

Soil Health Summit November 15th, 2017

In collaboration with East Stanislaus
RCD and USDA-NRCS featuring:

technical trainings, research updates,
carbon farm workshop, and
networking with soil health
professionals.





Building healthy soil and insect communities with cover crops

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November 15, 2017

Photo: Xerces Society / Jessa Kay Cruz

'Clean' floors

- Weed-herbicide cycle
- Erosion
- Dust



Photo: Xerces Society / Kathryn Prince



Photo: Xerces Society / Jessa Kay Cruz

Soil benefits from cover crops

- Organic Matter
- Water infiltration
- Carbon sequestration
- Microbial community
- Insect habitat



Photo: Xerces Society / Kathryn Prince

Beneficial insects

Pollinators and predators



Photos: Xerces Society / Mace Vaughan



Photo: Xerces Society / Kathryn Prince

Crop-specific limitations

- Height
- Bloom season
- Termination
- Annual/perennial
- Alternate hosts



Photo: Xerces Society / Kathryn Prince

Four Orchard and Vineyard Crops



Plant Name	Floral Name	Almond	Apple	Grape	Walnut
Yarrow	<i>Achillea millefolium</i>		x	x	
Spanish lotus	<i>Acmispon americanus</i>				x
White mustard	<i>Brassica hirta</i>	x			x
California brome	<i>Bromus carinitas</i>		x	x	
Blando brome	<i>Bromus hordaceus</i>		x	x	
Red maids	<i>Calandrinia menziesii</i>	x			
Winter marigold	<i>Calendula officinalis</i>		x	x	x
Farewell to spring	<i>Clarkia unguiculata</i>		x	x	
Chinese houses	<i>Collinsia heterophyllus</i>	x			
California poppy	<i>Eschscholzia californica</i>	x	x	x	x
Gumplant	<i>Grindelia camporum</i>		x	x	
Tidy tips	<i>Layia platyglossa</i>	x	x	x	
Blue flax	<i>Linum usitatissimum</i>	x	x	x	x
Sweet alyssum	<i>Lobularia maritima</i>	x	x		
Bird's foot trefoil	<i>Lotus corniculatus</i>			x	
Five spot	<i>Nemophila maculata</i>	x			
Baby blue eyes	<i>Nemophila menziesii</i>	x	x	x	x
California phacelia	<i>Phacelia californica</i>		x		
Great valley phacelia	<i>Phacelia ciliata</i>	x			
Winter pea	<i>Pisum sativum</i>				x
Tillage radish	<i>Raphanus sativus</i>	x	x	x	x
Crimson clover	<i>Trifolium incarnatum</i>	x			x
Balsam clover	<i>Trifolium mechelium</i>	x			
Faba bean	<i>Vicia faba</i>				x
Common vetch	<i>Vicia sativa</i>	x			x

California natives

Plant Name	Floral Name	Almond	Apple	Grape	Walnut
Yarrow	<i>Achillea millefolium</i>		x	x	
Spanish lotus	<i>Acmispon americanus</i>				x
White mustard	<i>Brassica hirta</i>	x			x
California brome	<i>Bromus carinitas</i>		x	x	
Blando brome	<i>Bromus hordaceus</i>		x	x	
Red maids	<i>Calandrinia menziesii</i>	x			
Winter marigold	<i>Calendula officinalis</i>		x	x	x
Farewell to spring	<i>Clarkia unguiculata</i>		x	x	
Chinese houses	<i>Collinsia heterophyllus</i>	x			
California poppy	<i>Eschscholzia californica</i>	x	x	x	x
Gumplant	<i>Grindelia camporum</i>		x	x	
Tidy tips	<i>Layia platyglossa</i>	x	x	x	
Blue flax	<i>Linum usitatissimum</i>	x	x	x	x
Sweet alyssum	<i>Lobularia maritima</i>	x	x		
Bird's foot trefoil	<i>Lotus corniculatus</i>			x	
Five spot	<i>Nemophila maculata</i>	x			
Baby blue eyes	<i>Nemophila menziesii</i>	x	x	x	x
California phacelia	<i>Phacelia californica</i>		x		
Great valley phacelia	<i>Phacelia ciliata</i>	x			
Winter pea	<i>Pisum sativum</i>				x
Tillage radish	<i>Raphanus sativis</i>	x	x	x	x
Crimson clover	<i>Trifolium incarnatum</i>	x			x
Balsam clover	<i>Trifolium mechelianum</i>	x			
Faba bean	<i>Vicia faba</i>				x
Common vetch	<i>Vicia sativa</i>	x			x

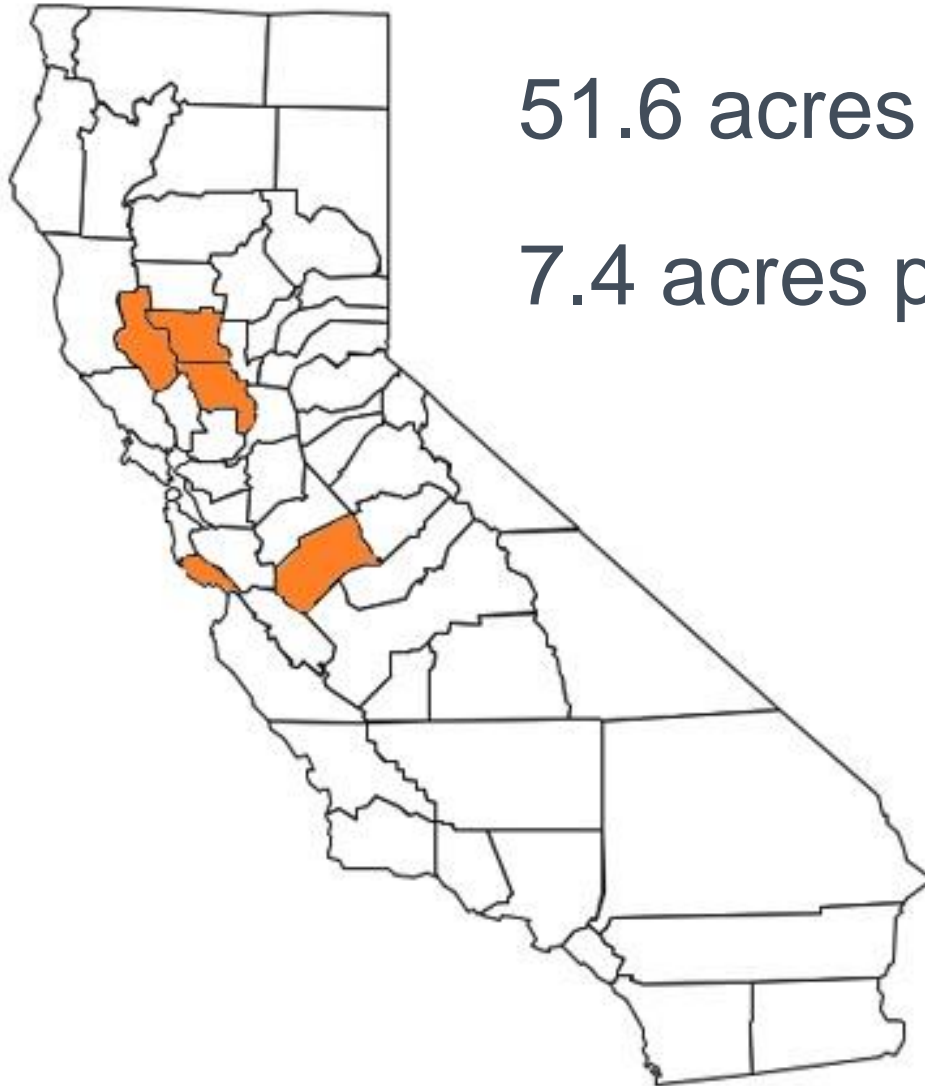


Traditional species & Non-natives

Plant Name	Floral Name	Almond	Apple	Grape	Walnut
Yarrow	<i>Achillea millefolium</i>		x	x	
Spanish lotus	<i>Acmispon americanus</i>				x
White mustard	<i>Brassica hirta</i>	x			x
California brome	<i>Bromus carinitas</i>		x	x	
Blando brome	<i>Bromus hordaceus</i>		x	x	
Red maids	<i>Calandrinia menziesii</i>	x			
Winter marigold	<i>Calendula officinalis</i>		x	x	x
Farewell to spring	<i>Clarkia unguiculata</i>		x	x	
Chinese houses	<i>Collinsia heterophyllus</i>	x			
California poppy	<i>Eschscholzia californica</i>	x	x	x	x
Gumplant	<i>Grindelia camporum</i>		x	x	
Tidy tips	<i>Layia platyglossa</i>	x	x	x	
Blue flax	<i>Linum usitatissimum</i>	x	x	x	x
Sweet alyssum	<i>Lobularia maritima</i>	x	x		
Bird's foot trefoil	<i>Lotus corniculatus</i>			x	
Five spot	<i>Nemophila maculata</i>	x			
Baby blue eyes	<i>Nemophila menziesii</i>	x	x	x	x
California phacelia	<i>Phacelia californica</i>		x		
Great valley phacelia	<i>Phacelia ciliata</i>	x			
Winter pea	<i>Pisum sativum</i>				x
Tillage radish	<i>Raphanus sativus</i>	x	x	x	x
Crimson clover	<i>Trifolium incarnatum</i>	x			x
Balsam clover	<i>Trifolium mechelianum</i>	x			
Faba bean	<i>Vicia faba</i>				x
Common vetch	<i>Vicia sativa</i>	x			x



Seven sites



51.6 acres total

7.4 acres per site, on average

Measuring three factors

Insect surveys



Photos: Xerces Society / Kathryn Prince; turf2max; Hope Farm



Soil content

Water holding capacity

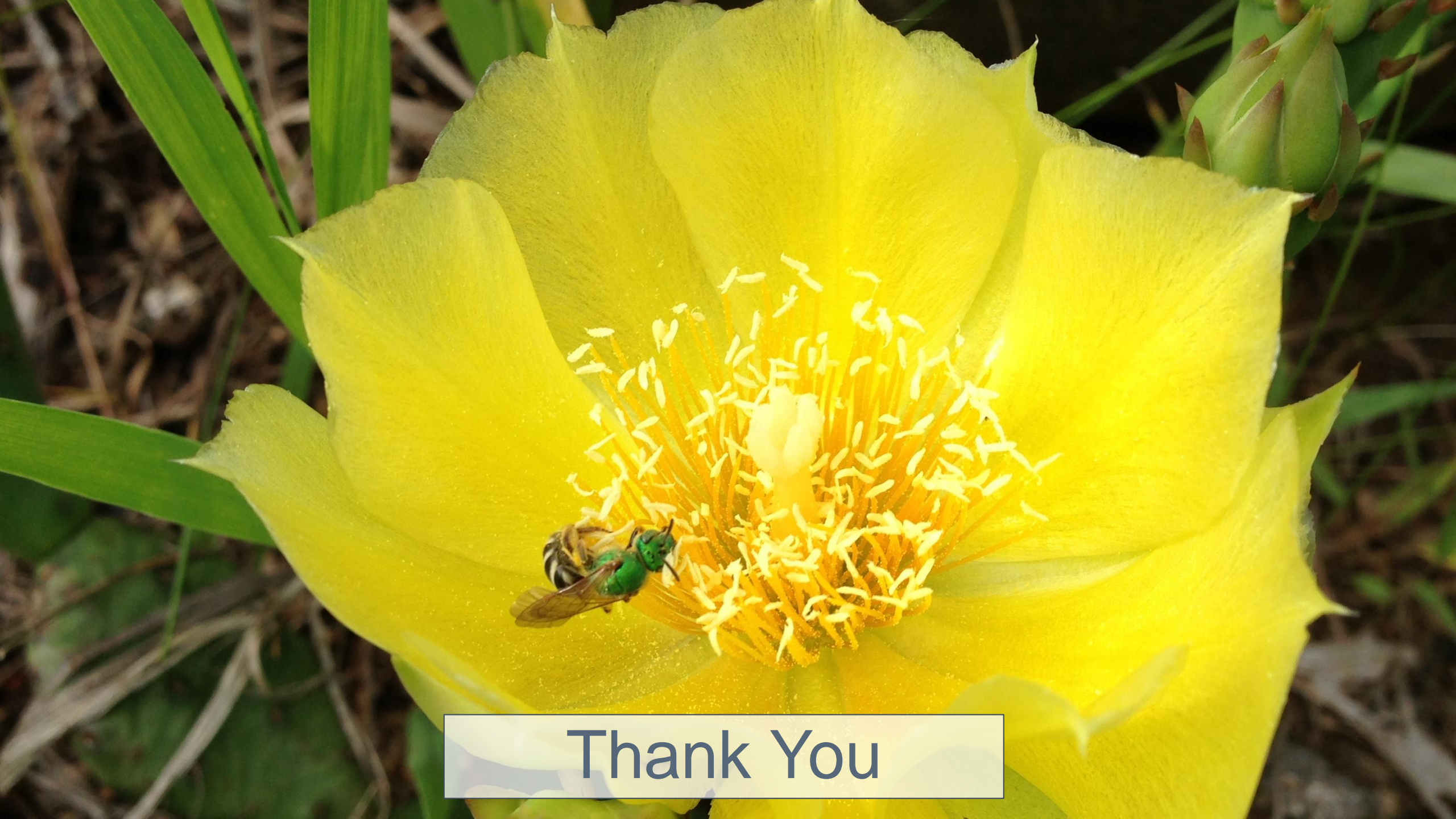


Next steps

- Final mix recommendations
- Crop trials in the San Joaquin Valley



Photo: Xerces Society / Jessa Kay Cruz



Thank You