



# Weed Management Strategies For Strawberries



# Weeds

**Proper identification is key to effective management**

- Grass
- Broadleaf
- Annual
- Winter Annual
- Biennial
- Perennial



# Weed Management

Pre-plant weed control is the cornerstone of a successful weed management program

- Should begin 1-3 years pre-planting
- Site selection
- Soil amendments
- Cover Crops
- Crop Rotation



# Site Preparation

## Soil Amendments

- Animal Manures
  - Often contain weed seed
- Compost
  - May contain weed seed
    - Should be “finished”
      - Hot enough to destroy seeds
    - Cover piles to prevent weed seed contamination





# Site Preparation

## Cover crops

- Improve soil structure
- Reduce weed pressure?
  - Shade out some species
  - Use allelopathic species
    - Inhibit weed seed growth
    - Sorghum/Sudan grass



# Site Preparation

## Cover Crop Options

- Summer
  - Grasses, legumes, buckwheat,
  - Cash crops (pumpkins, corn, greens)
- Winter
  - Rye, Mustards



# Site Preparation

## Fallowing

- Repeated tillage throughout growing season
  - Deplete annual weed seed bank
  - Deplete perennial plant reserves
- Problems
  - Energy intensive
  - Soil structure
  - Erosion





# Planting Year

## Delayed Planting/Stale Seedbed

- Plant in mid-late June
  - Prepare ground in fall or early spring
  - Allow weed seeds to germinate 2-4 wks
    - Spray or flame or lightly till,
    - Disturb soil as little as possible
- Advantages:
  - **weed control**, labor distribution
- Disadvantages:
  - Plant quality, availability, irrigation





# Site Preparation

## Tarping

- Prepare ground in fall or early spring
- Place plastic tarps over soil surface
  - Kills germinating weeds
- Remove tarps late spring
- Plant, keep soil disturbance to a minimum
  - Prevents new weed seeds from surfacing
- Slows new weeds by days-weeks



# Weeds

## Management strategies

### Strip Tillage

- Prepare ground in early fall, seed cover crop
  - Winter rye, annual rye, oats
- Kill cover crop in spring (oats winter-kill)
- Till narrow (8-16") strips through dead cover
  - Requires specialized equipment
- Plant crop into strips
- Dead vegetation inhibits weed growth





# Weeds



## Strip tillage

- Specialized equipment (\$)
- Horsepower
- Cool soil
- Weeds within rows

Photo: U. Mass.

# Management Strategies

## Cultivation

- Tines, blades, etc.
- Disturb weed roots
- Best when weeds very small
- Disturb soil as little as possible



E.  
Sideman

Some hand weeding will be needed



E.  
Sideman



# Cultivation

## “Finger” Cultivators



Buddingh



Regi

E. Sideman

# Chemical Options

## Herbicides

- *Pre-Emergent*
- *Post-Emergent*
- Must know your weeds
- Costly
- Won't control all weeds
- May injure crop plants
- Requires specialized equipment
- Follow all label directions and precautions





# Pre-Planting

## Herbicides

- Glyphosate
  - Apply fall prior to planting
- Goal 2XL (oxyflourfen, 1-2 pt)
  - Must apply 30 days prior to planting
  - Must be tilled 2.5" before planting
- Aim EC (carfentrazone, 2 oz)
  - Burndown, allow 24 hours before planting
  - May be tank mixed with other herbicides

# Pre-Planting

## Herbicides

- Prowl H<sub>2</sub>O (pendimethalin, 1.5-3 pt)
  - Irrigate in at least one day before planting
  - Good on annual grasses, some broadleaves
  - Don't use if plastic mulch is to be applied





# Planting Year Herbicides

## Transplanting

- Spartan 4F (sulfentrazone, 4-8 oz)
  - Apply prior to or just after planting but before new growth appears.
  - Broadleaf weeds, field pansy, groundsel, nutsedge
- Sinbar (terbacil)
  - Light rate (2 oz) prior to leaf emergence or wash off
  - May cause Injury



# Planting Year Herbicides

## Summer

### *Pre-emergent*

- *Devrinol* (napropamide, 2-4 lb)
  - After plants established, water in
  - Late summer control of winter annuals, grasses
- *Sinbar* (terbacil, 2-4 oz)
  - Late summer for winter annuals





# Planting Year Herbicides

## Summer

### *Post-emergent - Grasses*

- *Poast* (sethoxydim, 1-2 pt)
  - Must add crop oil
  - Don't use when hot
- *Select* (clethodim, 6-8 oz)
  - Must add crop oil
  - Repeat application for perennial grasses



# Fall-Dormant Herbicides

## Dormancy

- *Post-Emergent*

- *Formula 40 (2, 4-D; 2-3 pt)*
  - Apply after strawberries dormant
  - Control of broadleaves, winter annuals





# Fall-Dormant Herbicides

## Dormancy

- *Devrinol* (napropamide, 4-8 lb)
  - Annual grasses, volunteer grains
- *Sinbar* (terbacil, 2-8 oz)
  - Do not apply more than 6-8 oz/year



# Fall-Dormant Herbicides

## Dormancy

- *Satellite Hydrocap* (pendimethalin, 1.5-3 pt)
  - Annual grasses, purslane
- *Chateau* (flumioxazin, 3 oz)
  - Good on shepherds purse, chickweed, dandelion
  - Some pre-emergent control





# Dormant Mulching

Mulch straw can be a weed bank

- Use clean straw (not hay)
- Know your source



# Spring Herbicides

## Established Beds

- Remove mulch late March-April
  - place under & around plants
  - Provides control of some annual weeds
  - Supplement mulch to get good coverage
- Don't over-fertilize
  - 10-20 lbs N/A maximum





# Spring Herbicides

## Established Beds

- *Pre-emergent* - if not applied in fall...

- *Devrinol* (napropamide, 4-8 lb)
  - Must be watered in
- *Sinbar* (terbacil, 2-4 oz)
  - Water to rinse off foliage



# Renovation Herbicides

## Post-Emergent

- *Formula 40* (2,4-D; 2-3 pt)
  - Annual, perennial broadleaves
  - Apply 3-5 days before mowing



# Renovation

## Tillage

- Mow leaves above crowns
  - Remove weed seed heads
- Till to narrow rows
  - Kill weeds between rows
- *BUT* disturbing soil = ↑ weed seeds





# Renovation

## “No-Tilling” Approach

- Reduce weed pressure
- Mow & fertilize as usual
- No tilling to narrow row
  - Apply contact herbicide or flame to narrow rows
- Plant cover crop?



# Renovation Herbicides

## Pre-Emergent

- *Sinbar* (terbacil, 2-6 oz)
  - Many broadleaves and annual grasses
  - Some post-emergent control
  - Water in
  - 8 oz maximum per season
    - Split applications (fall) common
  - Over application will cause injury



# Renovation Herbicides

## Pre-Emergent

- *Satellite Hydrocap* (pendimethalin, 1.5-3 pt)
  - Annual grasses and some broadleaves
  - Purslane
  - Water in
  - 6 pt maximum per season





# Renovation Herbicides

## Pre-Emergent / Some Post-Emergent

- *Spur* (clopyralid, 2/3 pt)
  - Many broadleaves and annual grasses
    - Clover, dandelion, thistle
  - Some post-emergent control
  - Use minimum 10 gals water
  - 1 application per year
  - Do not tank mix
  - Perennial plantings only



Photo: WSU

# Post Renovation

## Herbicides - Between Rows

### *Pre-emergent*

- *Chateau* (flumioxazin)
- *Prowl H<sub>2</sub>O* (pendimethalin)

### *Post-Emergent*

- *Gramoxone* (paraquat)
- *Scythe* (pelargonic acid)
- *Aim* (carfentrazone)



# Weed Management Resources

1. Strawberry Production Guide

<https://scholars.unh.edu/extension/1670>

2. Strawberries: Organic Production

<http://attra.ncat.org/attra-pub/PDF/strawberry.pdf>

3. New England Small Fruit Pest Management Guide

<http://www.umass.edu/fruitadvisor>