

Walnut Weeds Have Changed; Have You Updated Your Weed Control Methods?

44th Tri-County Walnut Day
Feb 6, 2013

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Known herbicide-resistant weeds:

- Horseweed (glyphosate)
- Hairy fleabane (glyphosate and/or paraquat)
- Rigid ryegrass (glyphosate)
- Junglerice (glyphosate)



Future herbicide-resistant weeds:

- Palmer amaranth (glyphosate)
- Lambsquarters (glyphosate)
- Barnyardgrass (DNAs)
- Sprangletop (DNAs)

Palmer amaranth



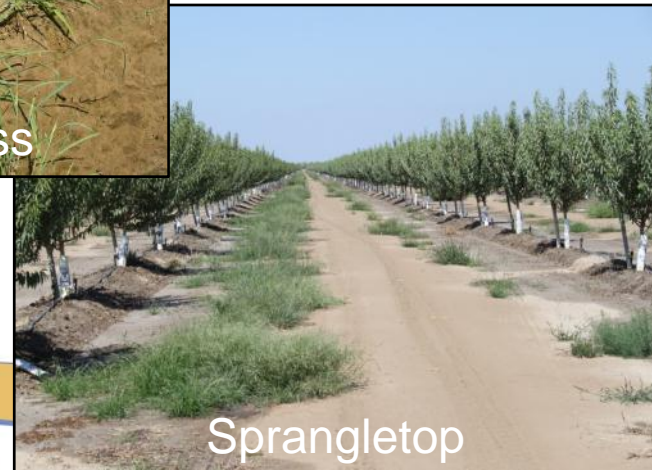
Barnyardgrass



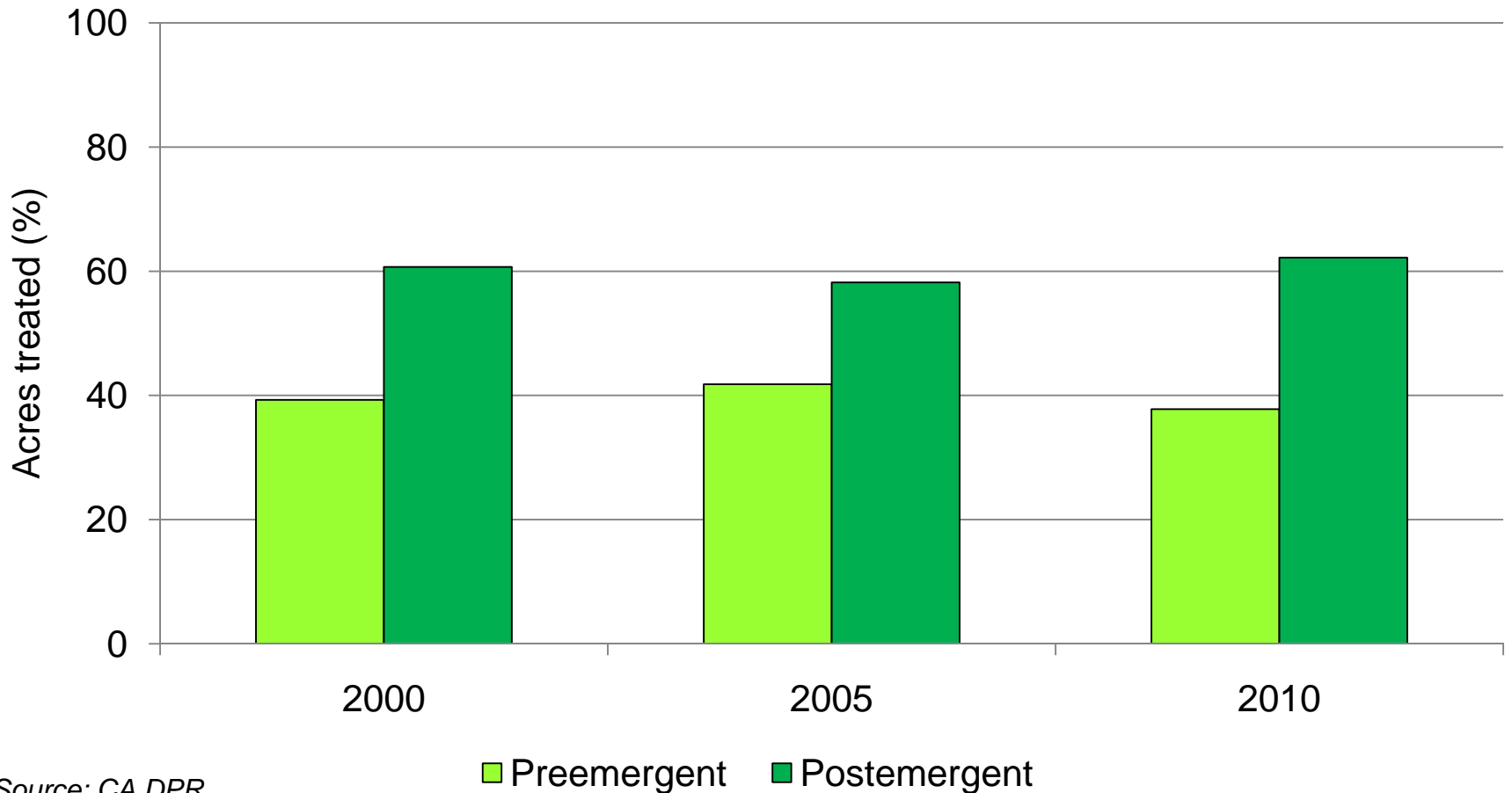
Lambsquarters



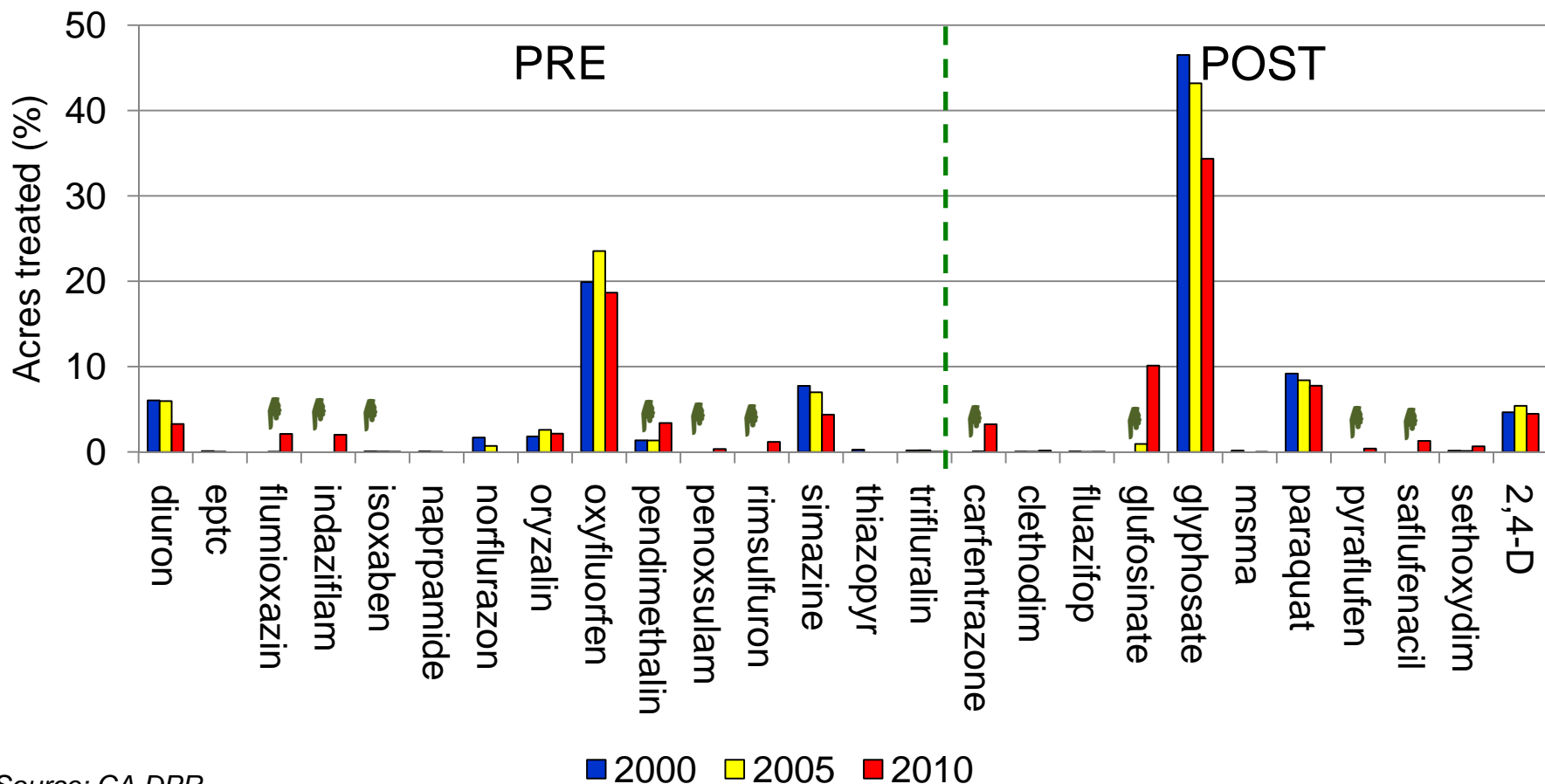
Sprangletop



Herbicide use in walnuts in CA (by herbicide type)

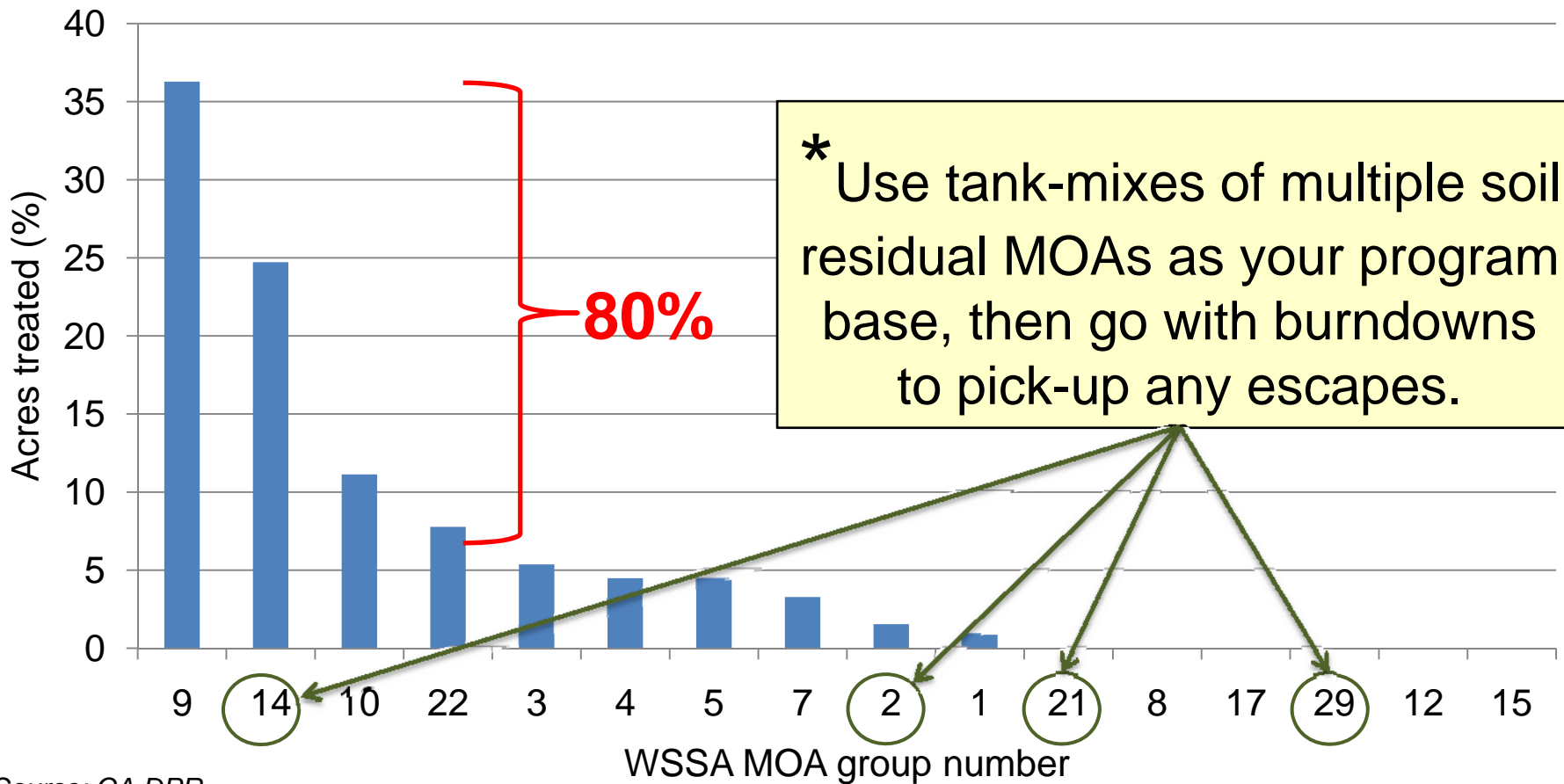


Herbicide use in walnuts in CA (by active ingredient)



Source: CA DPR

Herbicide use in walnuts in CA in 2010 (by mode of action)



Source: CA DPR



*Look for MOA on the container and/or the label.

Information on Weed Resistance:

GROUP 9 HERBICIDE

Glyphosate, the active ingredient in this product, is a Group 9 herbicide. Target site resistance to Group 9 herbicides is rare. Although rare in occurrence, any weed population may contain plants naturally resistant to Group 9 herbicides. Weed species resistant to Group 9 herbicides may be effectively managed utilizing another herbicide from a different Group or using other cultural practices.

Weed resistance management recommendations for Group 9 herbicides are:

- Ensure optimum weed control by making applications at the right time (correct weed size) and utilizing the recommended label rate for the most difficult to control weed in your field.
- Base decisions on local needs and use the tool(s) necessary to obtain optimum weed control and minimize weed escapes.
- Avoid tank mixtures that reduce this product's efficacy (through antagonism) or which encourage rates of this product below the label recommendations.
- Scout treated weed populations for escapes 2 to 4 weeks after application.
- Report any incidence of repeated non-performance of this product on a particular weed to the local retailer, county extension agent, or Monsanto representative.

Alion™ Herbicide

GROUP 29 HERBICIDE

For Preemergent Weed Control in Citrus Fruit, Stone Fruit, Pome Fruit, Tree Nuts and Pistachios

ACTIVE INGREDIENT: Indaziflam*	19.05%
OTHER INGREDIENTS:	80.95%
TOTAL:	100.00%

Contains 1.67 pounds of indaziflam per gallon.
*(CAS No: 730679-19-8)

EPA Reg. No.: 264-1106 EPA Est. No.

KEEP OUT OF REACH OF CHILDREN CAUTION

For MEDICAL and TRANSPORTATION Emergencies ONLY Call 24 Hours A Day 1-800-334-7577
For PRODUCT USE Information Call 1-800-334-9745

FIRST AID

If on skin:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled:	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.
If swallowed:	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything to an unconscious person.

For MEDICAL Emergencies Call 24 Hours A Day 1-800-334-7577
Have the product container or label with you when calling a poison control center or doctor or going for treatment.

Note to physician: No specific antidote is available. Treat symptomatically.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION
Harmful if swallowed, absorbed through the skin or inhaled. Avoid contact with skin, eyes, or clothing. Avoid breathing mist.

Labeled products since 2005:

Trade name	MOA	Rate/A	Additives*	Tree age	PHI
<i>Preemergent</i>					
Alion	29	5-6.5 fl oz	---	36 mo	14
Chateau	14	6-12 oz	---	12 mo	60
Matrix SG	2	4 oz	---	12 mo	14
Pindar GT	2 + 14	1.5-3 pt	---	9 mo	60
Prowl H2O	3	2-6 qt	---	Anytime	60
Trellis	21	0.66-1.33 lb	---	Anytime	60
<i>Postemergent</i>					
Rely 280	10	3.5-5 pt	---	Anytime	14
Shark EW	14	2 fl oz	NIS/COC/MSO	Anytime	3
Venue	14	1-4 fl oz	NIS/COC	Anytime	0
Treevix	14	1 oz	MSO	Anytime	7

*Add AMS at 8.5 lb/100 gal spray solution

Some important weeds targeted by the newer preemergents:

	Chateau	Trellis	Matrix SG	Pindar GT	Alion
Filaree	Green	Green	Green	Green	Green
Hairy fleabane (GR/PR)	Green	Green	Green	Green	Green
Horseweed (GR)	Green	Green	Green	Green	Green
Knotweed	Red	Green	Green	Yellow	Yellow
Malva	Green	Green	Green	Green	Green
Nettle	Green	Green	Green	Green	Green
Prickly lettuce	Green	Green	Green	Green	Yellow
Puncturevine	Green	Green	Green	Yellow	Green
Willowherb	Green	Yellow	Green	Green	Yellow
Ryegrass (GR)	Green	Red	Yellow	Yellow	Green
Junglerice (GR)	Green	Red	Yellow	Yellow	Green

Some important weeds targeted by the newer postemergents:

	Rely 280	Shark	Treevix	Venue	Roundup	2,4-D
Filaree	Green	Green	Green	Green	Yellow	Green
Hairy fleabane (GR/PR)	Green	Yellow	Green	Yellow	Red	Green
Horseweed (GR)	Green	Yellow	Green	Yellow	Red	Green
Knotweed	Yellow	Red	Yellow	Red	Yellow	Red
Malva	Green	Green	Green	Green	Yellow	Yellow
Nettle	Green	Green	Green	Green	Red	Green
Prickly lettuce	Green	Green	Green	Yellow	Green	Green
Puncturevine	Yellow	Yellow	Green	Green	Green	Yellow
Willowherb	Green	Green	Green	Green	Red	Yellow
Ryegrass (GR)	Green	Red	Red	Red	Red	Red
Junglerice (GR)	Green	Red	Red	Red	Red	Red

How have these newer materials been performing?

Preemergent

- flumioxazin (Chateau)
- rimsulfuron (Matrix SG)
- penoxsulam + oxyfluorfen (Pindar GT)
- isoxaben (Trellis)
- indaziflam (Alion)

Postemergent

- glufosinate (Rely 280)
- carfentrazone (Shark)
- pyraflufen (Venue)
- saflufenacil (Treevix)

Walnuts in Madera, CA

120 DAT

Chateau 12 oz



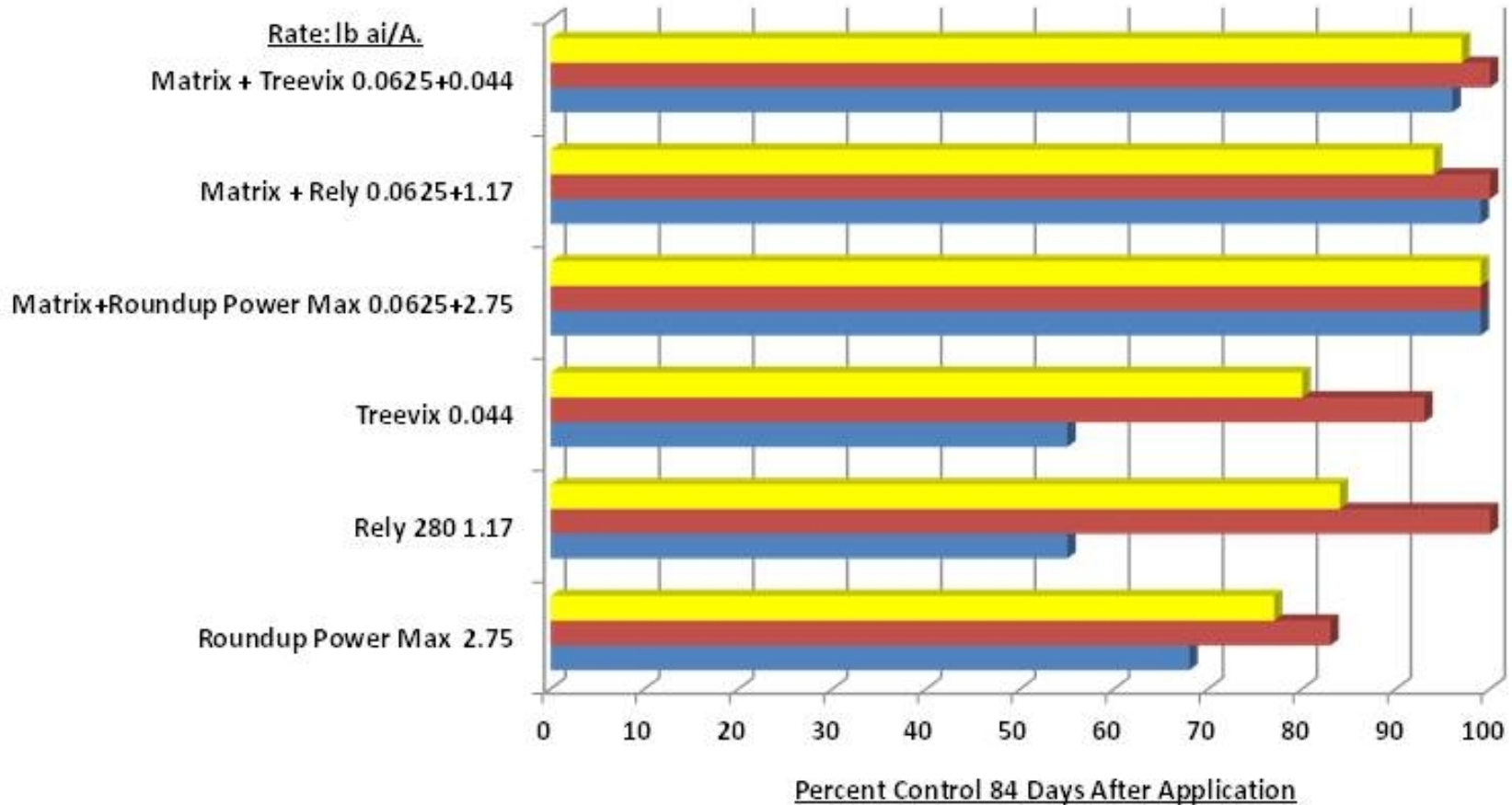
Ansolabehere, Valent

Untreated



■ Hairy Fleabane
 ■ Panicle Willowweed
 ■ Spotted Spurge

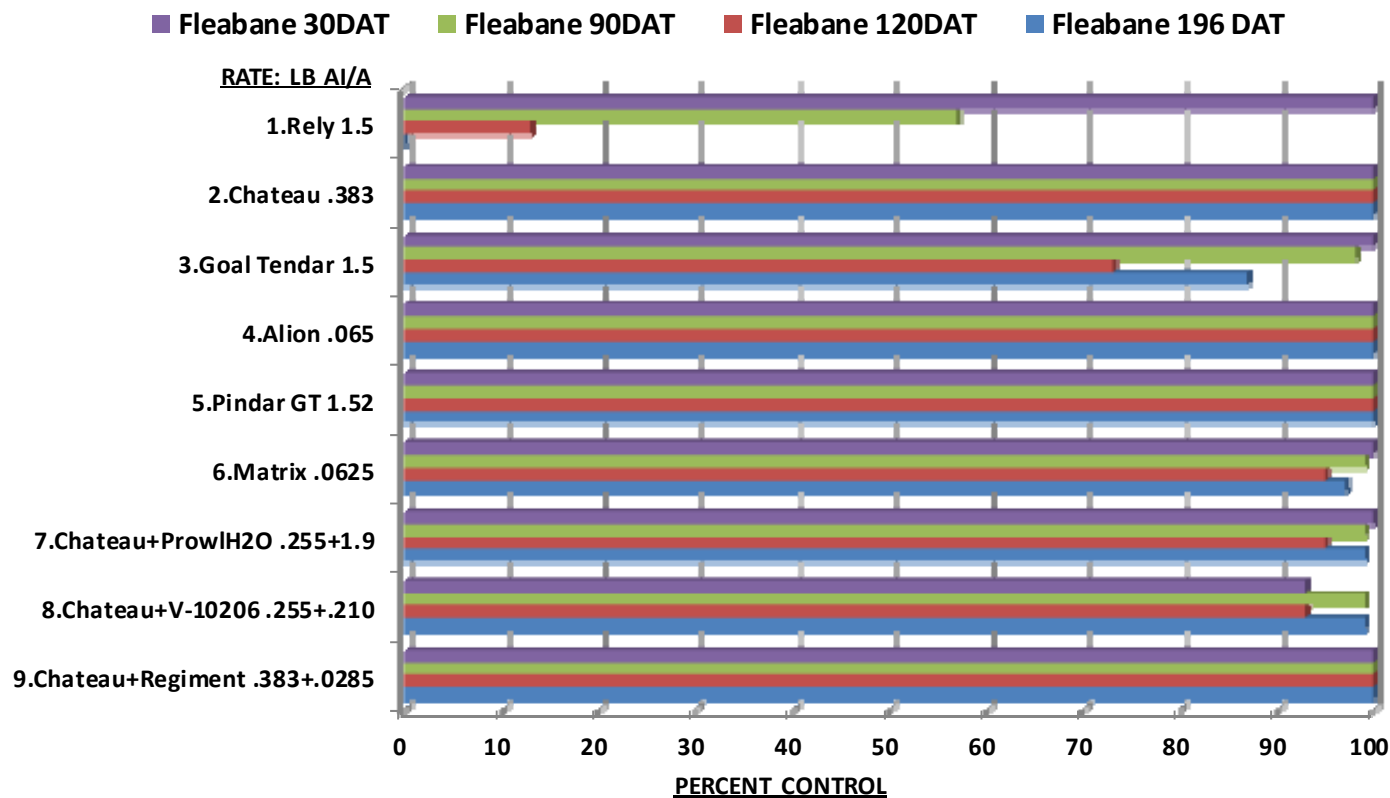
Rate: lb ai/A.



Application: March 21, 2012
 Activator 90 @ 0.25% V/V added to all treatments.

MICK CANEVARI
 UCCE EMERITUS
 SAN JOAQUIN COUNTY

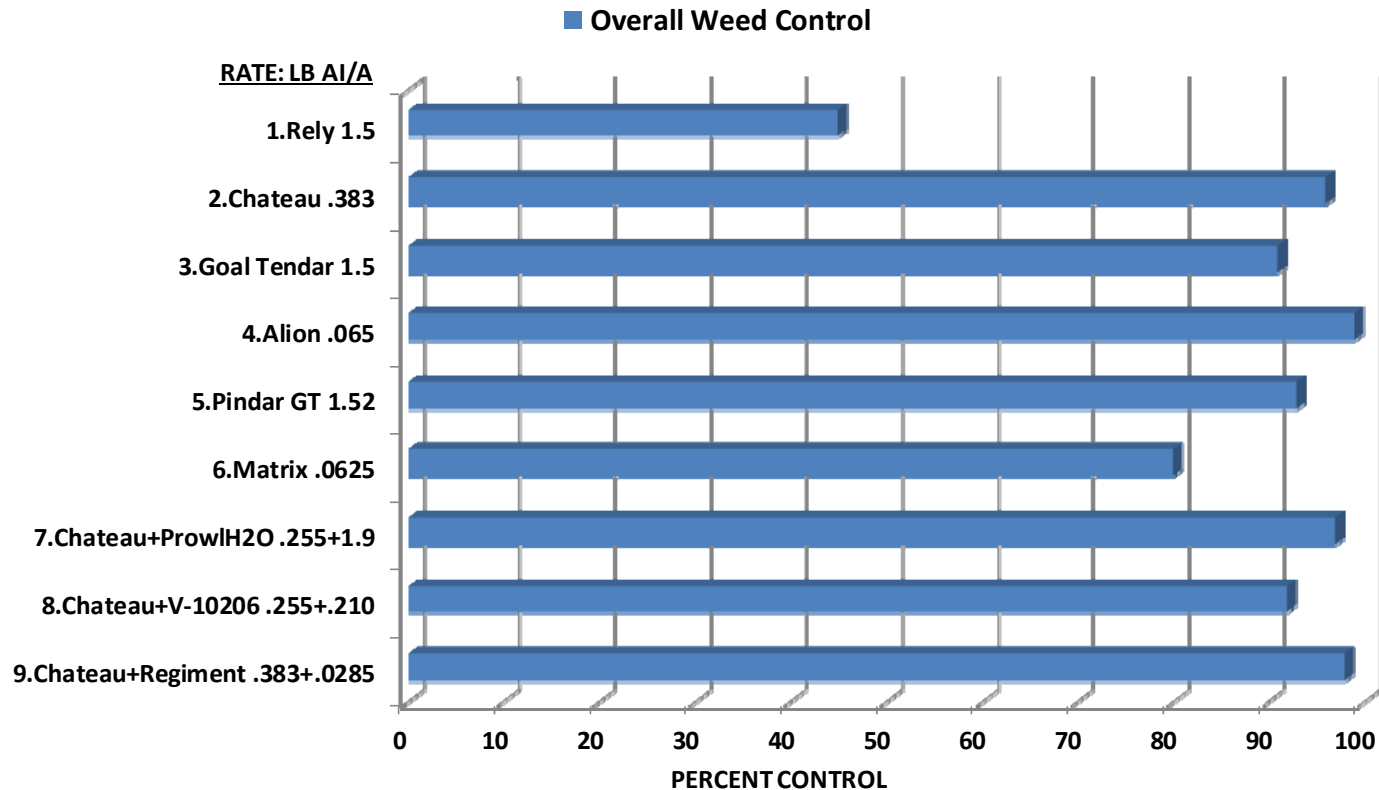
Hairy fleabane control in almonds in 2012



Appl: 12-19-11 Trt. 8 Chateau+V-10206 applied 1-4-12; Rely @ 1.5 lb ai/A included with all treatments

Canevari, Emeritus

Almond seasonal control in 2012 138 DAT



Appl: 12-19-11 Trt. 8 Chateau+V-10206 applied 1-4-12; Rely @ 1.5 lb ai/A included with all treatments

Canevari, Emeritus

Almonds in Fresno, CA in 2010 and 2011

115 DAT

Alion 5 oz + Rely 280 3.5 pt



Alion 5 oz + Matrix 4 oz + Rely 280 3.5 pt



Pindar GT 3 pt + Prowl H2O 2 qt + Rely 280 3.5 pt



Rely 280 3.5 pt



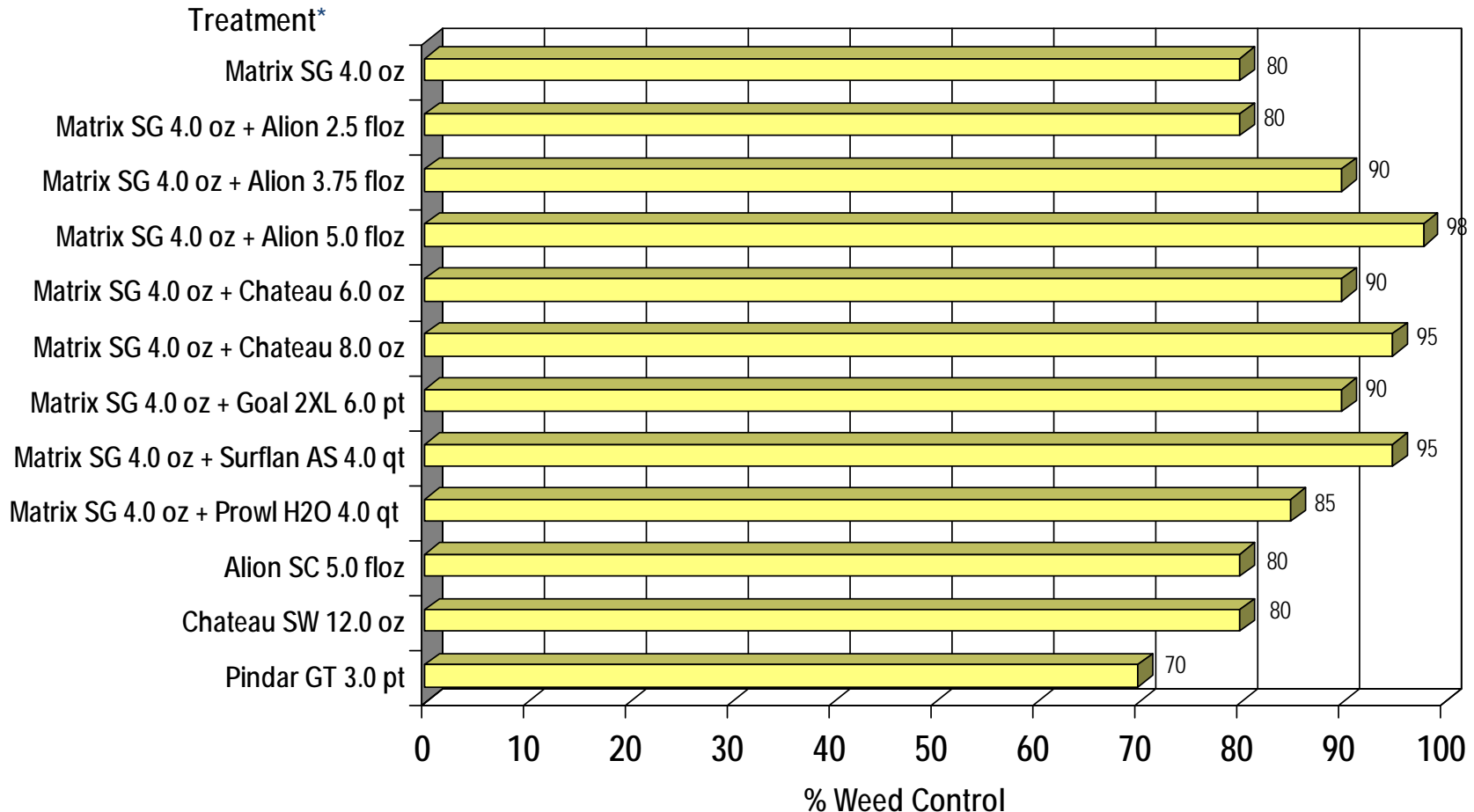


UC ANR



Italian Ryegrass in Almonds – 119 DAT

Martinez Ranch – Durham, CA



Pacheco, DuPont

* all treatments included Rely 280 at 5.0 pt

Almonds in Durham, CA in 2012

119 DAT



Italian ryegrass, shepherd's-purse, filaree, malva, chickweed, California burclover,



Pacheco, DuPont

Junglerice control – 180 DAT

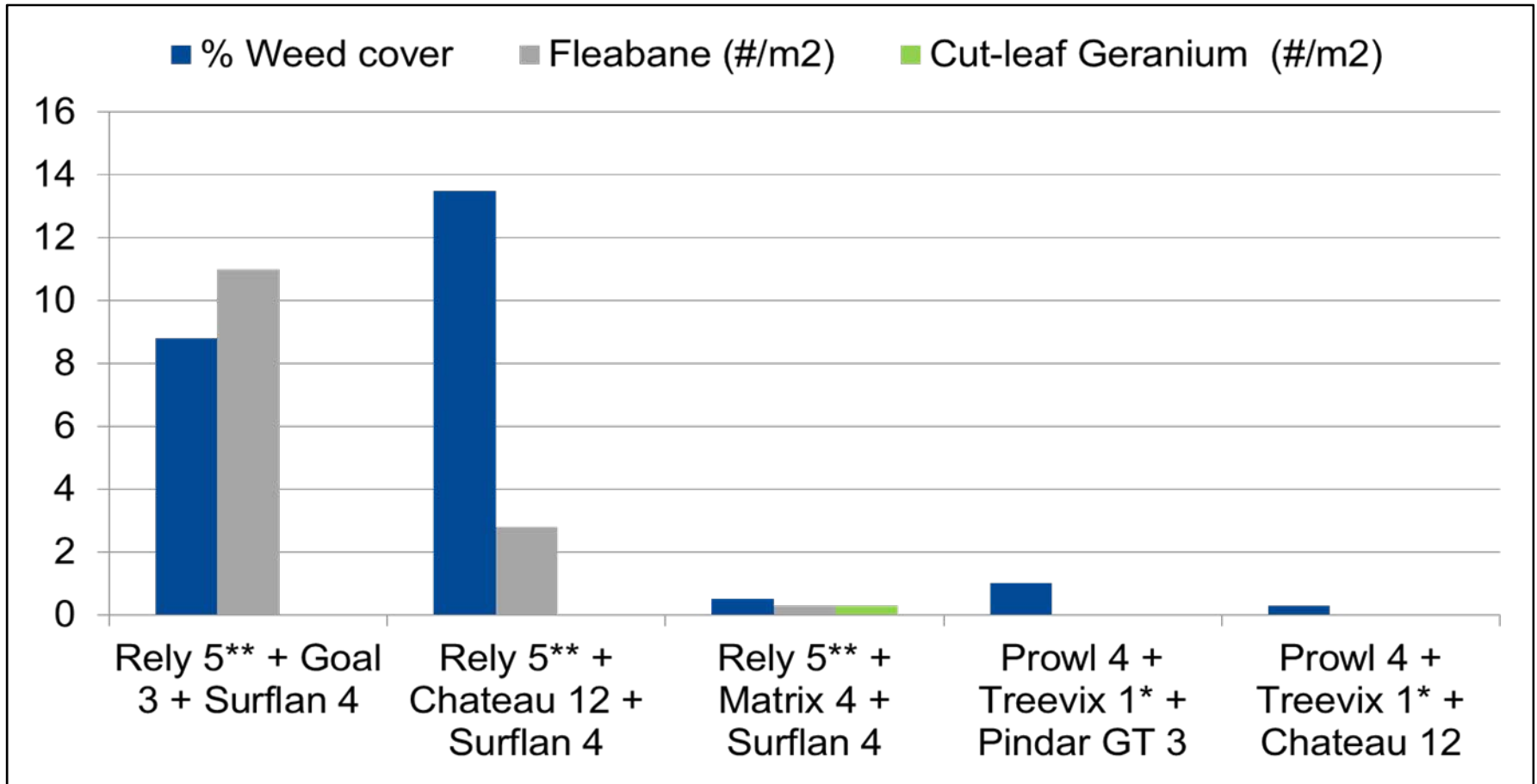


Gersdorf, Bayer CropScience



Almonds in Delhi, CA in 2012

120 DAT



Hanson, UC Davis

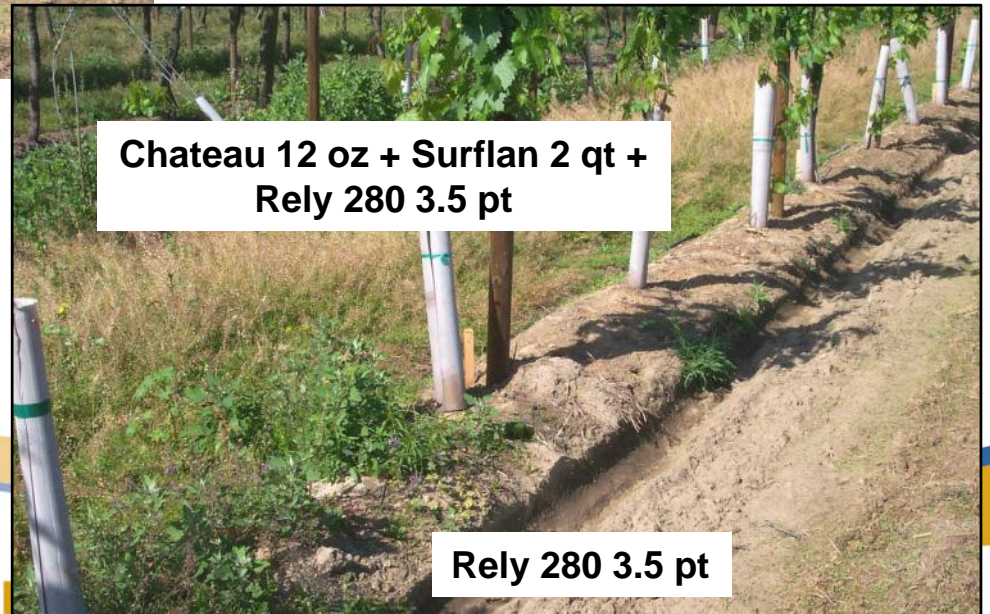
Grapes in Fresno, CA in 2010

110 DAT



Rely 280 3.5 pt

**Matrix 4 oz + Surflan 2 qt +
Rely 280 3.5 pt**



**Chateau 12 oz + Surflan 2 qt +
Rely 280 3.5 pt**

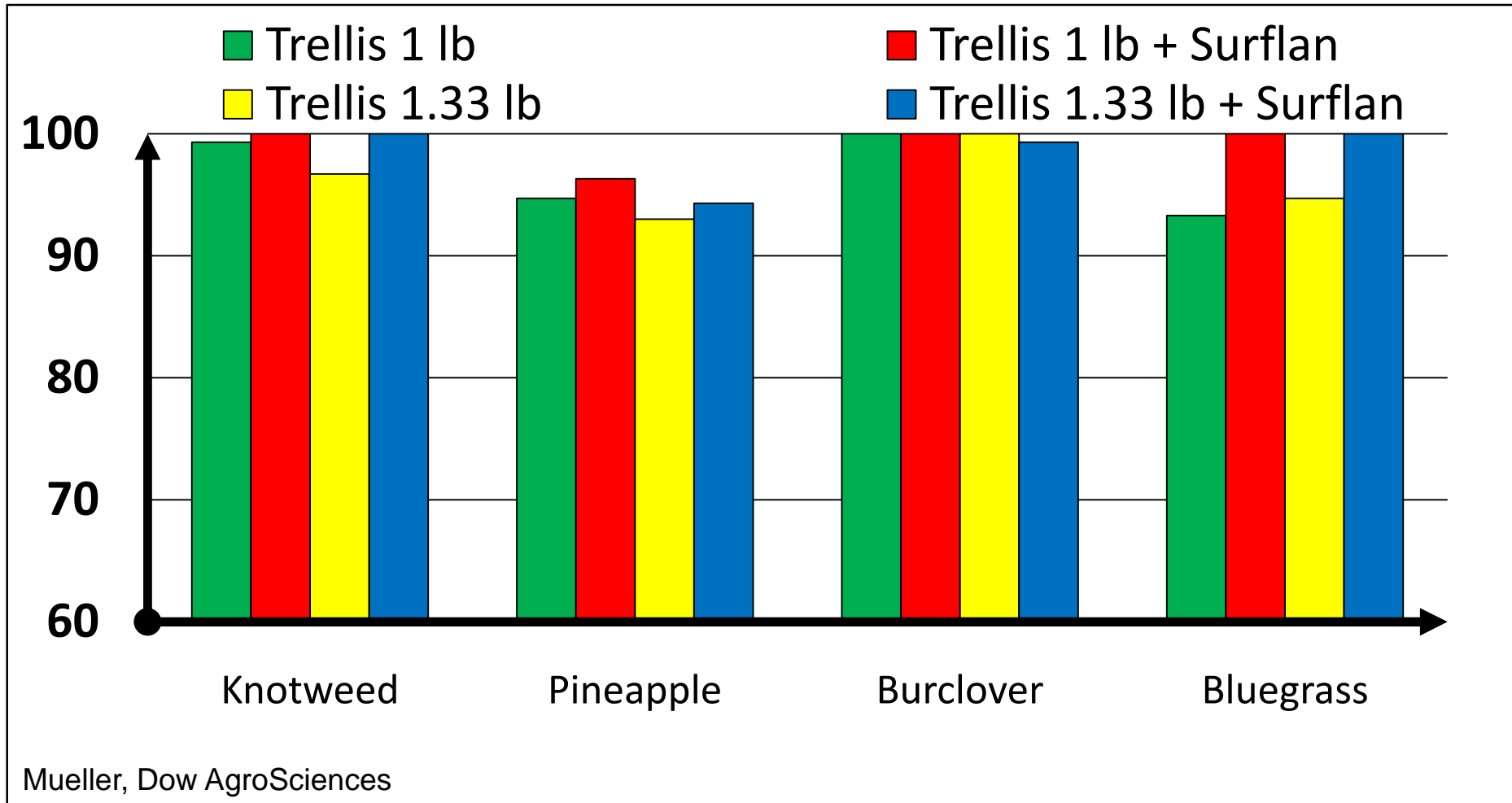
Rely 280 3.5 pt

Alion 5 oz + Simazine 1 qt
November 11, 2011



Almonds in Fresno, CA in 2012

186 DAT



Almonds in Fresno, CA in 2012

120 DAT

(Trellis at 1 lb/acre)



Mueller, Dow AgroSciences

Non-crop area in Fresno, CA in 2010

90 DAT



Untreated



Chateau 12 oz + Rely 280



Alion 5 oz + Rely 280

Non-crop area in Fresno, CA in 2010

210 DAT



Untreated

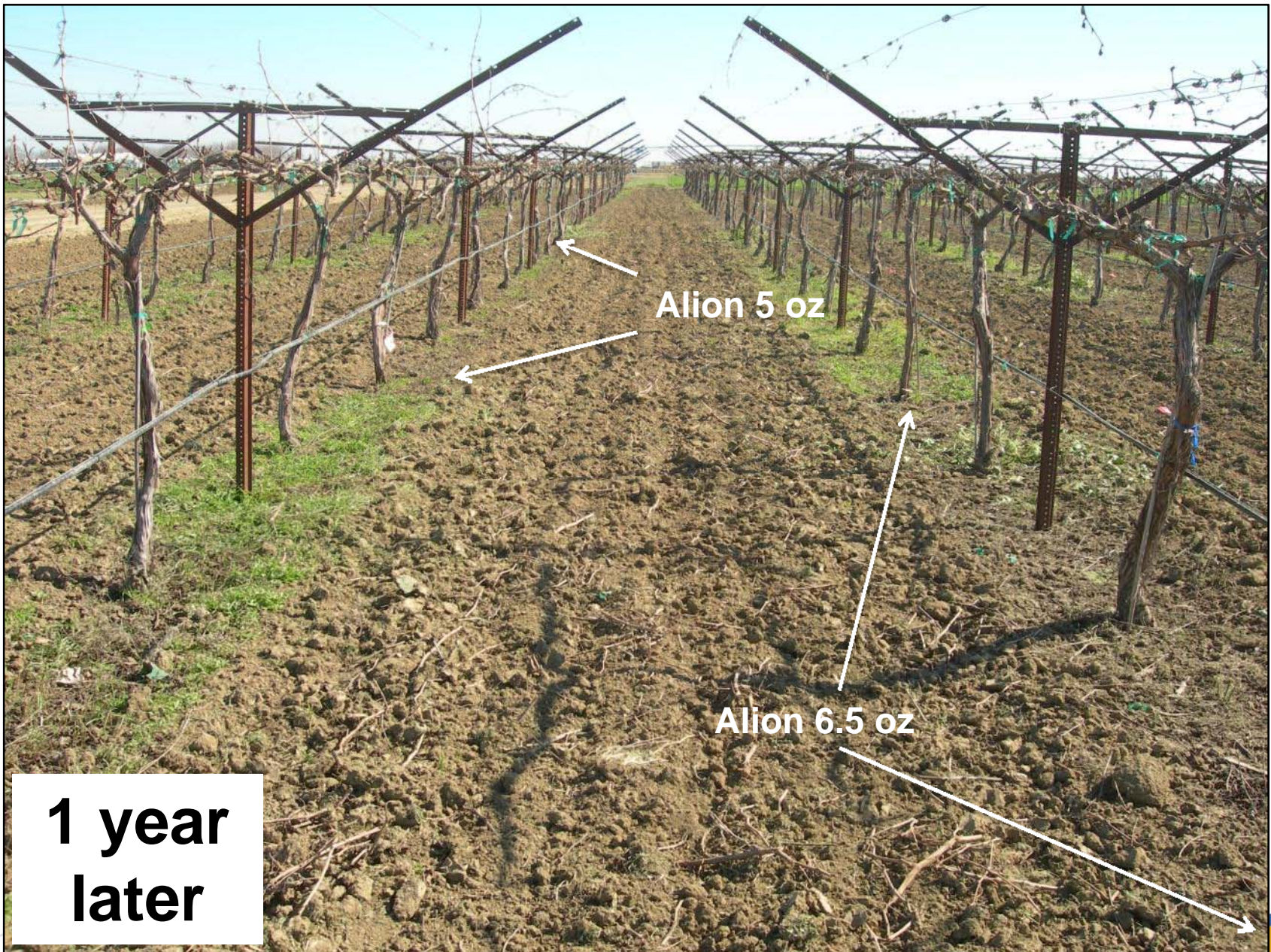


Chateau 12 oz + Rely 280



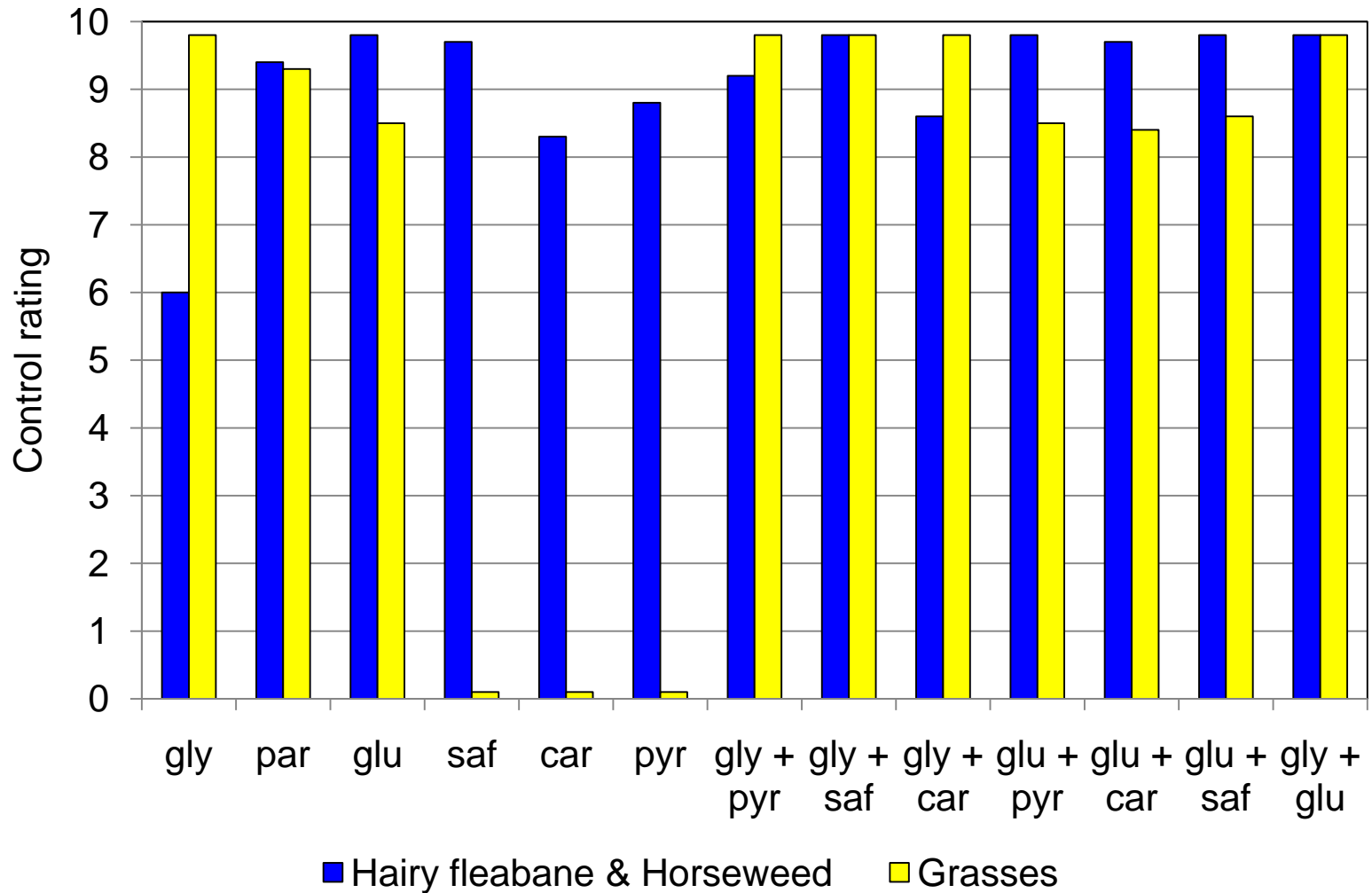
Alion 5 oz + Rely 280

*If weed seeds have sprouted before Alion is applied, mix another material with it.



**1 year
later**

POST control across 6 trials in 2009

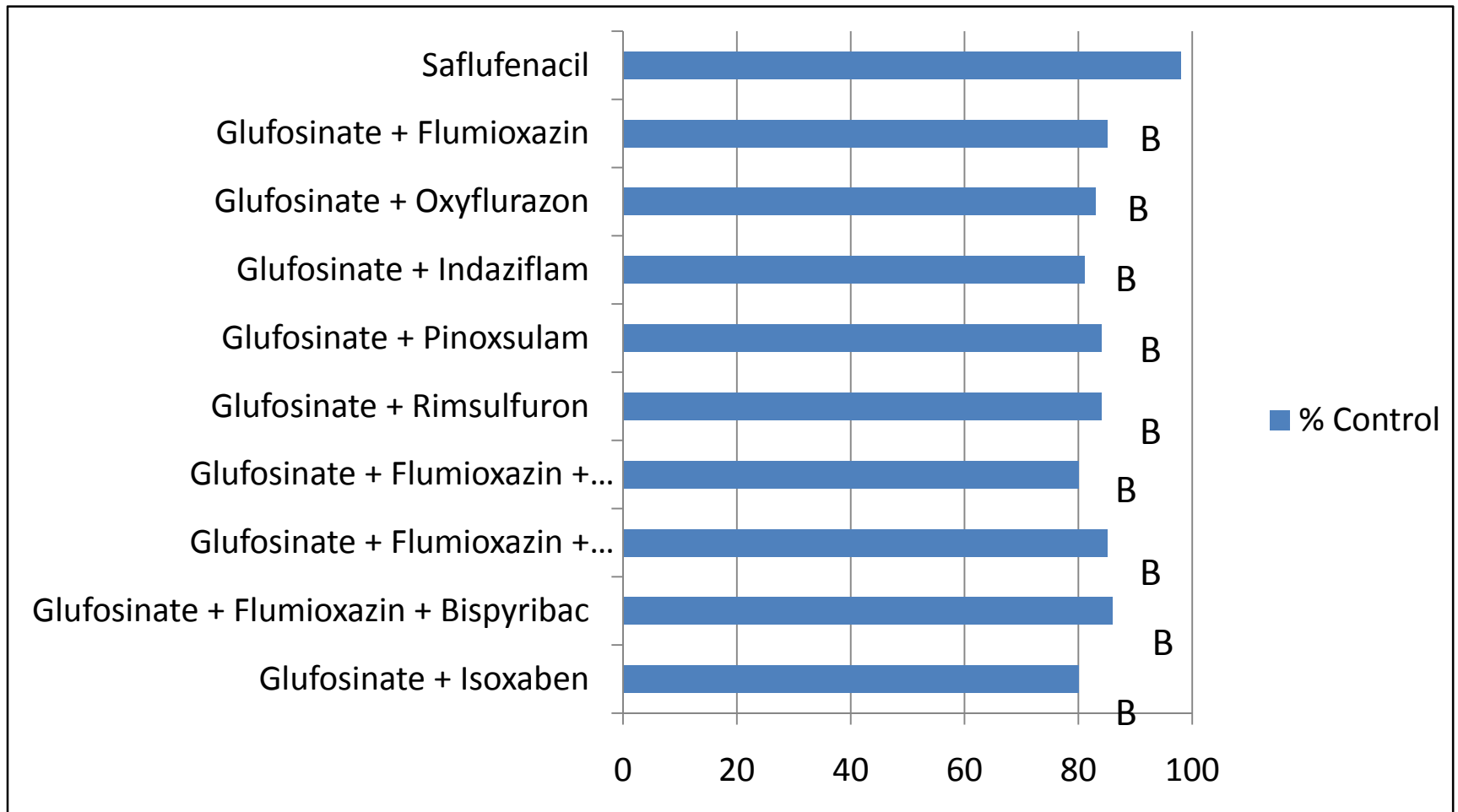


Treevix 1 oz + MSO Fresno County in 2012



Almonds in Tulare County in 2012

7 DAT



Rios, UCCE

Treevix + MSO 14 DAT



Rios, UCCE

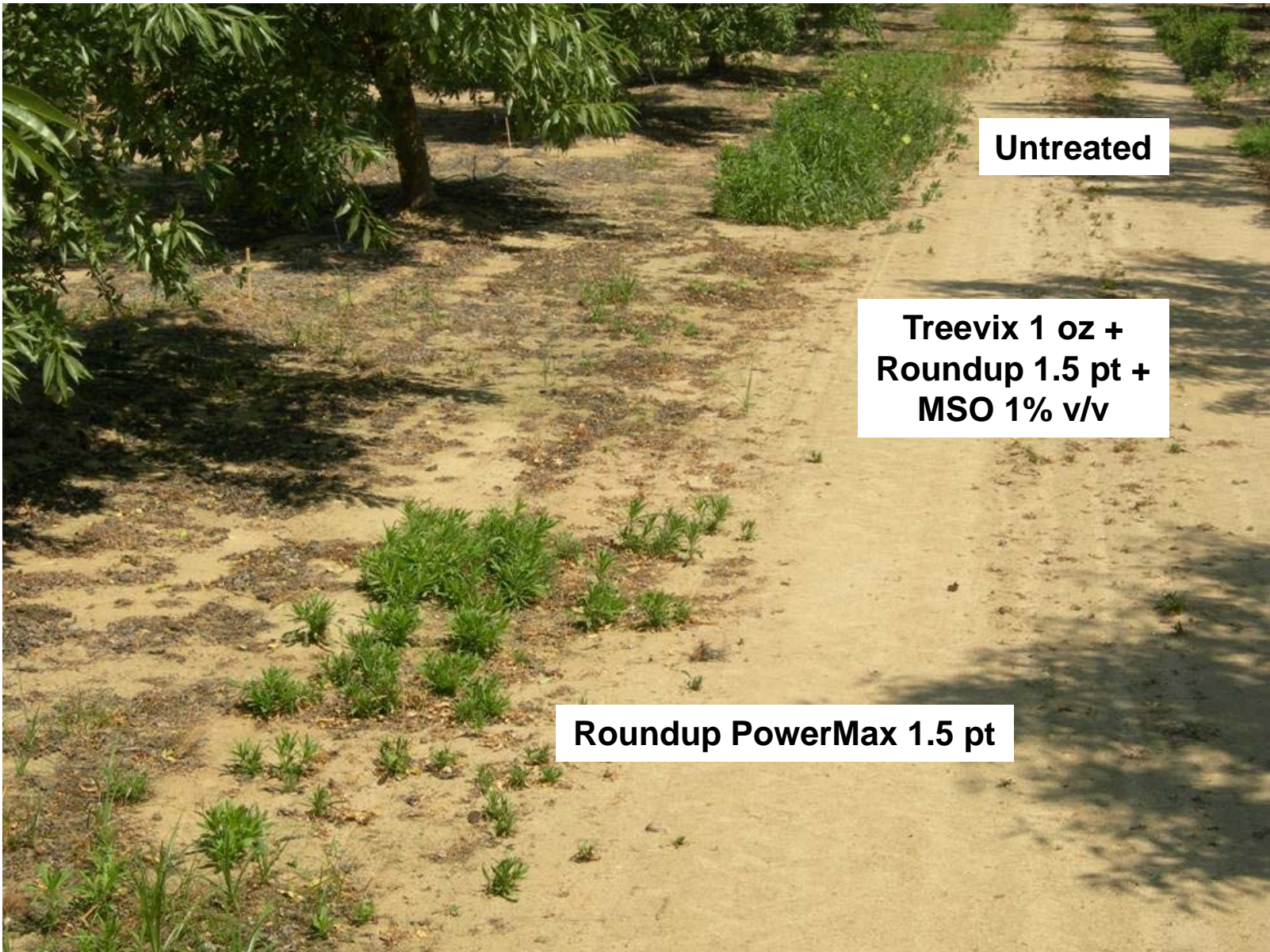
Weed Control in Pistachios – 2010

UCCE – Richgrove (Wright)

21 DAT

Treatments	Rate/ A	Nozzles	AMAPA Palmer Amaranth (2-10 inches)	AMAPA Palmer Amaranth (11-30 inches)	AMABL Prostrate Pigweed	MALNE Malva	URTDI Burning Nettle	SSYIR London Rocket
1. Rely 280	3.5 pt	FF 8002	86	38	45	40	78	100
2. Rely 280	3.5 pt	FF 8004	86	45	55	43	75	100
3. Rely 280	3.5 pt	TJ 11002	86	51	45	30	78	93
4. Rely 280	3.5 pt	TJ 11004	94	54	70	53	82	100
5. Rely 280	5 pt	FF 8002	84	48	65	50	98	100
6. Rely 280	5 pt	FF 8004	91	44	56	35	80	100
7. Rely 280	5 pt	TJ 11002	94	51	80	43	87	100
8. Rely 280	5 pt	TJ 11004	93	55	63	50	100	100
9. Untreated	-	-	0	0	0	0	0	0





Untreated

**Treevix 1 oz +
Roundup 1.5 pt +
MSO 1% v/v**

Roundup PowerMax 1.5 pt





PRE+POST
Program

POST Program

PRE+POST Program

Hanson, UC Davis

TAKE-HOME POINTS

- Take advantage of the newer preemergents to control difficult weeds like fleabane, horseweed, junglerice, and ryegrass. They're a bit costly (compared to simazine and diuron), but should help on the postemergent end.
- Rotate or tank-mix MOAs where possible to broaden and lengthen control.
- Use PREs as the base and POSTs to clean-up escapes when they're small. Relying solely on POST treatments can be problematic and often leads to resistance.
- These newer products are not regulated under GWPA.