal Reed Mar 27, 2025

Iowa Farmer Today

The global organic corn market, valued at $1184.3 million in 2025, is projected to experience steady growth, exhibiting a Compound Annual Growth Rate (CAGR) of 2.8% from 2025 to 2033. This growth is fueled by several key factors. Increasing consumer demand for organically produced food products, driven by growing health consciousness and concerns about the mental impact of conventional agriculture, is a significant driver. The rising adoption of organic farming practices

AMR

CORN FUTURES EDGE HIGHER ON STRONG ETHANOL DEMAND AMID U.S. HARVEST PROGRESS

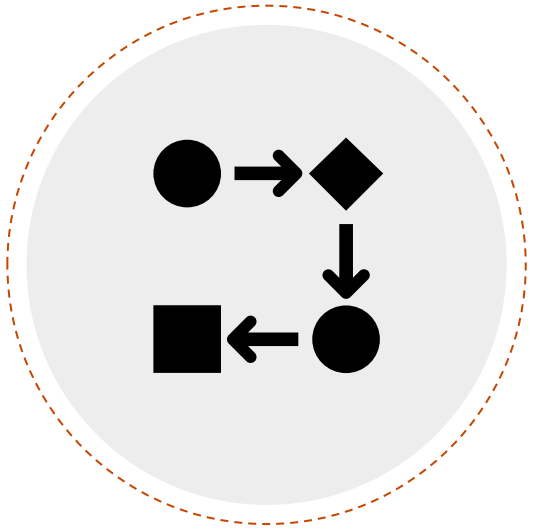
BROWNFIELD
POWERED BY LEARFIELD

High Oleic Soybeans: Not Just for Salad Anymore

A crop that was initially developed for the human food market is now being served up in heaping portions to the humble dairy cow.

Dairy Herd Management

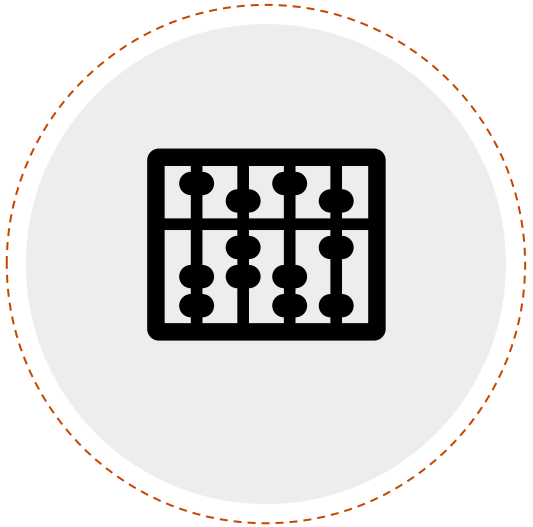
Deciding if specialty markets are right for *your* farm



Partial Budget

Short-term change

Replace conventional with high-oleic soybeans?



Enterprise Budget

Multi-year change

Transition conventional corn business to organic?

Partial Budget Case Study:
Conventional to HO Soybeans

Conventional vs. High-Oleic Soybeans

	Conventional	High-Oleic
Oleic Acid	~20-25%	~70-75%
Linoleic Acid	~50-55%	~10-15%
Market Price	Standard CME/CBOT	Premium $1.00-$1.75/bu
Identity Preservation	Not required	Required: must maintain variety separation
Adoption (U.S.)	~87-88M acres	~800K-1.1M acres (2023-2024) and growing
End Users	Commodity, oil, meal, exports	Food sector (~60%), dairy feed (~35%), industrial (~5%)
Geopolitical Exposure	Highly exposed to price volatility, export shocks, crush margins	Less exposed globally; price tied to more domestic, contract-based demand
Yield Expectations	High-performing	High-performing; competitive with conventional
Risk Considerations	Exposed to swings in spot market	Premium hedges risk through contract locking and diversified buyer base

Sources: United Soybean Board (USB), USDA ERS, USSEC

The "Good" Side

Additional Income		
Description		£
Milk: 5 cows @ £		9,585.00
Calves: 5 week-old calves @ £60		300.00
Total Extra Income		9,885.00

Added Revenues

Costs Saved		
Description		£
10 store cattle pu		6,000.00
Feed & vet for 10		1,000.00
Total Costs Saved		7,000.00

Reduced Expenses

Total Gains		16,885.00

The "Bad" Side

Lost Income		
Description		£
10 store catt		8,000.00
Total Income Lost		8,000.00

Reduced Revenues

Additional Costs	
Description	£
Feed: Silage f	1,250.00
Feed: Cake for £250/t	2,485.00
Vet: Additional vet costs for 5 cows @ £50/cow	250.00
Calf rearing costs - 5 calves for 1 week @ £15/calf	75.00
Cost of building work (£7,800 written down over 10 years	780.00
Sawdust:	200.00
Total Extra Costs	5,040.00

Added Expenses

Total Losses	13,040.00

Net Change (total gains - total losses)	3,845.00

SRDP: Farm Advisory Service

Goal is to determine the **net change in profit** from a specific change.

Change is **short-term or incremental**, typically implemented within ~1 year.

Requires **baseline comparison** and **assumptions**. Must maintain **consistent units.**

Partial Budget Basics

Case Study Goal and Assumptions

Will switching from conventional to high-oleic soybeans yield better spot price returns?

Farm size	500 acres
Expected yield	40 bushels per acre
Soybean market price	$10.42 per bushel
Premium for HO soybeans	$1 per bushel
Conventional seed cost*	$50 per acre
HO seed cost*	$55 per acre
Seeding rate (full-season)	150,000 seeds/acre

*Soybean seed prices vary by company, trait package, dealer discounts, seed trait licensing, and grower contract..
Regional sources suggest conventional and HO seed cost is similar, though contract and/or segregation costs may vary.
Yield and seeding rate comparable for both varieties.

VIRGINIA TECH

The “GOOD” Side of Partial Budget

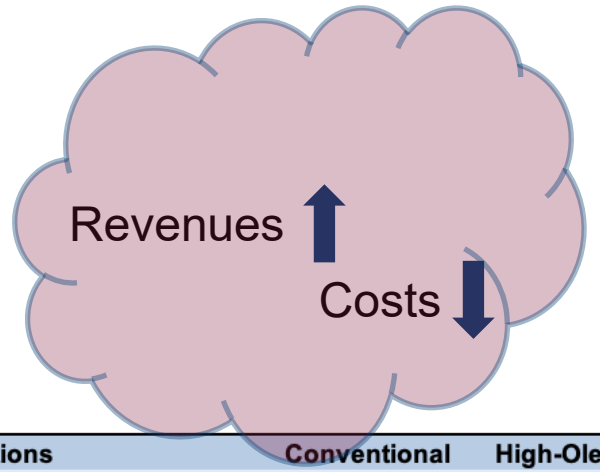
Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

GOOD (Left): Added Revenues & Reduced Expenses		
Item	**Calculation**	**Total**
Added Revenue		
HO Revenue	Price * Yield * Acres	**$228,400**
Reduced Expenses		
Conventional Seed Cost	Seed Cost * Acres	**$25,000**
Subtotal GOOD		**$253,400**

BAD (Right): Reduced Revenues & Added Expenses		
Item	**Calculation**	**Total**
Reduced Revenue		
Conventional Revenue	Price * Yield * Acres	**$208,400**
Added Expenses		
HO Seed Cost	Seed Cost * Acres	**$27,500**
Subtotal BAD		**235,900**

Net Change:	$17,500

Decomposing The “GOOD” Side



GOOD (Left): Added Revenues & Reduced Expenses		
Item	**Calculation**	**Total**
Added Revenue		
HO Revenue	Price * Yield * Acres	**$228,400**
Reduced Expenses		
Conventional Seed Cost	Seed Cost * Acres	**$25,000**
Subtotal GOOD		**$253,400**

Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

VIRGINIA TECH

The “BAD” Side of Partial Budget

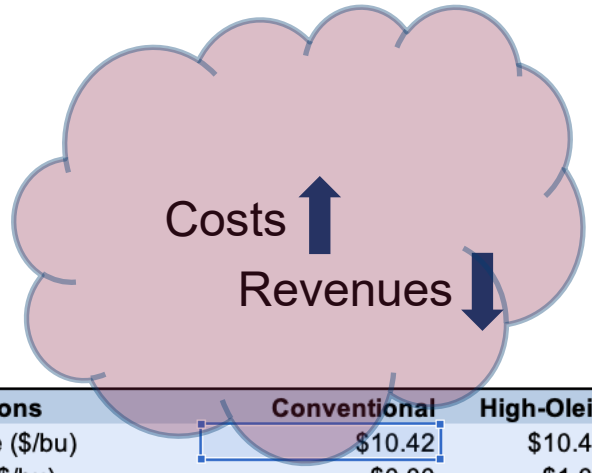
Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

GOOD (Left): Added Revenues & Reduced Expenses		
Item	**Calculation**	**Total**
Added Revenue		
HO Revenue	Price * Yield * Acres	**$228,400**
Reduced Expenses		
Conventional Seed Cost	Seed Cost * Acres	**$25,000**
Subtotal GOOD		**$253,400**

BAD (Right): Reduced Revenues & Added Expenses		
Item	**Calculation**	**Total**
Reduced Revenue		
Conventional Revenue	Price * Yield * Acres	**$208,400**
Added Expenses		
HO Seed Cost	Seed Cost * Acres	**$27,500**
Subtotal BAD		**235,900**

Net Change:	$17,500

Decomposing The “BAD” Side



BAD (Right): Reduced Revenues & Added Expenses		
Item	**Calculation**	**Total**
Reduced Revenue		
Conventional Revenue	Price * Yield * Acres	**$208,400**
Added Expenses		
HO Seed Cost	Seed Cost * Acres	**$27,500**
Subtotal BAD		**235,900**

Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

VIRGINIA TECH

Determining if the Change is Profitable

Assumptions	Conventional	High-Oleic
Cash price ($/bu)	$10.42	$10.42
Premium ($/bu)	$0.00	$1.00
Effective price ($/bu)	$10.42	$11.42
Seed cost ($/acre)	$50	$55
Yield (bu/ac)	40	40
Acres planted	500	500

GOOD (Left): Added Revenues & Reduced Expenses		
Item	**Calculation**	**Total**
Added Revenue		
HO Revenue	Price * Yield * Acres	**$228,400**
Reduced Expenses		
Conventional Seed Cost	Seed Cost * Acres	**$25,000**
Subtotal GOOD		**$253,400**

BAD (Right): Reduced Revenues & Added Expenses		
Item	**Calculation**	**Total**
Reduced Revenue		
Conventional Revenue	Price * Yield * Acres	**$208,400**
Added Expenses		
HO Seed Cost	Seed Cost * Acres	**$27,500**
Subtotal BAD		**235,900**

Net Change:	$17,500

Subtotal "GOOD"

$228,400
(Added Revenue)
+
$25,000
(Reduced Expenses)
=
$253,400
(Subtotal GOOD)

GOOD (Left): Added Revenues & Reduced Expenses		
Item	**Calculation**	**Total**
Added Revenue		
HO Revenue	Price * Yield * Acres	**$228,400**
Reduced Expenses		
Conventional Seed Cost	Seed Cost * Acres	**$25,000**
Subtotal GOOD		**$253,400**

Subtotal "BAD"

$208,400
(Reduced Revenue)
+
$27,500
(Added Expenses)
=
$235,900
(Subtotal BAD)

BAD (Right): Reduced Revenues & Added Expenses		
Item	**Calculation**	**Total**
Reduced Revenue		
Conventional Revenue	Price * Yield * Acres	**$208,400**
Added Expenses		
HO Seed Cost	Seed Cost * Acres	**$27,500**
Subtotal BAD		**235,900**

Net Change

$253,400
(Subtotal GOOD)
-
$235,900
(Subtotal BAD)
=
$17,500
(NET Change)

Positive Net Change → Profitable
Negative Net Change → Not Profitable

VIRGINIA TECH

”What-ifs”

- Add a seed cleaning or segregation cost line
- Adjust seed cost assumptions
- Swap full-season for double-crop yield levels
- Decrease HO yields compared to conventional yields

Adjust to suit your business.

What the partial budget captures

Whether the change is likely to increase or decrease net returns.

Helps to identify which parts of the business are affected.

Suitable for small, ~1 year changes.

What the partial budget doesn’t capture

Operational complexity of new venture (new delivery points, seed segregation/cleaning)

Risk factors (market volatility, contract compliance)

Opportunity cost (time, management bandwidth)

VIRGINIA TECH

Before Making the Decision…

- Treat partial budget as a “first filter”…if the math looks promising, dig deeper.
- Consider labor, logistics, risk, consumer demand, market access, and any other factors that may be affected.

How should we evaluate long-term changes that may have many moving parts?

Enterprise Budget Case Study:
Conventional to Organic Corn

Enterprise Budget Basics

- Goal is to determine the factors affected in an enterprise with a change
- Typically used to project specific expenses and revenues tied to one enterprise of a business
- Easier to put revenues and expenses on a per unit basis
- Change is more long-term, typically implemented and factors are expected to change over time
- Easiest way to calculate short and long run break-evens

Organic Soybean Farm Assumptions

Will switching from conventional to organic soybeans yield better profits?

Farm size	500 acres
Expected yield (Transition)	50% of base farm production
Expected yield (Organic)	77% of base farm production
Herbicides and Insecticides	10% increase from base farm use
Premium for organic soybeans	$0.15 per bushel

Enterprise Budget Comparisons

Virginia Cooperative Extension

PUBLICATION 446-047-131

SOYBEANS-RR, Minimum Tillage (Productivity Group 1-2 Soils)

Expected Crop Yield of 50 BU per Acre

Acres: 500

		UNIT	QUANTITY PER ACRE	PRICE OR COST/UNIT	TOTAL PER ACRE	BASE FARM	TRANSITION FARM	ORGANIC FARM
1. GROSS RECEIPTS			BASE					
SOYBEANS		BU.	50.00	$11.12	$556.00	**278000.00**	**139000.00**	**225400.00**
ORGANIC RELIEF PAYMENTS		ACRE	1.00	$10.00	$10.00	**0.00**	**5000.00**	**0.00**
TOTAL RECEIPTS:					**$566.00**	**278000.00**	**144000.00**	**225400.00**
2. PRE-HARVEST VARIABLE COSTS								
SEED: SOYBEANS		BAG	0.75	$25.00	$18.75	**9375.00**	**9375.00**	**9375.00**
FERTILIZER*	Soil Test Recommendation							
NITROGEN	25	LBS	25.00	$0.90	$22.50	**11250.00**	**0.00**	**0.00**
COMPOST	1	Ton	2.00	$5.00	$10.00	**5000.00**	**5000.00**	**5000.00**
PHOSPHATE	40	LBS	52.00	$0.54	$21.40	**10700.00**	**0.00**	**0.00**
POTASH	65	LBS	91.00	$0.44	$28.44	**14220.00**	**0.00**	**0.00**

Enterprise Budget Comparisons

	UNIT	QUANTITY PER ACRE	PRICE OR COST/UNIT	TOTAL PER ACRE	BASE FARM	TRANSITION FARM	ORGANIC FARM
FERTILIZER APPLICATION	ACRE	1.00	$7.25	$7.25	3625.00	2175.00	2175.00
LIME (PRORATED)	TON	0.33	$175.00	$57.75	28875.00	0.00	0.00
HERBICIDES	ACRE	1.00	$15.58	$15.58	7790.00	8569.00	8569.00
INSECTICIDES	ACRE	1.00	$2.50	$2.50	1250.00	1375.00	1375.00
FUNGICIDES	ACRE	1.00	$0.00	$0.00	0.00	0.00	0.00
GROWTH REGULATOR	ACRE	1.00	$0.00	$0.00	0.00	0.00	0.00
CHEMICAL APPLICATION	ACRE	1.00	$15.00	$15.00	7500.00	7500.00	7500.00
FUEL,OIL, LUBE	Eq Gallons	1.86	$6.00	$11.16	5580.00	5580.00	5580.00
REPAIRS	ACRE	1.00	$11.75	$11.75	5875.00	5875.00	5875.00
PRE-HARVEST LABOR	HRS	0.64	$20.00	$12.80	6400.00	6400.00	6400.00
CASH RENT OR LAND CHARGE	ACRE	1.00	$110.00	$110.00	55000.00	55000.00	55000.00
CROP INSURANCE	ACRE	1.00	$20.00	$20.00	10000.00	10000.00	10000.00
SCOUTING	ACRE	1.00	$0.00	$0.00	0.00	0.00	0.00
OTHER COSTS	ACRE	1.00	$0.00	$0.00	0.00	0.00	0.00
PRODUCTION INTEREST	6 MONTHS	$182.44	7.0%	$12.77	6385.40	4089.72	4089.72
TOTAL PRE-HARVEST COSTS		**$7.55 PER BU.**		**$377.65**	188825.40	120938.72	120938.72
3. HARVEST VARIABLE COSTS							
FUEL,OIL, LUBE	Eq Gallons	2.05	$4.50	$9.23	4615.00	4615.00	4615.00
REPAIRS	ACRE	1.00	$9.75	$9.75	4875.00	4875.00	4875.00

Enterprise Budget Comparisons

	UNIT	QUANTITY PER ACRE	PRICE OR COST/UNIT	TOTAL PER ACRE	BASE FARM	TRANSITION FARM	ORGANIC FARM
HARVEST LABOR	HRS	0.36	$20.00	$7.20	3600.00	3600.00	3600.00
HAULING	BU.	50.00	$0.18	$9.00	4500.00	4500.00	4500.00
STORAGE	BU.	50.00	$0.00	$0.00	0.00	0.00	0.00
DRYING	BU.	50.00	$0.00	$0.00	0.00	0.00	0.00
TOTAL HARVEST COSTS:		**$0.70 PER BU.**		**$35.18**	**17590.00**	**17590.00**	**17590.00**
	Breakeven Yield		Breakeven Price				
4. TOTAL VARIABLE COSTS	**BU.**		**PER BU.**	**$412.83**	**206415.40**	**138528.72**	**138528.72**
5. RETURN OVER TOTAL VARIABLE COSTS				**$153.17**	**71584.60**	**5471.29**	**86871.29**
6. MACHINERY FIXED COSTS (BASED ON NEW EQUIPMENT COST)							
TRACTOR & MACHINERY	ACRE	1.00	$78.40	$78.40	39200.00	31360.00	31360.00
7. OTHER FIXED COSTS							
GENERAL OVERHEAD	DOL.	$412.83	10.0%	$41.28	20640.00	20640.00	20640.00
8. TOTAL FIXED COSTS:				**$119.68**	**59840.00**	**52000.00**	**52000.00**
9. TOTAL VARIABLE & FIXED COSTS			**PER BU.**	**$532.51**	**266255.40**	**190528.72**	**190528.72**
10. PROJECTED NET RETURNS TO LAND, RISK AND MANAGEMENT:				**$33.49**	**11744.60**	**-46528.72**	**34871.29**

* This BUDGET is for PLANNING PURPOSES ONLY. Fertilizer rates are based on projected nutrient removal of harvested crop.
* Fertilizer requirements will vary with application method, manure use and/or residual nutrient levels in the soil.

Organic 6-Year Projections

Organic Soybean Farm 7-Year Income Statement Projection

Accrual Basis

	Base Farm Base	Year 1 Transition	Year 2 Transition	Year 3 Transition	Year 4 Organic	Year 5 Organic	Year 6 Organic
Gross Income	$278,000	$144,000	$151,200	$158,760	$225,400	$225,400	$225,400
Growth (%)	NA	-48%	5%	5%	42%	0%	0%
Cost of Goods Sold	$239,230	$165,799	$165,799	$165,799	$165,799	$165,799	$165,799
% of Sales	86%	115%	110%	104%	74%	74%	74%
Gross Profit	$38,770	-$21,799	-$14,599	-$7,039	$59,601	$59,601	$59,601
% of Sales	14%	-15%	-10%	-4%	26%	26%	26%
Operating Expenses (SG&A)	$20,640	$20,640	$20,640	$20,640	$20,640	$20,640	$20,640
% of Sales	7%	14%	14%	13%	9%	9%	9%
Operating Income (EBIT)	$18,130	-$42,439	-$35,239	-$27,679	$38,961	$38,961	$38,961
Interest Expense	$6,385	$4,090	$4,090	$4,090	$4,090	$4,090	$4,090
Pretax Income	$11,745	-$46,529	-$39,329	-$31,769	$34,871	$34,871	$34,871
Income Tax Expense	$0	$0	$0	$0	$12,205	$12,205	$12,205
Tax Rate	35%	35%	35%	35%	35%	35%	35%
Net Income	$11,745	-$46,529	-$39,329	-$31,769	$22,666	$22,666	$22,666

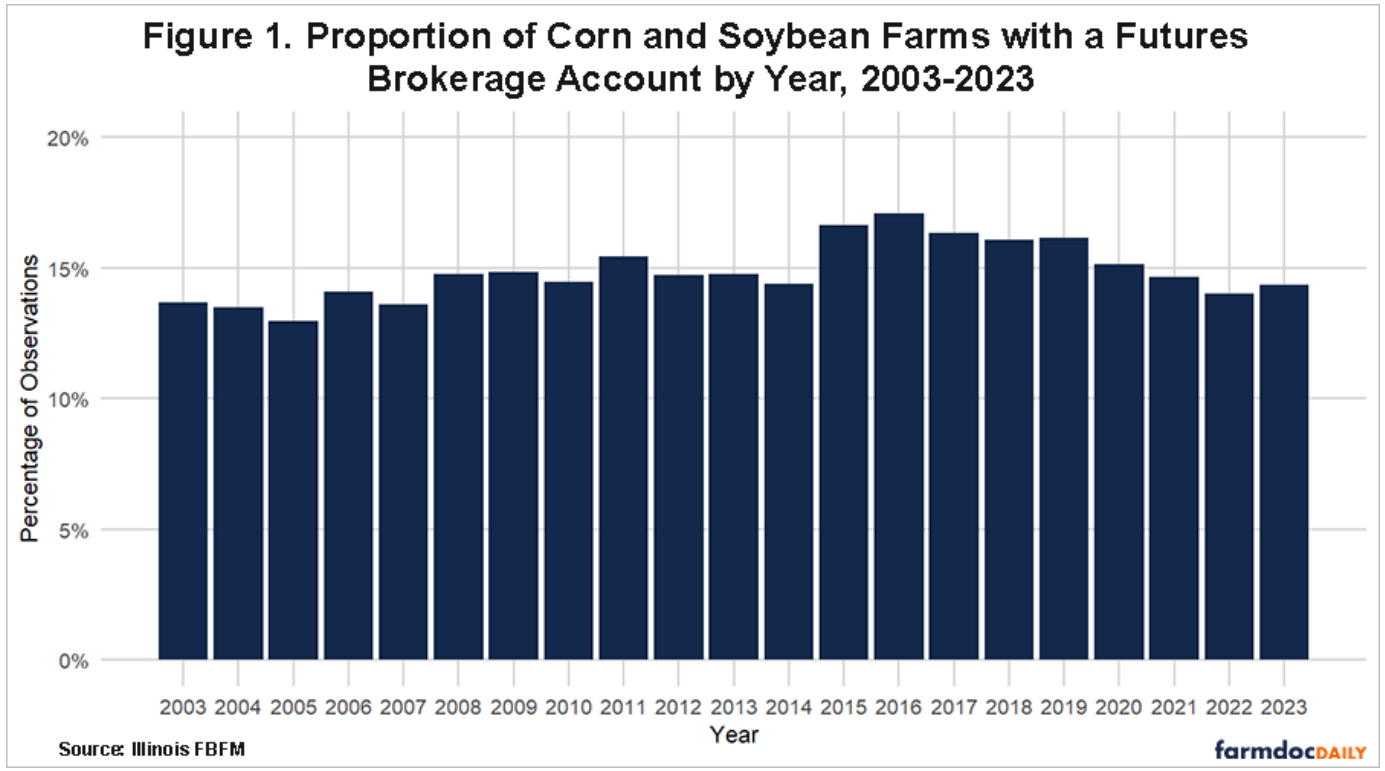
Decisions to Make

- Does the decision make sense for your operation?
- Does it improve your break-evens?
- Make changes to the enterprise budget to tool to your operation.

Futures & Storage Benefits

Corn Seasonality

Why Hedge with Futures and Options?



Source: farmdocdaily

- Futures and options are contracts available to trade based on what the national price is expected to be for a certain crop
- Less than 20% of all U.S. crop farms use futures and options to hedge
- Minimize price risk of commodities by hedging
- Ability to price higher than at harvest
- Important to know break-evens to decide when to hedge

Why Hedge with Futures and Options

Seasonality Index and Storage

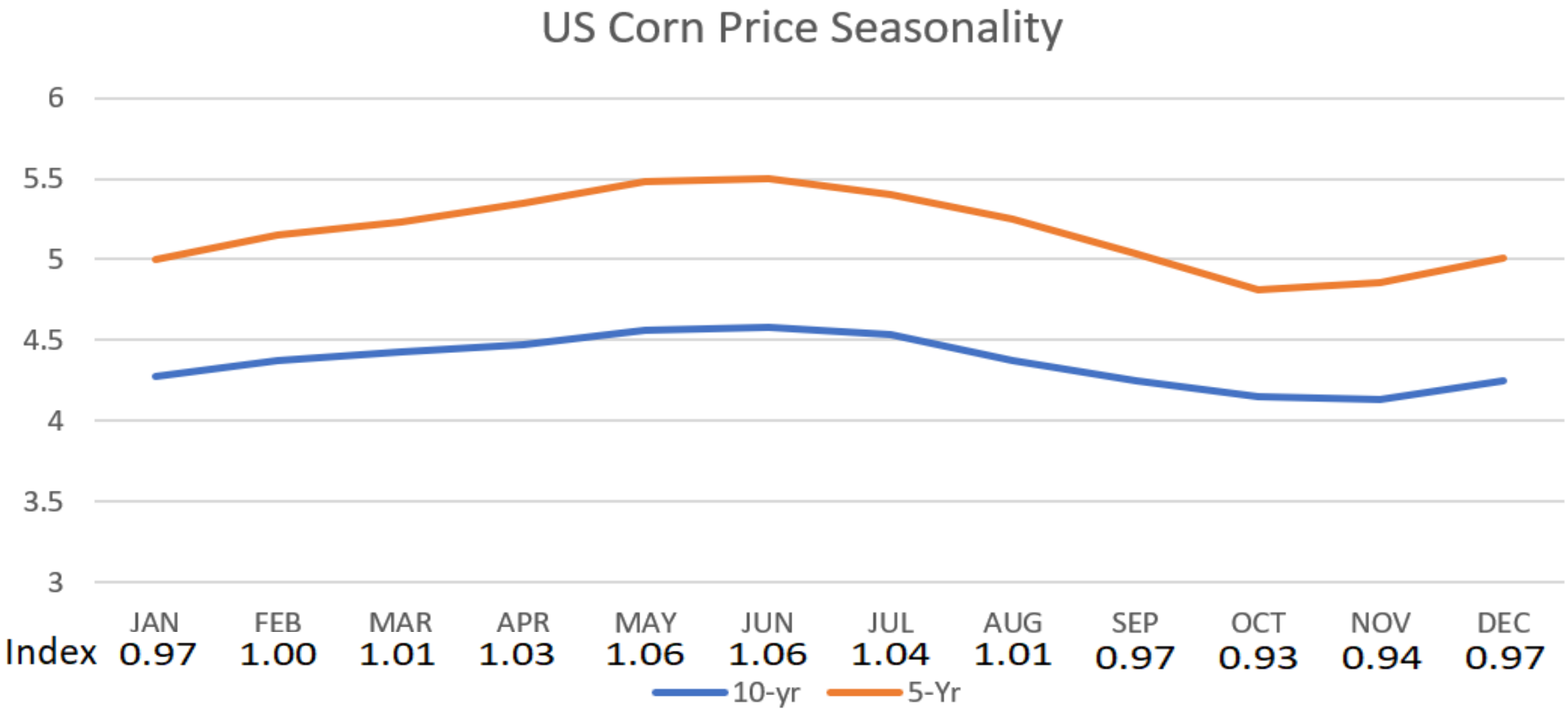
The seasonality index shows how prices tend to increase after harvest due to less supply.

Looking at seasonality index and storage costs can help a producer decide on storing crops or not after harvest.

For some operations, it makes sense to store and sell later; using an enterprise or a partial budget can help determine which route is best.

VIRGINIA TECH

Seasonality Index and Storage



Conclusion

Hedging your crops can improve and protect profitability

Not all decisions are equal to each farm, change numbers to what your projections are

In order to make informed and smart financial decisions it is crucial to budget your decisions and understand break-evens

Use projections to understand how to protect your farm from price volatility

All decisions do not have to be purely financial; stress, labor availability, and resources should be considered as well

VIRGINIA TECH

Thank you for your participation.

Feedback Survey

VCE Financial Management Resources

Financial Models

The views and materials presented are intended solely for informational purposes and do not constitute financial, investment, or professional advice.


VIRGINIA TECH®