Organic Weed Management in Field Crops

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Organic Field Crop Weed Control Options

Water

http://academic.evergreen.edu/curricular/experiencejapan/assets/img/toyooka_rice_patty.jpg

Steel

Fire

Flaming for Weed Control

1. Propane flamer versus rotary hoe

2. Flaming time of day

3. Tractor speed for flaming

Flamer vs. Rotary Hoe

- Alma, MI
- Soybean (organic) flamed at:
  - VE in 2006
  - PRE in 2007
- Weeds at cotyledon stage
- Treatments
  - Flame + cultivate
  - Rotary hoe + cultivate
  - Flame + rotary hoe + cultivate
- Measurements
  - Weed density
  - Fuel use
  - Hand labor costs

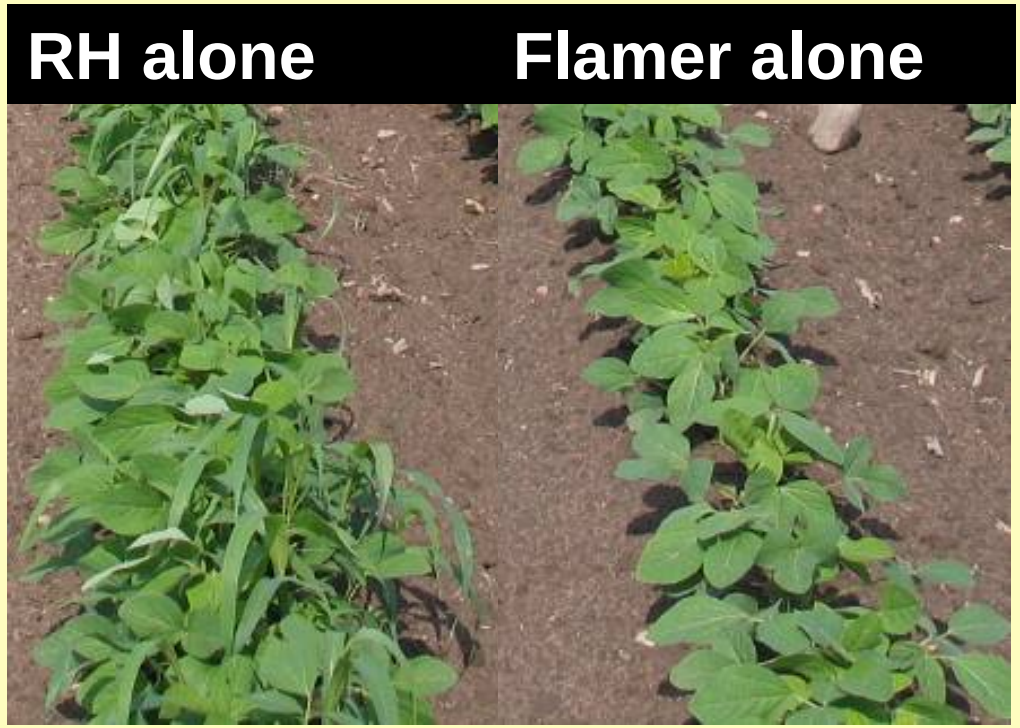
2006

2007

Flamer vs. Rotary Hoe

Weed Control Results

- 2006- Flaming reduced giant foxtail
- 2007- No difference
  - Low weed pressure
  - Dry year



Flamer vs. Rotary Hoe

Total costs of weed control ($/acre)

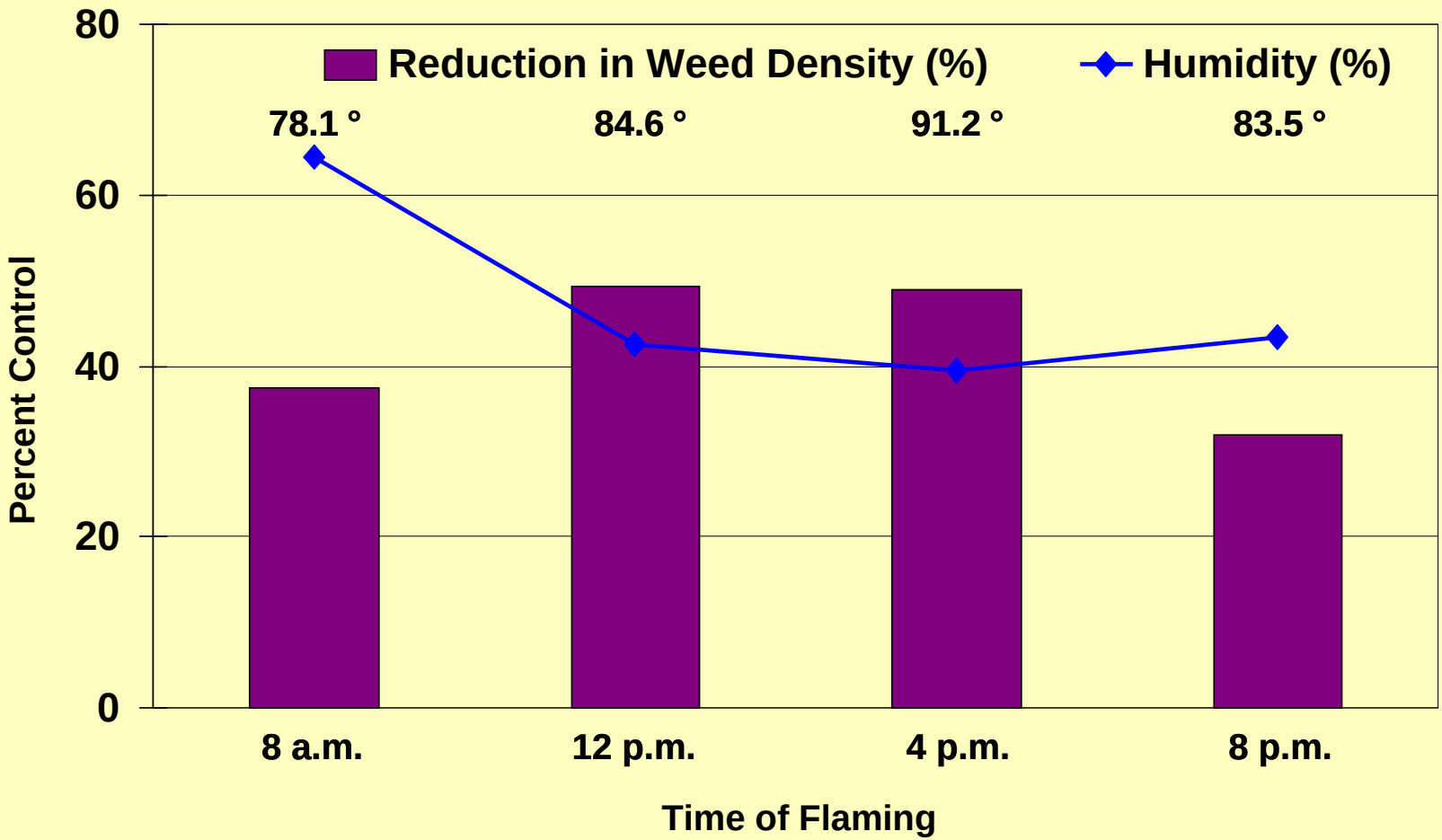
Year	Rotary Hoe Only	Flamer Only	Flamer + Rotary Hoe
2006	$54	$46	$48
2007	$35	$54	$42

- Economic analysis includes:
  - Diesel fuel costs
  - Propane costs
  - Hand labor costs

Flaming Time of Day

- Kellogg Biological Station
- Corn @ V3 stage
- Weeds @ ¾-2”
- Flaming times= 8am, Noon, 4pm, & 8pm
- Additional treatment= Rotary hoe only
- All plots uniformly cultivated
- Weed densities measured @ 3 permanent stations

Flaming Time of Day



Flaming Time of Day

Corn 4 days after flaming

Flaming Time of Day

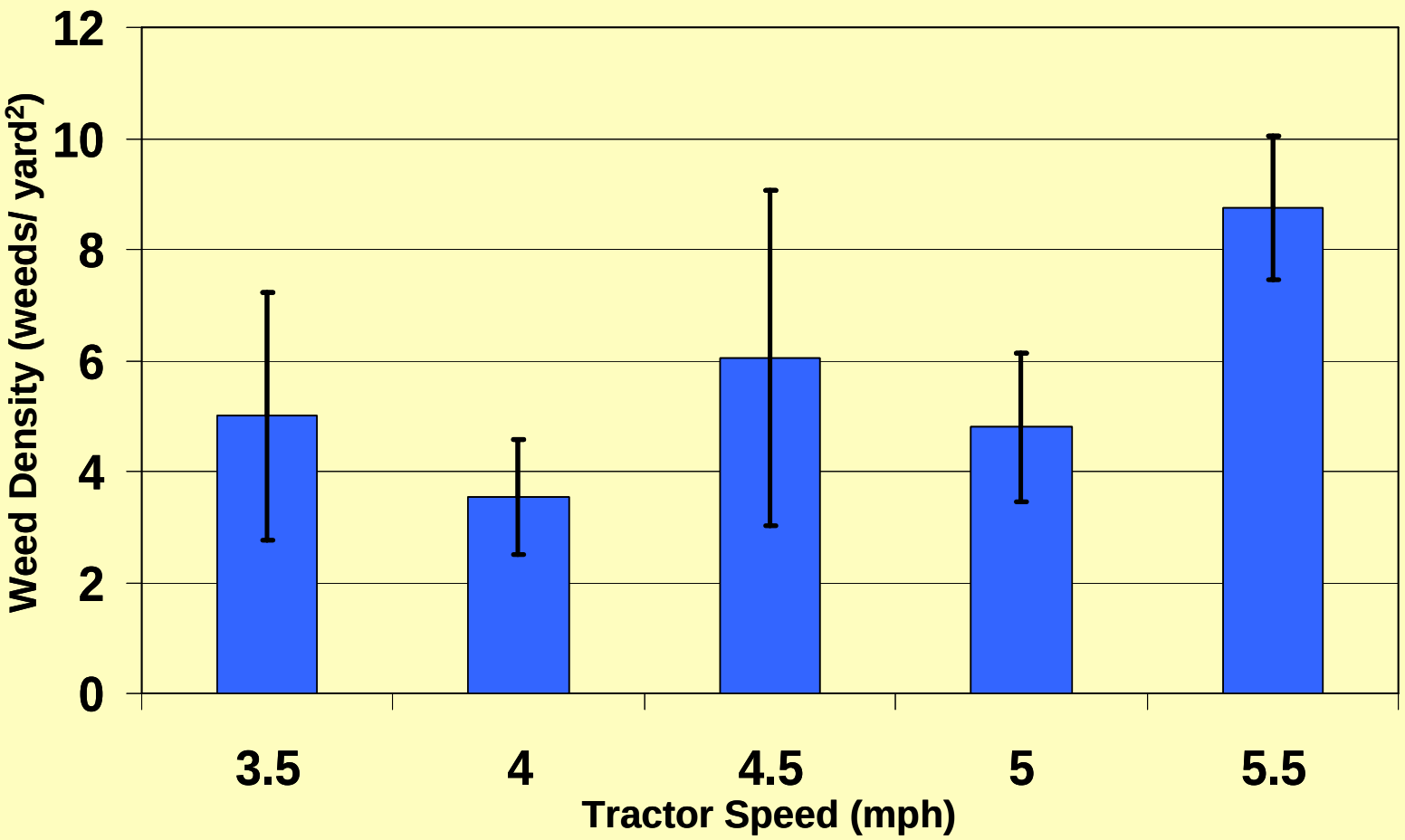
Conclusions

- **Differences were not explained by humidity & temperature**
- **1 month later, no weed differences among timings**
- **Better broadleaf control than grass**
- **Fewer weeds in rotary hoe treatment (2.5/ft^2) than flaming treatments (15/ft^2)**

Tractor Speed for Flaming

- Alma, MI
- Soybean @ PRE
- Weeds @ cotyledon stage
- Speeds= 3.5, 4.0, 4.5, 5.0, & 5.5 mph
- All plots rotary hoed and cultivated uniformly
- Weed densities measured
  - 4 days after flaming
  - 1 month after flaming

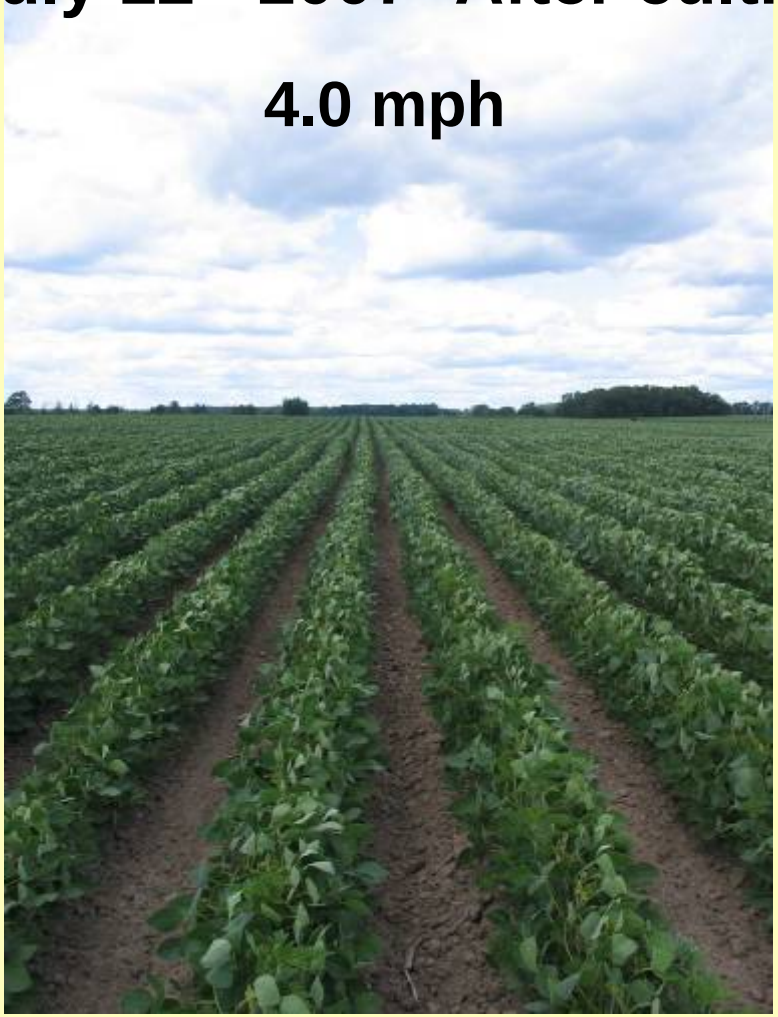
Tractor Speed for Flaming



Tractor Speed for Flaming

July 12th 2007- After cultivation, before hand weeding

4.0 mph



5.5 mph

Other Flaming FAQ

- **Average LP use/acre= 7-9 gpa**
- **Average costs in Alma, MI= $9-13/acre**
- **LP pressure**
  - **35 psi in Alma, MI**
  - **30 psi at KBS**