

Vineyard Weed Management Practices presented 17 April 2014 to NW Michigan growers



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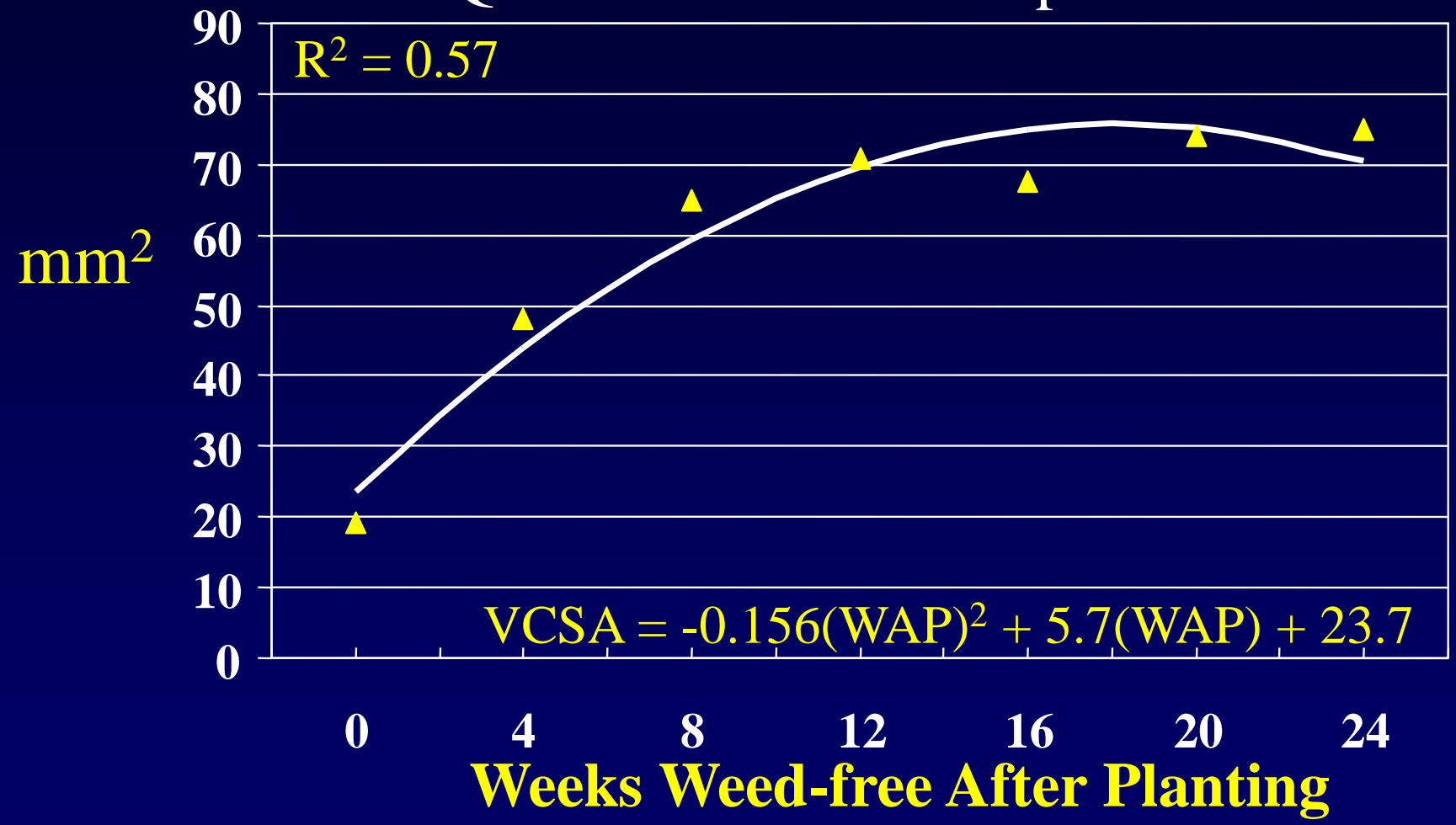
Vineyard Weed Management Objectives

- Prevent competition
 - Water
 - Irrigation efficiency
 - Nutrients
 - Newly planted vineyards
 - Survivability
 - Growth in formative years
- Radiant heat benefit
- Worker efficiency
- Prevent interference with grape root borer mgt
- Aesthetic



VCSA

Quadratic Relationship





0 WWF



4 WWF



8 WWF

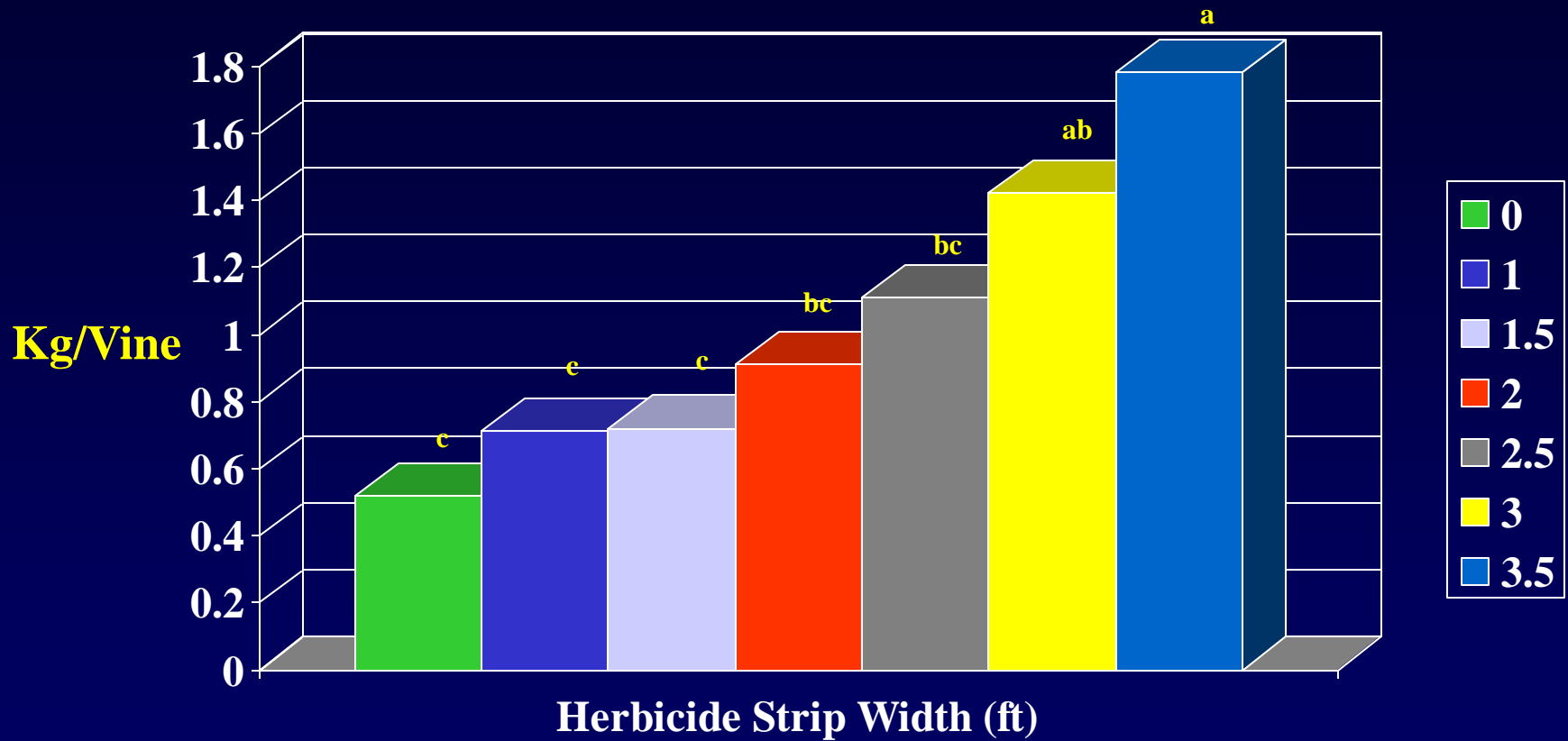


12 WWF



Weed control should be the primary concern in newly planted and young vineyards because survival and growth can be dramatically influenced.

Effect of Herbicide Strip Width on Grape Yield



LSD 0.05

Wilkes Co., NC

Buckelew et. al. unpublished

Putting Timing and Chemistry Together



Herbicide Program

Herbicide Options for Newly Planted Vineyards



- PRE
 - Chateau
 - Oryzalin
 - Prowl H₂O
 - Goal
 - Trellis
 - POST
 - Rely 280
 - Paraquat
 - Glyphosate
 - Clethodim (Select)
 - Poast
 - Fusilade
- Grow Tubes
-

PRE Newly Planted Vineyards

Crop Age	Spring	Summer
Newly Planted	Oryzalin 2 qt/A (once soil settles after transplanting)	Oryzalin 2 qt/A + Paraquat or Rely (June)
	Chateau 6 to 8 oz/A (Once soil settles after transplanting)	Chateau 6 to 8 oz/A + Paraquat or Rely (June or July)

Summer Notes: **DO NOT** apply summer PRE until control from initial application begins to fail (1 to 3" tall weeds). If perennial grasses are a problem it will be necessary to use Fusilade or clethodim.

Delayed PRE Options for Established Vineyards

Crop Age	Mid March	Early May
Vines est. 3 years or more	Glyphosate or Rely	Simazine 2 qt/A + Oryzalin 2 to 4 qt/A + Glyphosate or Paraquat or Glufosinate
		Alion 5 fl. oz/A (5 yr old vines) + Glyphosate or Paraquat or Glufosinate
		Oryzalin 2 to 4 qt/A + Rim. 4 oz/A + Glyphosate or Paraquat or Glufosinate

Summer Notes: **DO NOT** apply early May application until control from initial application begins to fail (1 to 3" tall weeds). If perennial grasses are a problem it will be necessary to use Poast.

Sequential PRE Programs for Established Vineyards

Crop Age	Mid March	Mid to Late June
Vines est. 3 year or more	Zeus 8 to 12 oz/A + Oryzalin 2 qt/A + Glyphosate	Zeus 8 to 12 oz/A + Oryzalin 2 qt/A + Glufosinate or Paraquat
Vines est. 1 year or more	Rim. 4 oz/A + Oryzalin 2 qt/A + Glyphosate	Rim. 4 oz/A + Oryzalin 2 qt/A + Glufosinate or Paraquat
	Chateau 6 to 8 oz/A + Glyphosate	Chateau* 6 to 8 oz/A + Paraquat or Glufosinate

****Chateau can only be applied after bud break if using hooded application equipment. Do not tank mix with glyphosate***

Fall/Summer Sequential Options for Established Vineyards

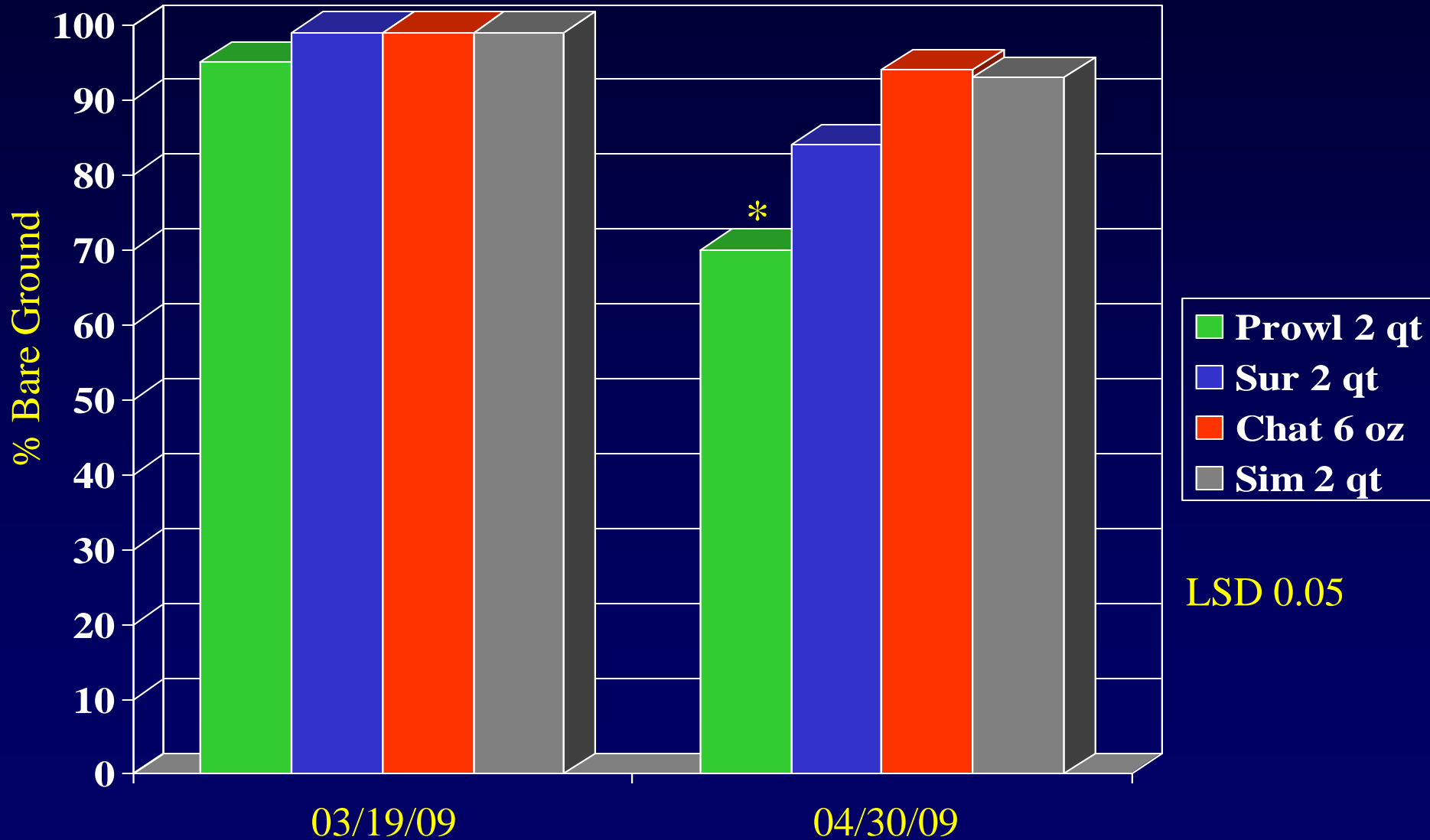
Crop Age	November	Early June
Vines est. 3 years or more	Chateau 6 to 8 oz/A + Paraquat	Chateau* 6 to 8 oz/A or simazine + oryzalin 2 qt/A + Paraquat or Glufosinate
	Simazine 2qt/A + Paraquat	Alion 5 fl oz/A (vines 5 yrs old) + Glyphosate, paraquat or Glufosinate
	Simazine 2qt/A + Paraquat	Chateau* 10 to 12 oz/A + Paraquat or Glufosinate

**Chateau can only be applied after bud break if using hooded application equipment. Do not tank mix with glyphosate*

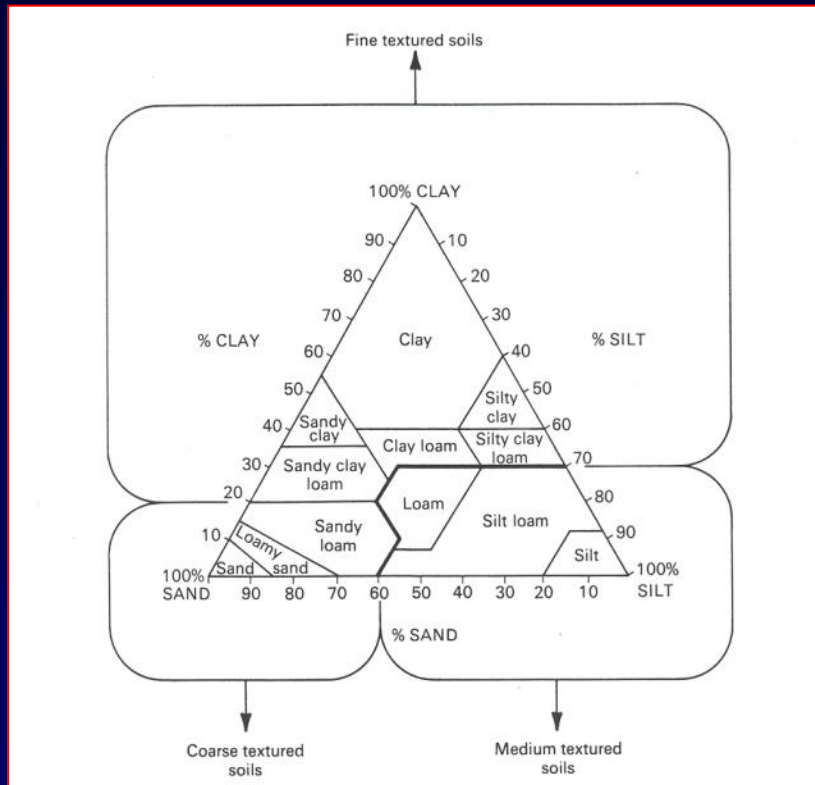
Summer Notes: DO NOT apply summer PRE until control from initial application begins to fail (1 to 3" tall weeds). If perennial grasses are a problem it will be necessary to use Poast.

Fall PRE Herbicide Benefit

Applied Oct. 31, 2008



Soil Texture and Organic Matter Influence PRE Herbicide Activity

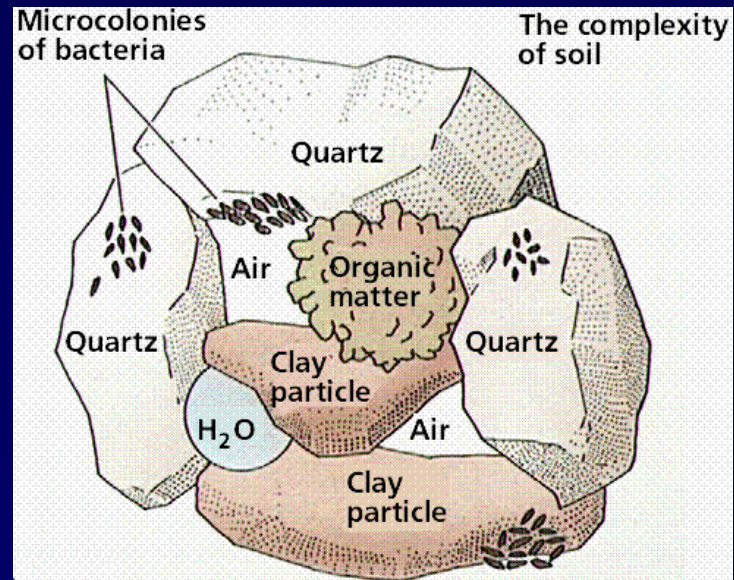


- The greater the organic matter and clay content, the greater adsorption of herbicides

Clay and Organic Matter Bind Herbicides



<u>Soil Constituent</u>	<u>CEC (meq/100g)</u>
OM	200-400
Vermiculite	100-150
Montmorillonite	80-150
Illite	10-40
Kaolinite	3-15



Soil Influences Herbicide Rate, Activity and Tree Health

Soil Texture	RATES POUNDS PER ACRE					
	1 to 2 % Organic Matter			More Than 2% Organic Matter		
	Karmex®	DF	SINBAR®	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



PRE Herbicides Soil Restrictions

- Chateau
 - Use rate cannot exceed 6 oz when soil has a sand plus gravel content of >80% on trees or vines established <3 years.
- Casoron
 - Do not use on light, sandy soils
- Diuron
 - Do not use on sand, loamy sand, gravelly soils
 - Do not use on soils with <1% OM
- Simazine
 - Do not use on gravelly, sand, or loamy sand soils

PRE Herbicide Rotation

- Prevents selection for weeds a herbicide program does not control
- Aids in resistance management
- Find at least two PRE herbicide programs and rotate them.
- Example
 - Even years use Chateau program
 - Odd years use simazine+oryzalin program

No herbicide program is so good that it can be used forever without eventually failing



Surfactants

- Designed to improve the dispersing, absorbing, spreading, sticking and /or pest penetration.
- Surfactant classes
 - Non-ionic (NIS)
 - Gramoxone or Firestorm
 - Glyphosate (if formulation does not contain a surfactant)
 - Crop oil concentrates (COC)
 - Poast, Select
 - Aim
- What should growers use?
 - Let the label be the guide!

Things to Remember when Purchasing and Using Surfactants



- Label is the ultimate guide
 - If it calls for at least an 80:20 NIS @ 0.25 % v/v (1 qt/100 gal. of spray solution) that is adequate.
- Surfactants are added to enhance herbicide activity
 - The use of a specific surfactant or type of surfactant as a means to reduce herbicide rates is not recommended.
- Under adverse conditions a little extra may help.
 - Addition of spray grade ammonium sulfate to glyphosate applied to drought stressed weeds.
 - Using organo-silicone surfactants to improve rain fastness

Know The Formulation

What is the formulation?

The active ingredient in a herbicide is the chemical that controls the target weed. The herbicide product you purchase is rarely made up only of active ingredients. Often the herbicide is diluted in water or a petroleum solvent, and other chemicals are added before the product is offered for sale. These other chemicals may include wetting agents, spreaders, stickers, extenders, or diluents. They usually make the product easier to apply and more convenient to handle. This mixture of active and inert ingredients (inactive) is called a formulation.

<http://www.agriculture.purdue.edu/fnr/html/faculty/Holt/NRCASupplement.pdf>

Herbicide Formulation Can Impact:

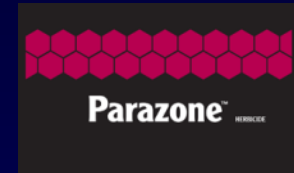
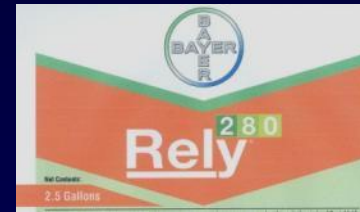
- Application rate
- Spray additives

Formulation Variations that Impact Fruit Crop Herbicide Uses

- Glyphosate
 - Various formulations
- Rely



- Rely 200 had 1.67 lb ai per gal
 - Rely 280 had 2.34 lb ai per gal



- Paraquat
 - Generic formulations contain 3 lb ai/gal
 - Gramoxone Inteon contain 2 lb ai/gal

- Oxyfluorfen
 - Goal 2XL
 - GoalTender



- Prowl H₂O
 - 4 lb ai/gal



- Clethodim
 - Select, Arrow, Volunteer
 - 2 lb ai/gal
 - Select Max, Intensity One
 - 1 lb ai/gal



Ultra Low Volume Applicator

- Most utility has been in vineyards and nursery operations.
- Primarily for glyphosate use
- Sprays herbicide without carrier
 - Apply volumes of 1/2 gallon or less per acre
- Precision applicator
 - Accurate to within 1 cm (<1/2 inch)
- Not suitable for PRE herbicides



Know What Your Applying

- Over application
 - Crop injury
 - Increased costs
- Under application
 - Poor control
 - Need for additional applications
- Use appropriate spray volume
 - 20 gal/A is ideal!



Be Ready for the Next GMO's

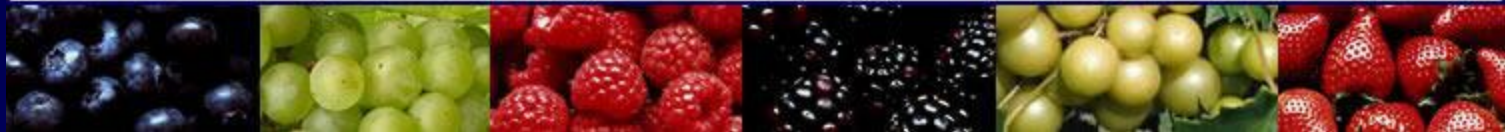
- Bayer
 - 2, 4-D tolerant crops
 - Soybean
 - Cotton
 - Corn
 - 2014/2015
- Monsanto
 - Dicamba tolerant crops
 - Soybean
 - Cotton
 - Corn
 - 2015
- Stacked tolerance with glyphosate or glufosinate

*A need exists for
education of technology
users and their neighbors
with sensitive crops!!!!*

The Technology and the Crops Need Protecting

Southeast Regional Bunch Grape Integrated Management Guide

the
Southern Region
small fruit consortium



<http://www.smallfruits.org/>

IPM/Production Guides