

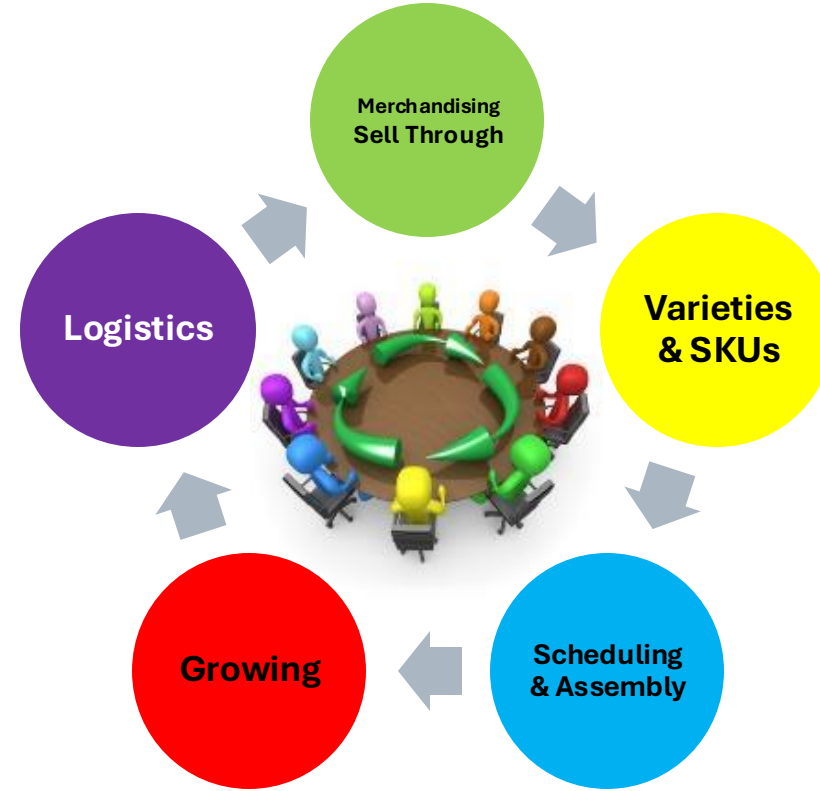
Your Time and Space: Math for Growing Plants and Profits

Jim Kennedy & Stephen Steiner

What Era are You In?



*Field of
Dreams
(Pandemic
Boom)*



**Plan for Profit
Plant to Plan
(Post-Pandemic)**

Where Can I Cut Costs?
What Should I Grow?
How Do I Make More Money?
... Am I Making Money?!

Cost Accounting has the answer!

Opportunities Created by 'Cost Accounting'

Increasing levels of detail and opportunity:

\$\$: Unit Costing: Identifies profitable vs 'loser' products (SKUs)

\$\$\$: Activity Costing: Identifies opportunities to increase profits

Terminology

- **Direct vs Indirect**

- Direct – Cost that CAN be associated with a specific product
- Indirect- Cost that CANNOT be cleanly associated with a specific product

- **Fixed vs Variable**

- Fixed – Costs that DO NOT change with Volume
 - Depreciation, Delivery Truck, Facility Insurance, Utilities (?)
- Variable – Costs that DO change with Volume
 - Plants, Pots, Tags, Soil

- **Dump: Buffer, Scrap, & Shrink**

	Direct	Indirect
Fixed	Greenhouse utilities; labor	Office utilities; delivery truck
Variable	Pot; plant; soil; tag	Equipment maintenance

What is dump?

Buffer

Extra plants needed
to produce the
required quantity

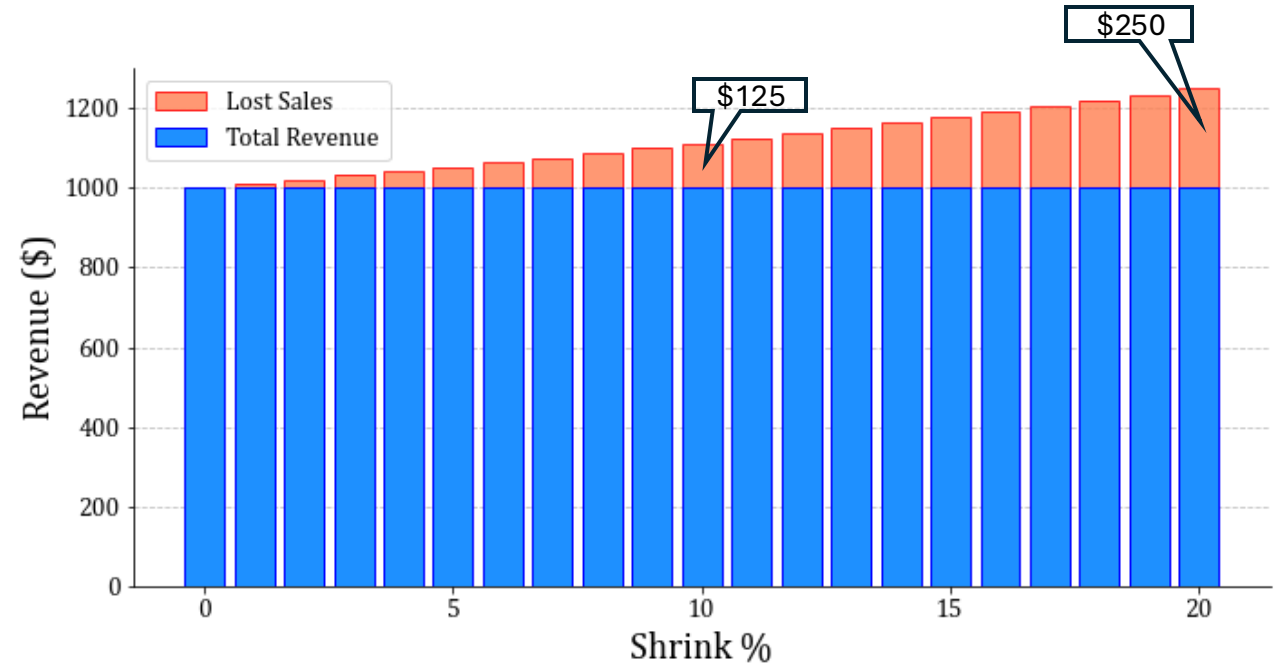
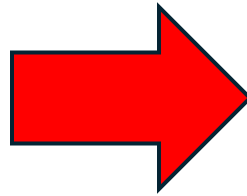
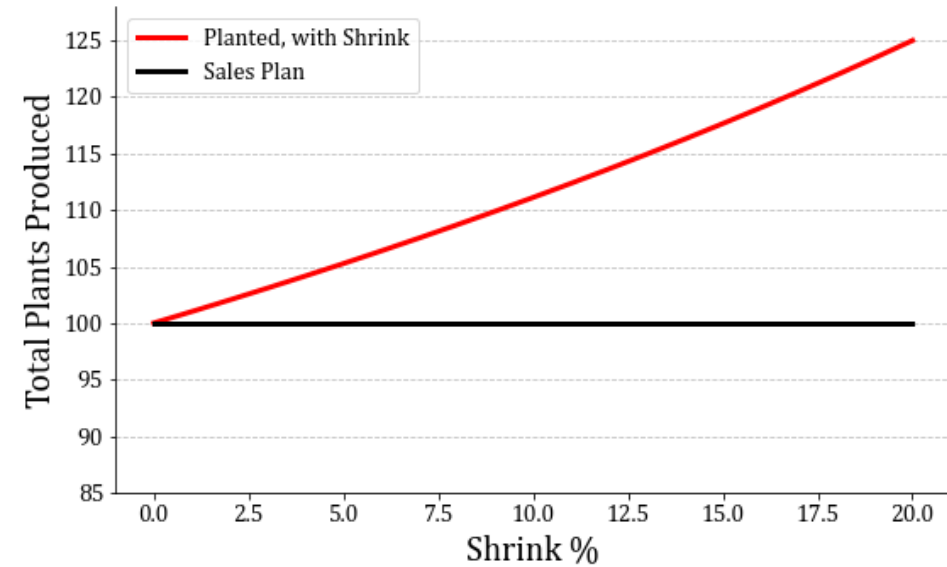
Scrap

Finished plants
that don't
get to retail

Shrink

Plants that
don't scan

Shrink is Costly!



Sell Price: \$10

Shrink: 20%

Expected Lost Total Revenue: $(\$10 * 125 \text{ plants}) * 20\% = \250

Average Shrink Opportunity Cost: $\$250 / 125 \text{ plants} = \2

Total Shrink Opportunity Cost: \$250 (\$2 per plant)

Let's Try It!

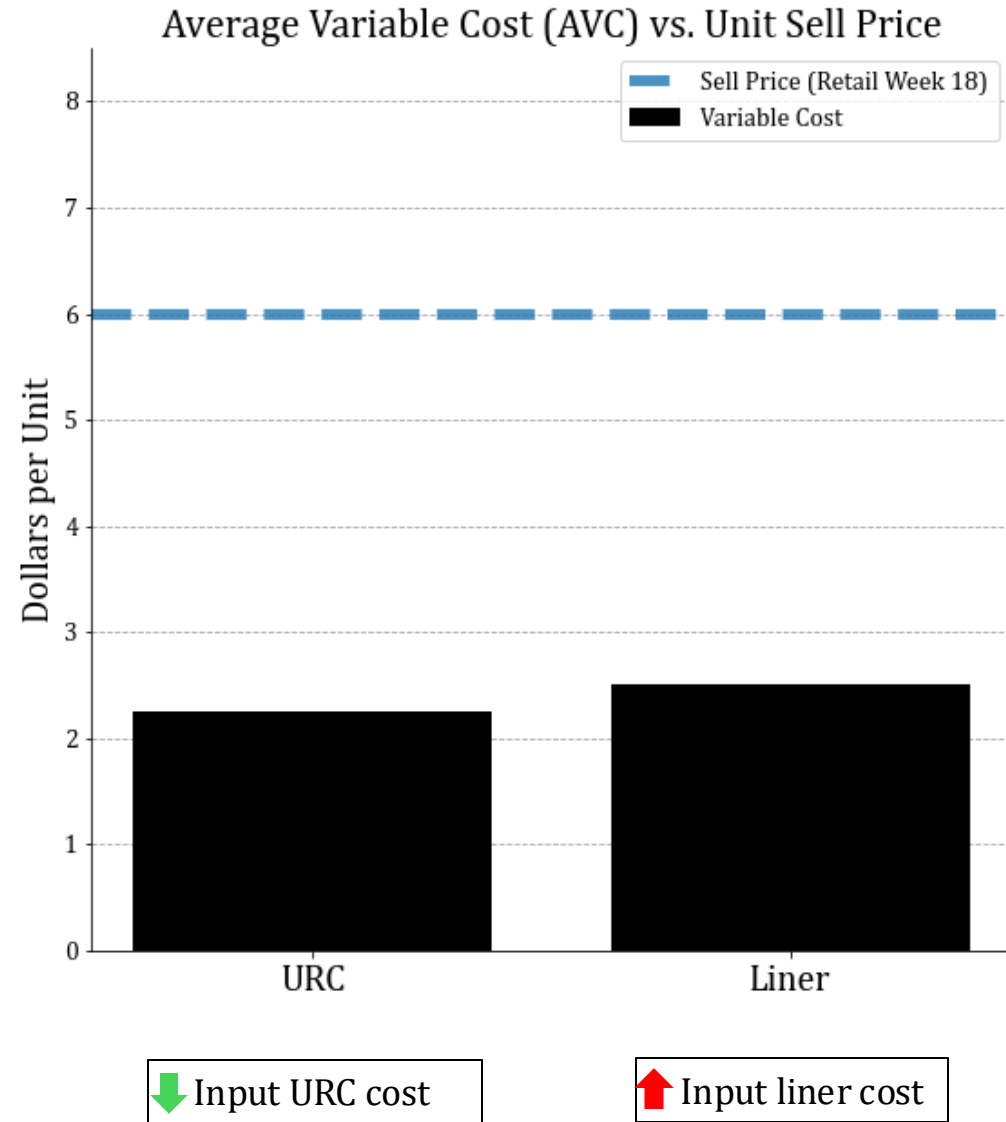
- Production Plan
 - 4-inch pots
 - Grown pot tight
 - 7,000 ft² bench area (10,000 ft² space)
- Variable Costs
 - Plants, Pots, Soil, Tags
 - Shrink
- Fixed Costs
 - Fuel
 - Direct labor
 - Hiring 2 temporary people at \$15 per hour



Average Variable Cost

Assumptions	URC	Liner
Retail Date	Week 18	
Crop Time	12 weeks	8 weeks

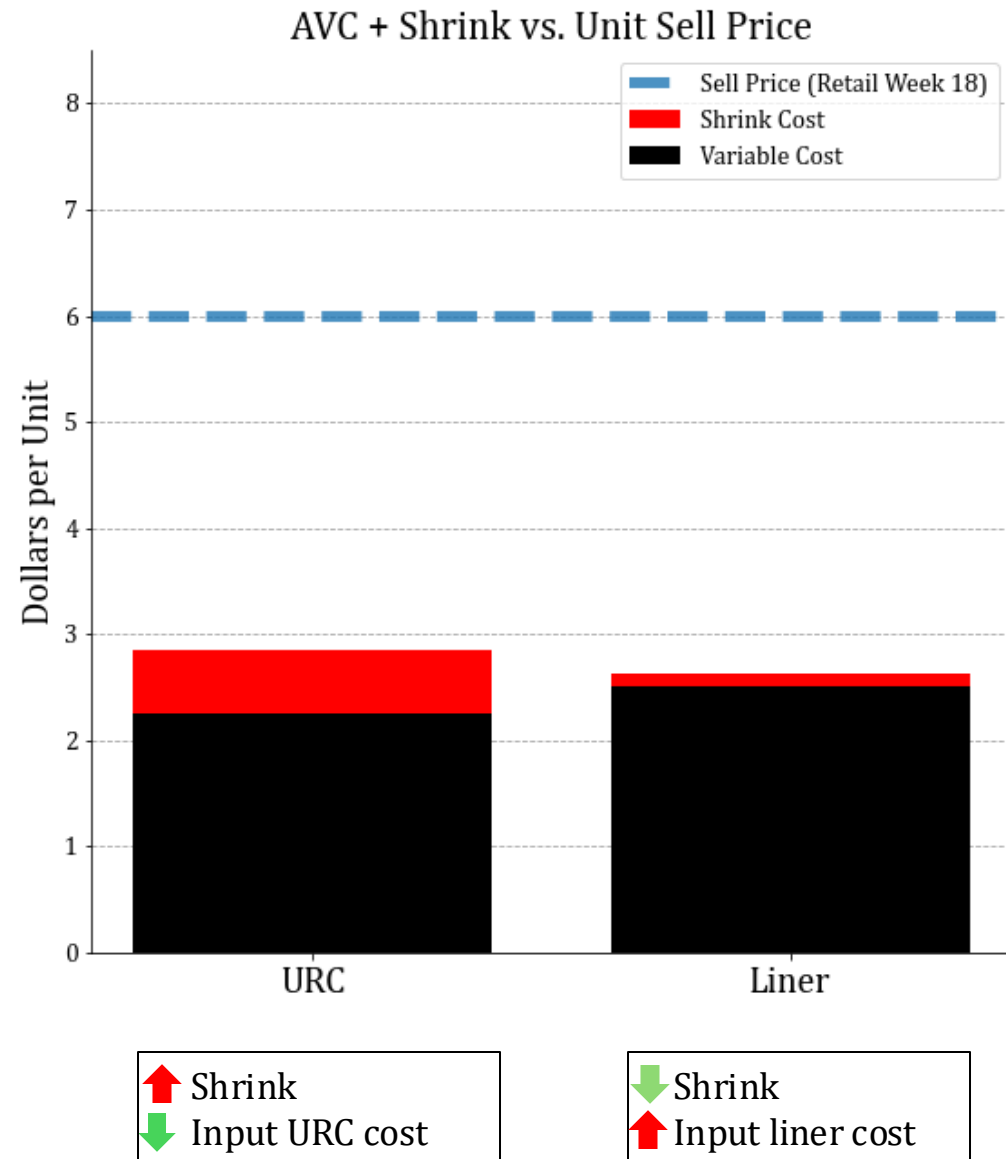
Costs	URC	Liner
Material Cost	\$0.30	\$0.75
Soil + Pot + Tags	\$1.95	\$1.75
Average Variable (AVC)	\$2.25	\$2.50



Average Variable Cost + Shrink

Assumptions	URC	Liner
Retail Date	Week 18	
Crop Time	12 weeks	8 weeks
Shrink	10%	2%

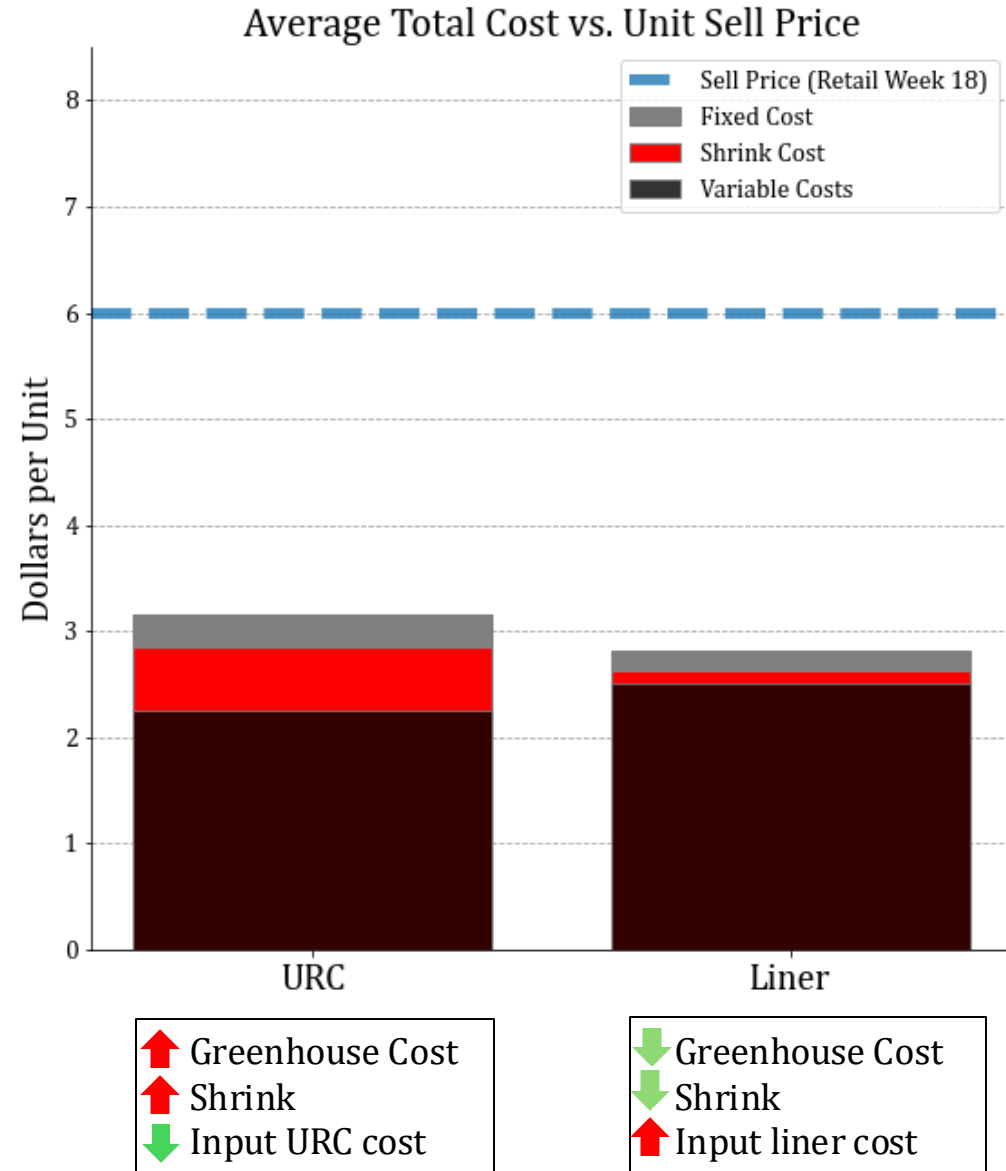
Costs	URC	Liner
Material Cost	\$0.30	\$0.75
Soil + Pot + Tags	\$1.95	\$1.75
Average Variable (AVC)	\$2.25	\$2.50
Shrink Cost	\$0.60	\$0.12
AVC + Shrink	\$2.85	\$2.62



Average Total Cost

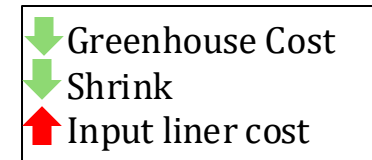
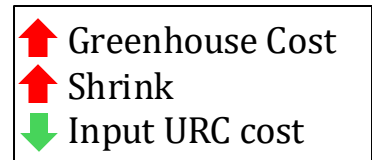
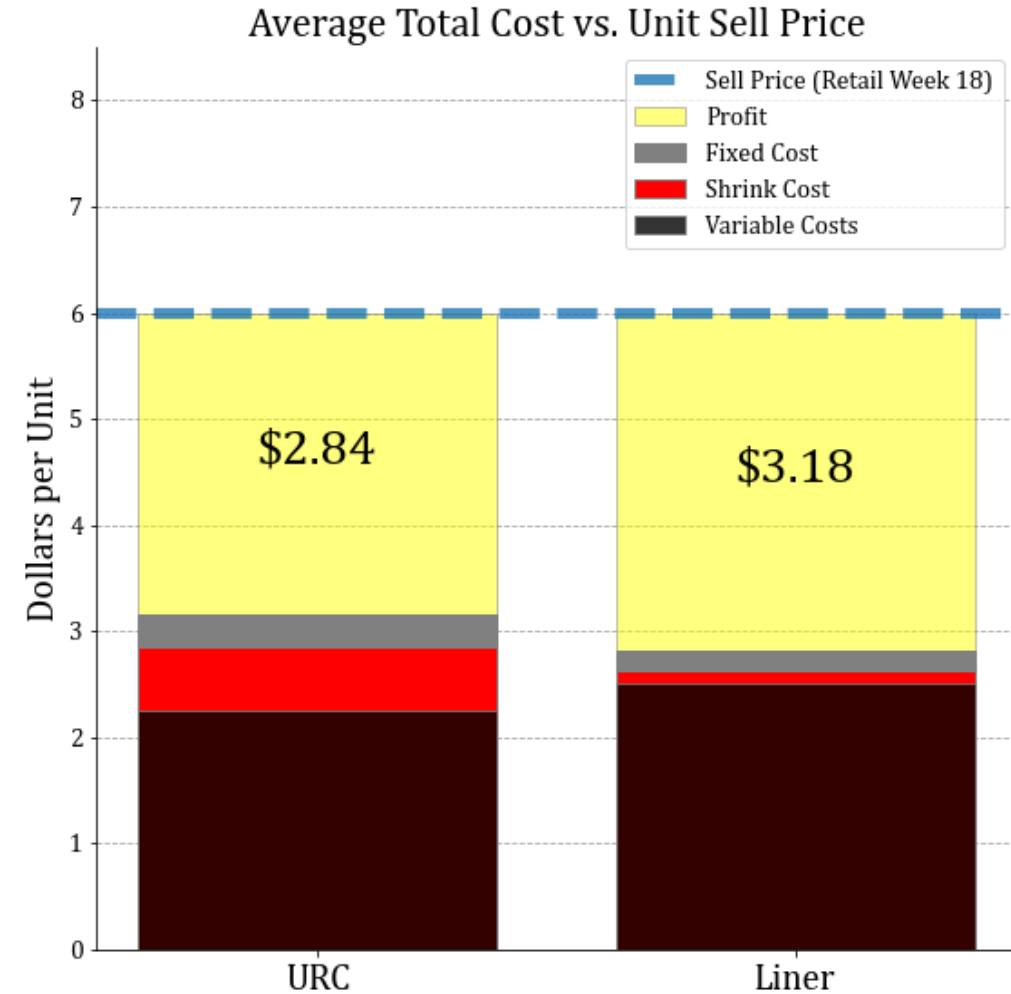
Assumptions	URC	Liner
Retail Date	Week 18	
Crop Time	12 weeks	8 weeks
Shrink	10%	2%
Fuel + Labor (Fixed)	\$19,400	\$12,500
Quantity Produced	63,000	

Costs	URC	Liner
Material Cost	\$0.30	\$0.75
Soil + Pot + Tags	\$1.95	\$1.75
Average Variable (AVC)	\$2.25	\$2.50
Shrink Cost	\$0.60	\$0.12
AVC + Shrink	\$2.85	\$2.62
Average Fixed Cost	\$0.31	\$0.20
Average Total Cost	\$3.16	\$2.82



Average Total Cost

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Profitability per plant increases by 12%!

... What just happened?

Where Can I Cut Costs?

What Should I Grow?

How Do I Make More Money?

Makes sense... But how can I do this?

Form 1040, Schedule F

Part II Farm Expenses—Cash and Accrual Method. Do not include personal or living expenses. See instructions.							
10	Car and truck expenses (see instructions). Also attach Form 4562	10		23	Pension and profit-sharing plans	23	
11	Chemicals	11		24	Rent or lease (see instructions):		
12	Conservation expenses (see instructions)	12		a	Vehicles, machinery, equipment	24a	
13	Custom hire (machine work)	13		b	Other (land, animals, etc.)	24b	
14	Depreciation and section 179 expense (see instructions)	14		25	Repairs and maintenance	25	
15	Employee benefit programs other than on line 23	15		26	Seeds and plants	26	
16	Feed	16		27	Storage and warehousing	27	
17	Fertilizers and lime	17		28	Supplies	28	
18	Freight and trucking	18		30	Utilities	30	
19	Gasoline, fuel, and oil	19		31	Veterinary, breeding, and medicine	31	
20	Insurance (other than health)	20		32	Other expenses (specify):		
21	Interest (see instructions):			a	.....	32a	
a	Mortgage (paid to banks, etc.)	21a		b	.....	32b	
22	Labor hired (less employment credits)	22		c	.....	32c	
				d	.....	32d	
				e	.....	32e	
				f	.....	32f	

Disclaimer Alert:

Cost Accounting can become a Bottomless Pit



- Back of the envelope ➡ Activity Accounting
- Balance between accuracy and precision
 - The more precise the more data (controls) needed
- Funny number problems

Questions?

Jim Kennedy & Stephen Steiner
Ball Seed Company