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

Plant and Soil Conference
February 6, 2019

Kurt Hembree and James Schaeffer
Farm Advisor and Staff Research Assistant, UCCE, Fresno County
cefresno.ucanr.edu

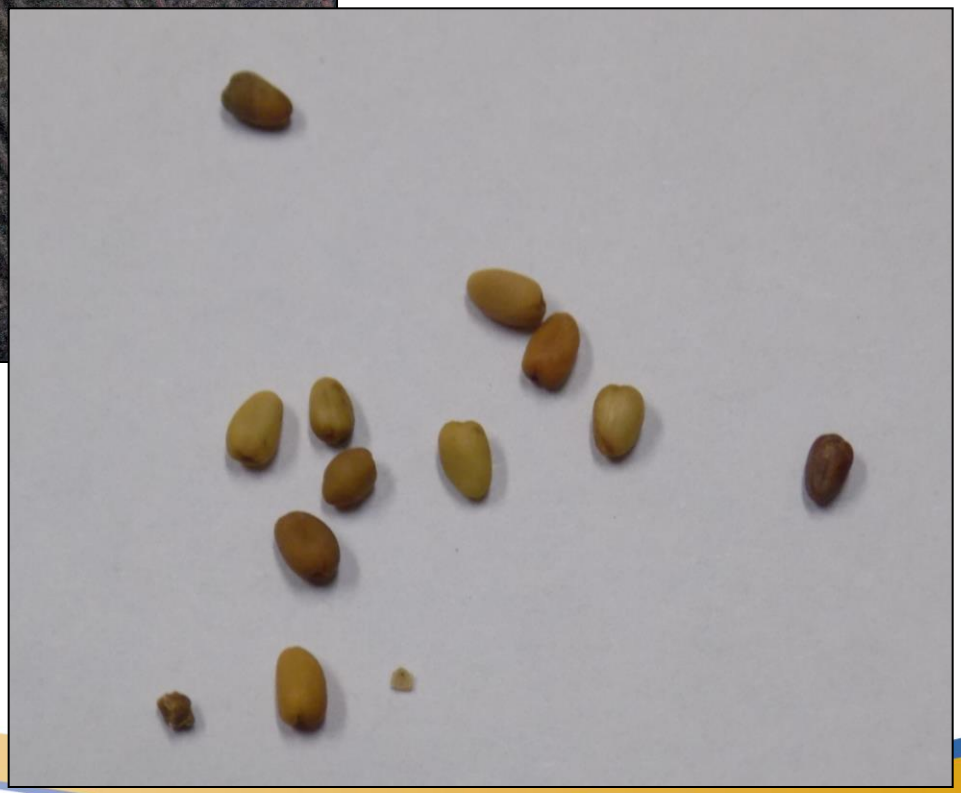
Alkaliweed (*Cressa truxillensis*)

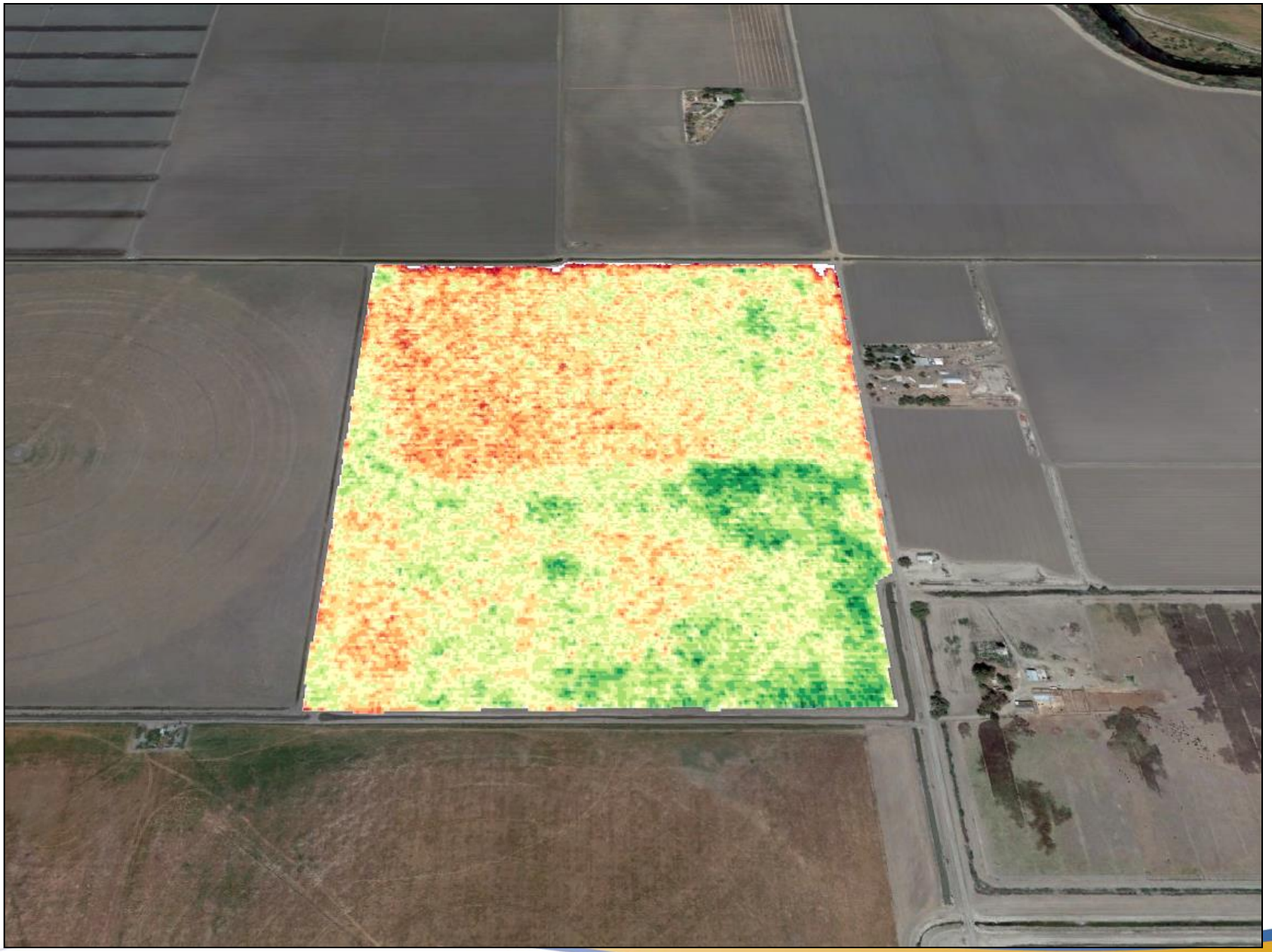
Alkaliweed - what we know

- Convolvulaceae:
  - related to morningglories and field bindweed
- California native perenial:
  - 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

UC CE | University of California Agriculture and Natural Resources

Kurt Hembree; Feb 6, 2019





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)

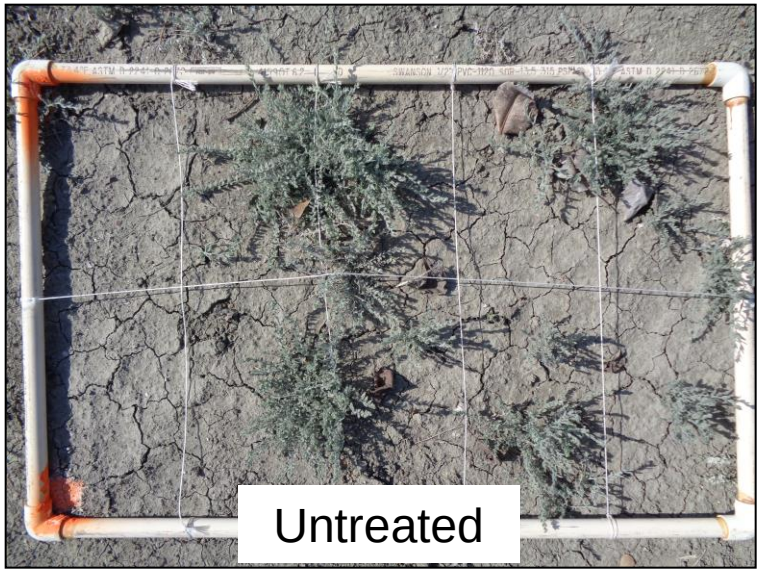
Table 3. Herbicide use information in pistachios in CA

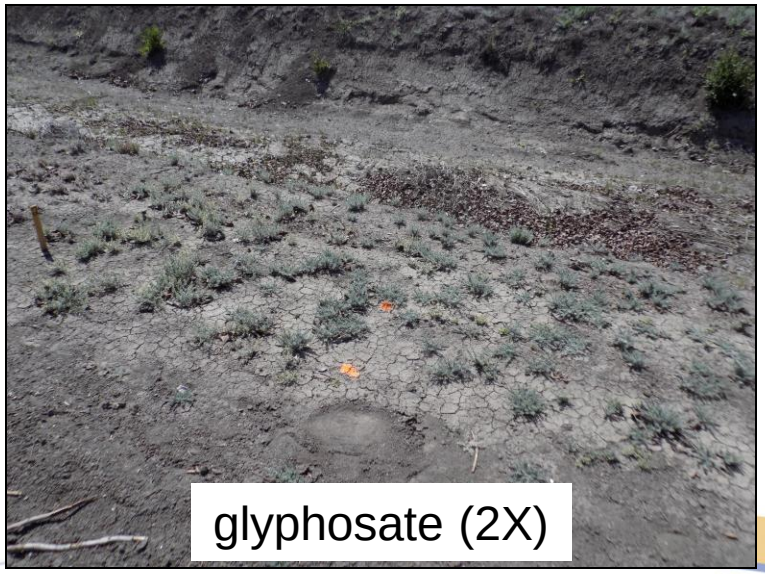
Herbicide active ingredient	Herbicide mode-of-action	Herbicide product example	Herbicide activity	Herbicide product/acre[1]	Tree age[2]	PHI days[3]
clethodim	group 1	Select Max	foliar	9 - 16 fl oz	non-bearing	365
fluazifop-p-butyl	group 1	Fusilade DX	foliar	16 - 24 fl oz	non-bearing	365
sethoxydim	group 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
rimsulfuron	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_2O	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
pyraflufern-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

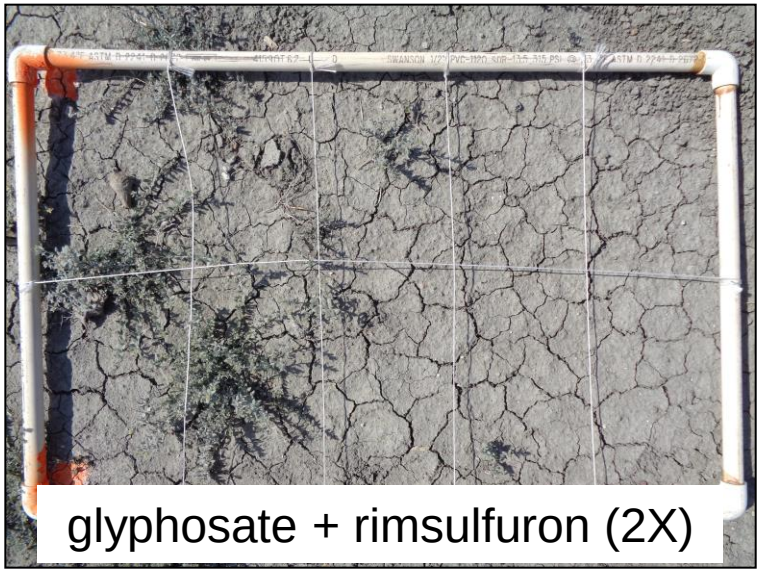
28 DAT



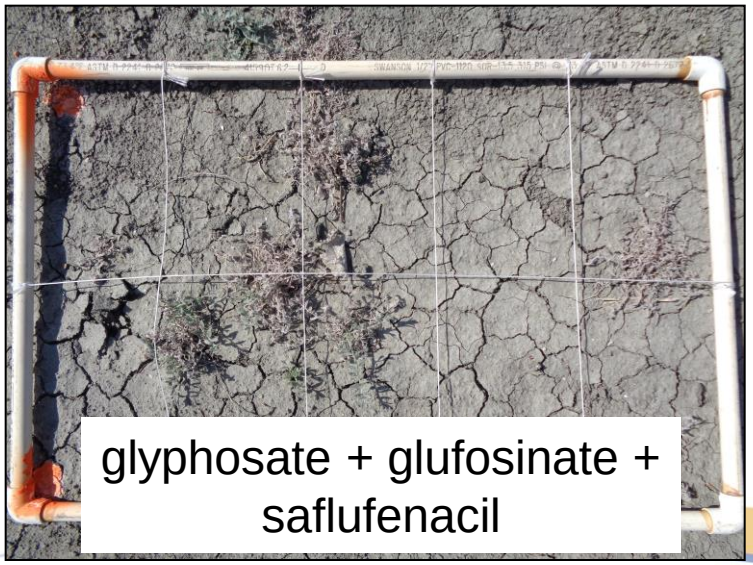


28 DAT

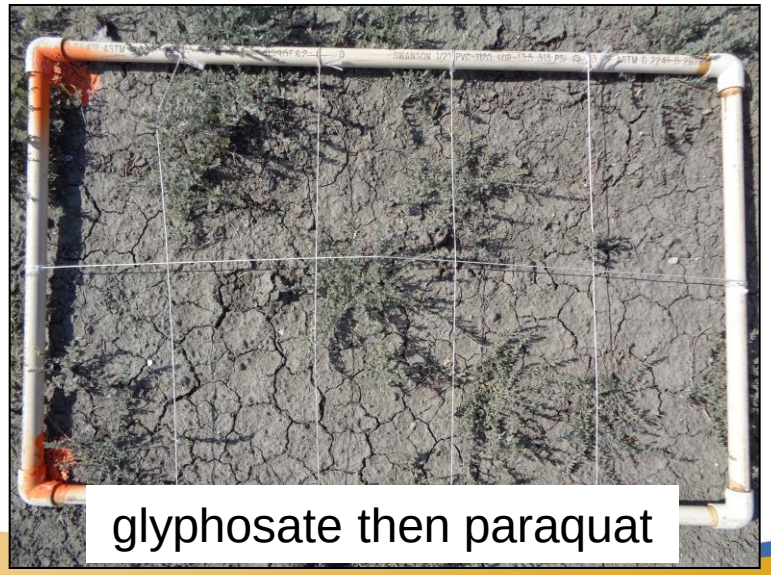
glyphosate + rimsiulfuron (2X)



glyphosate + rimsulfuron (2X)



glyphosate + glufosinate + saflufenacil



glyphosate then paraquat

Alkaliweed – what to do?

- **<u>Need a better understanding of its biology</u>**:
  - response to moisture, light, salinity, etc.?
  - seed dormancy and germination requirements?
  - response to herbicides?
  - response to tillage and disturbance?

- **<u>Identify herbicide options</u>**:
  - pre- and postemergence herbicide screening?
  - treatment timing and repeated sprays?
  - sequential applications?

- **<u>Identify physical and cultural options</u>**:
  - 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 postemergenct 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)

cefresno.ucanr.edu

Email: kjhembree@ucanr.edu
Office: (559) 241-7520; Cell: (559) 392-6095