

Understanding the Biology of Alkaliweed (*Cressa truxillensis*) and Developing Control Strategies in Pistachios

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Alkaliweed (*Cressa truxillensis*)



Alkaliweed - what we know

- Convolvulaceae:
 - related to morningglories and field bindweed
- California native perennial:
 - also reported in Az, NM, NV, OK, OR, UT, TX
- Growth habit:
 - prostrate or with ascending stems; gray; very hairy
- Reproduction ability:
 - produces seed; re-growth from underground buds
- Habitat:
 - associated with saline/alkaline soils
 - seasonal wetland species indicator
 - ditches, roadsides, pistachios, open ground





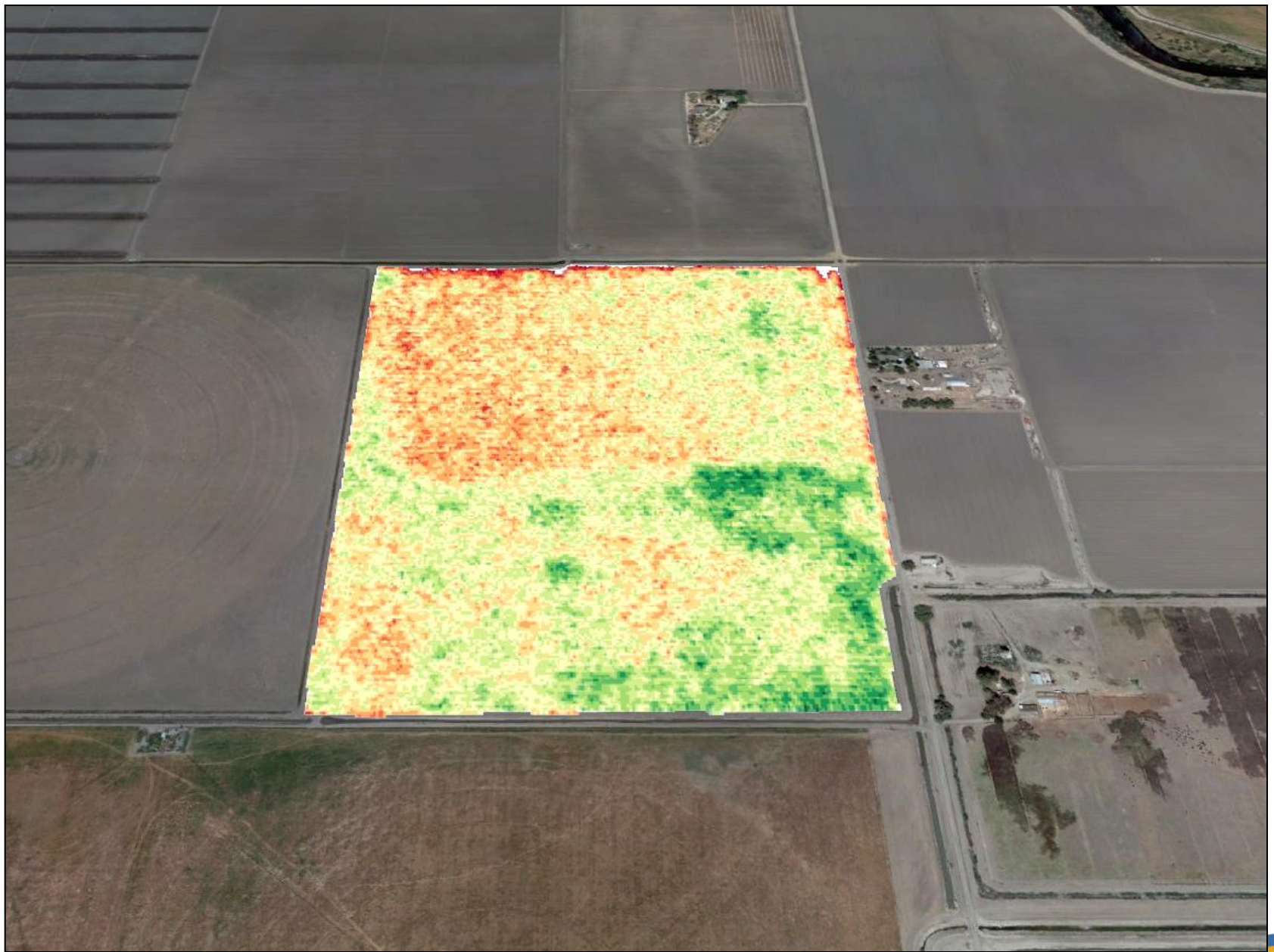












Soil analysis – Stratford site

	Result	Desirable	
Salinity			
pH (Sat Paste)	7.78	6.5-7.5	
EC (dS/m)	6.22	< 2	
Ca(meq/L)	20.30		
Mg (meq/L)	13.60		
Na (meq/L)	42.50		
Cl (meq/L)	3.08		
SO4 (meq/L)	58.80		
SAR	10.32	< 5	
B (mg/L)	5.11	< 1	
Sat %	80.82		
Exchangeable Cations (ppm)			
Calcium (ppm)	8540	8584	9904
Magnesium (ppm)	1340	801	1202
Potassium (ppm)	523	515	1288
Sodium (ppm)	1910	0	40

Alkaliweed management?

(Growth period about Mar-Dec)



Table 3. Herbicide use information in pistachios in CA

Herbicide active ingredient	Herbicide mode-of-action	Herbicide product example	Herbicide activity	Herbicide product/acre ¹	Tree age ²	PHI days ³
clethodim	group 1	Select Max	foliar	9 - 16 fl oz	non-bearing	365
fluazifop-p-butyl	group 1	Fusilade DX	foliar	16 - 24 fl oz	non-bearing	365
sethoxydim	group 1	Poast	foliar	1 - 2.5 pt	after planting	15
flazasulfuron	group 2	Mission	soil and foliar	2.14 - 2.85 oz	≥36 months	130
penoxsulam + oxyflourfen	group 2 + 14	Pindar GT	soil and foliar	1.5 - 3 pt	≥9 months	60
rimisulfuron	group 2	Matrix FNV	soil and foliar	2 - 4 oz	≥12 months	14
oryzalin	group 3	Surflan A.S.	soil	2 - 6 qt	after planting	0
pendimethalin	group 3	Prowl H ₂ O	soil	2 – 6.3 qt	anytime	90
2,4-DB amine	group 4	Orchard Master	foliar	2 - 3 pt	after planting	60
glyphosate	group 9	Roundup PowerMAX	foliar	11 – 105 fl oz	anytime	3
glufosinate	group 10	Rely 280	foliar	48 - 82 fl oz	after planting	14
carfentrazone	group 14	Shark EW	foliar	1 - 2 fl oz	after planting	3
flumioxazin	group 14	Chateau SW	soil and foliar	6 - 12 oz	≥12 months	60
oxyfluorfen	group 14	GoalTender	soil and foliar	0.25 - 3 pt	after planting	7
penoxsulam + oxyflourfen	group 14 + 2	Pindar GT	soil and foliar	1.5 - 3 pt	≥9 months	60
pyrafluferrn-ethyl	group 14	Venue	foliar	2 - 4 fl oz	after planting	0
saflufenacel	group 14	Treevix	foliar	1 oz	≥9 months	7
sulfentrazone	group 14	Zeus	soil	12 fl oz	≥12 months	3
isoxaben	group 21	Trellis SC	soil	16 - 31 fl oz	after planting	60
paraquat	group 22	Gromoxone SL	foliar	1.25 - 4 pt	after planting	7
mesotrione	group 27	Broadworks	soil and foliar	6 fl oz	≥12 months	30
indaziflam	group 29	Alion	soil	5 - 6.5 fl oz	≥36 months	14

Preliminary herbicide trial - 2018

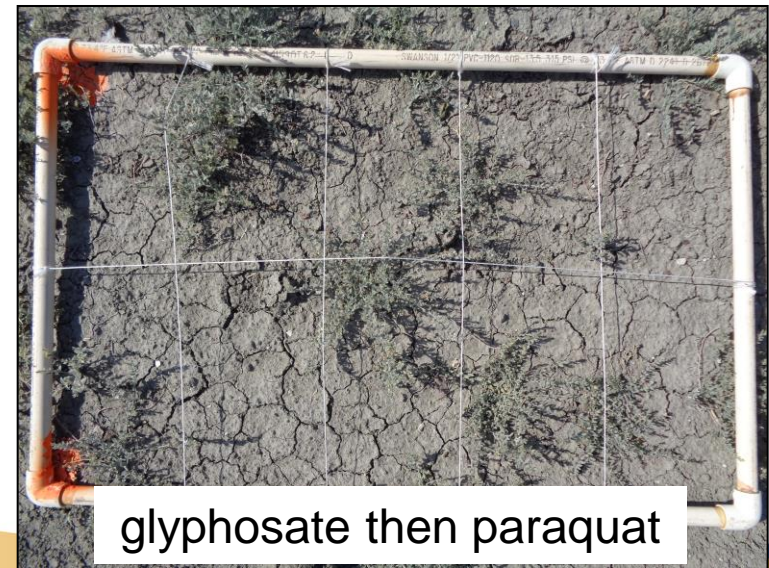
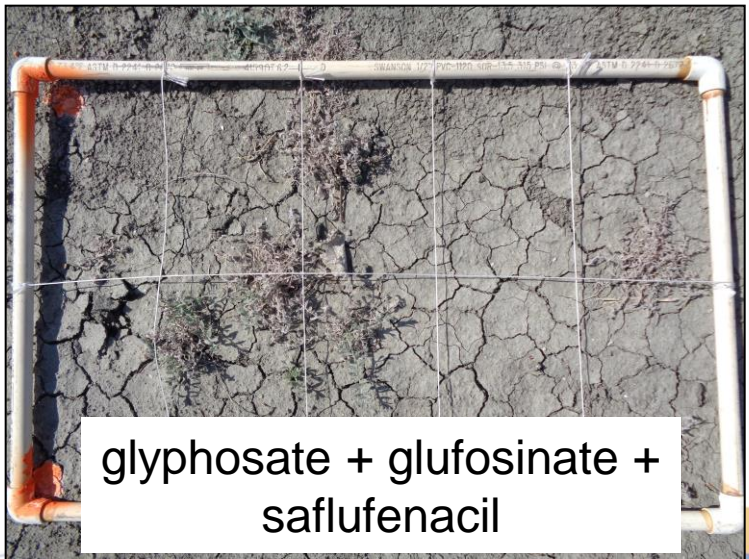
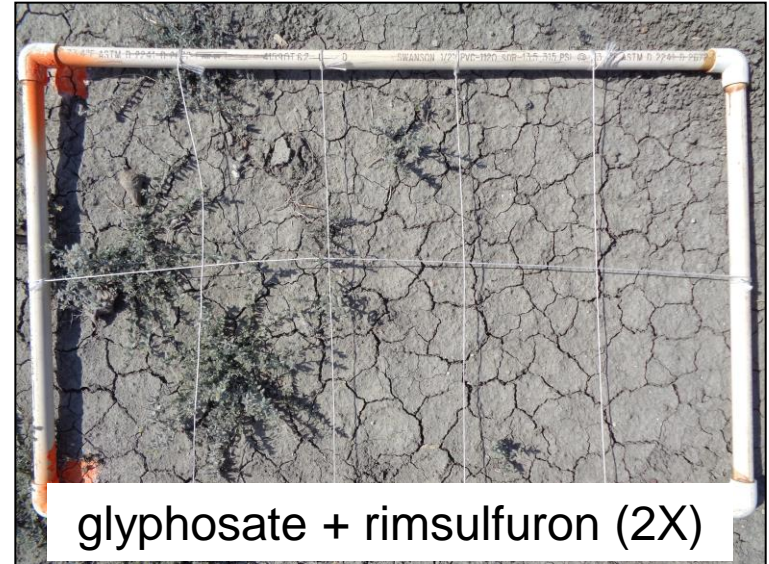
- Plants with 3-6" regrowth
- 1-2 postemergent sprays
- Evaluate control and regrowth



28 DAT



28 DAT



Alkaliweed – what to do?

➤ Need a better understanding of its biology:

- response to moisture, light, salinity, etc.?
- seed dormancy and germination requirements?
- response to herbicides?
- response to tillage and disturbance?

• Identify herbicide options:

- pre- and postemergence herbicide screening?
- treatment timing and repeated sprays?
- sequential applications?

• Identify physical and cultural options:

- repeated tillage, flaming, physical removal?
- prevention (ditches, field edges, roadside)?
- soil and water management (salinity)?

Current studies underway (James Schaeffer – Fresno State)

- Plant biology: salinity; seed germination; root/shoot development; shade and moisture tolerance
- GIS: southern SJV distribution (similarities)
- Herbicides: sequential treatments



In the meantime...

- Prevent movement of seeds and roots from ditches, roadsides, and field edges *into clean* fields.
- Limit spread *within infested* fields with repeated postemergent sprays in-season before seed production and clean equipment to prevent spread of root and plant parts across the field.
- Apply 2,4-D 1-2 weeks before first frost in winter and re-treat in spring when regrowth occurs (Feb/Mar)

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Weed Management

About my Program

Crop and non-crop areas alike are impacted by weed growth to one degree or another. Weeds affect crop production in several ways; weeds delay or reduce stand establishment, affect crop growth and development, reduce food quality and yield, compete for resources like water and soil nutrients, reduce irrigation uniformity and efficiency, harbor rodents and other destructive pests, increase the risk of frost hazard in temperature sensitive crops, and increase the cost of production. In non-crop settings, weeds may be poisonous to people and livestock, interfere with water recreation and water transport, cause potential traffic hazards, pose a fire hazard, are unsightly, and reduce land values.



To effectively manage weeds, one must be able to correctly identify the weeds present, develop a broad understanding of weed growth and survival, become familiar with the tools (both chemical and non-chemical) available, and implement a strategy that is both economically and environmentally sound. This is sometimes referred to as "Integrated Weed Management".



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