



# Organic Double Crop Sunflowers in Northern Illinois

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# About us:

- JL Acres LLC (Jacob, Joshua, Jonathan)
- Managing 2 operations. About 60 milking dairy cows + heifers and dry cows, feeding out about 30 steers (non-organic)/year, ~1000 certified acres (including hay and pasture)
- “Northwest IL” - Whiteside, Lee, Ogle, Bureau counties
- Family transitioned to organic around 2008
- We came back to the farm around 2017/2018
- Experience growing organic corn, soybeans (clear and dark hilum), wheat (srww), oats, alfalfa/hay, field peas, and sunflowers  
(+ numerous cover crops)



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# The Challenge

- Successful organic farming relies on diverse crop rotation to manage fertility and pests.
- The most widely suggested rotation is **corn -> beans -> small grain**.
- Small grains provide a summer window to manage weeds and add crop diversity.
- Financially, small grains are often break even at best, and in high rent environments can be a net loss in the rotation.

# Solutions?

- Growing fertility with/after the small grain for the following corn crop
  - In high land cost areas the fertility grown does not always offset the loss in profit. Cashflow needs can make it hard to have a crop with a net loss even with fertility savings the following year.
- Cover crops can be grown after small grains for grazing or forage.
  - Not all organic growers have livestock or access to forage markets.
- In some parts of the southern Midwest, soybeans can be successfully double cropped behind winter wheat.
  - In more northern areas, double cropping soybeans is a gamble.

# Other Options?

- Buckwheat can be grown late in the summer.
  - Markets for buckwheat can be hard to find.
- Some edible beans can be planted later in summer.
  - Contracts for edible beans can be hard to get, and more care is needed at harvest to avoid defects which can result in a rejected load = more risk for new growers.

What else??

# What About Sunflowers?

- Sunflowers can grow well with minimal moisture.
  - Sunflowers are more frost tolerant than soybeans.
  - Deep tap roots bring up minerals and can break apart hardpan.
  - Companies are expanding their contracts into the Midwest.
  - Direct to consumer possibilities for those that want to develop those markets
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- Friendly to pollinators
  - Locals love the look
  - Great for dove hunting

# Our question...

- Can sunflowers be grown as a profitable double crop after winter wheat, in Northern IL, in an organic system?

# Our plan

- Harvest wheat
- Do some light tillage to take care of any weeds
- Plant Sunflowers (under contract with Perdue AgriBusiness)
- Do some weed control passes
- Sidedress N (feather meal)
- Harvest sunflowers
- Sell and calculate the results





# Harvest wheat/plant flowers

- \*Wheat was fertilized with 2 ton/ac of poultry litter in early spring\*
- Wheat harvested July 5
- Straw was baled off for the dairy
- Ground soil finished July 8
- Sunflowers planted July 9 @ 30in rows N4H302, ~24,600 seeds/ac
- Rotary hoed July 14
  
- Something wasn't right...



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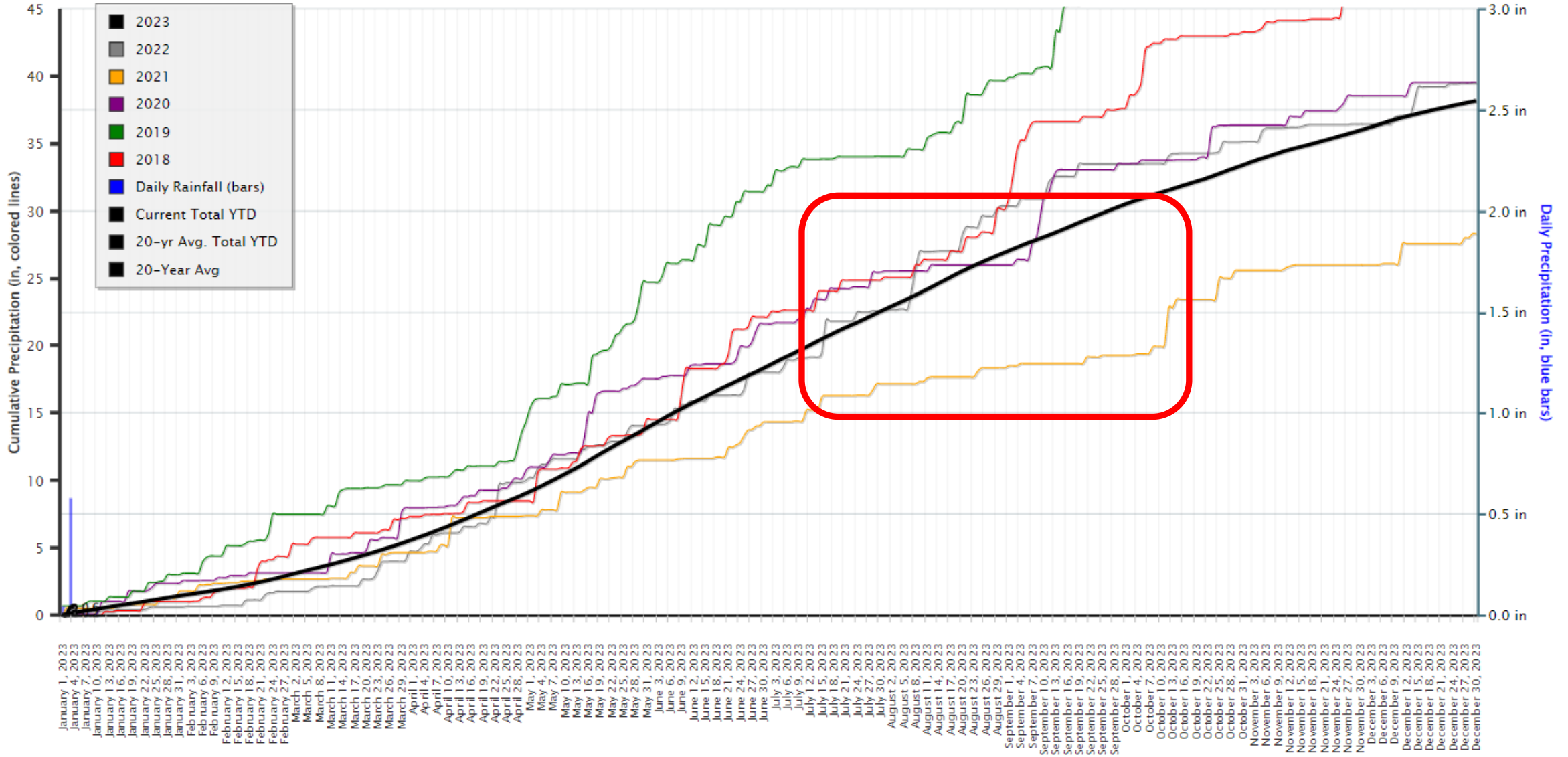
# Changes to the plan...

- Discovered we had bad seed, very poor stand, evaluate options...
- Aggressively dragged (to preserve moisture)
- Replant over the old rows as best as possible (to take advantage of the few sunflowers that were coming)
  - July 23. Cobalt II, 26,500

# Dry summer... and fall....

Summary for 07/01 to 11/20	<u>2021</u>	<u>Average in</u> <u>2022</u>
Max Daily Precipitation	1.95	1.59
Max Weekly Precipitation	3.40	3.60
Cumulative Precipitation	11.53	18.11

Summary for 07/01 to 11/20	<u>2021</u>	<u>Average</u> <u>2022 - 2017</u>
Max Daily Precipitation	1.95	2.24
Max Weekly Precipitation	3.40	4.14
Cumulative Precipitation	11.53	18.72







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# Harvest and Storage

- Nov 20
- 14%?? (Rain coming, time to get them out)
- 2001 R62, 25ft Gleaner 8000, blocked up, with air reel
  - Some harvest loss, which is to be expected
- Stored in a bin, 3ft deep? with air for a week or two. Dried down to about 9%
- Sunflowers dry very easily if you can get air to them. May need to clean/screen out some FM if you have too much.



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# The Numbers...

## Costs

- Seed: **\$1800**
- Fertilizer + application: **\$2596** (1.98t feathermeal, 132lbs/ac)
- Machinery/field operations: **\$1500**
- Trucking to Georgia: **\$3000**
- Total costs for 30 acres = **\$8,896**

# The Numbers cont...

## Income

- Yield: 17,033lb (567/ac)
- Price: \$0.38/lb delivered.
- Premium: Oil @ 46.5% = +\$0.0342/lb
- Gross: \$7055 (\$235/ac)
  
- Gross - Cost = \$7055 - \$8896 = -\$1841 (-\$61/ac)
- Break even would be 21,477lbs (715lbs/ac)
- But!!! ...

# But!!!

- These sunflowers were planted 3+ weeks later than planned.
- Well below average rainfall
- Fertilizer was not optimized
- Truck to Georgia was only about half full
- \*Another area farmer had similar seed issues, got the second planting in earlier, and yield was very good.

# Just for fun...

- IF we had skipped fertilizer entirely... -\$2596
- \$7055 – \$6300 = \$755 or \$25/ac
- IF the trucking was proportional to the volume... -\$1500
- \$7055 – \$4800 = \$2,255 or \$75/ac

If we would have decided to skip fertilizer because of dry weather we would have broke even under a “worst case” scenario.

# What if...

- Soybeans?
  - Forage?
  - Cover crops?
- 
- If we would have had a successful first planting, and earlier second planting, or gotten more average rainfall, we likely would have been profitable.

# Next time...

- Maintain “earlier” planting date
- Different fertilizer program
- Hope for more rain...



# This study shows that..

- Sunflowers can be a profitable alternative for double cropping in areas where double crop soybeans are riskier.
- Sunflowers are resilient in dry weather.
- Even in a “worst case” scenario sunflowers have the potential to bring a profit if managed strategically.
- Further research is needed to quantify costs and profits over multiple growing seasons.

# Potential Problems. Remaining Questions.

- Attention to harvest moisture and storage needs
- Too much fertility and they can lodge
- Bin/storage space
  
- How many volunteer sunflowers will there be? Strategies to deal with volunteers?
- Can other cover crops/clovers be seeded with/in the flowers? How do sunflowers affect the following crops in the rotation (compared to wheat alone)?



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# Other experiments and trials in the works (Not all SARE funded)

- No-till organic soybeans. 30in vs drilled.
  - Vs full tillage organic soybeans 30in vs drilled (Completed 2022)
- Full Season Sunflowers with interseeded cover crops/clover (2023, 2024)
- Elderberries

# Questions?

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