

# Evaluating and constructing your weed management plan

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# Outline

- General principles
- Examples of weed management plans in strawberries











# Cover Cropping





# Crop Rotation





# Perennial Weeds





# Day Neutrals as Annuals on Black Plastic





Cultivation





# In-Row Cultivators









# Over-the-top Herbicides for Actively Growing Strawberries

- Devrinol (not used more than once/year)
- Dacthal
- Sinbar (if washed off soon after)
- Poast/Select/Fusilade (grass herbicides)
- Stinger (on established plants)



# Directed Applications

Hooded sprayer



Wick applicator





# Spray on Row Middles

- Preemergence herbicides
  - Goal/Chateau/Aim
  - Prowl
- Postemergence herbicides
  - Aim
  - 2,4-D (not more than once/year)
  - Scythe
  - Gramoxone/  
Firestorm



# Rotate herbicide groups to prevent resistance

2,4-D  
Dicamba  
Stinger  
Grandstand  
others...

WSSA Group Number

LIPID SYNTHESIS INHIBITORS		
1	ACADE INHIBITORS (Acetyl CoA carboxylase)	15
AMINO ACID SYNTHESIS INHIBITORS		
2	ALL INHIBITORS (Amino acid synthesis)	47
9	EPIC SYNTHESIS INHIBITORS (L-tyrosine-4-hydroxylase)	15
GROWTH REGULATORS		
4	TRIAZOLIN INHIBITORS (Gibberellins)	8
19	ACID TRANSPORT INHIBITORS	0
PHOTOSYNTHESIS INHIBITORS		
5	PHOTOSYSTEM II INHIBITORS (Affected binding sites 1 & 2)	26
6	PHOTOSYSTEM II INHIBITORS (Affected binding sites 3 & 4)	1
7	PHOTOSYSTEM II INHIBITORS (Affected binding sites 5 & 6)	9
NITROGEN METABOLISM INHIBITORS		
10	NITROGEN METABOLISM INHIBITORS	1
PROMOTING INHIBITORS		
12	PHYTOGEN METABOLISM (Gibberellins)	1
13	PHYTOGEN METABOLISM (Gibberellins)	1
27	PHYTOGEN METABOLISM (Gibberellins)	2
CELL MEMBRANE DISRUPTORS		
14	PHYTOGEN METABOLISM (Gibberellins)	3
22	PHYTOGEN METABOLISM (Gibberellins)	5
SEEDLING ROOT GROWTH INHIBITORS		
3	SEEDLING ROOT GROWTH INHIBITORS	4
SEEDLING SHOOT GROWTH INHIBITORS		
8	LIPID SYNTHESIS INHIBITORS (Acetyl CoA carboxylase)	5
15	LONG-CHAIN FATTY ACID INHIBITORS	1
16	SPECIFIC SITE INHIBITORS	0
UNDEFINED		
17	UNDEFINED ACID INHIBITORS	1



## 2.17 Herbicide Active Ingredients and Weeds Controlled

(from Cornell Pest Management Guidelines for Berry Crops)

Active ingredient (Trade name)	WSSA Group Number	<b>Alfalfa</b> <i>Medicago sativus</i>	<b>Amaranth, Palmer</b> <i>Amaranthus palmeri</i>	<b>Amaranth, Powell</b> <i>Amaranthus powellii</i>	<b>Amaranth, spiny</b> <i>Amaranth spinosus</i>	<b>Aster</b> <i>Aster spp.</i>	<b>Barley, volunteer; wild</b> <i>Hordeum spp.</i>	<b>Barnyardgrass</b> <i>Echinochloa crus-galli</i>	<b>Redstraw</b> <i>Stachys recta</i>
Weed type		<b>BL</b>	<b>BL</b>	<b>BL</b>	<b>BL</b>	<b>BL</b>	<b>G</b>	<b>G</b>	<b>L</b>
Weed habit		<b>P</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>P</b>	<b>A</b>	<b>A</b>	<b>L</b>
Control Efficacy									
<b>2, 4-D</b> (Amine 4, Formula 40 etc.)	<b>4</b>	<b>C</b>							
<b>ammonium nonanoate</b> (Axxe)	<b>M</b>								
<b>carfentrazone-ethyl</b> (Aim EC)	<b>14</b>		<b>C</b>		<b>C</b>				
<b>*clethodim</b> (Arrow EC, Select Max)	<b>1</b>						<b>C</b>	<b>C</b>	
<b>*†clopyralid</b> (Stinger)	<b>4</b>	<b>C</b>							
<b>*†DCPA</b> (Dacthal W75.F)	<b>3</b>							<b>C</b>	
<b>dichlobenil</b> (Casoron 4G, CS)						<b>C</b>	<b>C</b>	<b>C</b>	
<b>flazifop-butyl</b> (Fusilade DX)	<b>1</b>						<b>C</b>	<b>C</b>	



Month	Planting year
April	Tillage, Goal/Chateau (14)
May	Prowl (3), Aim (14), plant strawberries
June	Poast/Select (1), Devrinol (15)
July	Cultivate, hand-weed
August	Cultivate, Stinger (4), Dacthal (3)
September	
October	Cultivate
November	Sinbar (5), mulch

# Weed Management for Matted Row Strawberries



Month	Planting year	Fruiting year
April	Tillage, Goal/Chateau (14)	Remove mulch, Goal/Chateau (14), Devrinol (15)
May	Prowl (3), Aim (14), plant strawberries	Stinger (4), Poast/Select (1)
June	Poast/Select (1), Devrinol (15)	Harvest
July	Cultivate, hand-weed	2,4-D (4), renovate, Sinbar (5), Prowl (3)
August	Cultivate, Stinger (4), Dacthal (3)	
September		Cultivate, Dacthal (3)
October	Cultivate	
November	Sinbar (5), mulch	Sinbar (5), mulch



# Shenk Berry Farm, Pennsylvania



Photo: John Shenk



# Shenk Rotation

- Year 1. Sweet Corn
- Year 2. Alfalfa.
- Year 3. Alfalfa. Fall planted Winter Rye
- Year 4. Cut the Winter Rye for mulch at flowering in May. Plant Sorghum Sudangrass hybrid, mow in August
- Year 5. Cultipack the winterkilled Sorghum Sudangrass while ground is frozen. Transplant strawberries
- Year 6. Strawberries
- Year 7. Strawberries
- Year 8. Strawberries





Photo: John Shenk



Month	Planting year
April	Weeds suppressed by residue
May	Prowl (3), planting
June	
July	Scouting, wait to cultivate until Prowl wears off, Dacthal (3)
August	Hand-weeding in-row, Sinbar (5), Devrinol (15)
September	
October	Cultivate, Stinger (4)
November	Chateau (14), mulch

# Shenk Berry Farm: Matted Row Strawberries



Month	Planting year	Fruiting year
April	Weeds suppressed by residue	Remove mulch, Devrinol (15)
May	Prowl (3), planting	
June		Harvest
July	Scouting, wait to cultivate until Prowl wears off, Dacthal (3)	2,4-D (4), renovate, Sinbar (5), Prowl (3)
August	Hand-weeding in-row, Sinbar (5), Devrinol (15)	
September		Scouting, wait to cultivate until PREs wear off
October	Cultivate, Stinger (4)	Cultivate, Stinger (4)
November	Chateau (14), mulch	Chateau (14), mulch



# Hillside Cultivator



Photo: John Sher



# Hillside Cultivator





# Hillside Cultivator



Photo: John Shenk



# Adjusting Plan with Scouting

- Did weeds survive prior controls?
- Did any new weeds emerge?

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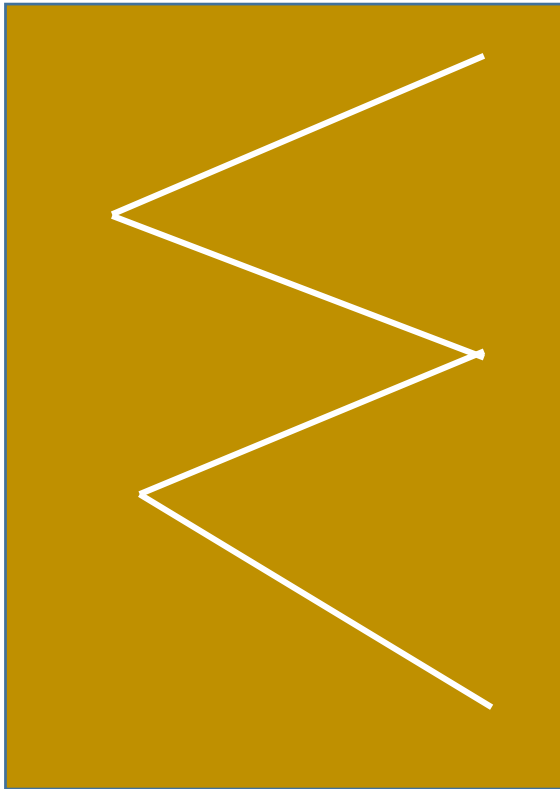


# Adjusting Plan with Scouting

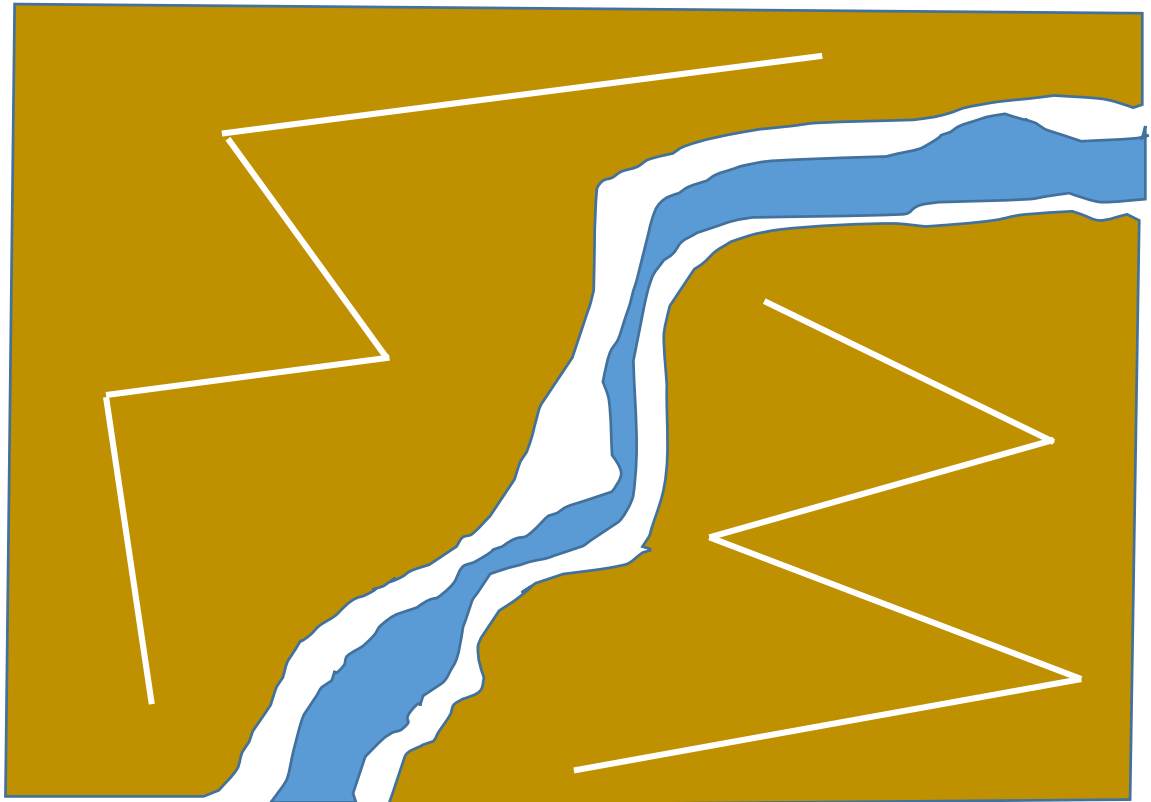
- Did weeds survive prior controls?
- Did any new weeds emerge?
- Weed map, species present, severity, growth stage
- Early-season scouting
  - To maintain yield
- Late-season scouting
  - Thinking of future

# Scouting Patterns

Rectangular field



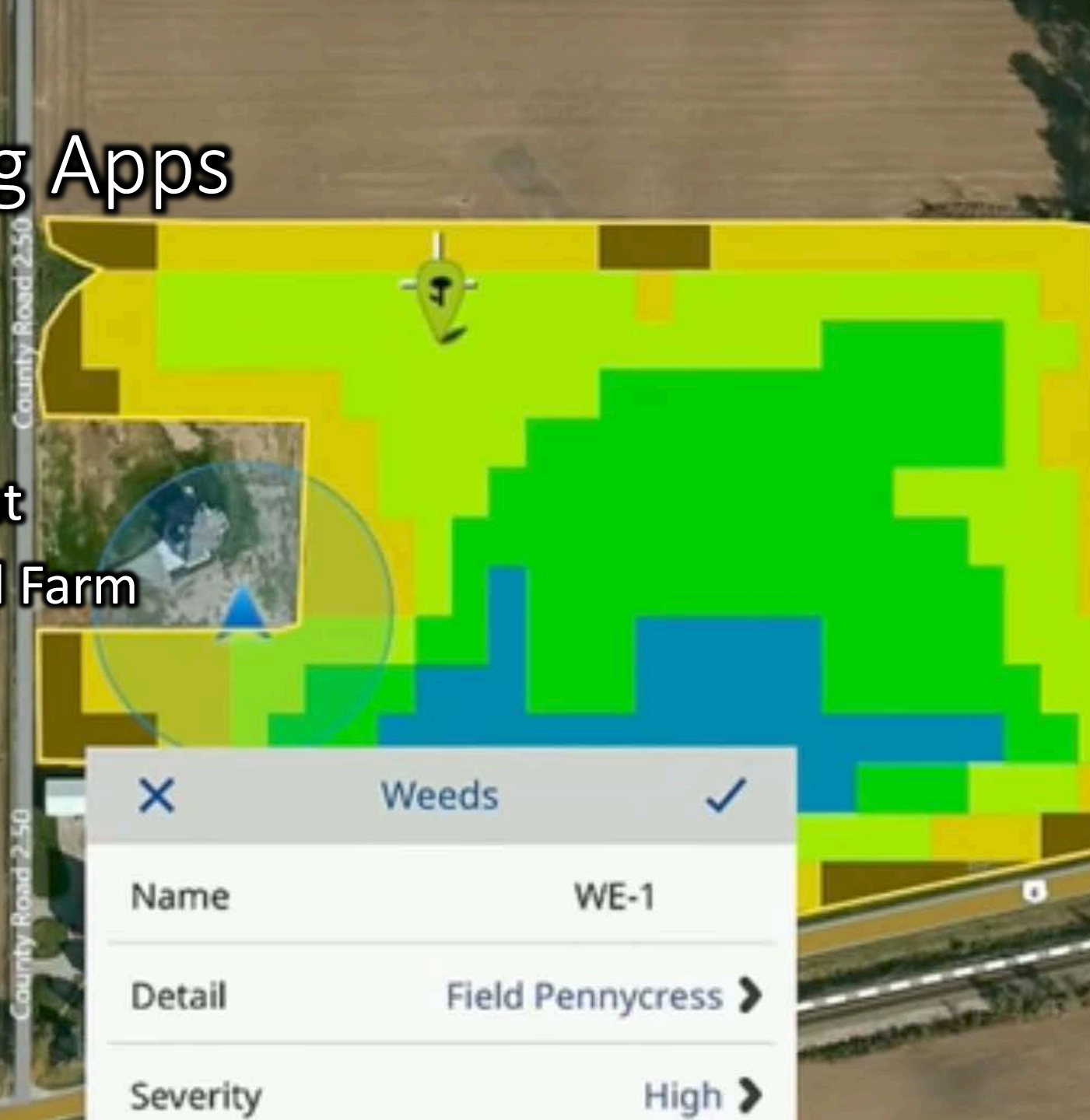
Oddly shaped fields





# Scouting Apps

- ID Weeds
- ScoutPro
- eCropScout
- Connected Farm



# Discussion Questions

- Which weeds slip through the cracks?
- Other crop rotations?
- Other challenges?





Photo: Eric Gallandt



# Volunteers in Straw





# Herbicides

- Pre-emergence v Post-emergence
- Broad-Spectrum v Selective
- Contact v Systemic