Efficacy of drip-applied fungicides and fumigants against *Fusarium* diseases

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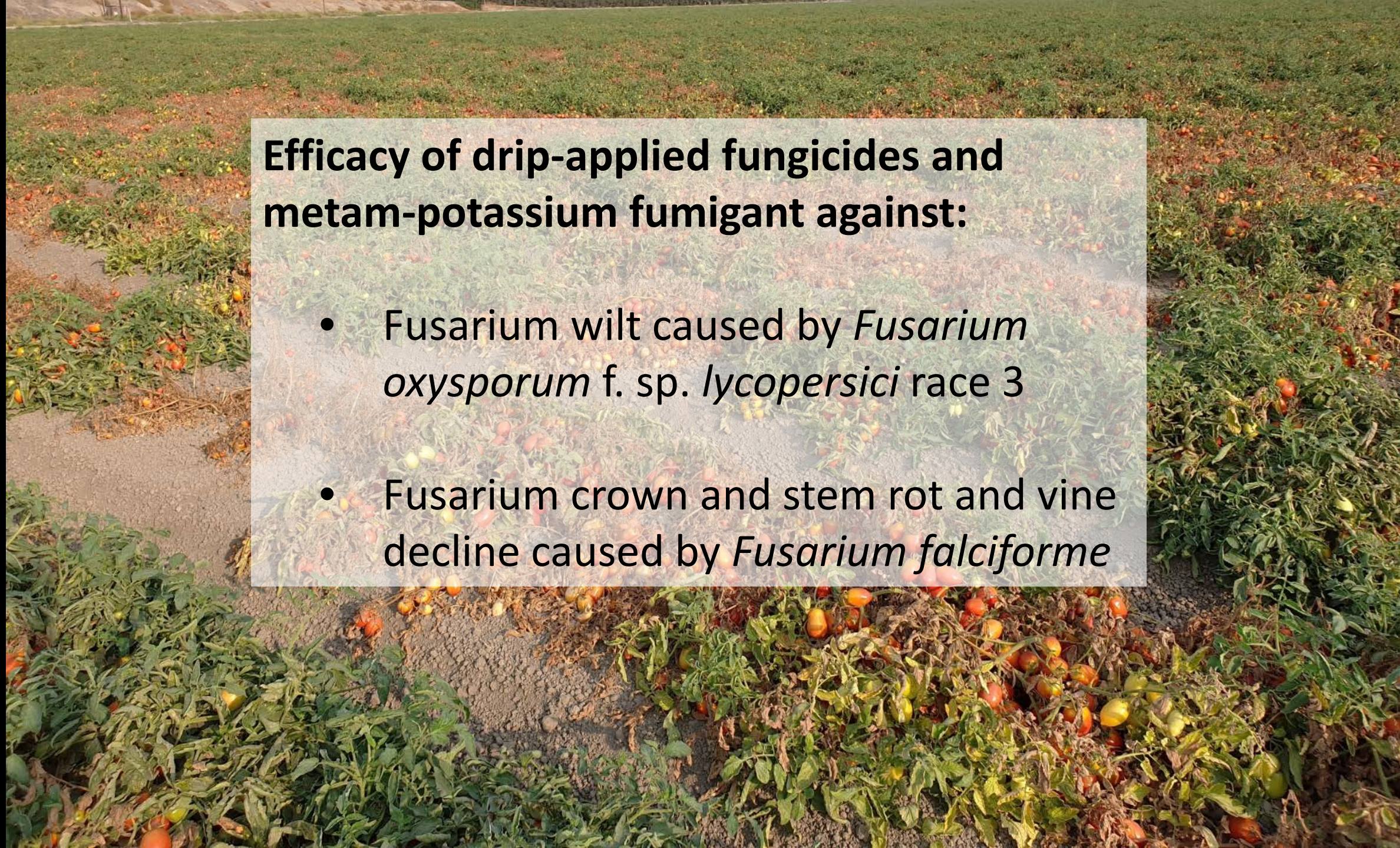


Efficacy of drip-applied fungicides and metam-potassium fumigant against:

- Fusarium wilt caused by *Fusarium oxysporum* f. sp. *lycopersici* race 3
- Fusarium crown and stem rot and vine decline caused by *Fusarium falciforme*

Study sites

2018

- Yolo Co. commercial field with Fusarium falciforme

2019

- UC Davis field infested with Fusarium wilt
- UC Davis field infested with Fusarium falciforme
- Yolo Co. commercial field with Fusarium falciforme
- San Joaquin Co. commercial field with both diseases

2020

- San Joaquin Co. commercial field with both diseases

Materials evaluated: *Please note that Miravis and Propulse are not currently registered for use on California tomatoes.*

Fungicides (applied at planting and early season):

- **Miravis** (Syngenta) – pydiflumetofen (FRAC group 7)
- **Velum** (Bayer) – fluopyram (7)
- **Propulse** (Bayer) – prothioconazole (3) + fluopyram (7)
- **Rhyme** (FMC) – flutriafol (3)

Fumigant (applied at least two weeks prior to planting):

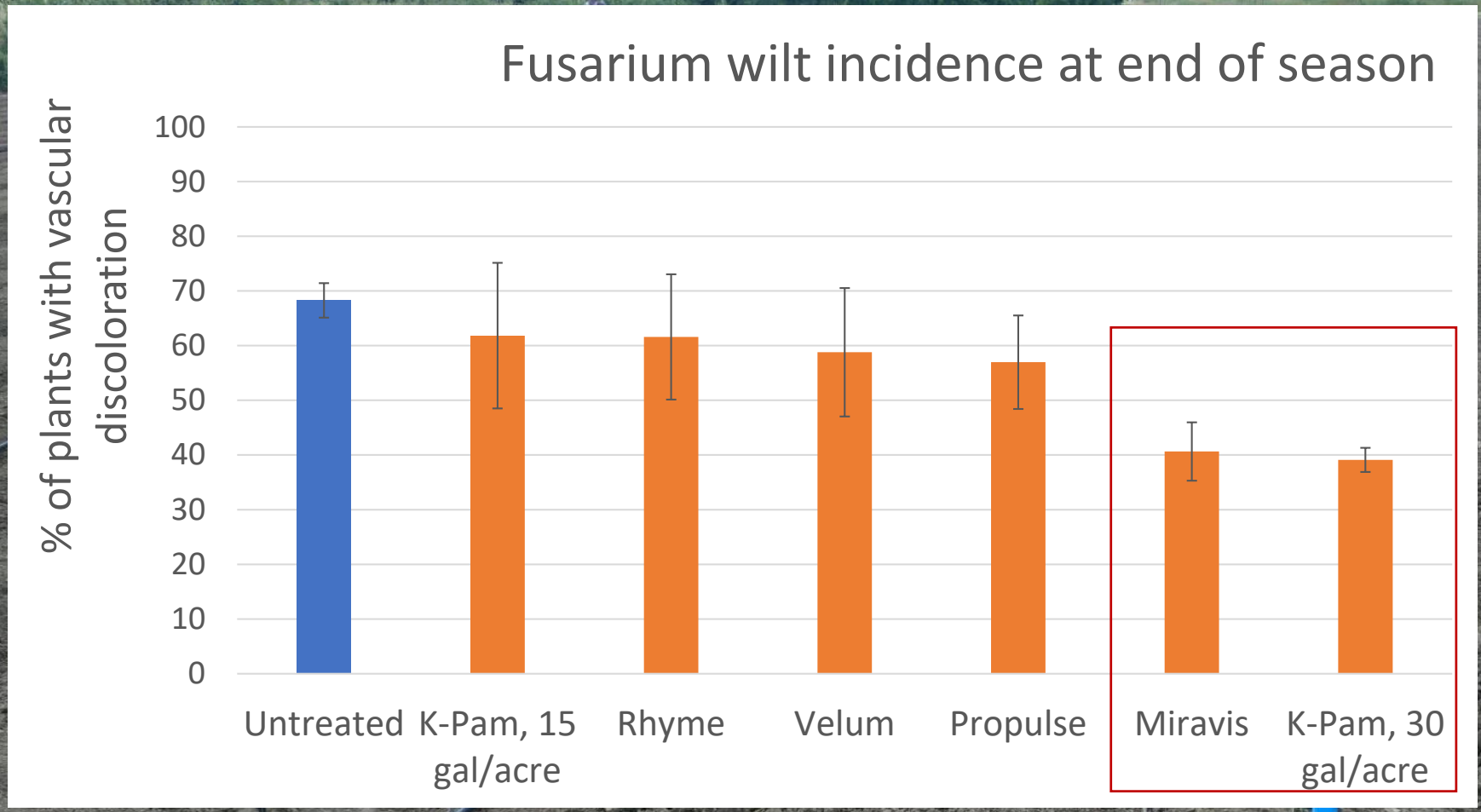
- **K-Pam (AMVAC)** – metam potassium

Application timings

application timing(s) relative to transplant date	>2 weeks pre-plant	At transplanting	3 wk	5 wk
Product (active ingredient)				
Propulse (prothioconazole + fluopyram) 2019 only		drench	drip	
Velum One (fluopyram)		drench	drip	drip
Rhyme (flutriafol)		drench	drip	drip
Miravis (pydiflumetofen)		drench	drip	drip
K-Pam (metam potassium)	drip			

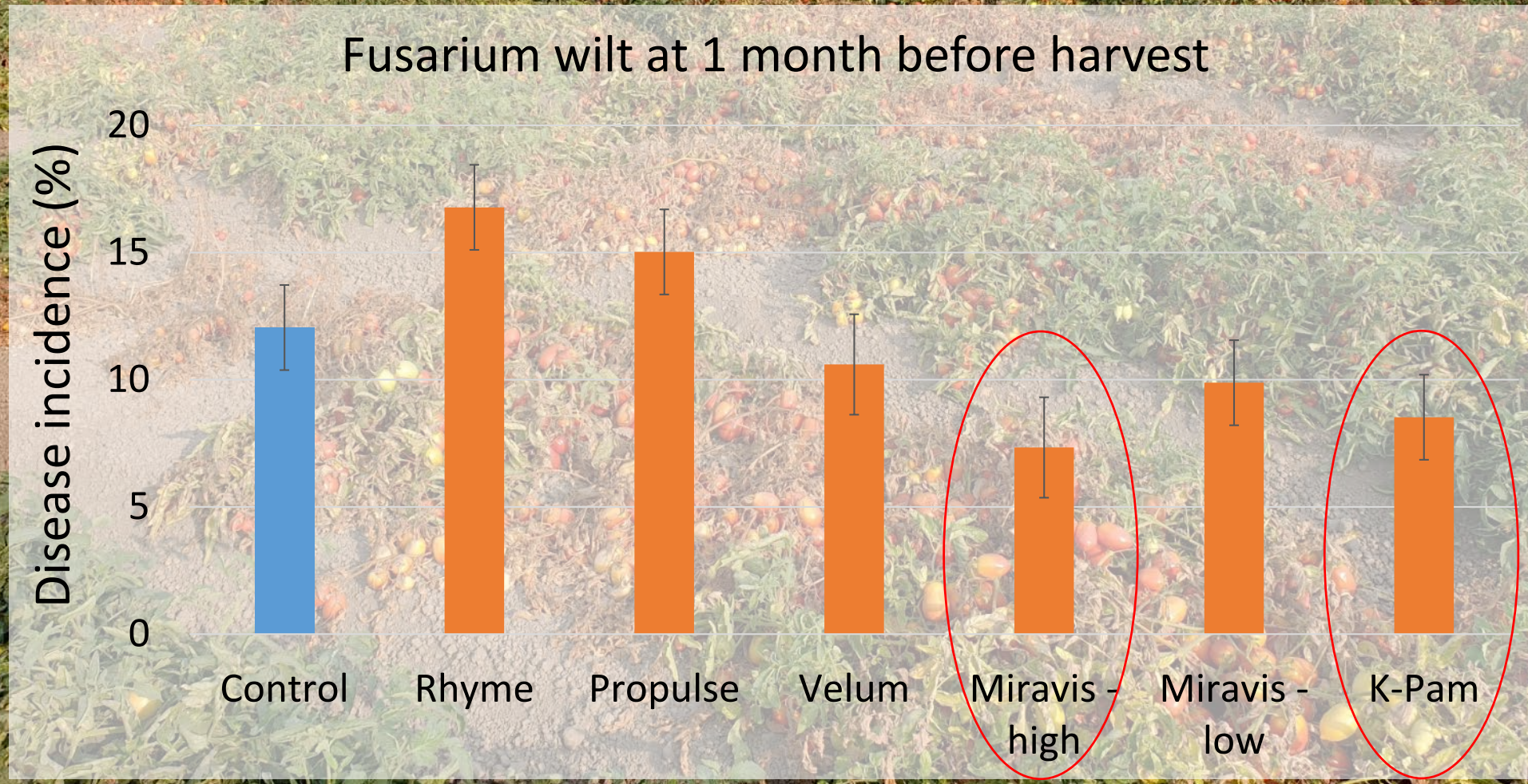
UC Davis Fusarium wilt trial, 2019

Miravis and K-Pam (30 gal/A) most effective

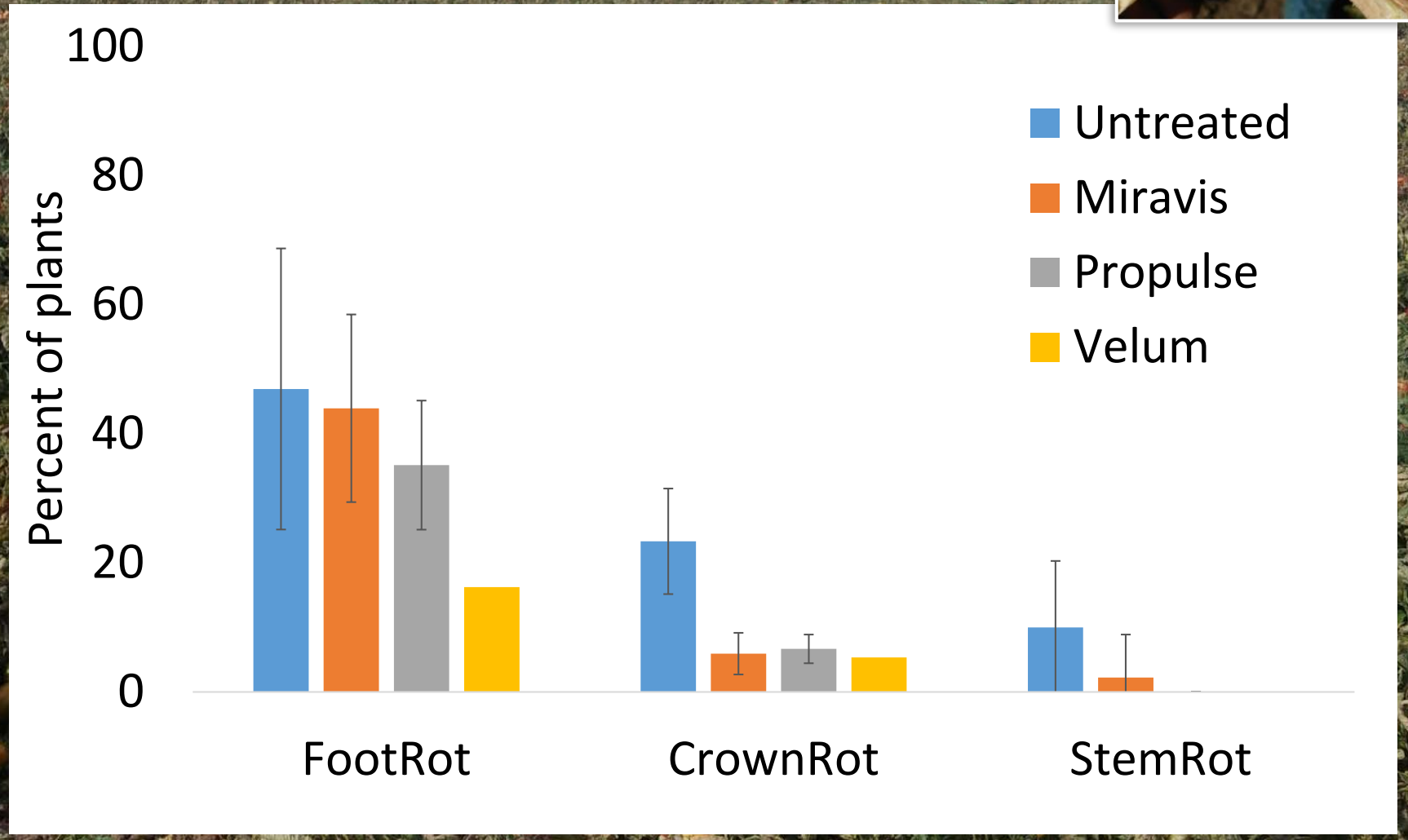


Slide courtesy of Kelley Paugh, UCD

San Joaquin Co. Fusarium wilt trial, 2019



UC Davis *F. falciforme* trial, 2019



Slide courtesy of Kelley Paugh, UCD

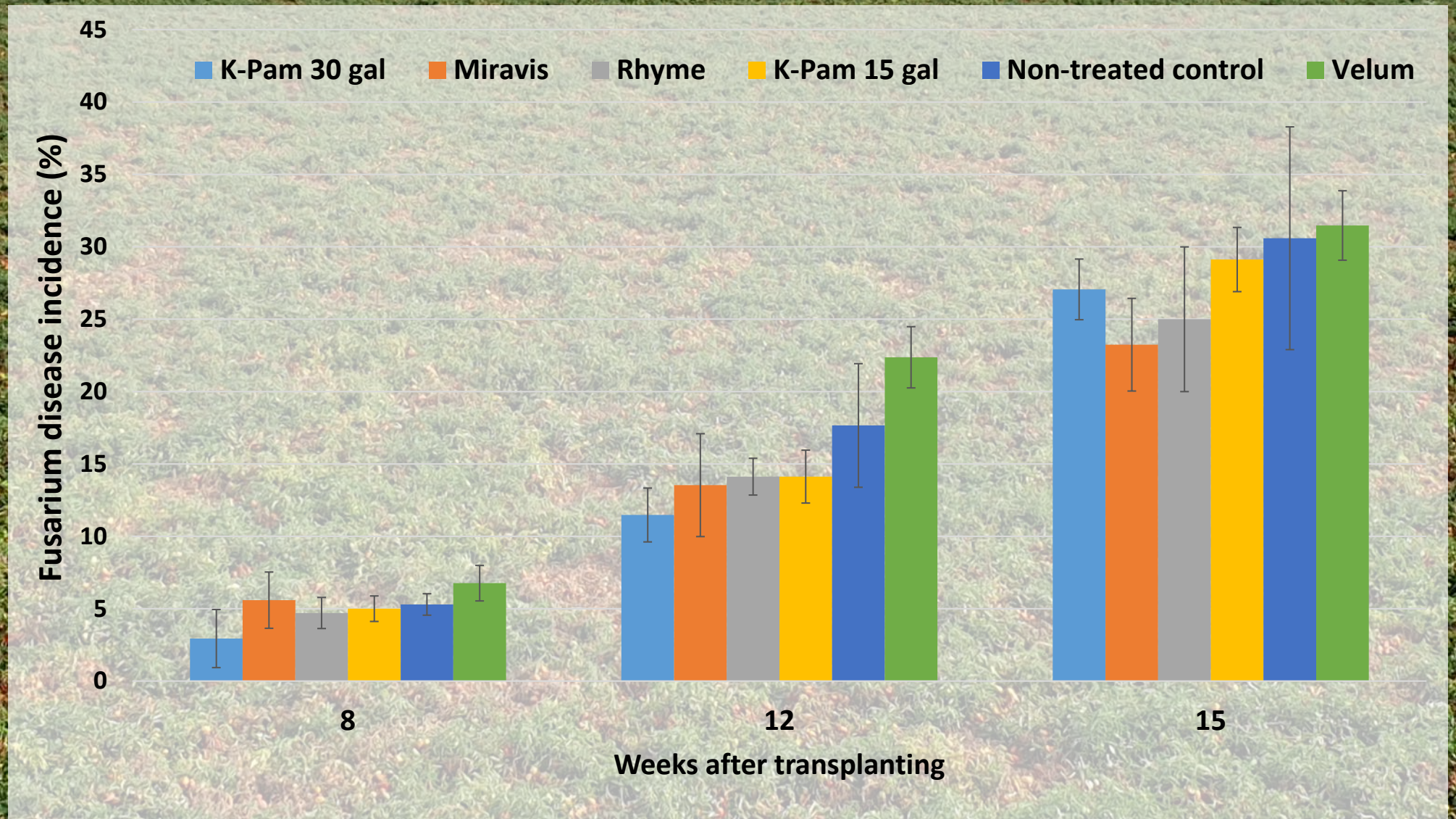
San Joaquin Co. *F. falciforme* trial – non-replicated (split field) 2019

K-Pam treated

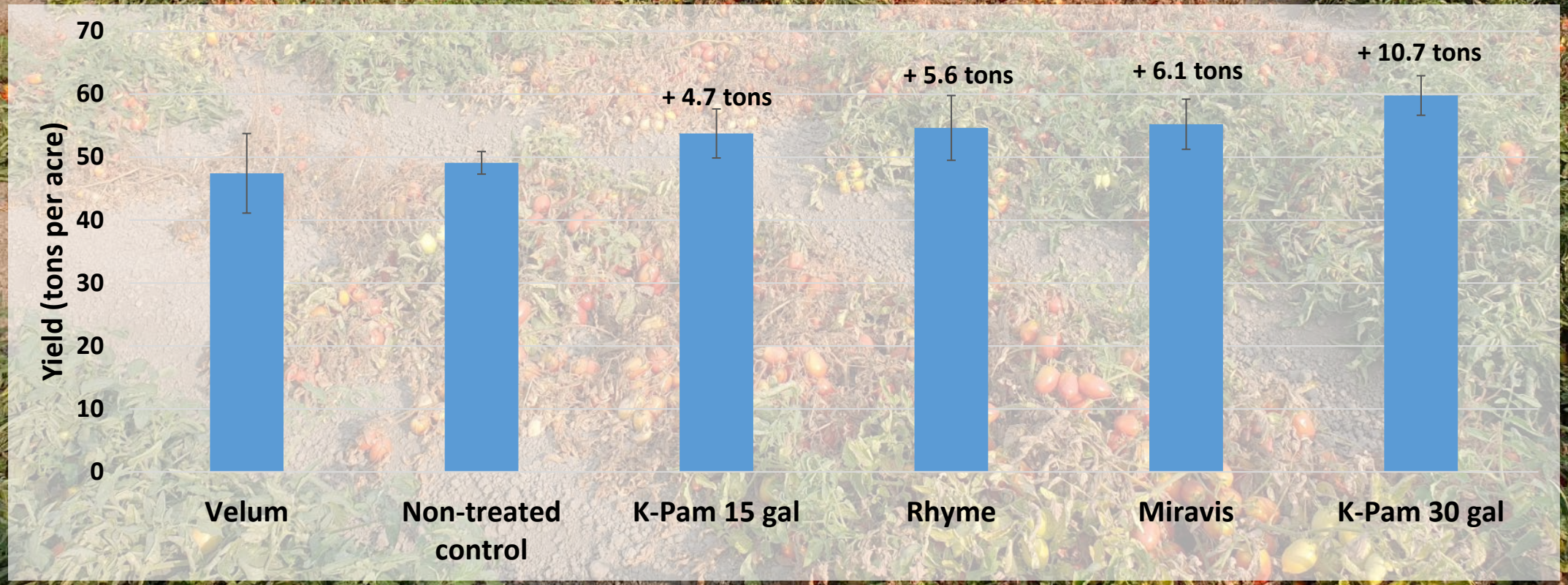
Non-treated

	Disease incidence				Disease severity	Marketable yield
	1-Jul	15-Jul	31-Jul	12-Aug	19-Aug	27-Sep
K-Pam treated	**0%**	**0.2%**	**0.7%**	**7.9%**	**1%**	**54.7 tons**
Non-treated	**0.13%**	**1.6%**	**2.0%**	**16.4%**	**20 to 25%**	**47.5 tons**
						7.2 ton difference (15%)

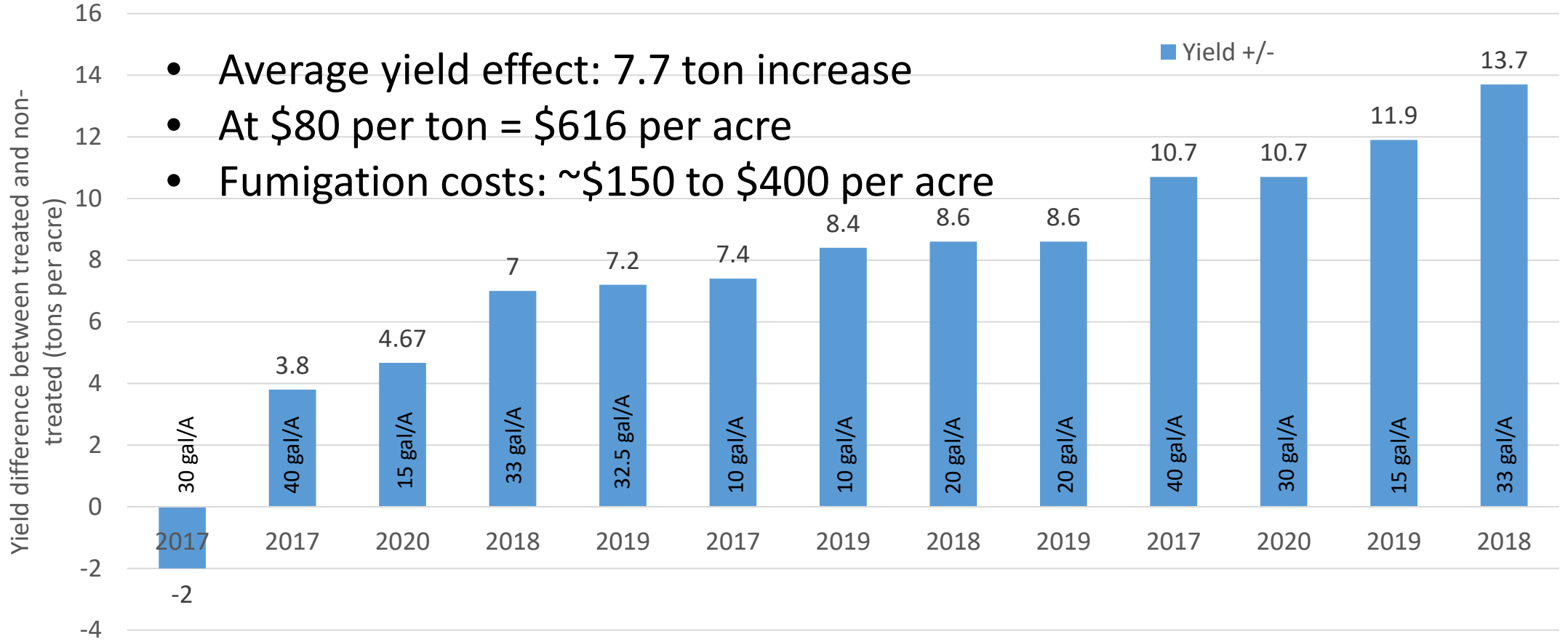
San Joaquin Co. trial in commercial field with both Fusarium wilt and F. falciforme, 2020



San Joaquin Co. trial in commercial field with both Fusarium wilt and F. falciforme, 2020



Effect of metam drip application on processing tomato marketable yield in demo trials 2017-20



2017 -2018 data from Marja Koivunen, AMVAC

Rates are expressed as broadcast equivalents,
Yield difference is expressed in comparison to UTC in Tons/A

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- Some fungicides may provide some small benefit in disease suppression, but are clearly not a “silver bullet”. Early application timing is important, before plants become infected or show symptoms.
- Metam (K-Pam) may help reduce severity of both diseases. As always, optimal soil conditions are important for efficacy of metam.
- Other measures should be considered before chemicals - avoiding infested fields, planting tolerant/resistant varieties and avoiding plant stress

Acknowledgements

California Tomato Research Institute

Del Carlo Farms

AMVAC, Syngenta, Bayer and FMC

Bill Vignolo, Simplot Stockton

Cassandra Swett & Kelley Paugh, UC Davis Plant Pathology

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