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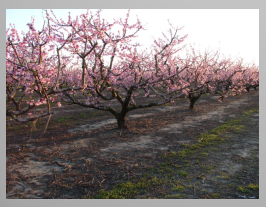
Peach Orchard Weed Management



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Weed Control Program Expectations……

- Prevent competition
- Prevent erosion
- Assist with IPM
- Maximize radiant heat benefit
- Crop management and worker efficiency

Stink bug damage

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Soil Influences Herbicide Rate, Activity, and Tree Health

RATES
POUNDS PER ACRE

Soil Texture	1 to 2 % Organic Matter Karmex® DF		SINBAR®	More Than 2% Organic Matter Karmex® DF		SINBAR®
Sandy loam	1.0	+	1.0	1.5	+	1.5
Loam, Silt loam, Silt	1.5	+	1.5	2.0	+	2.0
Clay loam, Clay	2.0	+	2.0	2.0	+	2.0

- Soil variation within a field can result in the need to vary herbicide rates by 30%
- Chronic exposure over time will reduce tree productivity and health

Diuron Injury

Terbacil Injury

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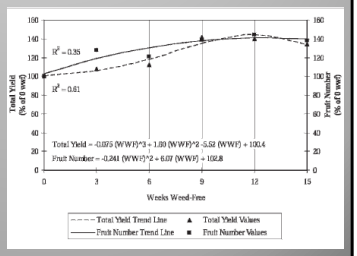
Weeds Will Reduce Yields in Mature Orchards

- Yield was maximized when orchard was maintained weed-free for 11 to 12 weeks bud break
- Weed control resulted in a 40% increase in yield
- Weed control for 3 weeks after bud break was no different than doing nothing.



MacRae, A.W., W.E. Mitchem, D.W. Monks, M.L. Parker, and R.K. Galloway. Tree growth, fruit size, and yield response of mature peach to weed-free intervals. Weed Tech. vol. 21, 2007, p.102-105

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Weed Management in Newly Planted Orchards

- PRE herbicides
  - Chateau
  - Sinbar
  - Oryzalin
  - Prowl
- POST herbicides
  - Paraquat
  - Clethodim (Select)
  - Fusilade
- Tree protection
  - Exterior latex paint
  - Milk cartons

August 1st

Herb Rate*	Palmer Control	MG Control	Lg Crab Control	% BG
Ch 6 oz Fb Ch 6 oz	100 a	95 a	98 a	88 ab
Ch 8 oz Fb Ch 8 oz	100 a	98 a	100 a	94 a

*March 29th and June 13th were the two application dates. Gramoxone and X-77 were included at each application time for POST weed control.

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Weed Management Program for Established Orchards

- Fall
  - PRE in Oct.-Nov.
    - Alion
    - Chateau
    - Simazine
    - Karmex
- Winter
  - Winter annual broadleaf weed control
    - Perennial grass sod
      - Limited to 2,4-D amine and Stinger
    - Native vegetation
      - Glyphosate + 2,4-D
      - 2,4-D amine
      - 2,4-D amine + rimsulfuron
- Spring/Summer
  - Timing
    - Depends on herbicide limitations
  - Alion
  - Rimsulfuron + Oryzalin
  - Sinbar tank mix
  - Chateau (before bloom)
  - Karmex
  - Simazine + oryzalin or Solicam




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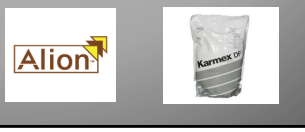
Start a Summer Weed Control Program with a Fall Applied PRE Herbicide

- Benefits of a Fall PRE
  - Frees up time in the spring
  - Extends residual weed control into harvest
  - Radiant heat benefit
  - IPM of stink bug complex
- Apply after harvest (mid November)
- Use paraquat or glufosinate for POST control
- Herbicide options (suggested)
  - Karmex @ 2 lb
  - Simazine @ 2 qt
  - Chateau @ 6oz
  - Alion @ 3.5 fl. oz



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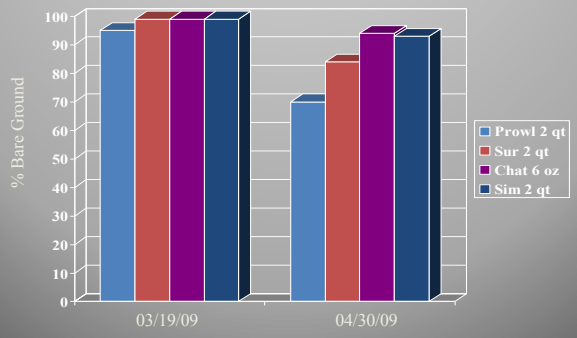
Fall PRE Options



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Winter Annual Broadleaf Weeds in Row Middle

- Apply 6 to 8 weeks before bloom
- Herbicide options
  - 2,4-D amine
  - 2,4-D amine + Rimsulfuron
  - Glyphosate* + 2,4-D amine

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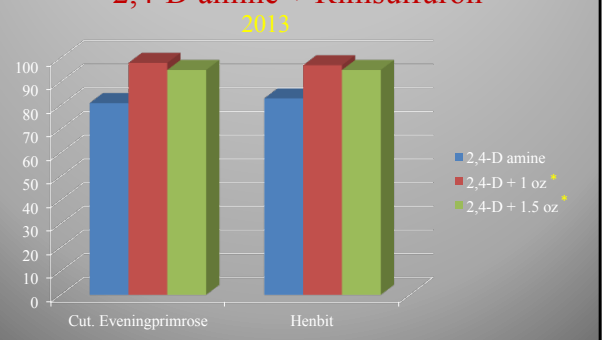
2,4-D amine + Rimsulfuron



*COC @ 1% v/v + AMS @ 8.5 lb/100 gal

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Alion 1.67SC

- Indaziflam
  - Mode of Action
    - Cellulose biosynthesis-inhibitor
    - First AI in this herbicide family
- Use rates
  - 3.5 to 5 fl. oz/A
- Trees established 3 years and longer
- 14 day PHI
- Programs
  - Fall/Summer
    - Alion 3.5 fb 5 fl. oz
    - Chateau @ 6 oz fb Alion @ 5 fl. oz
    - Simazine @ 2 qt fb Alion @ 5 fl. oz*
    - Karmex @ 2 lb fb Alion @ 5 fl. oz*

Fall applications of Simazine and Diuron ***may*** not persist as long thru Spring

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Alion Herbicide Label

- Rate restrictions based on soil organic matter
- 90 day interval between applications

Dose Rate Chart for Pome and Stone Fruit, Tree Nuts, and Olive

Soil Texture	Alion Herbicide (fl oz product / broadcast acre)			
Any soil except those that contain 20% or greater gravel content	Soil % Organic Matter Content	Rate Per Application	Max Rate Per Year	Minimum Days Between Applications
	%	fl oz/A	fl oz/A	Days
	<1	3.5 (0.045 lb ai/A)	7 (0.091 lb ai/A)	90
	1 to 3	3.5 to 5 (0.045 to 0.065 lb ai/A)	8.5 (0.11 lb ai/A)	
	> 3	5 to 6.5 (0.065 to 0.085 lb ai/A)	10.3 (0.134 lb ai/A)	

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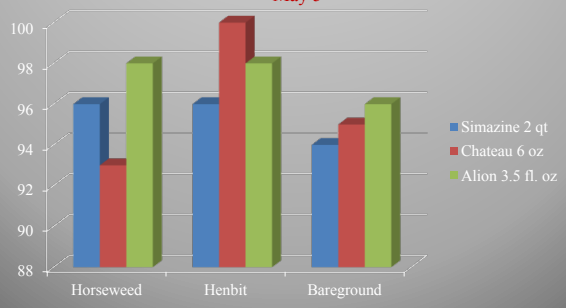
Reduced Rate Alion Trial

May 5



Research Funded by SC Peach Council

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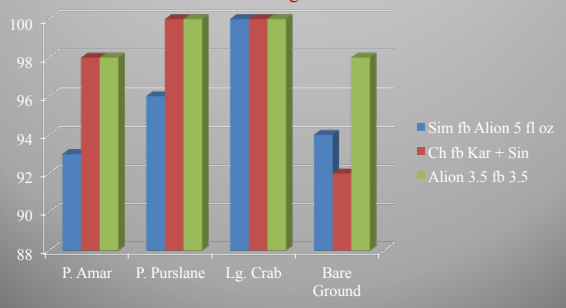
Reduced Rate Alion Trial

August 14



Research Funded by SC Peach Council

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Sinbar 80 WDG

- Use rates
  - 1 to 2 lb
- Tree age
  - 1 lb or less on newly planted
  - Full rate trees est. 3 years
- Tank Mix Partner
  - Karmex @ 1 to 2 lb (1 yr)
  - Solida @ 2 oz/A
- Programs
  - Fall/Summer
    - Chateau @ 6 oz fb Sinbar + Karmex @ 2 lb
    - Simazine @ 2 qt fb Sinbar + Karmex @ 2 lb *

*Fall applications of Simazine ***may*** not persist as long thru Spring as Chateau

Sinbar® Agricultural Herbicide

RATES POUNDS PER ACRE

Soil Texture	1 to 2 % Organic Matter Karmex® DF		SINBAR®	More Than 2% Organic Matter Karmex® DF		SINBAR®
Sandy loam	1.0	+	1.0	1.5	+	1.5
Loam, Silt loam, Silt	1.5	+	1.5	2.0	+	2.0
Clay loam, Clay	2.0	+	2.0	2.0	+	2.0

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Rimsulfuron Products

- Use rates
  - 4 oz/A
  - Cost
    - Matrix vs. generic
- 14 day PHI
- Trees est. 1 year
- Tank Mix Partner
  - Oryzalin @ 2 to 4 qt
  - Sinbar
  - Karmex
- Programs
  - Fall/Summer
    - Simazine @ 2 qt fb Rim @ 4 oz + Oryzalin @ 4 qt

SOLIDA® HERBICIDE

DuPont™ Matrix® SG herbicide

Pruvin® HERBICIDE

Tangible Benefits

- Added POST Punch
  - Dandelion
  - Yellow nutsedge
  - Horseweed
  - Fleabane
  - Henbit
  - Mallow sp.

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Other Tank Mix Options

- Simazine tank mixes
  - Simazine + Oryzalin @ 4 qt
  - Simazine @ 4 qt + Solicam @ 3 lb
- Karmex
  - Karmex @ 2 to 3 lb + Solicam @ 3 lb
- Prowl H_2O as substitute for oryzalin

Princep 4L

PROWL H_2O

Solicam DF

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Pindar GT

- Penoxsulam + oxyfluorfen
- Mode of Action
  - ALS inhibitor
  - PPO inhibitor
- Use rates
  - 1.5 to 3 pt/A
- Trees established 4 years and longer
- Application time
  - Fall (post harvest)
  - Late winter (before bloom)
- Programs
  - Fall/Late Winter
    - Pindar GT fb Pindar GT + Oryzalin
    - Chateau fb Pindar GT + Oryzalin
    - Simazine fb Pindar GT + Oryzalin

Pindar GT HERBICIDE

New in 2017

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POST Herbicides

- Glyphosate
  - Roundup PowerMax @ 22 fl. oz/A ($4.30)
  - Generic Glyphosate @ 1 qt/A ($3.95)
  - Bulk packaging (30 gal drum and larger) will save you money
- Paraquat
  - Gramoxone SL @ 3 pt/A
  - Generic paraquat @ 2 pt/A
- Stinger
  - Clopyralid
  - 1/3 to 2/3 pt/A
  - 30 day PHI
  - 2 applications not exceed maximum rate
  - Excellent on horseweed. clover, vetch, thistle, ragweed, groundsel, prickly lettuce, nightshade

Roundup POWERMAX

Gramoxone

Firestorm HERBICIDE

Parazone

Stinger HERBICIDE

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POST Herbicides

- Glufosinate (commit this to memory)
  - Non-selective
  - DO NOT allow contact with immature bark, fruit, or leaves
  - 48 fl. oz/A (DO NOT exceed 164 fl oz/A per year)
    - 32 fl oz/A is working well!
  - Several formulations cleared for use in fruit
    - Rely (Bayer)
    - Reckon (Solera)
    - Life Line (MANA)
  - Expect more favorable pricing!

LIFELINE HERBICIDE

Rely 280

solera RECKON™

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Weaknesses of Glyphosate and Paraquat

- Glyphosate
  - Crop sensitivity issue
    - Hooded application equipment
    - "Do not apply 90 days past bloom"
  - Weed Resistance
- Paraquat
  - Toxicity to handlers
  - Limited effectiveness
    - Horseweed
    - Virginia pepperweed
    - Grasses
    - Perennials





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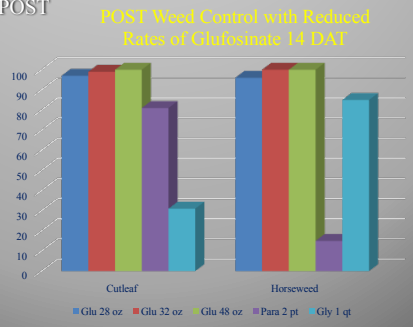
Non-Selective POST Herbicides

- Non-selective POST
  - Paraquat
  - Glyphosate
  - Glufosinate



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Costs are Important…Finding a Program with Value is Critical

- Excellent Control
  - Broad spectrum
  - Persistence
  - Impact beyond competition
    - Worker efficiency
    - IPM
- Save time
  - Minimal trips
    - Initial and follow up
  - Does it save time at the right time

Preemergence Herbicides are the Cornerstone ..IMHO

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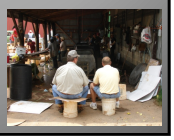
In Closing

- Sometimes less is more
- You can "Get What You Pay For!"
- Easiest money made is what you can save!
- Don't spend $10 trying to save $5!
- Don't put all you eggs in one basket
  - Find 2 or 3 herbicide programs and rotate



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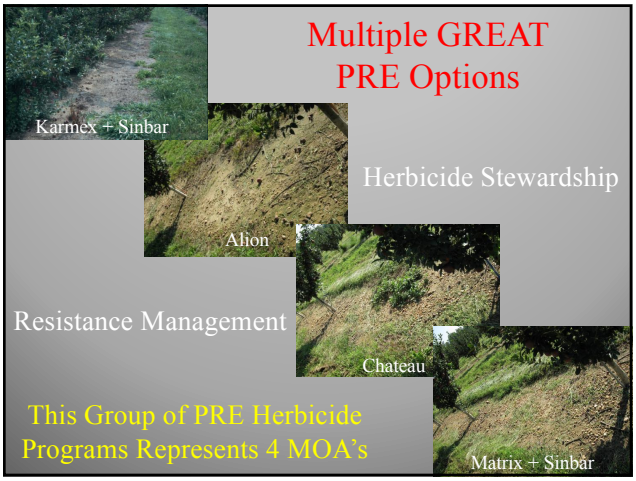
Questions

Multiple GREAT PRE Options



Herbicide Stewardship

Resistance Management

This Group of PRE Herbicide Programs Represents 4 MOA's