



# Weed Control in Cut Sunflowers

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# About Roo Crew Farms



- 2022 - Wanted a dairy cow compromised for a garden
- 2023 grew 6 1200 sq. ft beds
- 2024 grew .66 of an acre
- 2025 1.3 acres
- 2026 6 acres
- Primary Crops: Cut flowers and some root veggies
- Flood and Drip Irrigation is used
- Sale Primarily Wholesale
- Employ 14-18 year old students





# About Abbie & Jaydin

- We are both seniors at South Summit High School
- We are both FFA Officers
- We chose this objective because we wanted to know which weed control method would make the most money.
- Also we are doing an Ag Science Fair Project where we will have to present this information to judges at FFA State Convention in March.





# Research Objective

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## Objective 1

Which Weed Control Method results in the highest quality sunflowers?



## Objective 2

What weeds are being controlled?



## Objective 3

Which method results in the highest profit margin?





# Project Design

## Timeline

This research was conducted through the 2025 growing season on five 160 foot rows per succession

## Irrigation and Spacing

Plants were planted 4" apart

Drip tape with 6" emitter spacing

## Replications

Data was collected from 7 plantings





# How Data Was Collected & Sampled



Data will be collected for 2 years. Today's presentation focuses on the results from year 1.

# Weed Control Methods Used



Sulfentrazone (Aquest 4F)

Hand Weeding

Trifluralin 4EC

Wool

Straw



## Objective 1

- Which Weed Control Method results in the highest quality sunflowers?



# Price of Sales and Outcomes



| <b>Weed Control Method</b> | <b>Average Yield</b> | <b>Price/Stem</b> |
|----------------------------|----------------------|-------------------|
| <b>Hand-Weeding</b>        | 42.22                | \$0.50            |
| <b>Sulfentrazone</b>       | 37.78472222          | \$0.75            |
| <b>Wool</b>                | 46.97361111          | \$0.50            |
| <b>Trifluralin</b>         | 37.02361111          | \$0.75            |
| <b>Straw</b>               | 40.23194444          | \$0.50            |

Note: Price of stems was determined by average yield. Yields >40 stems resulted in a lower cost due to bloom size at the harvest stage.



## Objective 2

- What weeds are being controlled?



# Weed Presence by Control Method



| Weed Types             | Hand-Weeding | Sulfentrazone | Wool         | Trifluralin  | Straw        |
|------------------------|--------------|---------------|--------------|--------------|--------------|
| <b>Redroot Pigweed</b> | 72.5         | 38.9          | 27.0         | 70           | 110.1        |
| <b>Lambs Quarter</b>   | 54.9         | 38.0          | 23.0         | 36.6         | 84.1         |
| <b>Kochia</b>          | 1.2          | 0.2           | 0.2          | 0.2          | 0.7          |
| <b>Puncturevine</b>    | 2.8          | 1.8           | 1.0          | 3.9          | 1.0          |
| <b>Grass</b>           | 7.2          | 6.2           | 11.6         | 7.1          | 11.8         |
| <b>Other</b>           | 103.0        | 83.2          | 92.7         | 128.4        | 120.4        |
| <b>TOTAL Weeds</b>     | <b>241.6</b> | <b>168.3</b>  | <b>155.5</b> | <b>246.2</b> | <b>328.1</b> |

Other Weeds present that will garner special attention in 2026 trials: Field Bindweed, Common Mallow



## Objective 3 - Jaydin and Abbie



- Which method results in the highest profit margin?

# Expenses by Method



| <b>Weed Control Method</b> | <b>Fixed Expenses</b> | <b>Variable Expenses</b> | <b>Total Expenses</b> |
|----------------------------|-----------------------|--------------------------|-----------------------|
| <b>Hand-Weeding</b>        | \$5.96                | \$65.00                  | \$70.96               |
| <b>Sulfentrazone</b>       | \$5.96                | \$0.48                   | \$6.44                |
| <b>Wool</b>                | \$5.96                | \$24.50                  | \$30.46               |
| <b>Trifluralin</b>         | \$5.96                | \$0.49                   | \$6.45                |
| <b>Straw</b>               | \$5.96                | \$45.00                  | \$50.96               |

# Table Two - Price of Sales and



## Outcomes

Table 2 Price of Sales and Outcomes

| <b>Weed Control Method</b> | <b>Average Yield</b> | <b>Price/Stem</b> | <b>Gross Sales</b> |
|----------------------------|----------------------|-------------------|--------------------|
| <b>Hand-Weeding</b>        | 42.22                | \$0.50            | \$1,688.92         |
| <b>Sulfentrazone</b>       | 37.79                | \$0.75            | \$2,267.08         |
| <b>Wool</b>                | 46.97                | \$0.50            | \$1,878.94         |
| <b>Trifluralin</b>         | 37.02                | \$0.75            | \$2,221.42         |
| <b>Straw</b>               | 40.23                | \$0.50            | \$1,609.28         |

Note: Price of stems was determined by average yield. Yields >40 stems resulted in a lower cost due to bloom size at the harvest stage.

# Table Three - Profitability Comparison



Table 3 Profitability Comparison

| <b>Weed Control Method</b> | <b>Gross Sales</b> | <b>Total Expenses</b> | <b>Net Income</b> | <b>Ranking</b> |
|----------------------------|--------------------|-----------------------|-------------------|----------------|
| <b>Hand-Weeding</b>        | \$1,688.92         | \$70.96               | \$1,617.96        | 4              |
| <b>Sulfentrazone</b>       | \$2,267.08         | \$6.44                | \$2,260.64        | 1              |
| <b>Wool</b>                | \$1,878.94         | \$30.46               | \$1,827.98        | 3              |
| <b>Trifluralin</b>         | \$2,221.42         | \$6.45                | \$2,214.97        | 2              |
| <b>Straw</b>               | \$1,609.28         | \$50.96               | \$1,578.82        | 5              |

Note. Ranking is assigned based on the most profitable being 1 and the least profitable being 5.



# Solution Proposal

## ■ Best Overall Method

Sulfentrazone is the most profitable for growers.

## ■ Best Organic Method

Wool is recommended if avoiding chemicals. Wool outperformed straw in yield making it a viable sustainable option.





# Key Takeaways

01

## Price Break

Smaller blooms dropped the price from \$0.75 a stem to \$0.50 a stem showing that quality is more profitable than quantity.

02

## Density VS. Quality

Higher plant density (Wool/Hand Weeding) led to smaller blooms.

03

## Labor Impact

Labor is the biggest profit-killer; Hand Weeding cost \$70.96 vs. Chemical costs of ~\$6.45.





# 2026 Considerations

## **Timeline**

1 row with each  
treatment

## **Irrigation**

6" Emitter Spacing  
Drip tape will be  
used

## **Seed Spacing**

4.9" Spacing  
instead of 4"  
spacing

## **Weed Pop.**

Collecting Data  
on other weeds  
we noticed in  
2025





# Future Work

## Soil Health

What impacts do the treatments have on the soil?

## Hybrid Model

Would a combination of methods yield more desirable results?

## Efficiencies

Can we cut expenses in other areas, I.e. Processing, other materials, etc.



Questions?

