Adjusting the risk-based survey (RBS) model strategy in CA

Weiqi Luo

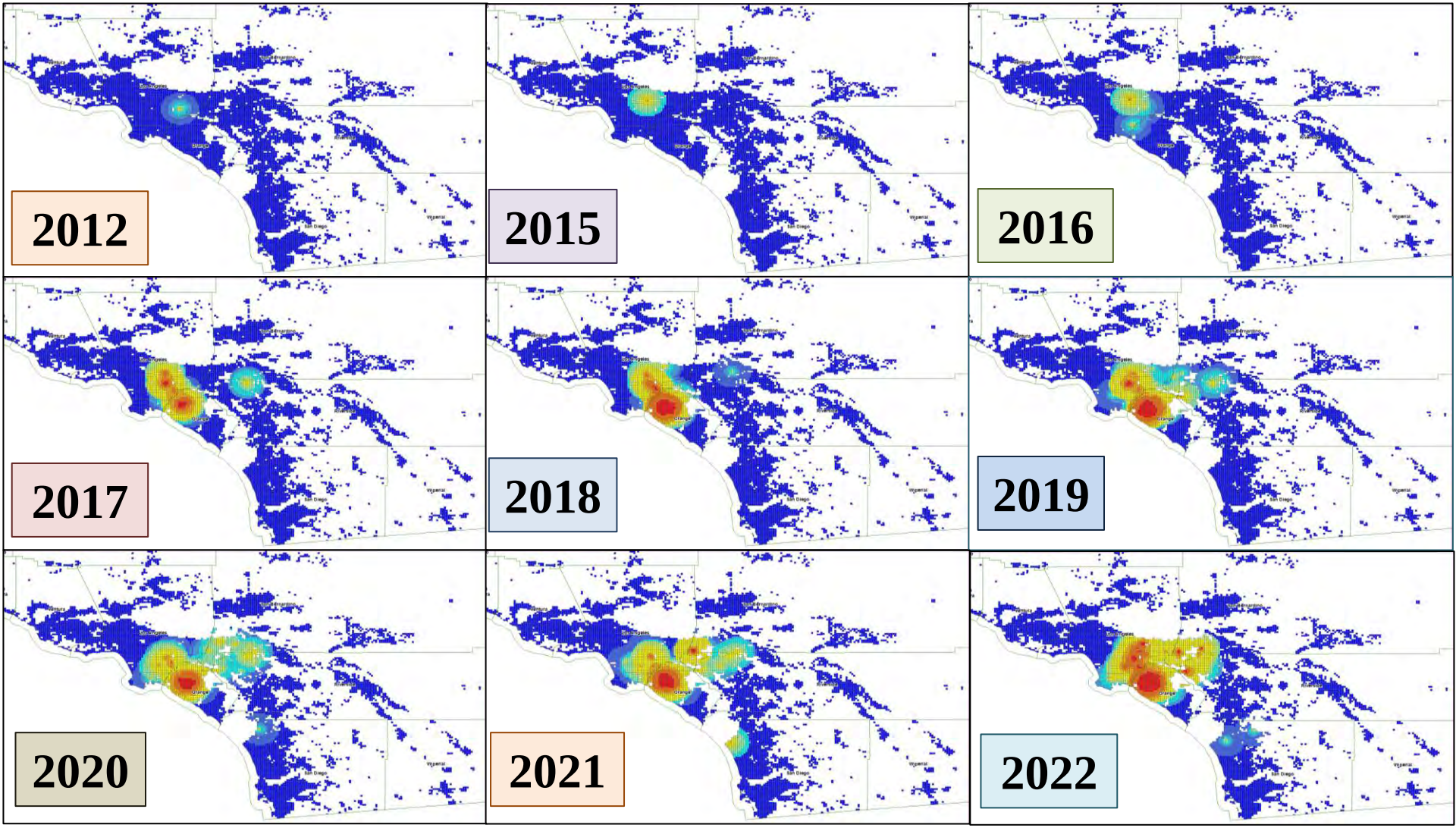
Neil McRoberts

Support: CRB #5300-199, 5300-212

General situation about HLB & ACP in CA

Risk calculated from actual HLB findings with consideration of ACP dispersal kernel

- Density of infected trees/ACP
- Intensity of ACP population
- Dispersal curve of ACP

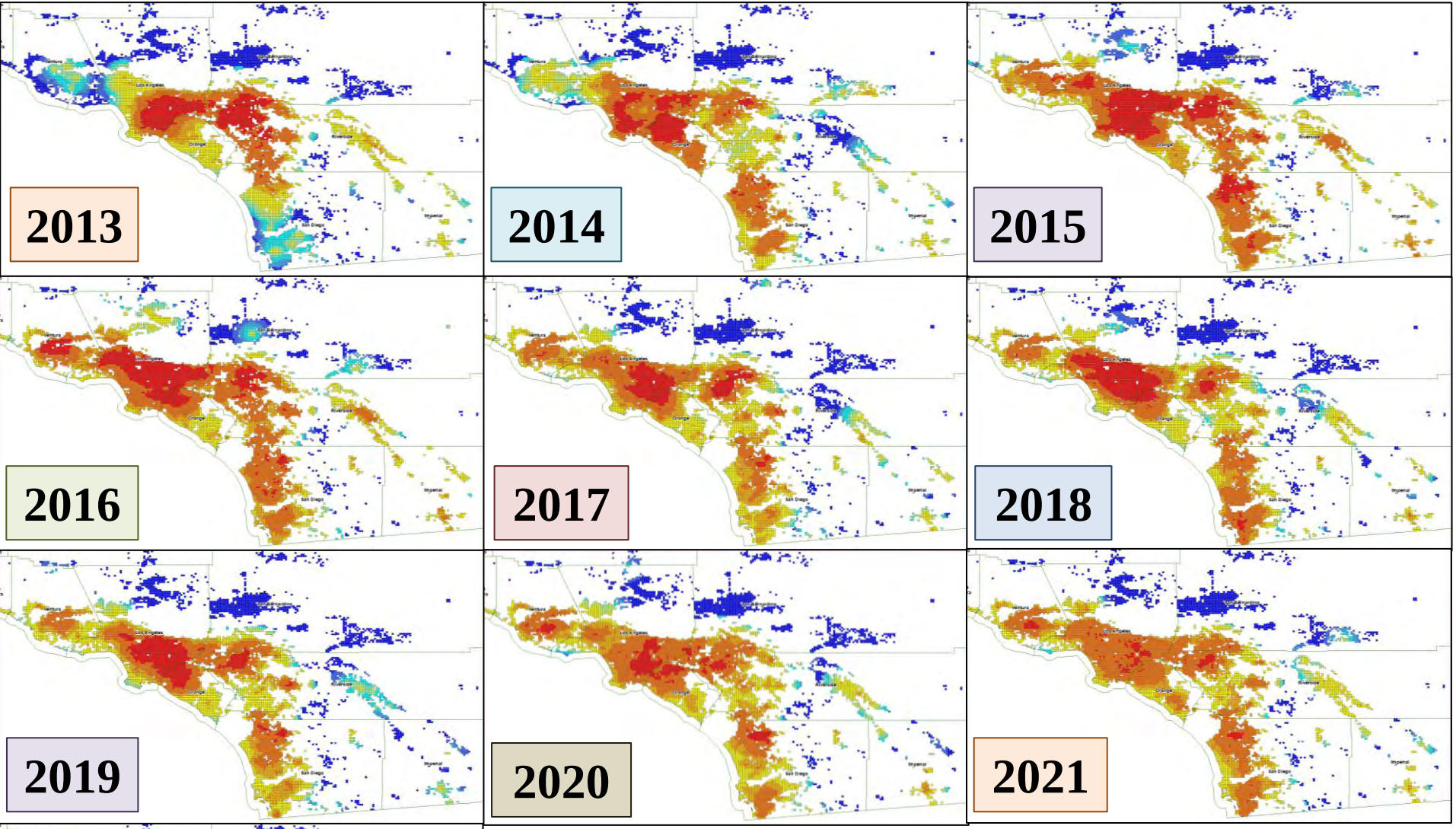


The distribution of confirmed HLB risk levels in Southern California from 2012 to 2022

Southern California Confirmed HLB Risk (out of 7489 Total STR), 2012-2022					
Year	HLB free Risk = 0	Low risk Risk ≤ 0.1	Median risk 0.1<Risk ≤ 1	High risk 1<Risk ≤ 10	Extremely high risk Risk >10
2012	96.0%	3.4%	0.6%	0.0%	0.0%
2015	96.2%	0.0%	3.4%	0.4%	0.0%
2016	90.8%	4.4%	4.3%	0.6%	0.0%
2017	83.5%	3.2%	4.9%	6.9%	1.4%
2018	82.2%	5.3%	3.4%	5.5%	3.6%
2019	75.4%	6.6%	7.8%	7.0%	3.2%
2020	71.4%	8.0%	11.8%	6.9%	2.0%
2021	71.8%	5.6%	10.3%	9.8%	2.5%
2022	70.5%	6.3%	5.0%	12.4%	5.8%

****Data are updated to 11/2022**

The data suggest that the HLB risk in Southern CA has been steadily increasing over the years, with a decrease in the proportion of HLB-free risk and an increase in the proportion of high and extremely high risk categories. The proportion of low-risk areas has remained relatively constant, while the median-risk areas have fluctuated over the years.



Risk calculated from actual ACP findings with consideration of dispersal kernel

- Intensity of ACP population
- Dispersal curve of ACP

Southern CA

The distribution of confirmed ACP risk levels in Southern California from 2013 to 2022

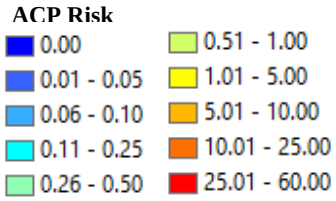
Southern California ACP Risk (out of 7489 Total STR), 2013-2022					
Year	ACP free Risk = 0	Low risk Risk ≤ 0.1	Median risk 0.1<Risk ≤ 1	High risk 1<Risk ≤ 10	Extremely high risk Risk >10
2013	24.78%	7.20%	15.44%	24.73%	27.85%
2014	21.63%	2.67%	12.82%	26.97%	35.91%
2015	12.83%	3.73%	5.33%	26.51%	51.61%
2016	9.64%	3.70%	7.09%	30.04%	49.53%
2017	19.96%	1.84%	7.48%	39.52%	31.19%
2018	17.45%	2.75%	8.11%	34.88%	36.81%
2019	20.30%	2.55%	9.52%	35.84%	31.79%
2020	18.31%	2.23%	6.28%	37.72%	35.47%
2021	16.38%	2.26%	5.17%	36.27%	39.93%
2022	17.67%	2.55%	10.62%	41.18%	27.99%

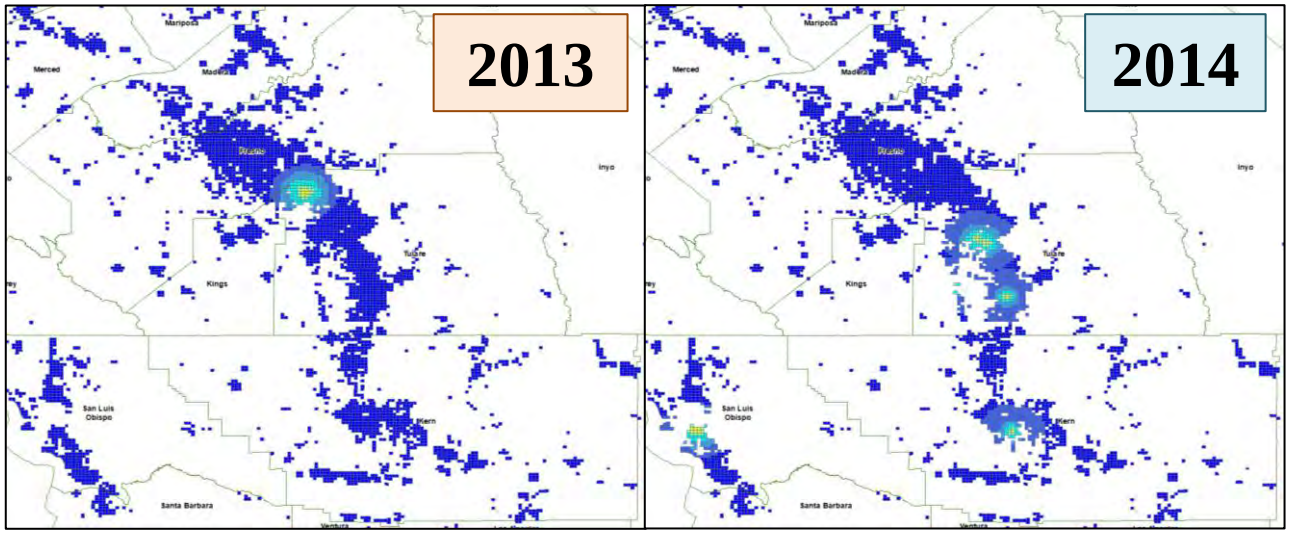
****Data are updated to 09/2022**

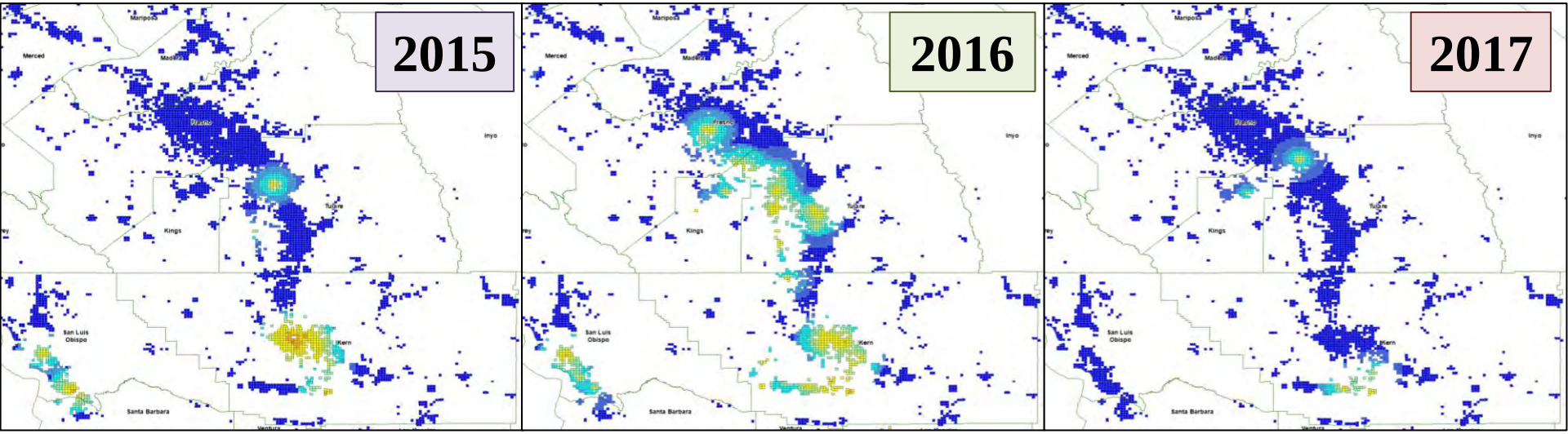
The data suggest that the ACP risk in Southern CA has fluctuated over the years, with some years showing a decrease in the proportion of high and extremely high risk categories, while other years show an increase. Overall, the table shows a pattern of increasing ACP risk in Southern CA from 2013 to 2016, followed by a decrease in risk for 2017, and then a fluctuation with no clear trend from 2018 to 2022. **Overall, the ACP prevalence in Southern CA is generally high, with a significant proportion of the region falling into the high and extremely high-risk categories throughout the years.**

Risk calculated from actual ACP findings with consideration of dispersal kernel

Central Valley 2013-2017

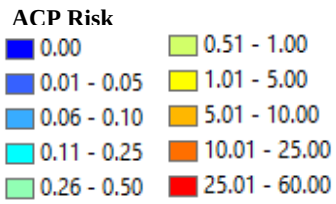


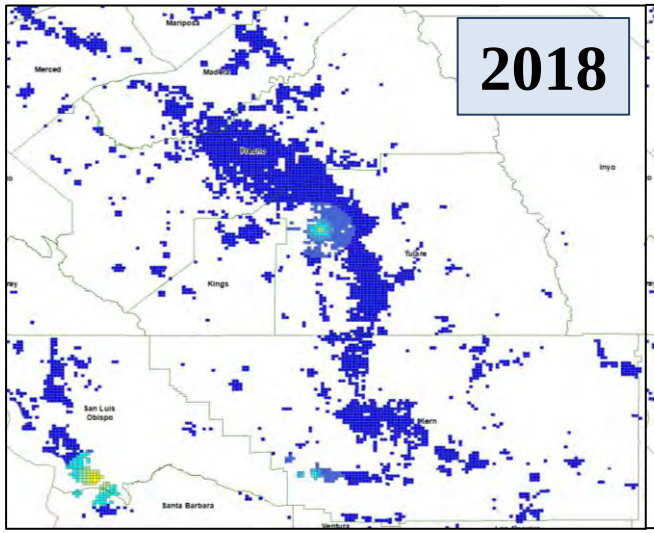


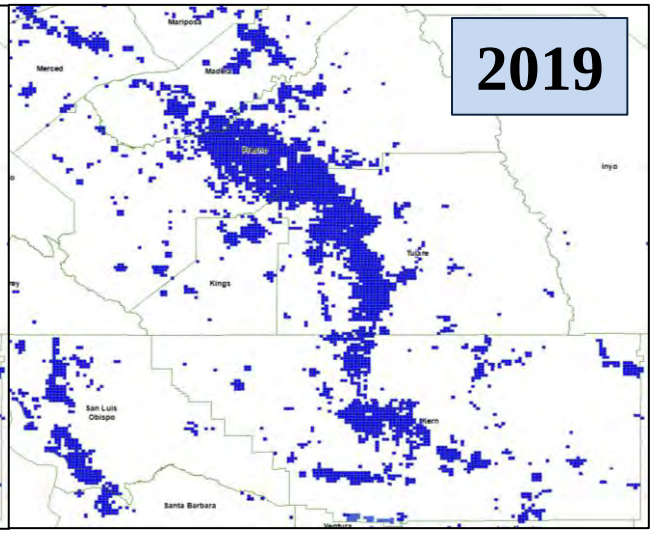


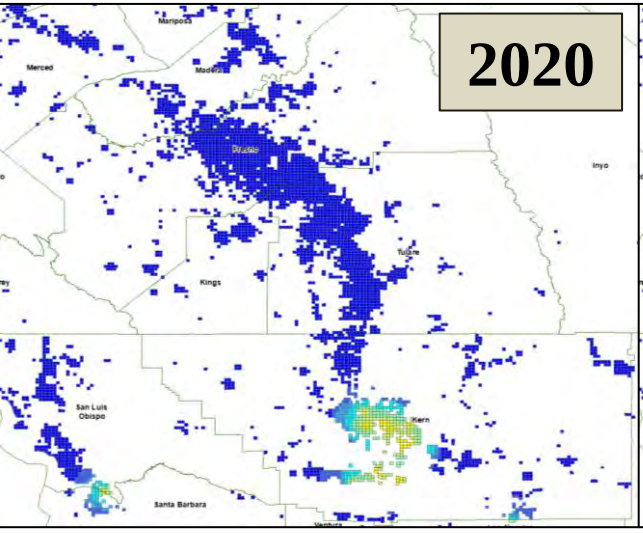
Risk calculated from actual ACP findings with consideration of dispersal kernel

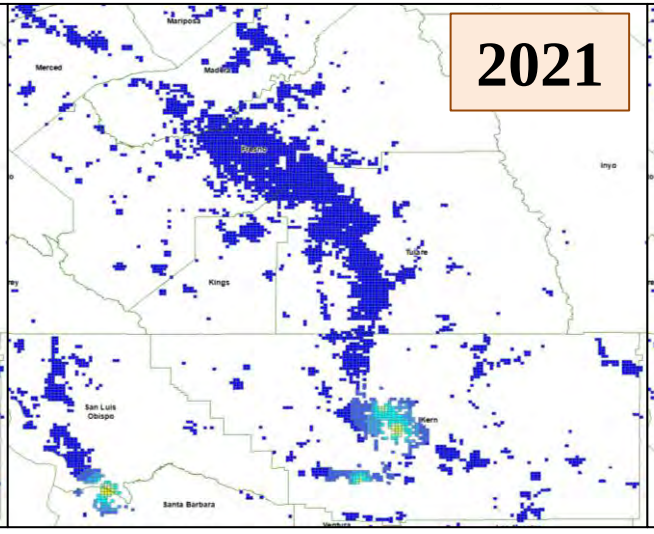
Central Valley 2018-2022

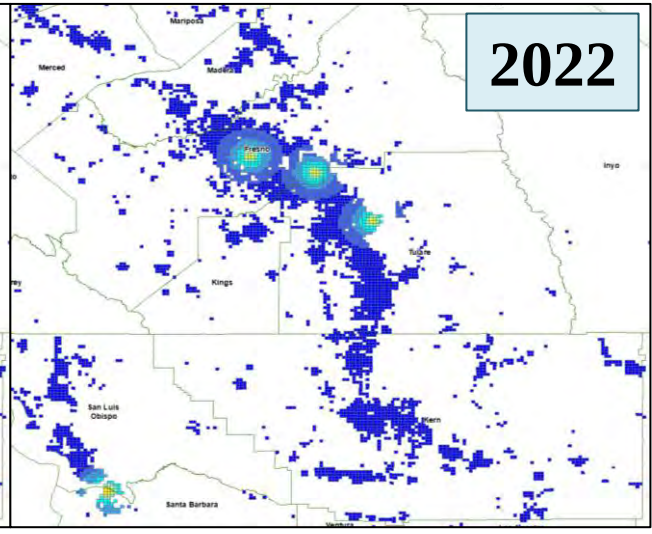












The distribution of confirmed ACP risk levels in Coastal and Central Valley from 2013 to 2022

Coastal and Central Valley ACP Risk (out of 4121 Total STR), 2013-2022					
Year	ACP free Risk = 0	Low risk Risk ≤ 0.1	Median risk 0.1<Risk ≤ 1	High risk 1<Risk ≤ 10	Extremely high risk Risk >10
2013	93.8%	4.5%	1.6%	0.0%	0.0%
2014	81.7%	15.6%	2.7%	0.0%	0.0%
2015	80.5%	6.5%	7.9%	5.0%	0.0%
2016	56.2%	14.7%	24.8%	4.3%	0.0%
2017	89.0%	7.8%	3.0%	0.2%	0.0%
2018	90.8%	6.3%	2.6%	0.3%	0.0%
2019	98.4%	1.4%	0.2%	0.0%	0.0%
2020	88.9%	3.6%	6.6%	0.9%	0.0%
2021	90.9%	6.4%	2.6%	0.1%	0.0%
2022	82.3%	14.1%	3.5%	0.1%	0.0%

****Data are updated to 09/2022**

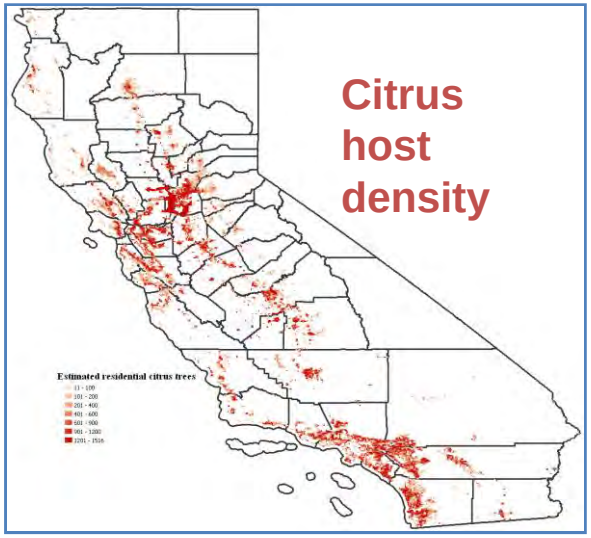
The data suggest that the ACP risk in Coastal California and Central Valley varies significantly by year. In some years, the majority of the region is ACP free or low risk, while in 2015, 2016 & 2020, a significant proportion of the region falls into the median or high-risk categories. There is a concern about the substantial increase of low risk ACP regions in 2022, as seen in the pattern from 2014.

Recent Science Advisory Panel (SAP) review and recommendations for RBS

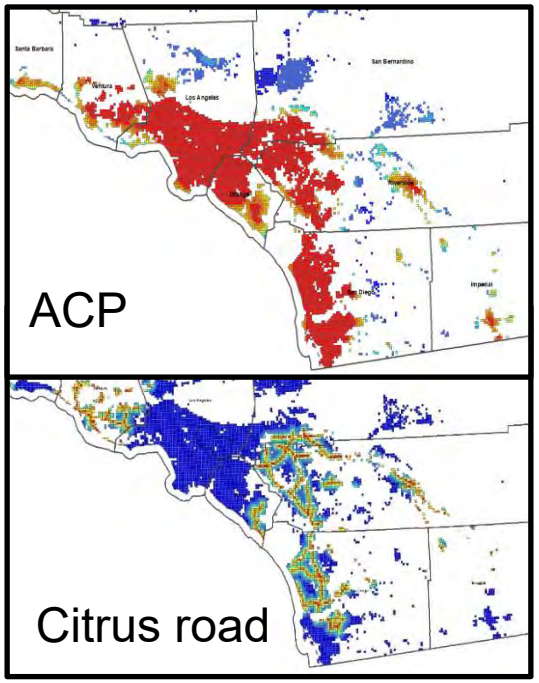
Revisit Risk-based survey (RBS) model framework (Residential & Commercial)

Maps are developed on 1-square mile grids (STRs)

Citrus Host Population Maps ***F(Host)***



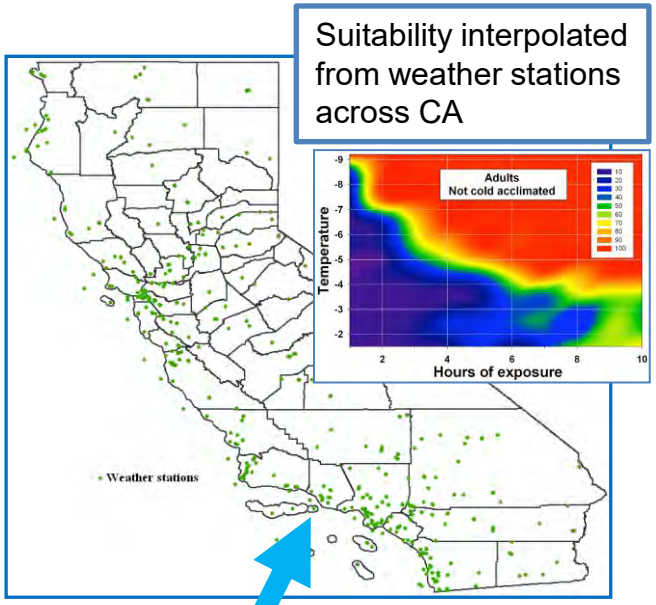
Dynamic *Spatial* Risk Models for each factor (***Risk$_i$***)



Etc.....

Climate Suitability ***G(Suitability)***

Suitability interpolated from weather stations across CA

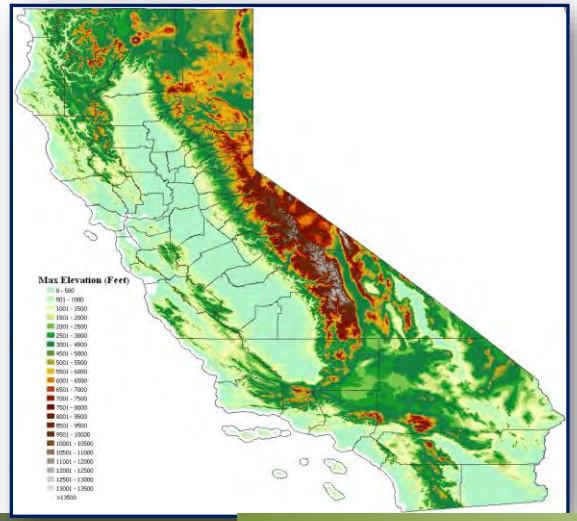


$$Risk = F(Host) * \sum_i w_i Risk_i * G(Suitability)$$

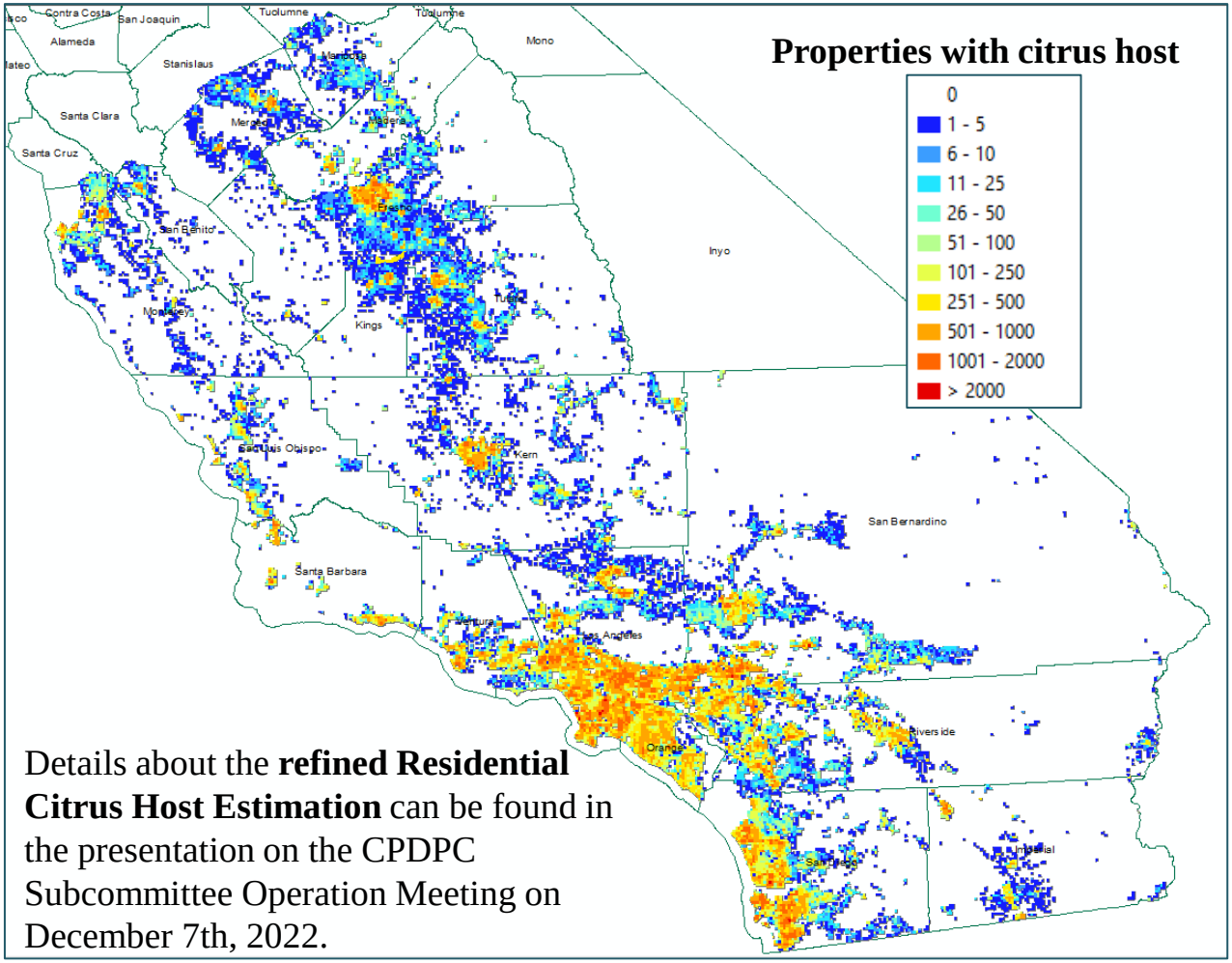
Residential Citrus Host Map Development

GIS Data Filtering

- Non-suitable landscape
- Inaccessible areas for survey
- Land cover classification
- Geography/Topography
- Human population relationship
- *Conversion to Appropriate Grid*
- Consistency of data across regions



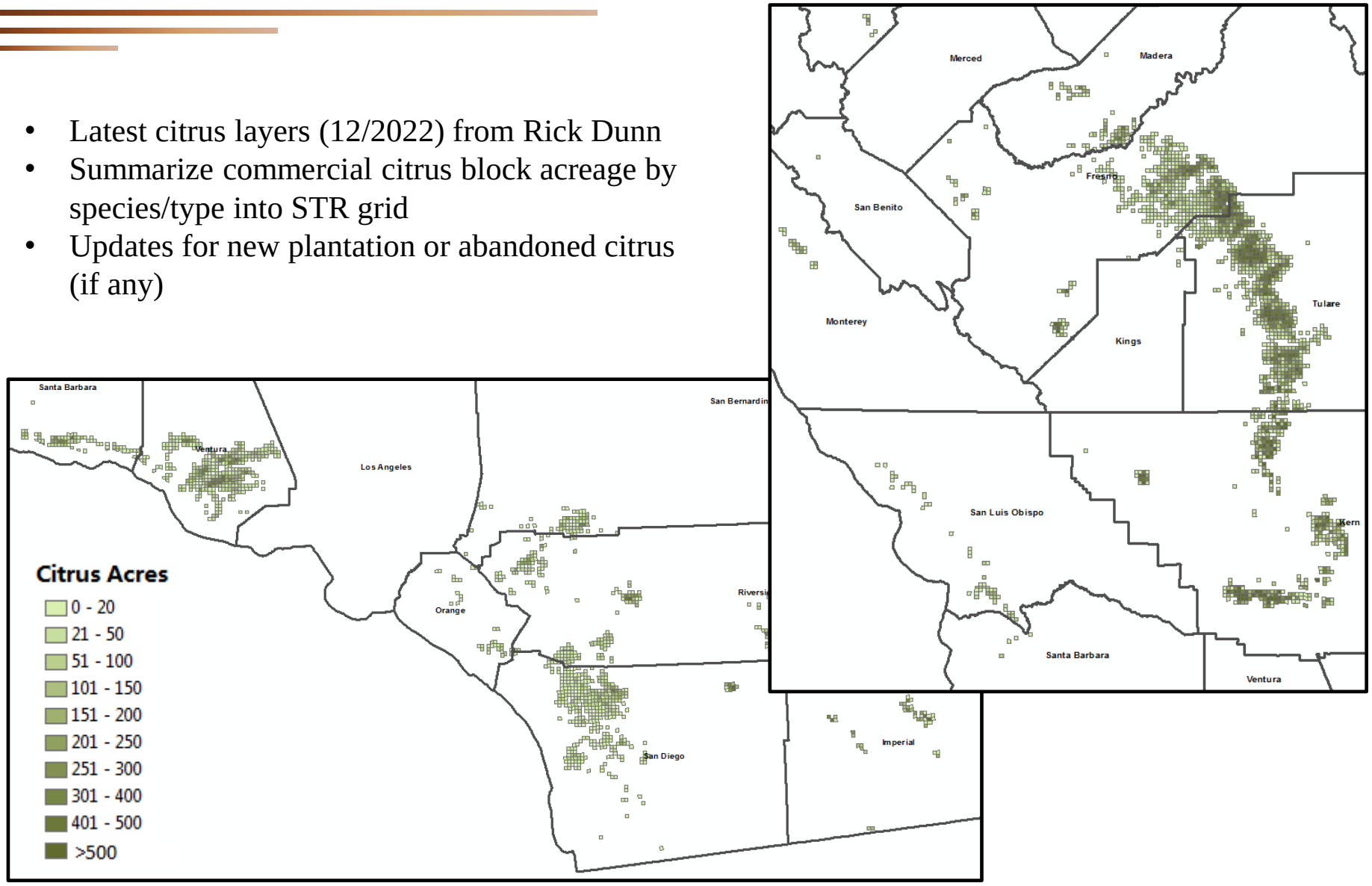
Dooryard citrus distribution (updated 02/2023)



Details about the **refined Residential Citrus Host Estimation** can be found in the presentation on the CPDPC Subcommittee Operation Meeting on December 7th, 2022.

Commercial Citrus Host Map Development

- Latest citrus layers (12/2022) from Rick Dunn
- Summarize commercial citrus block acreage by species/type into STR grid
- Updates for new plantation or abandoned citrus (if any)



SAP recommendations

1) Split the Central/Northern and Southern California Risk-Based Surveys (RBS) into two separate surveys

2) Determine the residential RBS Model weightings for Southern CA and Central/Northern CA

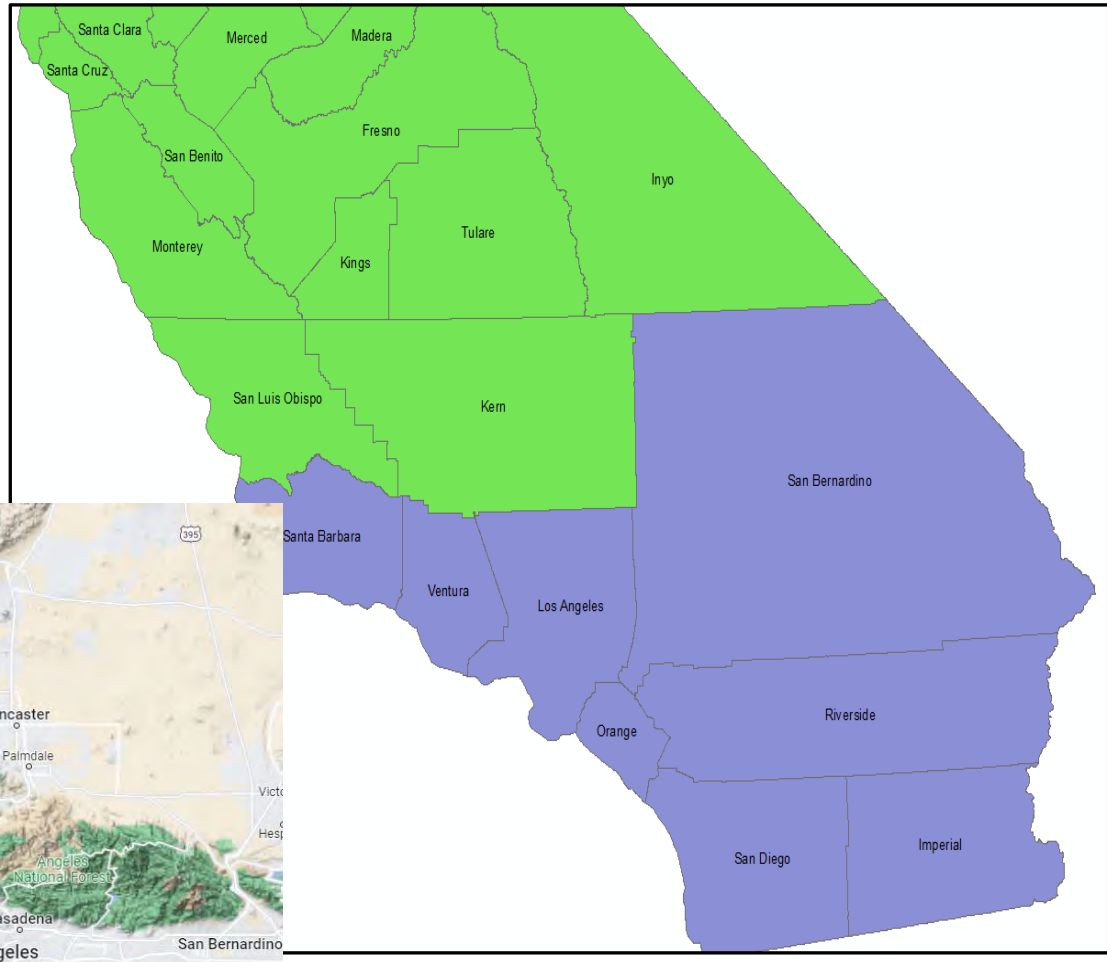
3) In the residential RBS, increase the proportion of surveyed residential citrus in areas near commercial citrus

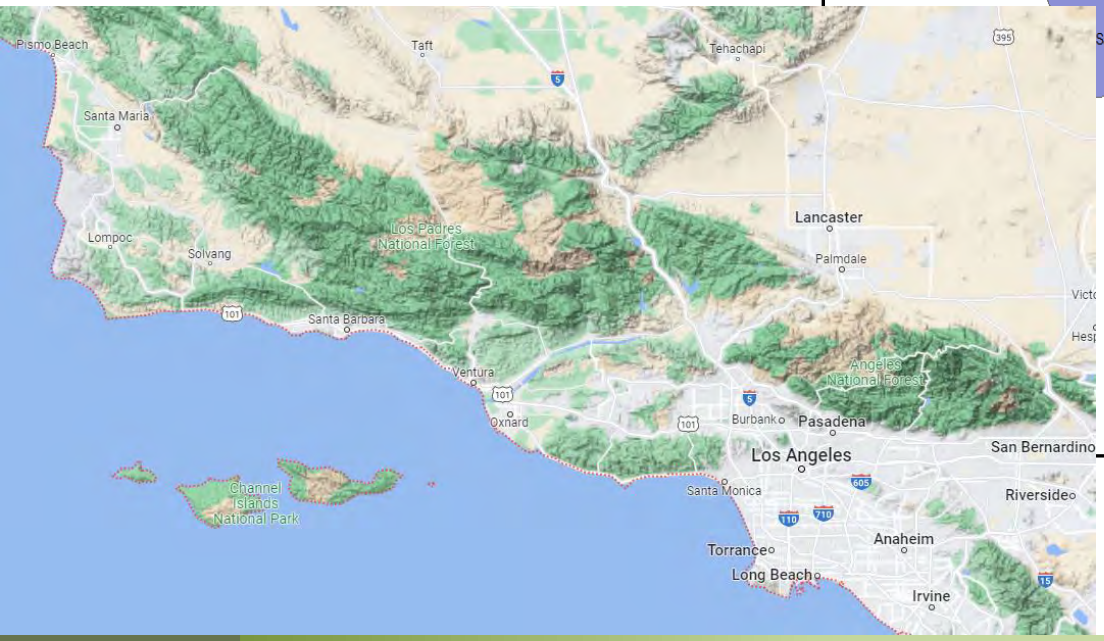
4) Invoke the Commercial RBS in Southern California

1) Split the Central/Northern and Southern California Risk-Based Surveys (RBS) into two separate surveys

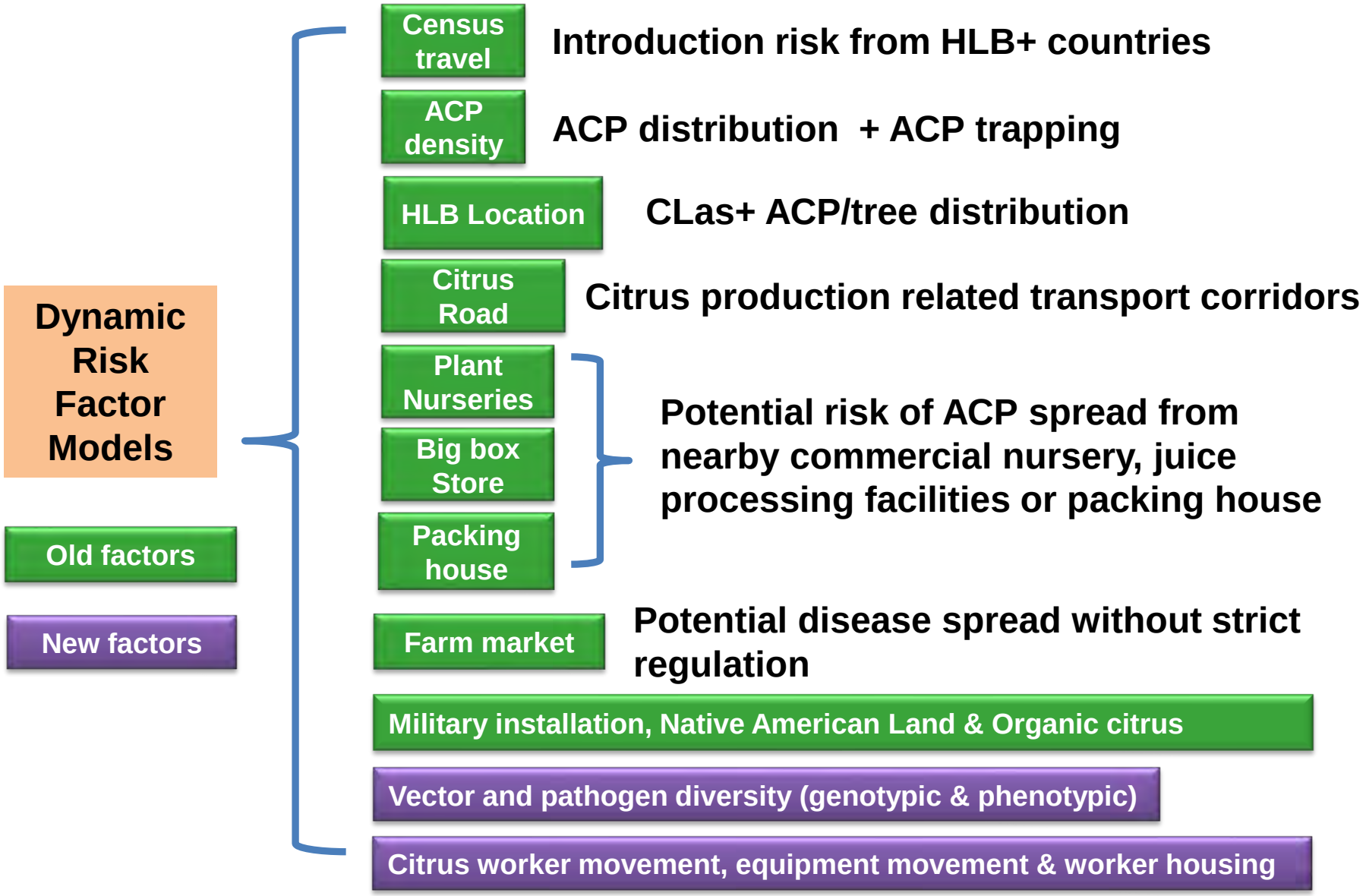
Should we group the Southern Coastal counties of Ventura and Santa Barbara into the Southern CA design?

This is because these counties experience similar ACP pressure and are separated from the Central Valley by the Tehachapi Mountains.





Dynamic Risk Models (Residential)



2) Determine the residential RBS Model weightings for Southern CA and Central/Northern CA

The weighting of each risk factor will change/refine throughout HLB epidemic

Risk factor	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Introduction risk (Census travel)	1	1	0.95	0.9	0.75	0.7	0.55	0.5	0.45	0.3
ACP density	1	1	0.6	0.85	0.9	0.8	0.85	0.8	0.9	0.9
LAS+ locations	1	1	0.85	0.95	0.9	0.95	0.95	1	1	1
Plant nursery & Big box store	0.5	0.5	0.6	0.6	0.75	0.75	0.55	0.6	0.6	0.65
Citrus Road	0.5	0.5	0.5	0.5	0.8	0.8	0.6	0.75	0.75	0.7
Packing house		0.25	0.25	0.25	0.9	0.9	0.25	0.4	0.5	0.35
Farm market		0.25	0.75	0.75	0.85	0.8	0.8	0.8	0.8	0.7
Military and Native American Lands	0.5	0.5	0.5	0.5	0.25	0.1	0.01	0.01	0.05	0.05
Organic citrus			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05
Genotyping										TBD
Worker/Equipment										TBD

First HLB detections in 2012, risk-based survey methodology design began in 2013.

The importance of each risk factor is estimated by their actual predictive power in detecting the new HLB locations

2) Determine the residential RBS Model weightings for Southern CA and Central/Northern CA

Proposed initial weighting, subject to change

Risk factor	Southern CA	Central/Northern
Introduction risk (Census travel)	0.3	0.9
ACP density	0.9	1
LAS+ locations	1	NA
Plant nursery & Big box store	0.65	0.5
Citrus Road	0.7	0.7
Packing house	0.35	0.5
Farm market	0.7	0.7
Military and Native American Lands	0.05	0.05
Organic citrus	0.05	0.05
Genotyping	TBD	TBD
Worker/Equipment	TBD	TBD

3) In residential RBS, increase proportion of surveyed residential citrus in areas near commercial citrus

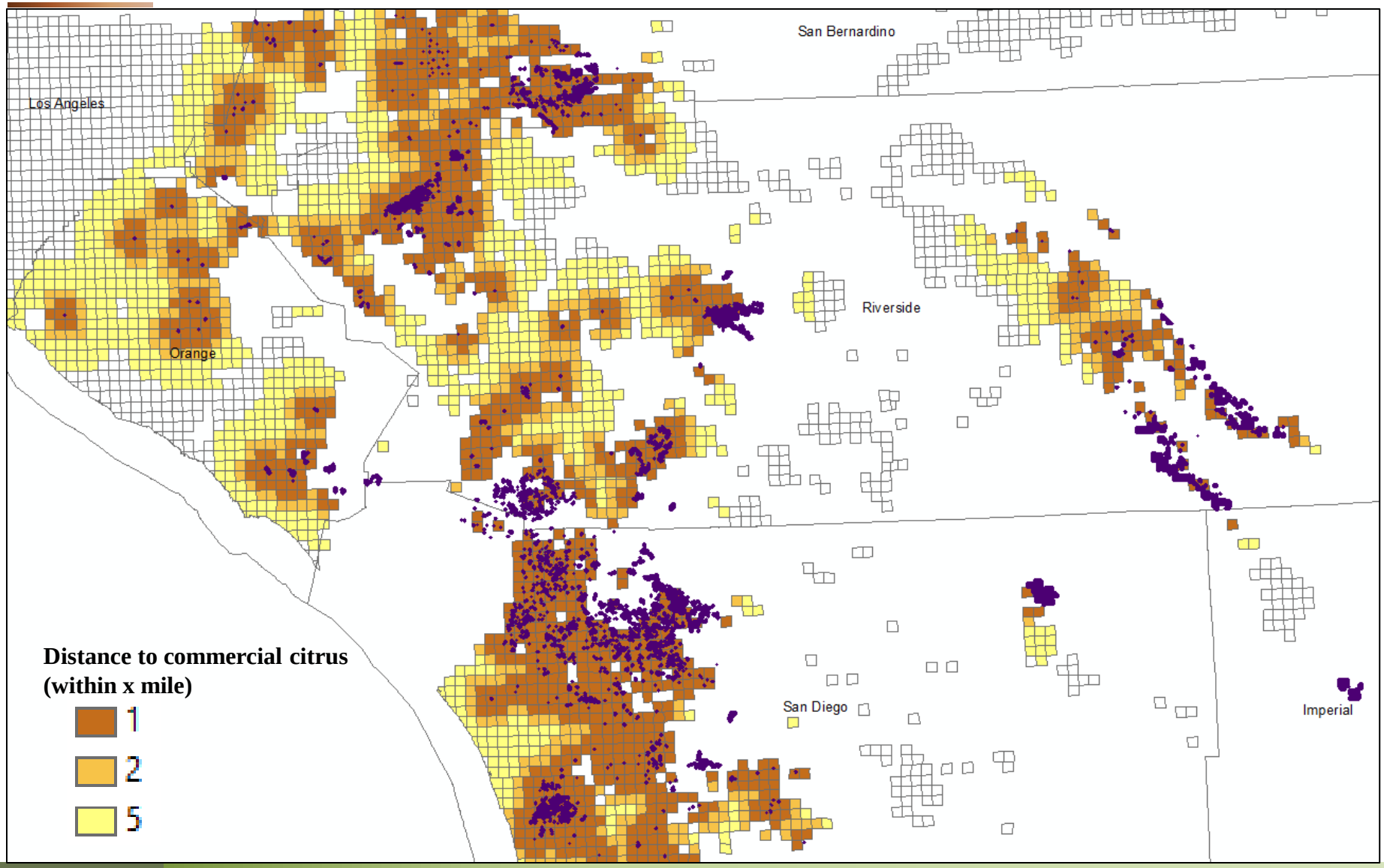
Points to consider:

1. Overlay the maps of commercial and residential citrus to identify areas where they overlap or are within X miles of commercial citrus (as defined by the user)

2. Identify the residential areas with high concentrations of commercial citrus

3. Adjust the weighting of risk factors in the model: increase the weight assigned to residential citrus near commercial citrus, and decrease the weight assigned to residential citrus in areas with little or no commercial citrus

3) In residential RBS, increase proportion of surveyed residential citrus in areas near commercial citrus



4) Invoke the Commercial RBS in Southern California

Commercial RBS

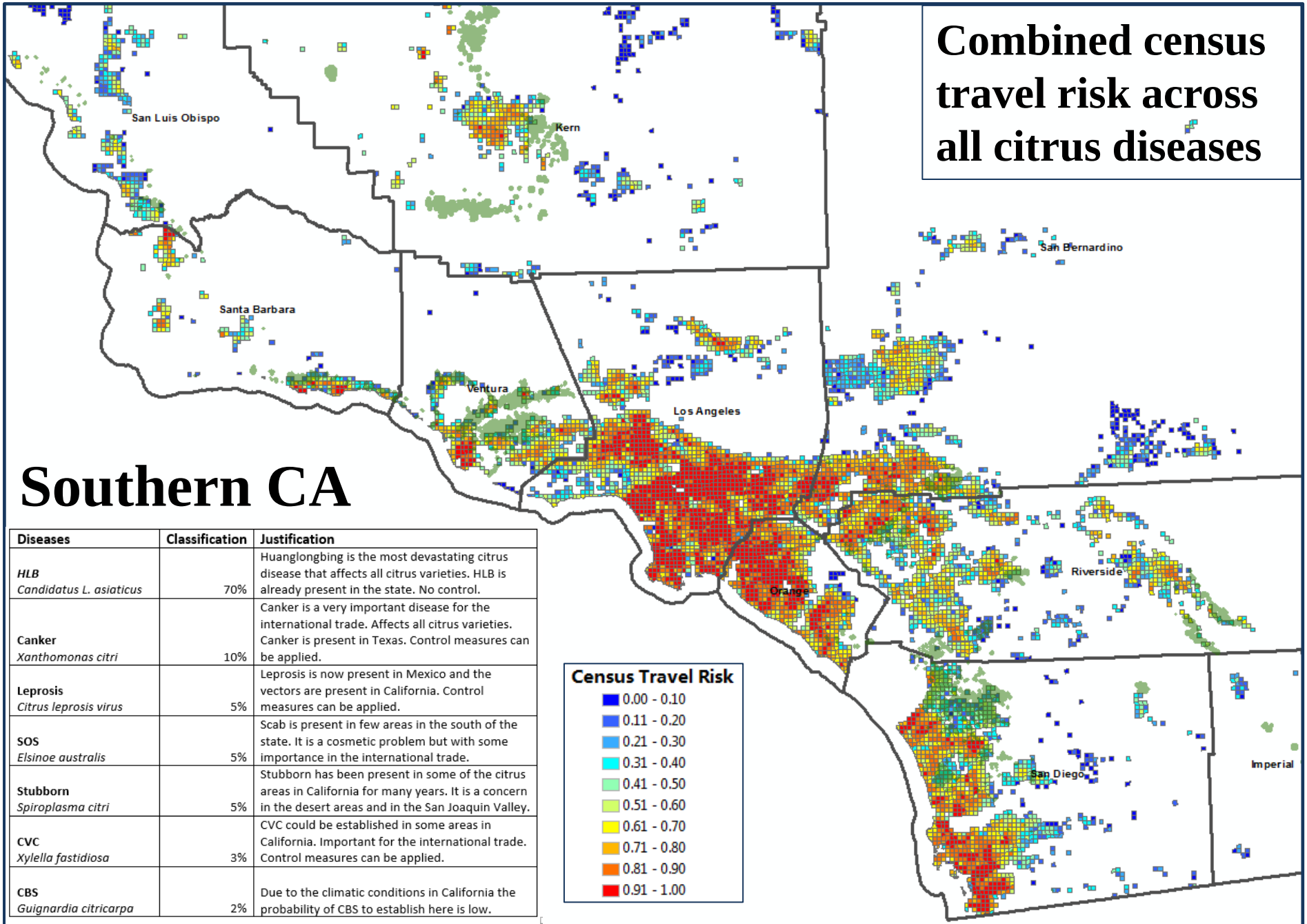
Dynamic Risk Factor Models

- Old factors
- New factors

- Census travel — **Introduction risk across all citrus diseases** (HLB, Canker, Leprosis, SOS, Stubborn, CVC, CBS, CYVCV)
- ACP density — **ACP distribution**
- HLB Location — **CLas+ ACP/tree distribution**
- Citrus Road — **Citrus production related transport corridors**
- Plant Nurseries
- Big box Store
- Packing house

  → **Potential risk of ACP spread from nearby commercial nursery, juice processing facilities, or packing house**
- Residential exposure — **Potential human-mediated spread adjust to urban areas with HLB+ detection**
- Vector and pathogen diversity (genotypic & phenotypic)
- Citrus worker movement, equipment movement & worker housing
- Citrus type, plantation age and grove size

Commercial RBS (Census travel introduction as example)



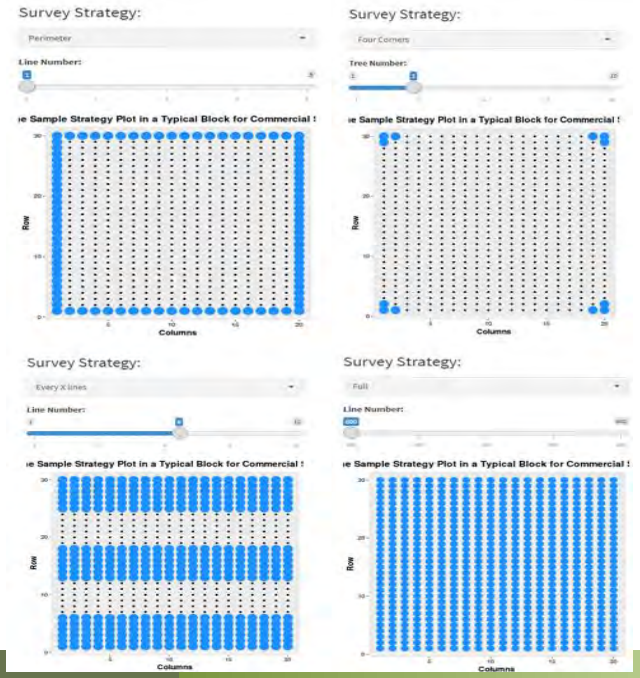
Southern CA

Diseases	Classification	Justification
HLB *Candidatus L. asiaticus*	70%	Huanglongbing is the most devastating citrus disease that affects all citrus varieties. HLB is already present in the state. No control.
Canker *Xanthomonas citri*	10%	Canker is a very important disease for the international trade. Affects all citrus varieties. Canker is present in Texas. Control measures can be applied.
Leprosis *Citrus leprosis virus*	5%	Leprosis is now present in Mexico and the vectors are present in California. Control measures can be applied.
SOS *Elsinoe australis*	5%	Scab is present in few areas in the south of the state. It is a cosmetic problem but with some importance in the international trade.
Stubborn *Spiroplasma citri*	5%	Stubborn has been present in some of the citrus areas in California for many years. It is a concern in the desert areas and in the San Joaquin Valley.
CVC *Xylella fastidiosa*	3%	CVC could be established in some areas in California. Important for the international trade. Control measures can be applied.
CBS *Guignardia citricarpa*	2%	Due to the climatic conditions in California the probability of CBS to establish here is low.

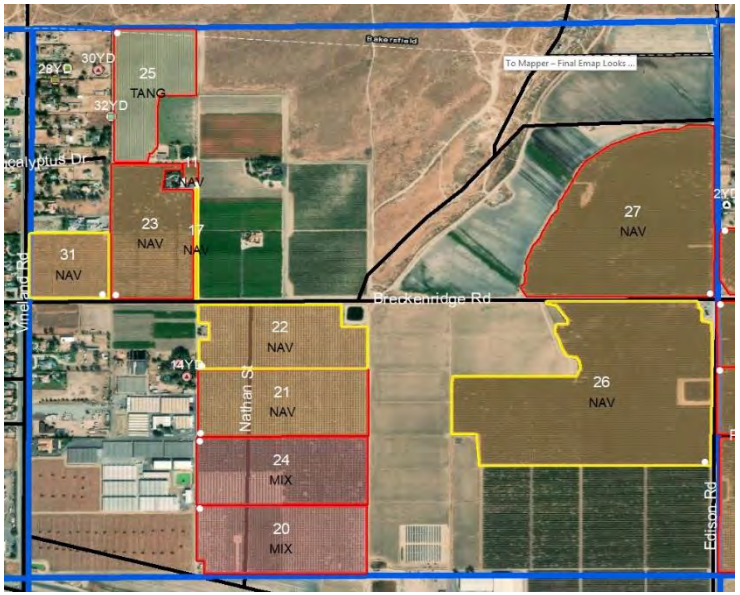
Survey strategy (commercial)

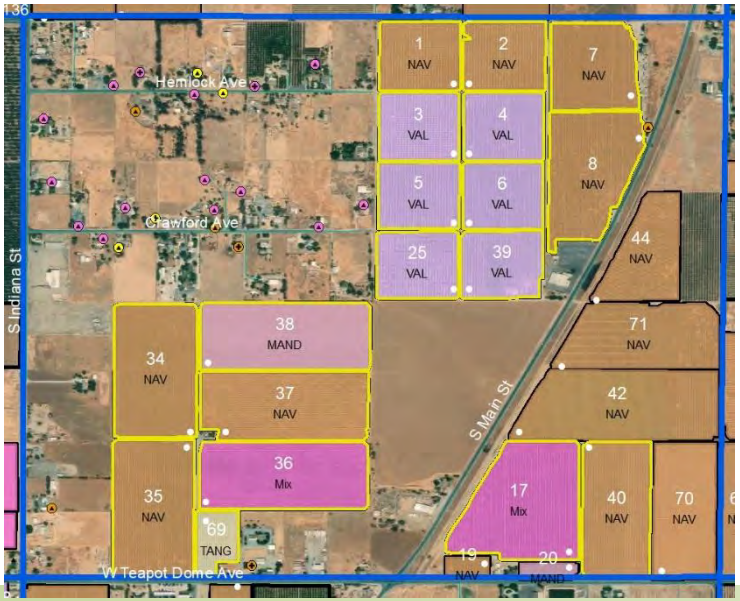
Survey strategy in commercial farms:

Strategy	Parameter	Percentage in block
Perimeter	1	16%
Four Corners	3	2%
Every X lines	6	60%
Full survey	NA	100%

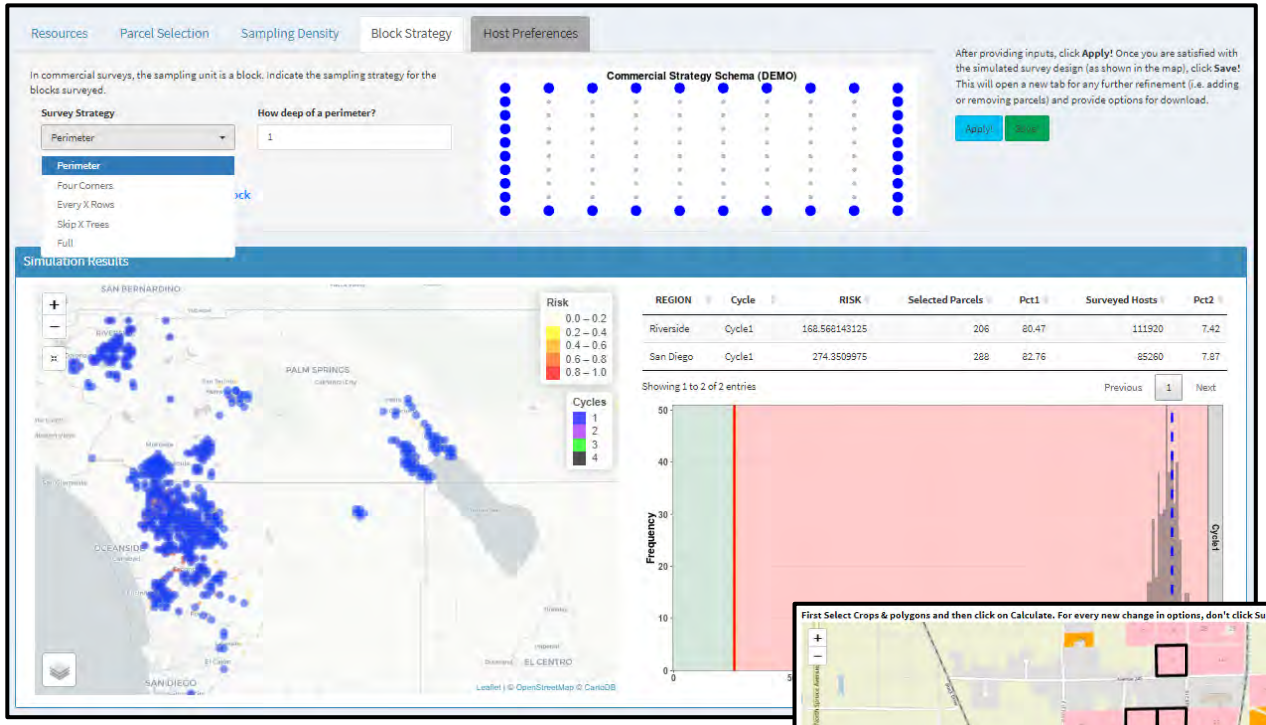


Based on host variety





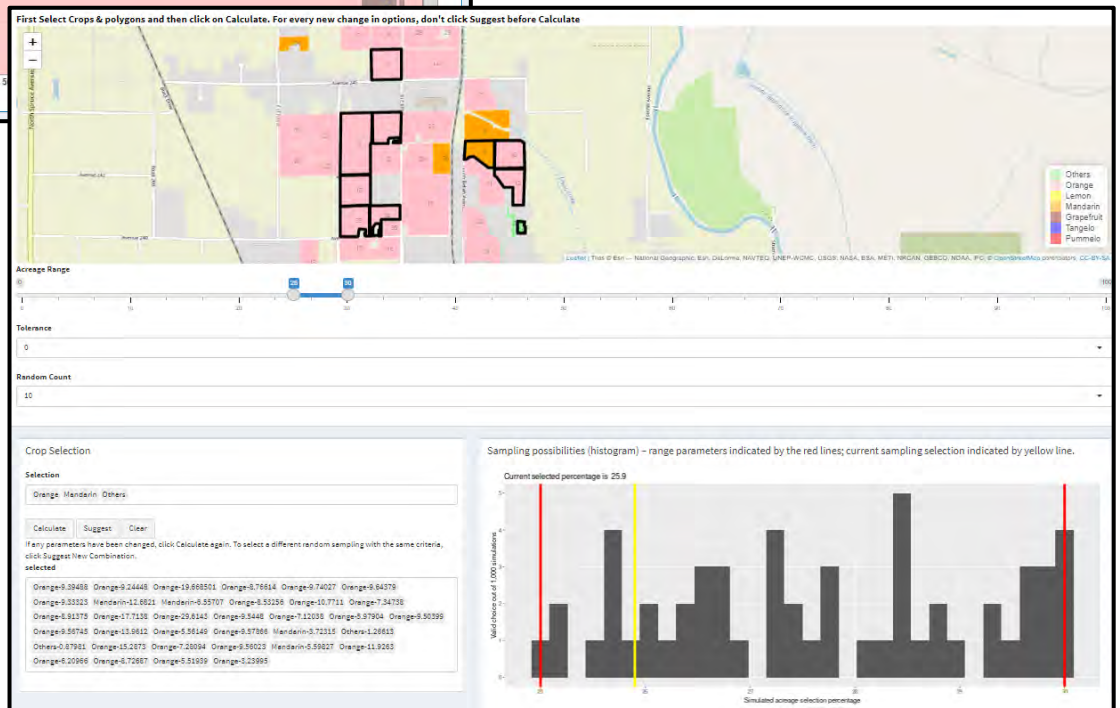
Two Applications under-developed for assisting commercial citrus survey design



Survey resource management

How many/which STR to select?

How many/which citrus blocks to select within the STR?



Citrus block selection and auto report generator

Thanks for your time and attention!

Special thanks to CDFA, DATOC, CCTEA & CRB for background data and support!

HLB Detection, Delimitation, and Tree Removal Updates

Southern District

March 8, 2023

HLB+ Detection in Rancho Bernardo, San Diego County

- A small HLB positive lime tree was detected in the front yard of a residential property on Jan 24
  - Infected tree was removed on Feb 3
  - Remaining hosts at the find site and the adjacent properties were quadrant sampled
- Two more host trees came back positive at an adjacent property on Feb 3
  - Both trees were removed on Feb 10
- Two additional host trees were detected positive at a residential property down the street on Feb 10
  - Both trees were removed on Feb 22
  - Another tree detected positive at an adjacent property and was removed on Feb 27
- **Total positive trees so far =6**
- Delimitation survey was completed in SD 1 & 2 but continuing in SD 3
  - No commercial nurseries or groves within the delimitation area
  - Public Meeting was held on Feb 21
  - Delimitation treatments are ongoing

HLB Delimitation Survey I

Areas	Total Properties	Properties Surveyed	No Host Properties	Refusals/No Contact-Pending	Completion Percentage
Duarte(19-20)	150	99	30	2/11	66%
Norwalk (4,9)	175	99	53	4/19	56%
Pomona (4-5)	163	163	55	8/5	100%
La Mirada (10,14)	262	152	69	7/30	58%
San Diego (1-2)	847	794	632	8/45	94%
Corona (25-28)	818	371	288	12/447	45%
Ontario (16-19)	934	433	325	5/503	46%

HLB Delimitation Survey II

Areas	Total Properties	Properties Surveyed	No Host Properties	Refusals/No Contact-Pending	Completion Percentage
Fontana (10-11)	220	72	22	0/148	33%
Chino (3-7)	190	162	72	11/27	85%
Westminster (1)	186	142	91	0/2	76%
Placentia(1)	113	22	4	0/3	19%
Orange (54, 57-58)	341	277	164	5/12	81%
Santa Ana (21,33,35,92,94)	65	34	4	0/2	52%
Anaheim (95-98, 57,14,68)	178	141	46	2/13	79%

HLB Border Buffer Risk Survey

County	Cycle 2 2022	Number of Sq. miles: Proposed	Number of Sq. miles: Completed	Number of Sites Surveyed	Number of Sites: Ento. Samples	Number of Sites: Plant Samples	Completed Sq. miles
San Diego **(Tecate, Portero, San Ysidro, and San Diego)**	Winter (Dec 21-March 20)	26	9	100	6	43	35%
Imperial **(Calexico, Holtville, and Winterhaven)**	Winter (Dec 21-March 20)	34	25	168	2	159	74%

Quadrant Survey 2023

(Find sites, Adjacent, Inconclusive samples)

County	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Los Angeles	684	241										
Orange	656	923										
Riverside	62	140										
San Bernardino	106	138										
San Diego	28	60										
Imperial	0	0										
Total	**1,536**	**1,502**										

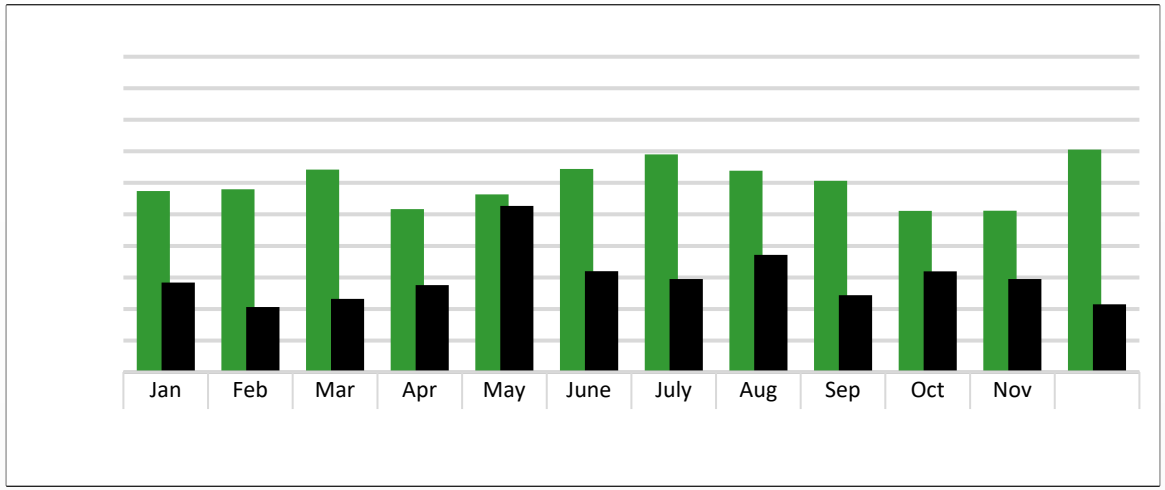
HLB Positive Trees (January and February 2023)

County	Detected	Removed	Cumulative Pending
Los Angeles	119	101	95
Orange	261	130	195
San Bernardino	12	21	10
Riverside	19	16	12
San Diego	6	6	0
TOTAL	**417**	**274**	**312**

California Department of Food & Agriculture
Plant Pest Diagnostics Center
HLB Testing Program
2023

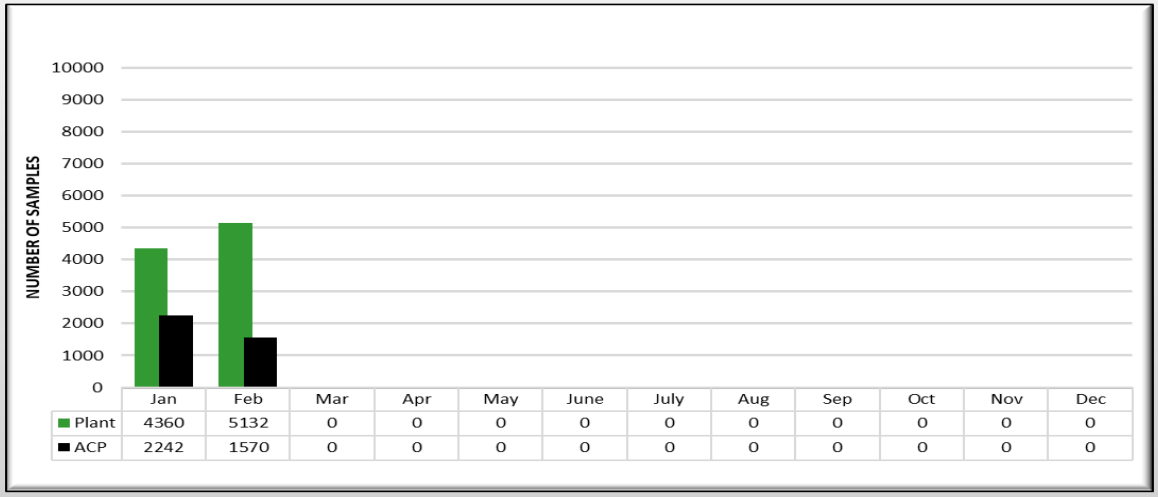
Total number of plant and ACP samples per month – Fig. 1a, Fig1b
Number of samples tested for HLB per year from 2008 –2023 – Fig. 2
Number of samples collected per county in 2022 – Fig. 3
Tally of positive detections by county and city – Tables 1-3
Tally of positive detections by city per year – Table 4
ACP and Plant Risk-based Survey Samples – Number of positives from 2015 to 2022– Tables 5 and 6
ACP and Plant Risk-based Survey Samples - % Positives from 2015 to 2022– Fig. 4 and 5
If you have any questions, please call or email me at 916-738-6710 lucita.kumagai@cdfa.ca.gov.

Fig 1a. 2022 - Total number of plant and ACP samples submitted per month.



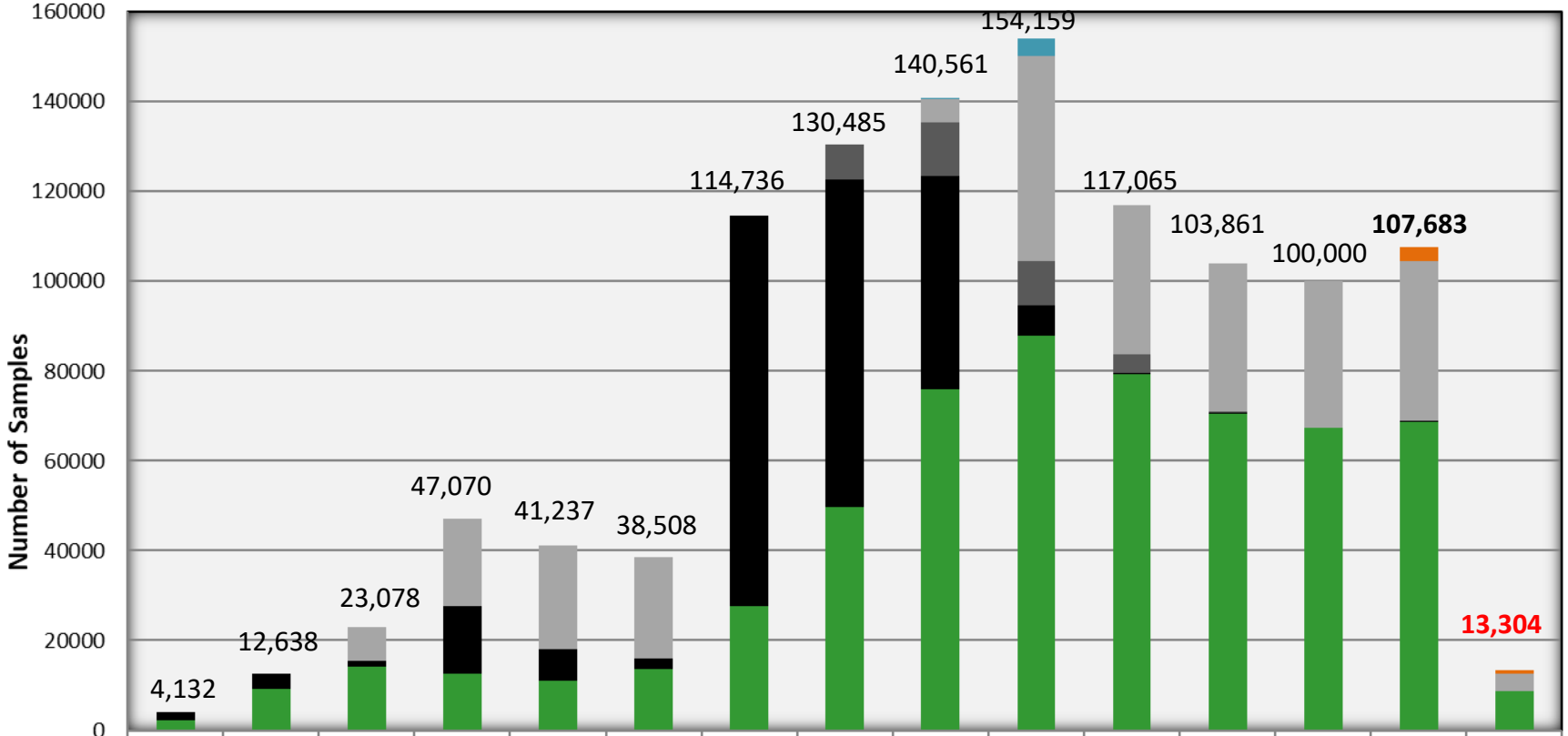
2022 Annual Sample Total
Plant - 71,830
ACP - 35,853

Fig 1b. 2023 - Total number of plant and ACP samples submitted per month.



	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Plant	4360	5132	0	0	0	0	0	0	0	0	0	0
ACP	2242	1570	0	0	0	0	0	0	0	0	0	0

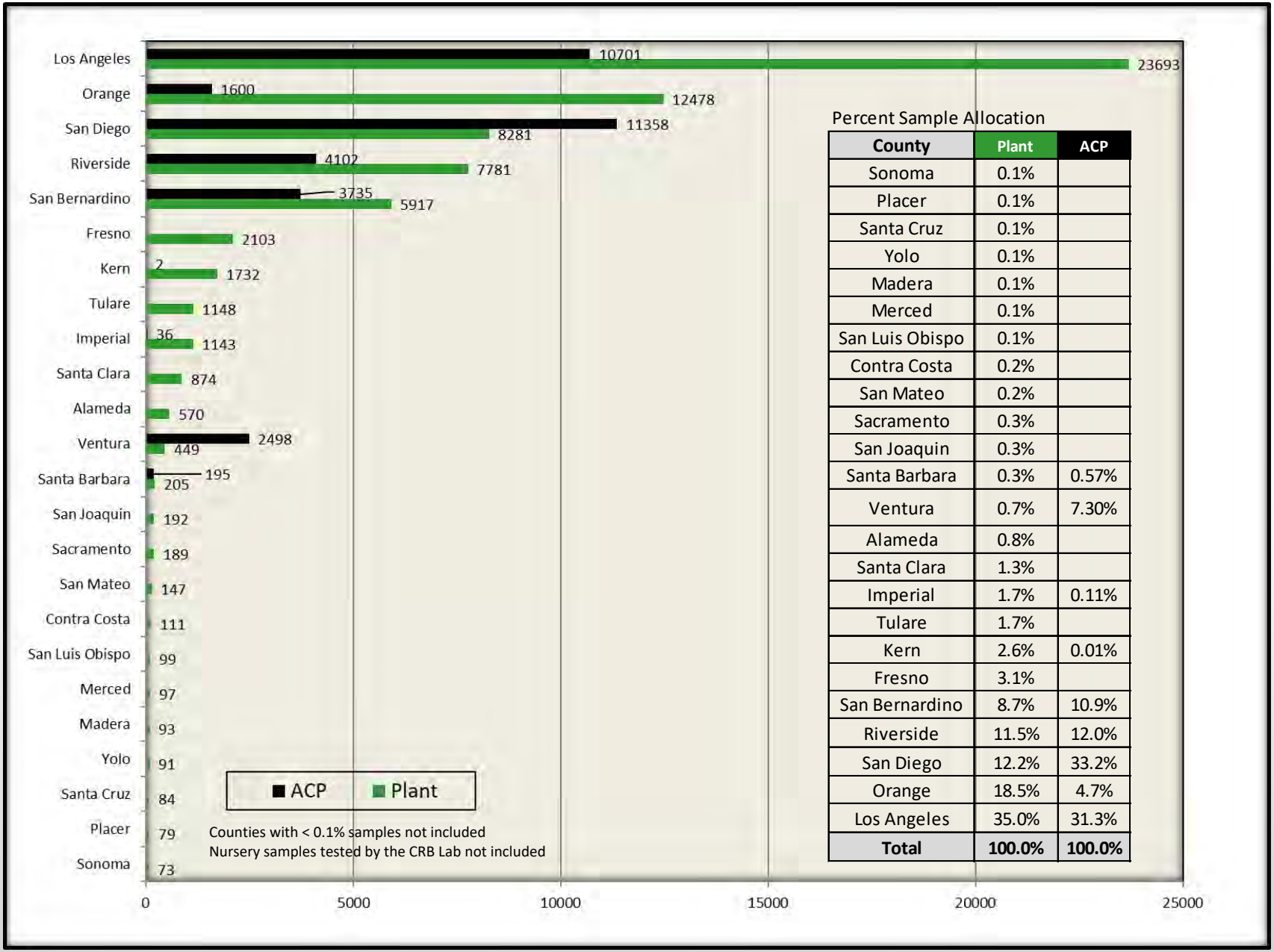
Fig 2. Number of samples tested for HLB per year from 2008 –2023.



	2008-09	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CRB Plant														3122	702
CPDP ACP									94	4020	0	0	0	0	0
CRB ACP			7740	19380	23222	22568	0	0	5085	45550	33247	32920	32507	35690	3784
U AZ ACP								7881	11896	10079	4310	205	0	0	0
CDFA ACP	1923	3527	1105	15032	6872	2300	87052	72832	47619	6698	133	130	29	163	28
CDFA Plant	2209	9111	14233	12658	11143	13640	27684	49772	75867	87812	79375	70606	67464	68708	8790

Combined total of plant and ACP samples tested from 2008 – 2023 is 1,148,517.

Fig 3. Number of samples collected per county in 2022.



Percent Sample Allocation

County	Plant	ACP
Sonoma	0.1%	
Placer	0.1%	
Santa Cruz	0.1%	
Yolo	0.1%	
Madera	0.1%	
Merced	0.1%	
San Luis Obispo	0.1%	
Contra Costa	0.2%	
San Mateo	0.2%	
Sacramento	0.3%	
San Joaquin	0.3%	
Santa Barbara	0.3%	0.57%
Ventura	0.7%	7.30%
Alameda	0.8%	
Santa Clara	1.3%	
Imperial	1.7%	0.11%
Tulare	1.7%	
Kern	2.6%	0.01%
Fresno	3.1%	
San Bernardino	8.7%	10.9%
Riverside	11.5%	12.0%
San Diego	12.2%	33.2%
Orange	18.5%	4.7%
Los Angeles	35.0%	31.3%
Total	**100.0%**	**100.0%**

Table 1. Tally of positive sites, positive trees, and CLas+ ACP samples by county and city as of 2/28/2023.

HLB Positive Detections			
City	# Sites	# Trees	# ACP samples
Orange County			
Garden Grove	537	802	79
Santa Ana	493	652	86
Anaheim	566	868	143
Westminster	353	576	20
Orange	174	214	35
Tustin	17	17	6
Fountain Valley	8	14	2
Huntington Beach	23	26	2
Placentia	30	32	11
La Habra	5	6	1
Fullerton	11	13	6
Yorba Linda	6	4	5
Irvine	6	6	3
Costa Mesa	3	1	3
Brea	1	1	0
Buena Park	4	3	1
Cypress	5	0	5
Stanton	2	1	1
Midway City	3	4	0
Los Alamitos	1	0	1
Total	**2248**	**3240**	**410**
Los Angeles County			
Whittier	194	234	43
Pico Rivera	160	215	64
Montebello	72	99	2
San Gabriel	67	83	7
Rosemead	33	38	7
Paramount	29	34	5
La Mirada	46	61	6
La Puente	11	12	7
Norwalk	15	12	5
Cerritos	5	3	4
Hacienda Heights	4	4	1
Lakewood	5	6	0
Duarte	45	63	3
El Monte	24	27	8
South El Monte	12	25	4
Alhambra	1	1	0
Temple City	4	3	2
Compton	1	1	0
Glendora	1	0	1
South Gate	7	6	4
Long Beach	7	7	3
Los Angeles	1	0	1
Downey	13	17	5
Carson	4	3	1
Monrovia	19	25	0
Rowland Heights	2	0	2
Pomona	10	12	2
Artesia	1	1	0
Bellflower	2	2	0
Monterey Park	1	1	0
Total	**796**	**995**	**187**
Riverside County			
Corona	72	112	19
Riverside	26	28	5
Eastvale	1	1	0
Jurupa Valley	17	19	4
Moreno Valley	1	1	0
Total	**117**	**161**	**28**
San Bernardino County			
ancho Cucamonga	3	7	2
Montclair	7	6	1
Colton	6	11	3
San Bernardino	2	1	1
Ontario	61	118	20
Fontana	26	33	9
Chino	15	20	2
Total	**120**	**196**	**38**
San Diego			
Fallbrook	1	0	1
Oceanside	4	9	4
Pauma Valley	1	0	1
Vista	1	0	1
San Diego	4	6	0
Total	**11**	**15**	**7**
Grand Total	**3292**	**4607**	**670**

Table 2. Percent positives per county

County	Sites	Trees	ACP
Orange	68.3%	70.33%	61.2%
LA	24.2%	21.60%	27.9%
Riverside	3.6%	3.49%	4.2%
San Bernardino	3.6%	4.25%	5.7%
San Diego	0.3%	0.33%	1.0%
Total	100%	100%	100%

Table 3. Tally of positive samples from Risk-based and HLB Response surveys.

Sample type	Trees		ACP	
Risk-based Survey	344	7%	403	60%
HLB Response	4263	93%	267	40%
Total	**4607**	**100%**	**670**	**100%**

Table 4. Annual tally of positive trees per city from 2012 – 2023 as of 2/28/2023

County	Total
Orange	3240
Los Angeles	995
Riverside	161
San Bernardino	196
San Diego	15
Grand Total	4607

HLB Positive Tree Detections

City	2012	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Anaheim				132	109	90	21	200	257	59	868
Garden Grove				13	348	115	116	34	140	36	802
La Habra				1	0	2	0	0	1	2	6
Fullerton				1	0	0	0	0	4	8	13
Santa Ana					44	168	217	99	71	53	652
Westminster					15	175	3	39	331	13	576
Yorba Linda					1	0	0	1	0	2	4
Orange					31	14	36	43	37	53	214
Tustin					5	8	1	0	1	2	17
Huntington Beach						6	2	17	0	1	26
Placentia						7	0	0	1	24	32
Fountain Valley							10	0	1	3	14
Irvine							1	1	4	0	6
Costa Mesa									1	0	1
Brea										1	1
Buena Park										3	3
Stanton										1	1
Midway City										4	4
Cypress											0
Los Alamitos											0
Hacienda Heights	1	0	1	0	0	0	0	0	1	1	4
San Gabriel		10	17	33	10	6	0	1	6	0	83
Cerritos			1	1	0	0	0	0	0	1	3
Pico Rivera				67	35	18	10	1	28	56	215
Whittier				18	80	23	21	35	52	5	234
La Puente					0	3	0	0	8	1	12
Lakewood					1	1	0	4	0	0	6
Norwalk					1	0	2	1	4	4	12
Rosemead					17	11	0	0	9	1	38
Duarte					2	0	0	0	42	19	63
Temple City						1	0	0	1	1	3
Montebello						84	4	0	11	0	99
El Monte						1	1	0	18	7	27
Compton						1	0	0	0	0	1
Alhambra						1	0	0	0	0	1
La Mirada							7	6	33	15	61
Paramount							11	8	15	0	34
Long Beach								2	5	0	7
South Gate								2	4	0	6
Downey									14	3	17
Carson									3	0	3
Monrovia									19	6	25
Pomona									12	0	12
South El Monte									25	0	25
Artesia									1	0	1
Bellflower									2	0	2
Monterey Park									1	0	1
Glendora											
Rowland Heights											
Los Angeles											
Riverside				3	0	4	6	8	6	1	28
Corona						15	4	11	69	13	112
Eastvale							1	0	0	0	1
Moreno Valley							1	0	0	0	1
Jurupa Valley								1	13	5	19
Montclair						2	2	2	0	0	6
San Bernardino							1	0	0	0	1
Ontario							1	64	48	5	118
Colton							4	7	0	0	11
Rancho Cucamonga							5	2	0	0	7
Fontana									27	6	33
Chino									16	4	20
Oceanside								9	0	0	9
San Diego										6	6
Fallbrook											
Pauma Valley											
Vista											
Total	1	10	19	269	699	756	488	598	1342	425	4607

Risk-based Survey Samples from 2015-2022

Table 5. ACP Risk-based Survey Samples – Number of Positives from 2015 to 2022

ACP Risk-Based Samples			
Year	ACP Total	% positive	# of CLas+ ACP samples
2015	75285	0.00%	0
2016	49015	0.01%	3
2017	42106	0.09%	39
2018	54771	0.05%	29
2019	30927	0.16%	50
2020	22568	0.13%	29
2021	23902	0.08%	20
2022	24990	0.46%	114

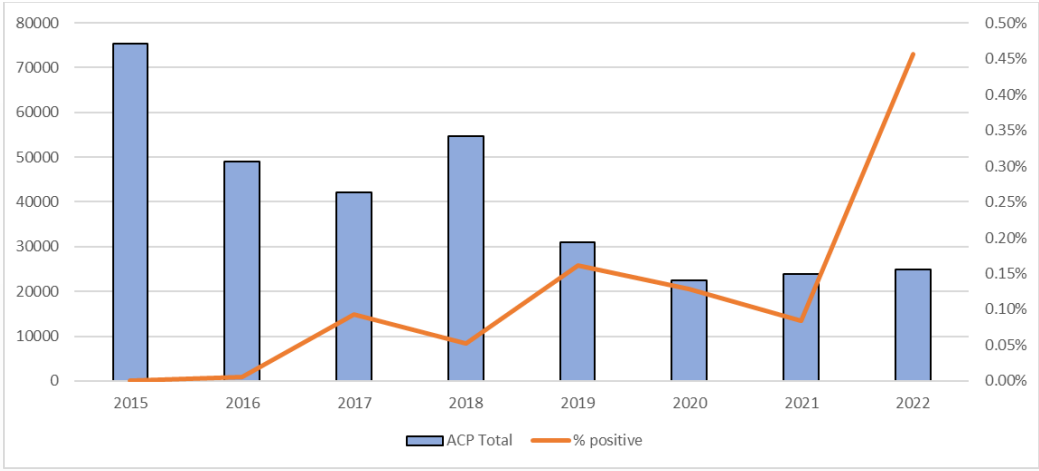


Fig 4. ACP Risk-based Survey Samples - % Positives from 2015 to 2022

Table 6. Plant Risk-based Survey Samples – Number of Positives from 2015 to 2022

Plant Risk-Based Samples			
Year	Plant Total	% positive	# of HLB+ trees
2015	17603	0.006%	1
2016	12383	0.008%	1
2017	22043	0.132%	29
2018	23683	0.089%	21
2019	26096	0.130%	34
2020	20019	0.050%	10
2021	33808	0.035%	12
2022	29901	0.274%	82

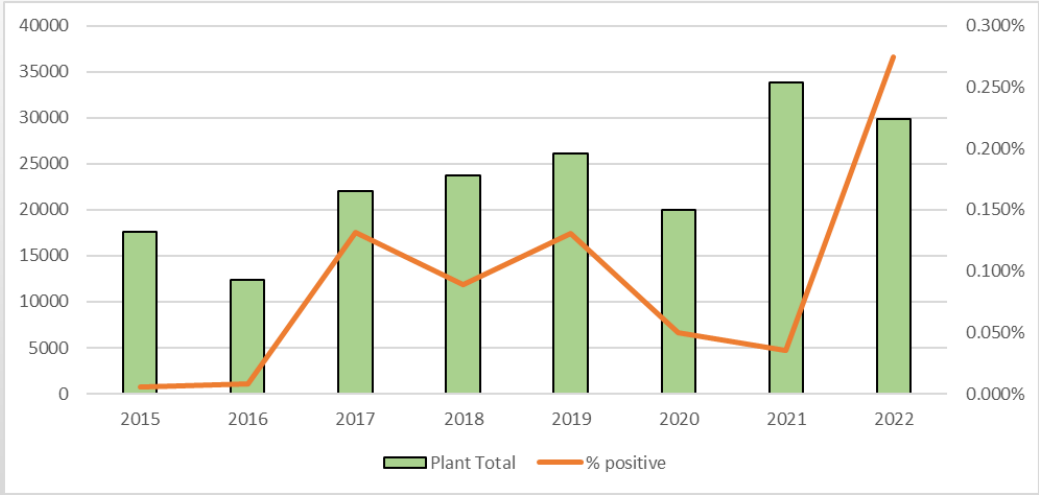
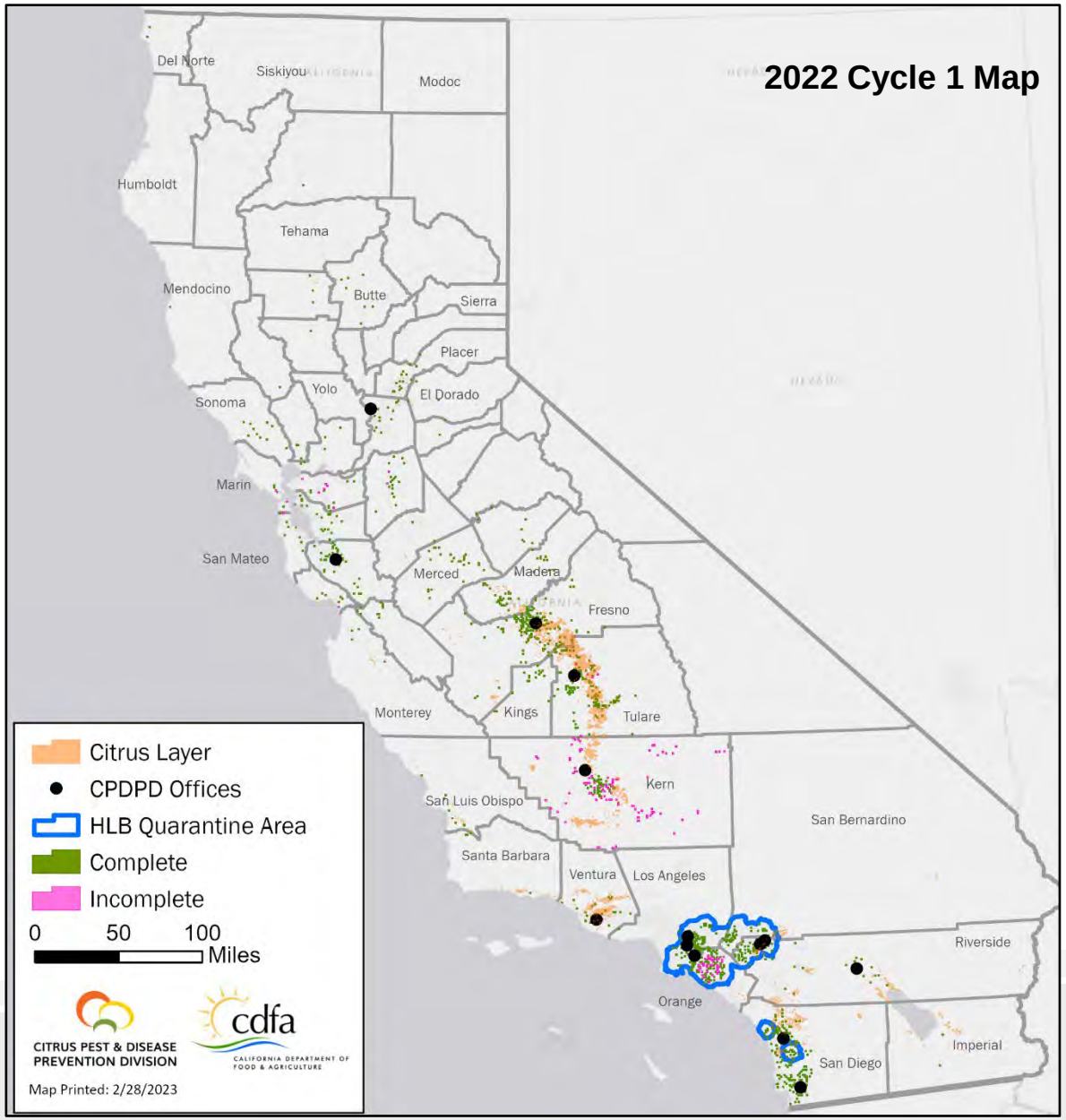


Fig 5. Plant Risk-based Survey Samples - % Positives from 2015 to 2022

Risk Research Survey Update
Joint Science and Operations Subcommittee Meeting
March 8, 2023

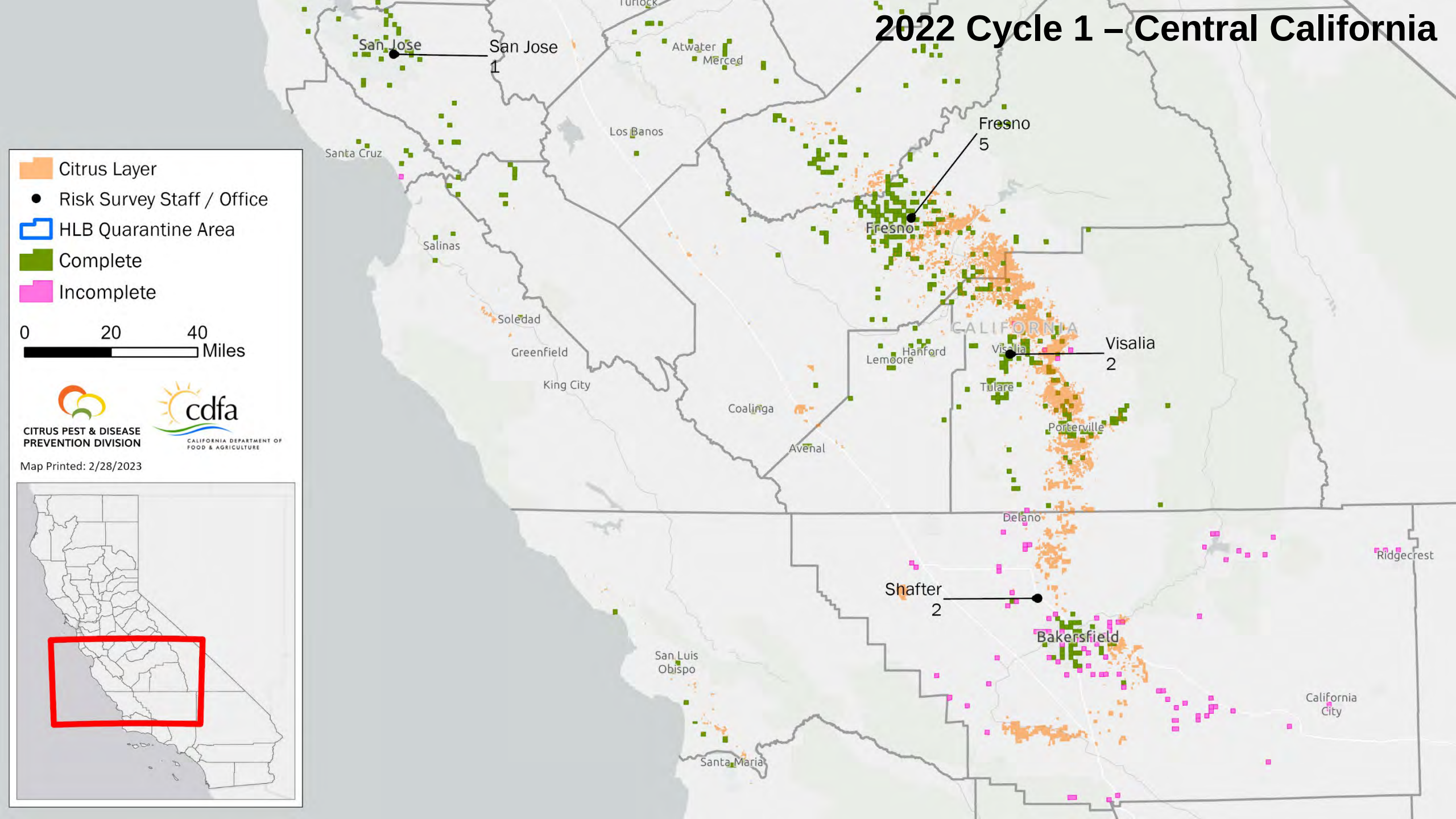
2022 Cycle 1



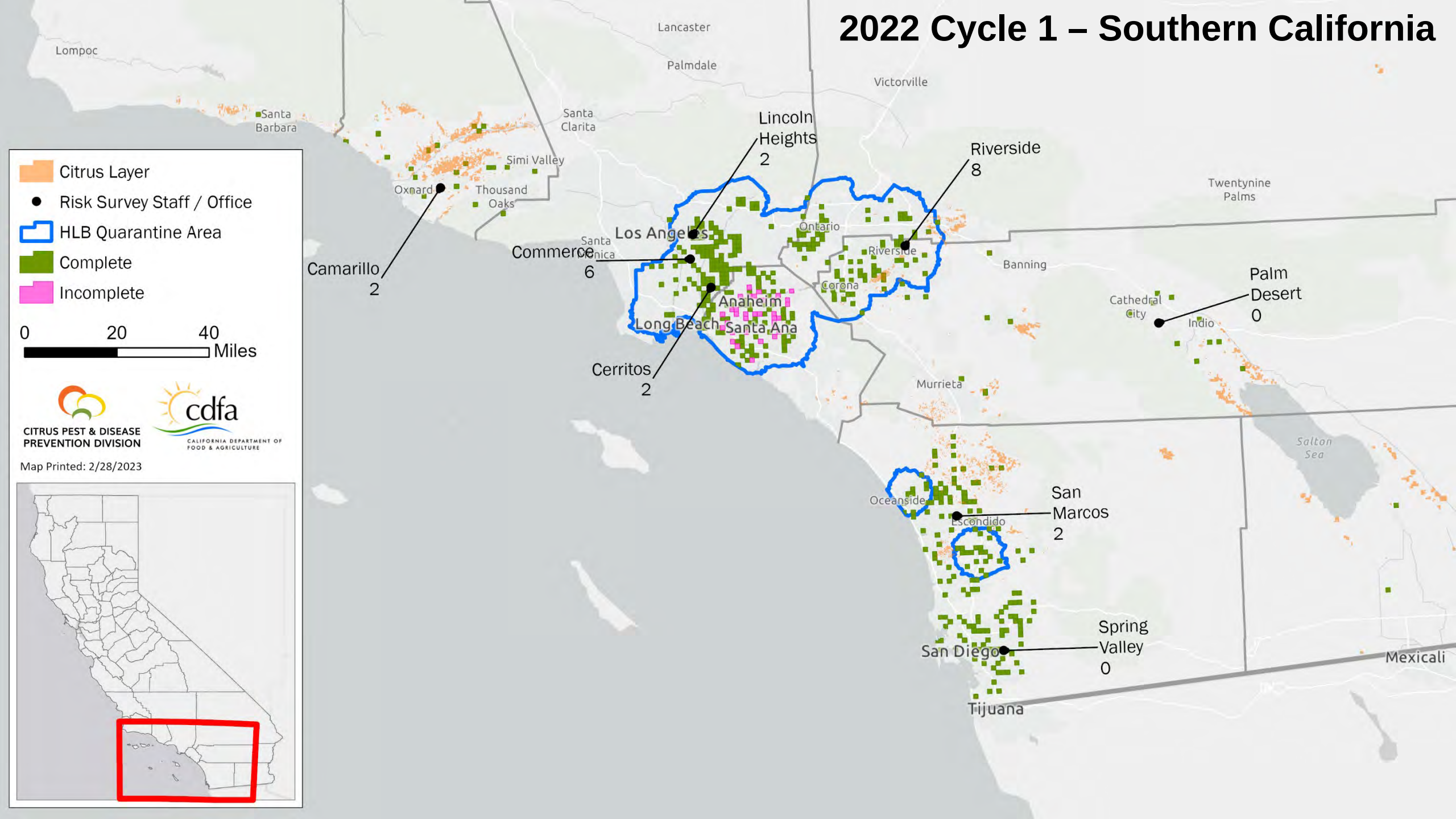
- Began June 2022
- 89% Complete
- Survey Complete in 31 of 42 Allocated Counties
- 37,920 Properties Visited
- 16,016 Properties Sampled
- 9,078 Entomology PDRs
- 9,698 Plant PDRs

2022 Cycle 1 – Northern California

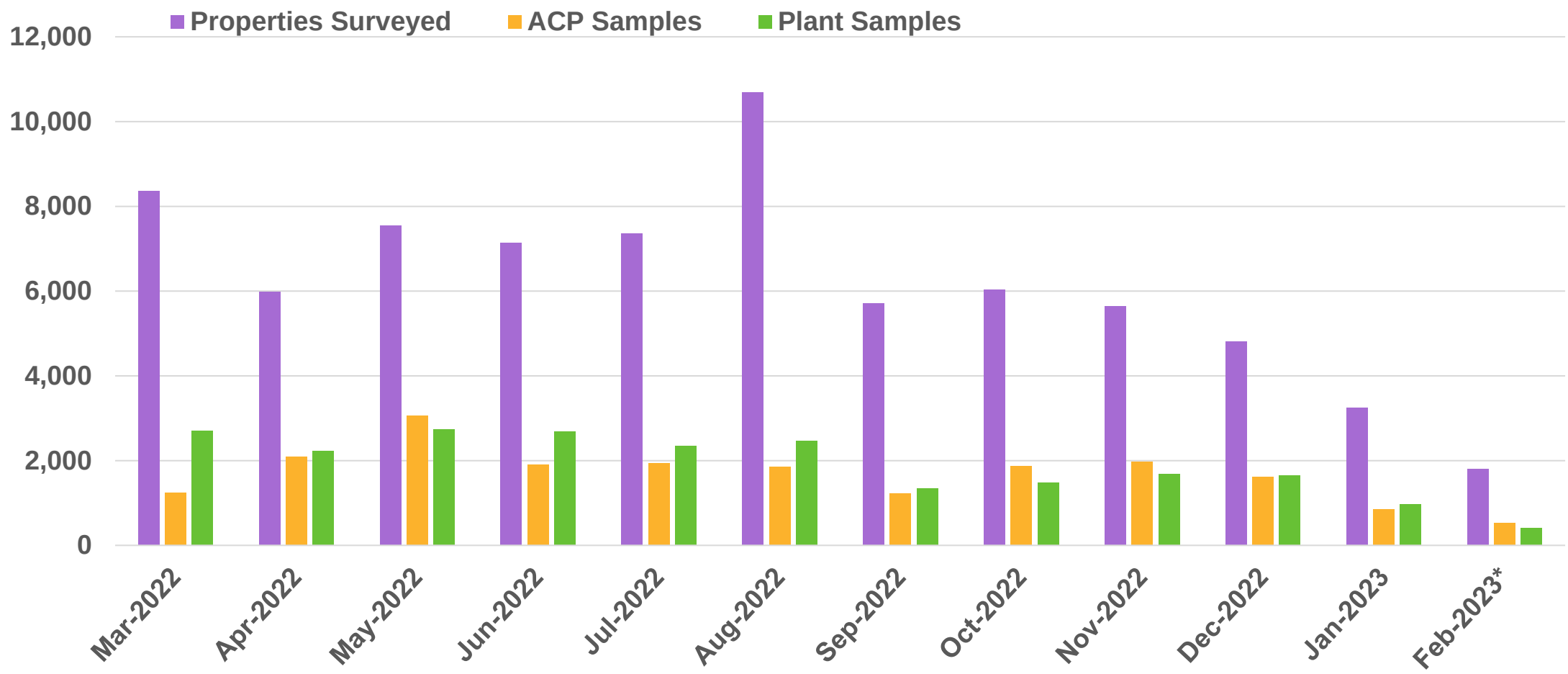
2022 Cycle 1 – Central California



2022 Cycle 1 – Southern California

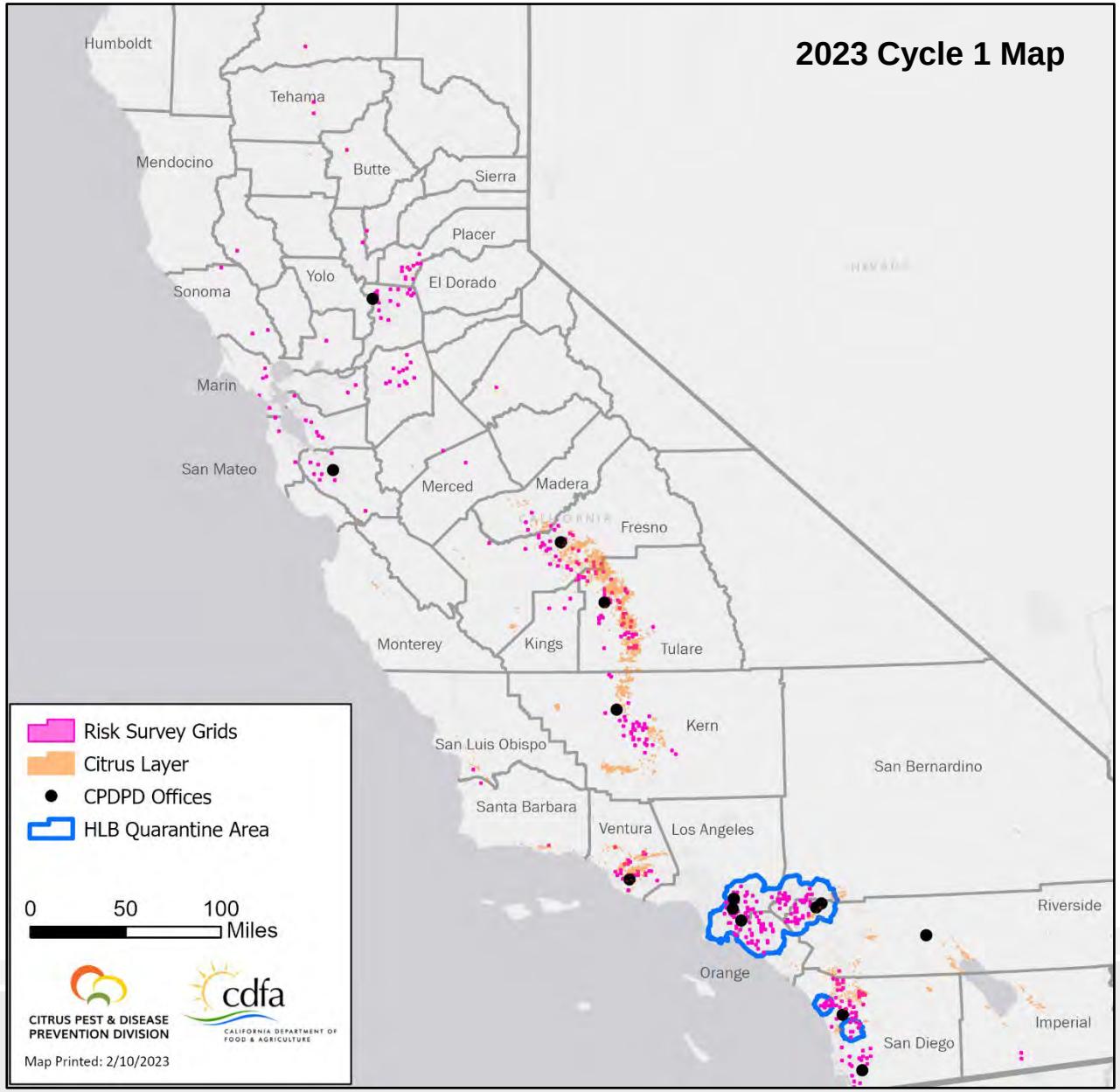


Statewide Trends (2021 Cycle 2, and 2022 Cycle 1)



*February data is being finalized

2023 Cycle 1



- In Process
- February – May 2023
- 34 Counties
- 436 Survey Grids

County Monthly Activity Report
October - December 2022

County	FY 2022-23 Budget	Percent Expended	CAs Issued	Grower Inspections	Transporter Inspections	Packer/Processor Inspections	Fruit Seller Inspections	Regulatory Incidents	NOVs	NOPAs
Fresno	$84,424.26	81%	33	0	272	1	0	0	20	3
Imperial	$55,892.01	34%	2	16	20	5	0	1	1	0
Kern	$70,000.00	0%	45	1	180	12	0	0	1	0
Kings (*1)	$20,035.30	0%	0	0	0	13	0	0	0	0
Los Angeles	$263,358.11	16%	0	6	0	35	78	0	0	0
Monterey (*3)	$14,227.50	0%	0	0	0	0	0	0	0	0
Orange	$87,987.88	7%	0	15	0	0	0	0	0	0
Riverside	$680,306.63	38%	4	69	442	1	4	3	4	0
San Bernardino	$29,334.95	0%	0	3	0	0	0	0	0	0
San Diego (*3)	$561,592.75	0%	0	0	0	0	0	0	0	0
San Luis Obispo	$8,035.44	23%	1	0	0	0	0	0	0	0
Santa Barbara	$15,147.08	14%	0	0	0	0	1	0	0	0
Tulare	$340,031.38	28%	93	0	510	7	0	5	20	6
Ventura (*3)	$200,951.41	0%	0	0	0	0	0	0	0	0
Total	**$2,431,324.70**	**20%**	**178**	**110**	**1,424**	**74**	**83**	**7**	**46**	**9**

(*#) = number of invoices missing from reporting period

HLB Treatment Updates

Southern District

March 8, 2023

Treatment Updates

- Delimitation treatments were conducted in the following areas:
  - Irvine, Corona, Jurupa Valley, Riverside, Ontario, Fontana, Pomona, Pico Rivera, Rosemead, Norwalk, Duarte, Santa Ana, Orange, Costa Mesa, and Anaheim.

- Multiple Public meetings held in January and February:
  - To treat delimitation areas in Riverside and San Bernardino Counties: Jan 4, Feb 7, and Feb 28, 2023.
  - To conduct treatments around the commercial citrus groves: Jan 5 for Imperial County and Jan 10 for Riverside County.
  - To treat delimitation areas in Los Angeles and Orange Counties: Jan 26, and Feb 22, 2023.
  - To treat delimitation area in San Diego County: Feb 21, 2023.
  - To conduct treatments along the 2-mile border buffer in San Diego: Jan 31, 2023.

HLB Delimitation Treatments I

Areas	Total Properties	Properties Treated	No Host Properties	Refusals/ No Contact	Completion
Corona (19-22)	517	194	275	18/29	91%
Riverside (9)	194	107	70	7/9	91%
Chino (2)	227	92	118	11/6	93%
Jurupa Valley (6)	80	43	28	3/6	89%
Bell Flower (1)	12	0	12	0/0	100%
Fontana (8-9)	47	32	9	2/4	100%
Rosemead (1,5,6,10)	254	128	106	7/8	98%
Duarte (24-26)	207	138	60	7/2	100%

HLB Delimitation Treatments II

Areas	Total Properties	Properties Treated	No Host Properties	Refusals/ No Contact	Completion
Pico Rivera (51-55)	994	441	496	24/11	98%
Pico Rivera (13,17,24,29)	417	178	213	17/8	100%
Pomona (4-5)	161	94	53	8/6	100%
Irvine (4-6)	552	329	189	17/17	94%
Orange (65-70)	96	56	37	4/0	97%
Costa Mesa (1-3)	840	171	632	17/20	100%
Anaheim (99,100,102)	156	103	45	3/5	95%
Santa Ana (94-101)	576	125	416	12/19	96%

Treatments around commercial citrus groves

- Treatments along the 2-mile border buffer at the US/MEX border are ongoing in both San Diego and Imperial Counties.
- Treatments around the commercial citrus groves are ongoing in Coachella and UCR.

Areas	Total Properties	Properties Treated	No Host Properties	Refusals/ No Contact	Status
San Bernardino (9-11)	229	74	106	40/8	Completed
Hemet	1,881	628	529	573/68	Completed
Imperial (3-4)	325	93	218	11/3	Completed
Imperial Border	2,579	783	1,534	186/84	Will be completed by end March

Southern District Staffing Updates

County	Permanent	Seasonal	Pending Hiring	Hiring Status
Los Angeles	30	6	One PPA I, seven seasonal	Pending advertisement
Orange	14	2	Three PPA I and eight seasonal	Advertisement for two PPA I closed. One PPA 1 and seasonal pending advertisement
Riverside and San Bernardino	18	10	Five PPA I (LT), One PPA III and Eight Ag Tech I/II	2 PPA 1 LT to begin 3/2/23 1 PPA III to begin 4/3/23 Seasonals advertised
San Diego and Imperial	17	1	One ES, three PPA I (LT)	Waiting for more PPAI applications. Reviewing ES applications.

Staff Distribution By Projects

Counties	Multi-Pest Surveys	ACP/HLB Treatments and Tree Removals	ACP/HLB Regulatory
Los Angeles and Orange	31	18	3
Riverside and San Bernardino	17	9	4
San Diego and Imperial	6	10	2

Central District Update

Operations Subcommittee Meeting

March 8, 2023

Central District

- **County ACP Detections**
- ACP detections from December 7, 2022 – March 3, 2023

County	# Detections*	Treatment	Public Meeting
Kern	4	Yes	Yes
Madera	1	Yes	Yes
Monterey	25	Yes	Yes
San Luis Obispo	1	Yes	No
Tulare	2	Yes	No

*Detections = PDR's, not individual ACP counts

Central District Update

- **Biocontrol releases**

County	December	January	February	Total
Kern	24,500	6,000	8,000	38,500
Madera	1,200	1,200	--	2,400
Monterey	--	1,800	--	1,800
San Luis Obispo	6,400	2,400	3,200	12,000
Santa Barbara	12,000	5,400	7,900	25,300
Tulare	2,400	1,800	--	4,200
Grand Total	**46,500**	**18,600**	**19,100**	**84,200**

Central District Update - Projects

Office	Survey	Trapping	Treatment
Fresno	4	6	1
Visalia	2	4	2
Shafter	2	3	4
Camarillo	2	1	6

Central District Update - Staffing

County	Total Perm Staff (current)	Pending Hiring (vacancies)	Hiring Status
Fresno County (Fresno)	10	1 SESS 1 ES 1 PPA I	PPA I set to start 4/3; ES and SESS just advertised
Kern County (Shafter)	7	2 PPA I	In process
Tulare County (Visalia)	8	1 PPA I	In process
Tulare County (Visalia Regulatory)	1	--	--
Ventura County (Camarillo)	8	2 ES 1 PPA III 1 PPA I	In process

Northern District Update
Operations Subcommittee Meeting
March 8, 2023

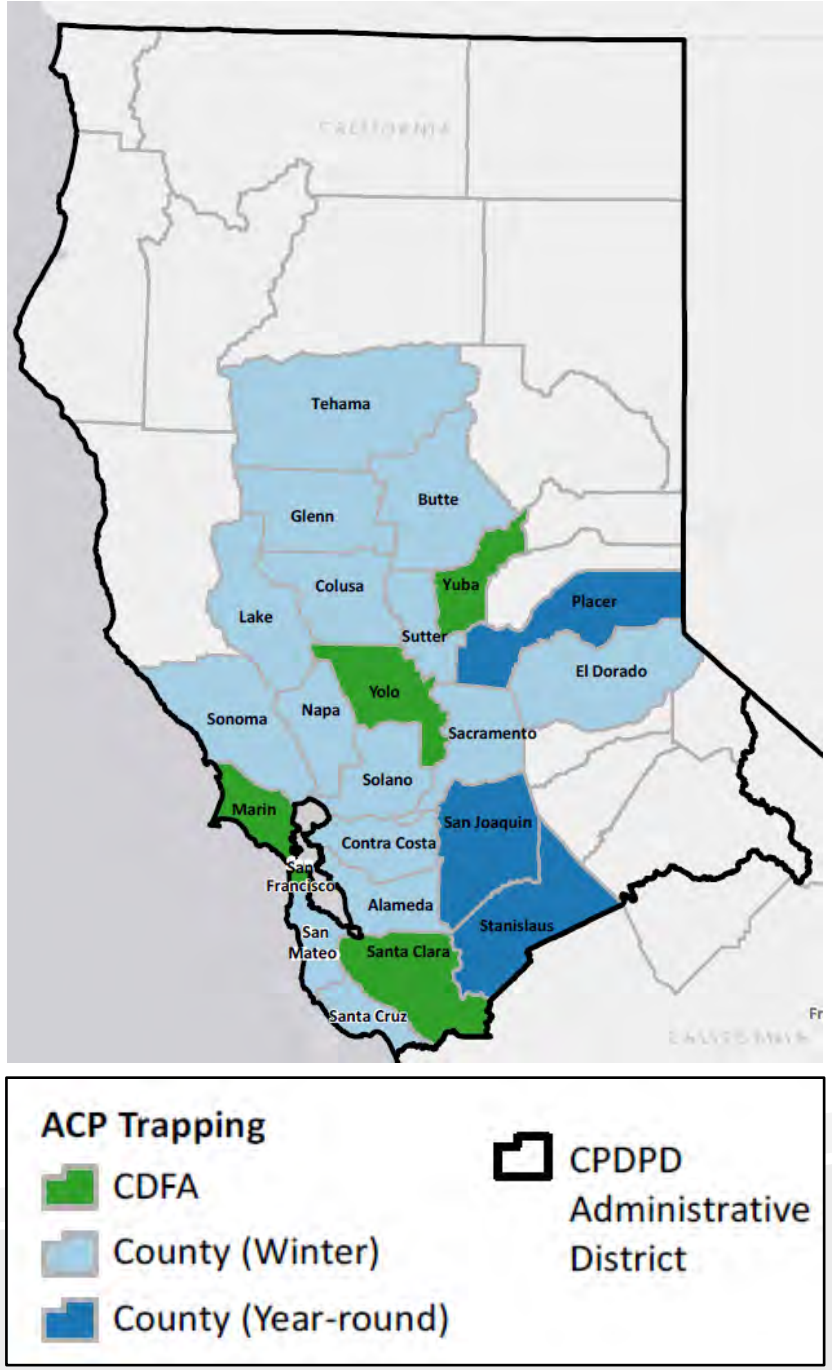
Northern District Update | ACP Trapping

General Detection

Entity	Type	Number of Counties	Number of Traps
County	Commercial	3	137
County	Residential (YR)	3	1426
County	Residential (W)	15	5440
State (CDFA)	Residential (W)	5	1252

Delimitation & Treatment

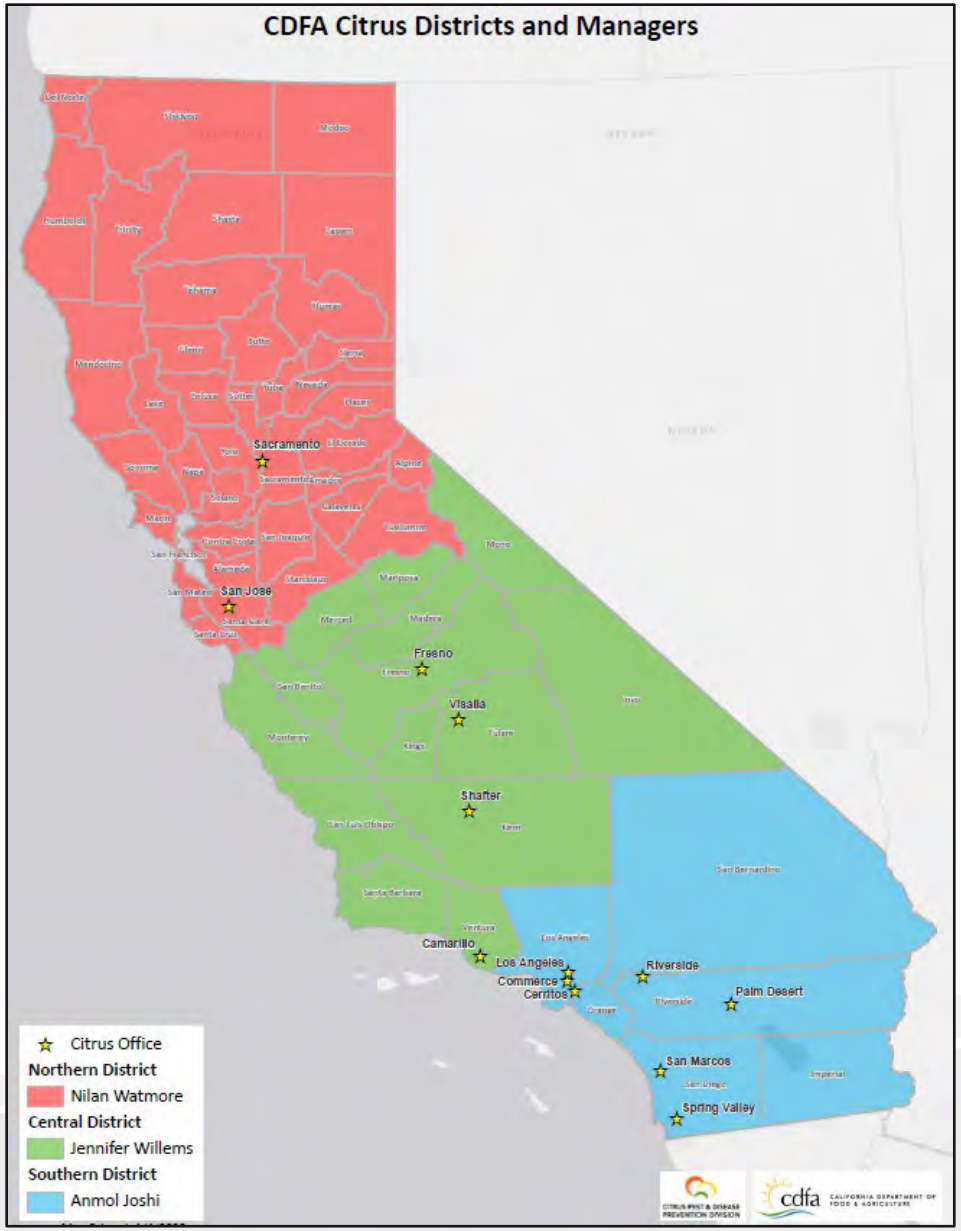
- Santa Clara County – 608 detection traps set in winter
  - On-going delimitation in Los Arboles
  - Public meeting on December 8, 2022
  - Treatment by CDFA staff on December 13, 2022
  - 68 properties in treatment area
  - 36 total properties treated
  - 7 no host, 13 no access, 3 no contact, 9 refusals



Northern District Update | HLB Risk-Based Survey

2022 Cycle 1 Counties	
Alameda	Sacramento
Amador	San Francisco
Butte	San Joaquin
Colusa	San Mateo
Contra Costa	Santa Clara
El Dorado	Santa Cruz
Glenn	Shasta
Lake	Solano
Marin	Sonoma
Mendocino	Stanislaus
Napa	Del Norte
Placer	Tehama

Summary	
Percent Complete	92



Northern District Update | Staffing

Classification	Total Perm Staff (current)	Pending Hiring (vacancies)	Hiring Status
Senior Environmental Scientist (Supervisory)	4	1	Anticipated start date – April 2023
Senior Environmental Scientist (Specialist)	1	0	
Environmental Scientist	8	0	
Research Data Specialist I	1	0	
APC Specialist	1	0	
Pest Prevention Assistant III	1	0	
Pest Prevention Assistant II	5	2	Anticipated start date – April 2023
Pest Prevention Assistant I	6	1	Advertised in December 2022

Grower Liaison Update

CPDPC Operations Meeting

March 8, 2023

Teri Blaser

- **Fresno, Madera, Northern Tulare Counties**
  - Monthly updates are sent to growers for all three counties.
  - Assisted at the California Citrus Mutual Citrus Showcase CCPDPP booth in Visalia on March 9.
  - Contacted team leaders for the Pest Management Areas in Northern Tulare County and recruiting in the Fresno and Madera Counties.
  - Updates were given at the Central California Tristeza Eradication Agency Board of Commissioners meetings in December and in February.
  - Attended the San Joaquin Valley ACP/HLB Task Force meetings in December and February.

Jessica Leslie

- **Southern Tulare County**
  - No new ACP detections in Southern Tulare County in 2023.
  - Attended and presented at the Master Gardner's meeting in January as well as the Nutrien Grower and PCA meeting in February.
  - Participated on ICS calls for Tulare County ACP and CYVCV.
  - Spoke with new growers and added them to the monthly e-mail update list.

Judy Zaninovich

- **Kern County**
  - Contacted growers/PCA's in 800 meters areas with ACP detections in commercial citrus.
  - Incident calls with CDFA, USDA, and CAC.
  - ACP updates provided to Tulare and Kern GWSS meetings.
  - Weekly or bimonthly email updates to industry.
  - Grower/PCA/industry calls.
  - SJV Organic Citrus ACP/HLB Advisory meetings – provided updates.
  - SJV ACP/HLB Task Force meetings – provided updates.
  - SJV ACP/HLB Areawide Committee meeting – provided update.
  - CA-CRaFT TAC meeting – input provided.
  - Tristeza Agency Board meetings – provided updates.
  - Bayer Citrus Grower/PCA meeting – presentation given.
  - Nutrien Grower/PCA meeting.

Cressida Silvers

- **All Counties**
  - Monthly email updates and AW treatment reminders where applicable.
  - CA-CRaFT TAC meeting.
  - Respond to industry member emails and phone calls.
  - CPDPP Committee and Subcommittee meetings, GL meeting.
- **Santa Barbara County**
  - Updating grower file with 2023 permit list from the CAC.
  - Winter AWM treatment window January.
  - Reconciling PURs from the CAC.
- **San Luis Obispo County**
  - No new detections since December report.
- **Ventura County (with Sandra Zwaal)**
  - Task Force meeting.
  - PCA/PCO Treatment Protocol Subcommittee meeting.
  - Associates Insectary annual meeting.
  - Collaborated with Task Force, PCAs, PCOs to update AWM schedule.
  - Presented at ACP/HLB annual grower meeting.
  - Presented at Ventura Pacific PH annual meeting.

Sandra Zwaal

- **General GL Activities**
  - Distributed monthly GL newsletters to the citrus affiliates in Ventura, San Diego, Riverside, and San Bernardino Counties.
  - Meetings Attended – UCR Citrus Day, CPDPD public meeting, and the CPDPP Science, Operations, and Outreach meetings.
  - Identify growers that have treated by reviewing PURs. Update the grove and grower contact list.
  - Ground truth groves, as needed.

- **Ventura County**
  - Participated in the VC Task Force, the PCA Task Force subcommittee, and the ACP/HLB packinghouse meetings.
  - Presented at the Ventura Grower meeting and the Saticoy Lemon's annual packinghouse meeting.
  - Attended a PCO annual meeting
  - Assisted with finalizing next year's AWM schedule.

Sandra Zwaal

- **San Diego County**
  - Over 45 commercial/25+ groves in the new Rancho Bernardino HLB quarantine. No commercial properties in the 250-m delimitation or 1-mile area.
  - Coordinated a meeting with the main PCO, CDFA, and the CAC. Individually contact growers in the HLB quarantine.
  - Presented GL updates at the San Diego PCD meeting.

- **Riverside County**
  - HLB hotspots in Corona and Jurupa Valley. No commercial properties in the delimitation areas. Review new HLB finds and maps.
  - Presented GL updates at the Hemet and Coachella PCD meetings, and the Riverside Farm Bureau meeting.
  - Participated in the CA CRaFT TAC meeting.

- **San Bernardino County**
  - HLB hotspots in Ontario and Fontana. No commercial properties in the delimitation areas. Review new HLB finds and maps.
  - Participated in the Task Force meeting.
  - Presented GL updates at the Farm Bureau meeting.

Curtis Pate

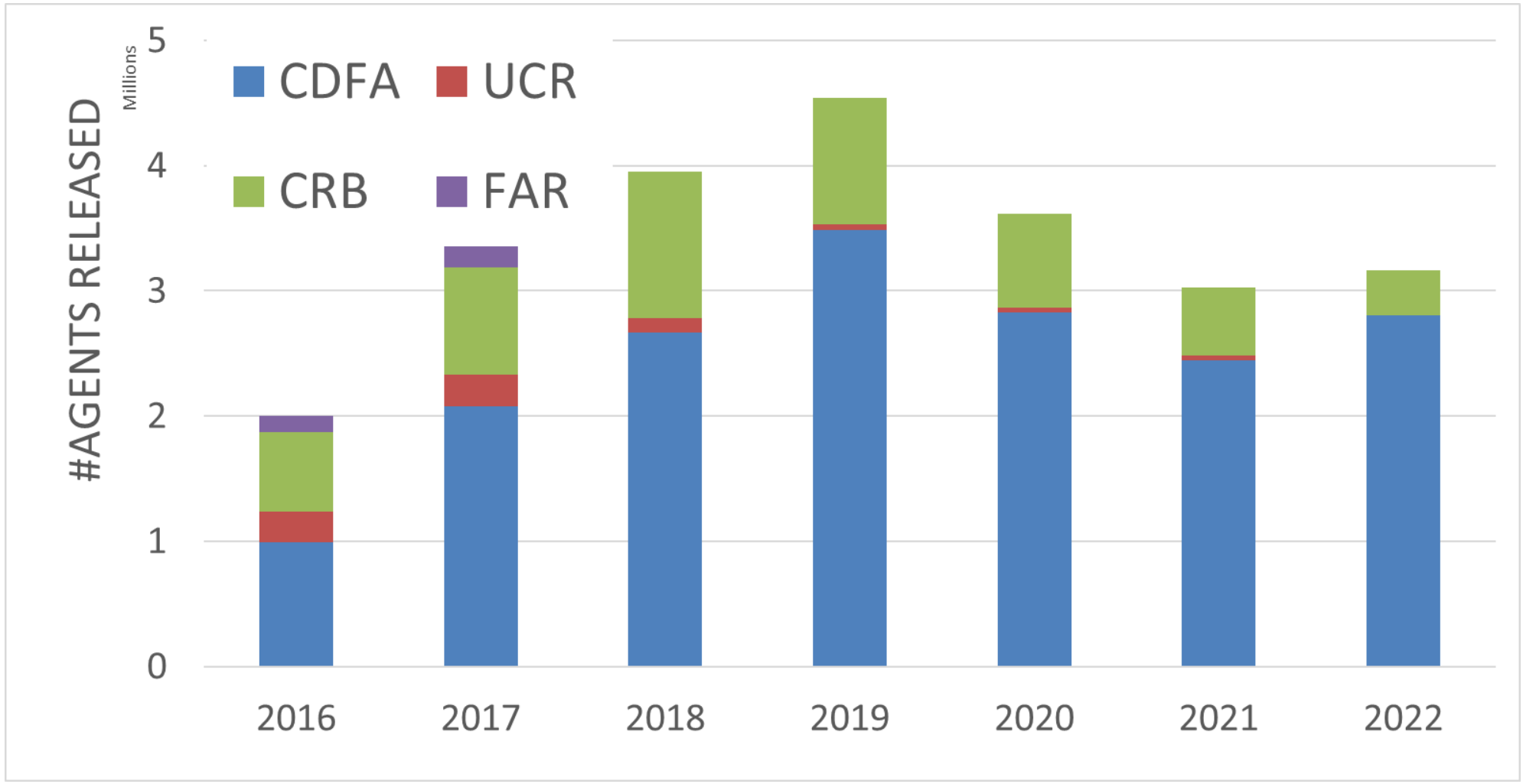
- **Imperial County**
  - Winter AWT concluded with typical high compliance percentages with weather complicating some zones achieving 100%.
  - ACP detections continue but at low levels. Growers have re-treated where needed.
  - Cooler than normal conditions have resulted in bloom/set cycle 2-3 weeks later than normal.

Asian Citrus Psyllid Biocontrol Update

2022 Report

CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Tamarixia Releases in California



CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Biological Control Agent Releases - 2022

County	Releases, 2022	Releases 2011-2022	
	T. radiata Released	Tamarixia Released	*D. aligarhensis* Released
Imperial	68,200	587,743	10,295
Los Angeles	805,394	7,387,309	107,734
Orange	754,700	5,719,176	71,179
Riverside	321,300	3,857,102	127,739
San Bernardino	246,580	2,050,255	57,252
San Diego	278,076	3,002,364	86,403
Ventura	212,050	2,242,106	16,830
Santa Barbara	121,000	351,482	12,012
Kern	132,500	356,664	0
Santa Clara	90,900	226,037	0
Placer	0	3,400	0
San Luis Obispo	20,800	130,300	0
Tulare	25,600	61,600	0
Fresno	17,400	17,400	0
Monterey	0	14,400	0
Madera	4,400	4,400	0
Arizona	61,400	221,500	0
Mexico	0	306,000	0
TOTAL	3,160,300	26,539,238	489,444
	TOTAL (2011-2021):		27,028,682

CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

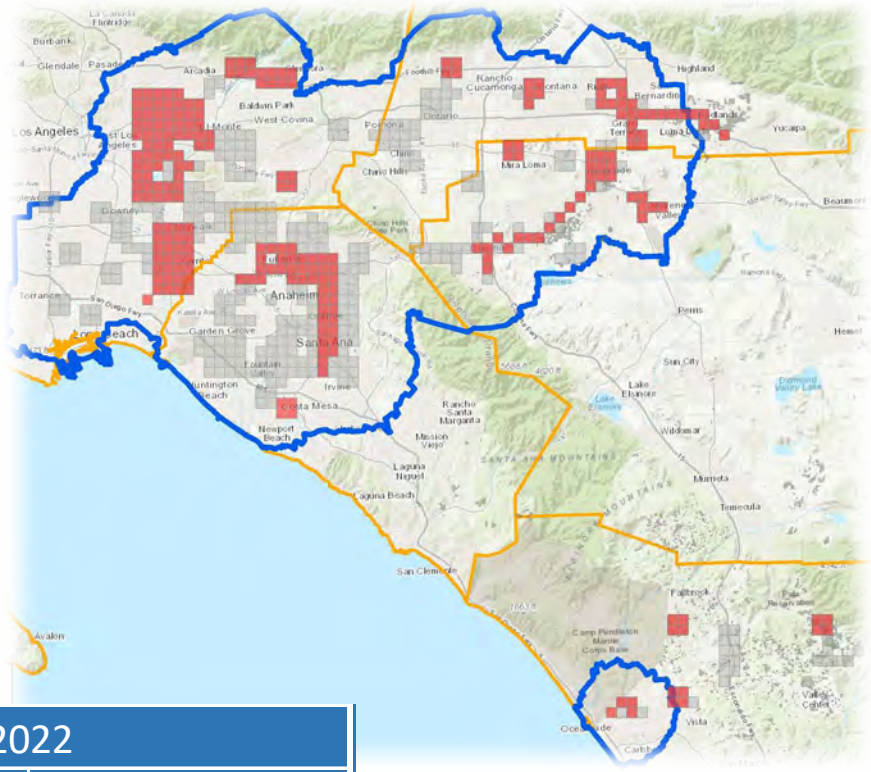
Biological Control Agent Release Areas

Releases in:

- HLB Quarantine areas
- Borders
- Trade routes
- Area-wide management
- Newly established ACP

Changes 2022:

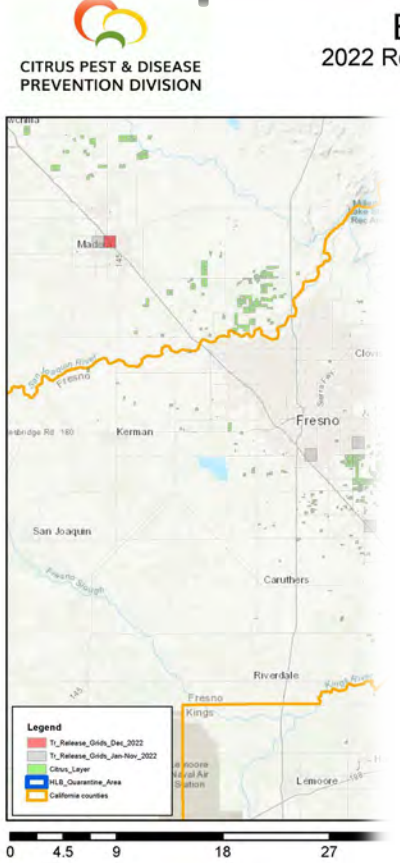
- Fewer releases, larger numbers
- Rapid response:
  - Canine Alerts
  - PDR clusters
  - New cities

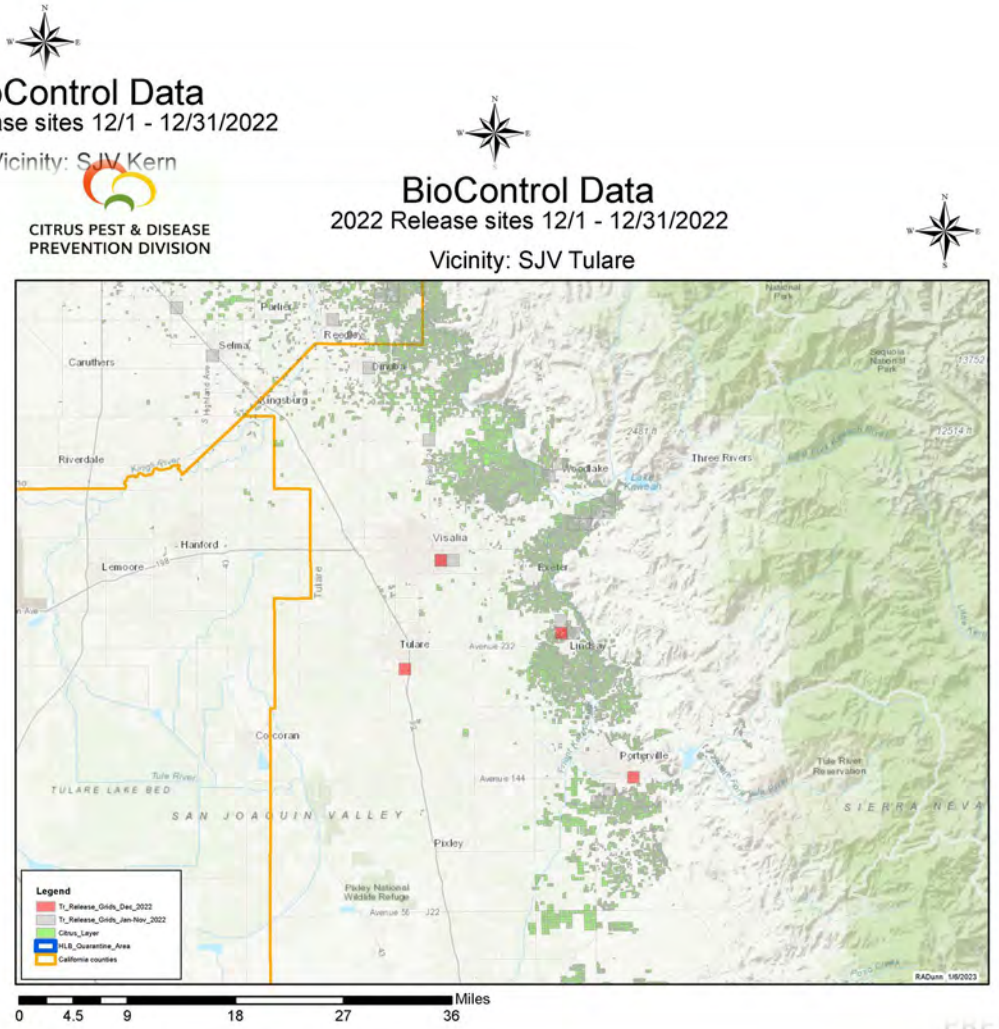


Release Type	2021		2022	
	# Agents	%	# Agents	%
Borders	92,634	3	129,600	4
HLB	2,456,592	81	2,406,050	76
New	135,355	4	291,600	9
Routes	339,244	11	333,050	11

CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Biological Control Agent Release Areas San Joaquin Valley





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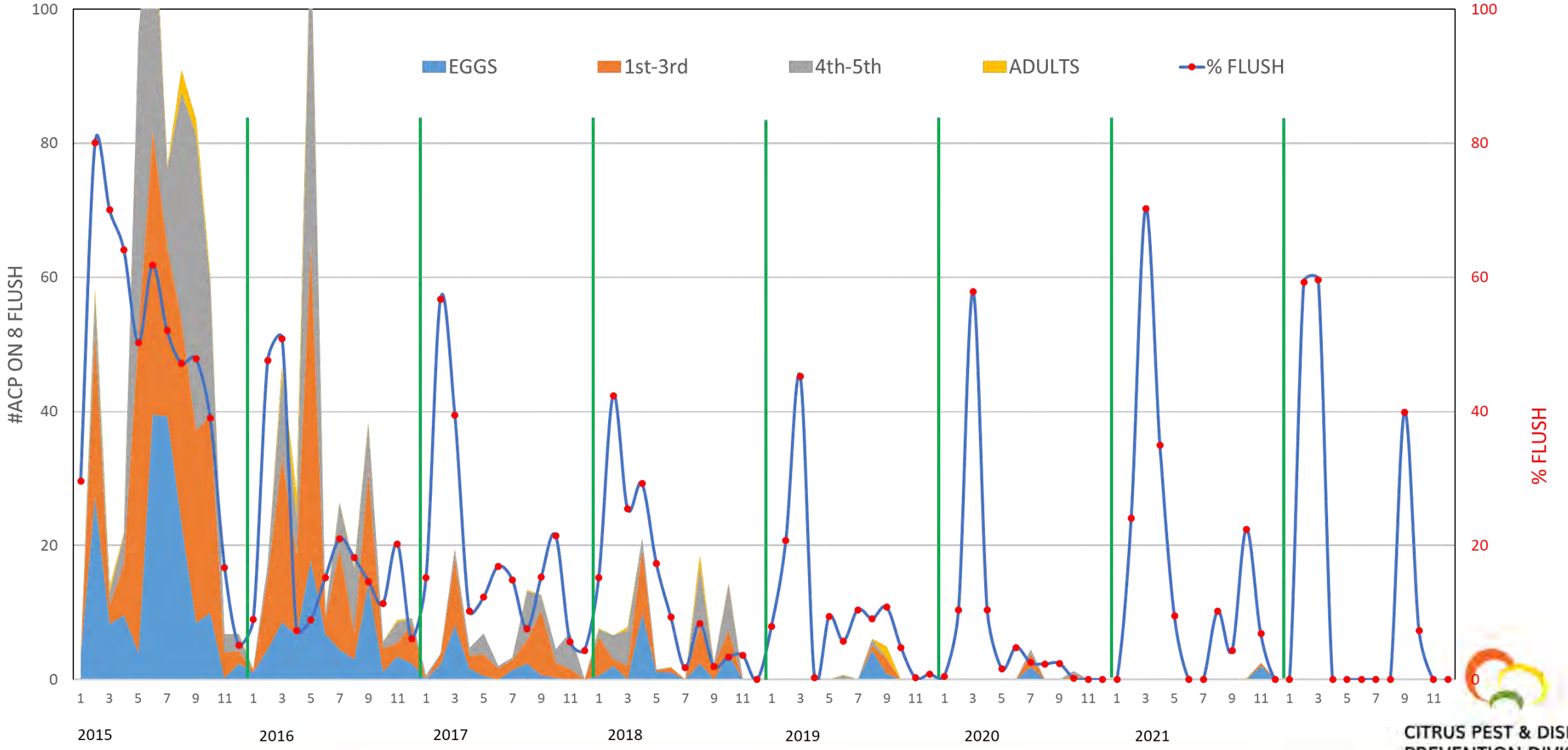
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Region-Wide Urban Monitoring 2015 - Present



CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

2022 Publications

Topics in Subtropics Newsletter
University of California Cooperative Extension
Fresno, Kern, Madera, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Tulare, & Ventura Counties
News from the Subtropical Tree Crop Farm Advisors in California
Volume 22, Summer 2022

TOPICS IN THIS ISSUE – Craig Kallsen, Editor

- Natural enemies have significantly suppressed Asian Citrus Psyllid populations in southern California
- Synergizing IPM of Argentine and biocontrol of sap sucking pests with biodegradable hydrogels, infra-red sensors, and cover crops in commercial citrus orchards
- Irrigation Stress and Early-Navel Fruit Maturity
- High Density Citrus Planting

Natural enemies have significantly suppressed Asian citrus psyllid populations in southern California

Ivan Milosavljević, Department of Entomology, University of California, Riverside, CA
Christina D. Hoddle, Department of Entomology, University of California, Riverside, CA
David J.W. Morgan, California Department of Food and Agriculture, Mt. Rubidoux Station, Riverside CA
Nicola A. Irvin, Department of Entomology, University of California, Riverside, CA
Mark S. Hoddle, Department of Entomology, University of California, Riverside, CA

FARM ADVISORS AND SPECIALISTS

Ashraf El-Kereamy – Extension Citrus Specialist, UCR
Phone: 559-592-2408
Email: ashrafe@ucr.edu

Greg Douhan – Area Citrus Advisor, Tulare, Fresno, Madera
Phone: 559-684-3312
Email: gdouhan@ucanr.edu
Website: http://celtulare.ucanr.edu

Ben Faber – Subtropical Horticulture, Ventura/Santa Barbara
Phone: (805) 645-1462
Email: bafaber@ucdavis.edu
Website: http://ceventura.ucdavis.edu

Sandipa Gautam – Citrus IPM Advisor
Phone: (559) 592-2408
Email: sangautam@...

...cesandiego.ucanr.edu

Philippe Rolshausen – Extension Specialist Subtropical Crops, UCR
Phone: (951) 827-6988
Email: philrols@ucr.edu
Website: http://ucanr.edu/sites/Rolshausen/

Eta Takele – Area Ag Economics Advisor
Phone: (951) 683-6491 ext 221 and 243
Email: ettakele@ucdavis.edu
Website: http://ceriverside.ucdavis.edu

Topics in Subtropics – Summer 2022 – Published Quarterly
UCCE Kern County, 1031 S. Mt. Vernon Avenue, Bakersfield, CA 93307
Phone 661-868-6200 • Fax 661-868-6208
http://cekern.ucanr.edu

USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

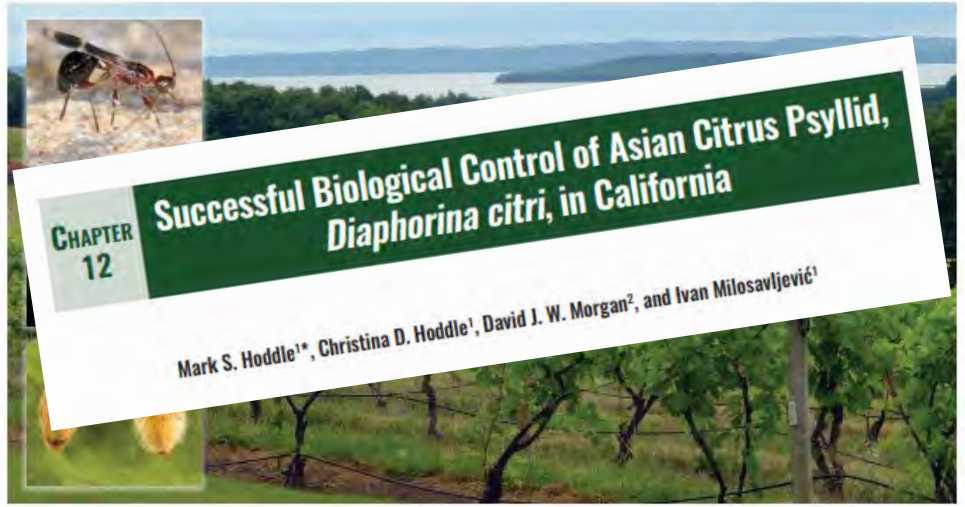
Forest Health Assessment and Applied Sciences Team | FHAAST-2019-05 | June 2022

Contributions of

CLASSICAL BIOLOGICAL CONTROL

to the U.S. Food Security, Forestry, and Biodiversity

Edited by
Roy G. Van Driesche, Rachel L. Winston, Thomas M. Perring, and Vanessa M. Lopez



Current Activities

Mount Rubidoux
- Renovations
  - VFR Vent Fans
  - Environmental Controls
  - Alarm System
  - Electrical Switching
- Isopopulation maintenance
  - Working with CRB
  - Finding sources for new lines

Cal Poly Pomona
- Lighting Project
- IPM for greenhouse pests
  - Banker plant project
  - Beneficial insect colonies

Arvin
- Seedling Production
- Deferred Maintenance
- Staffing

CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

CANINE DETECTION SERVICES

ACP DETECTOR CANINES UPDATE

CPDPC Operations Sub-Committee

March 8, 2023

WHERE MAN'S BEST FRIEND FINDS IT!

PEST CONTROL – AGRICULTURE – FOOD SAFETY

Annual Work Summary
January - December 2022

	Residential		Commercial	
	CA	AZ	CA	AZ
Trees Inspected	2,534	917	133,432	4,055
Trees with ACP	67	12	900	0
Percent of Trees Inspected w/ACP	2.6%	1.3%	.67%	-
Alerts Confirmed	67%	67%	92%	-
TA Accuracy	100%	88%	95%	100%

ACP Located in San Joaquin Valley

- None since June 2022.
- Tulare County- May 17, 2022: Nymphs on a residential tree across canal from canine alert. They were collected by Subhas Hajeri (CCTEA).
- Fresno County- June 6, 2022: Live nymphs on nursery trees after pesticide application by owner. Owner treated the trees again and trees are re-scouted regularly in planted location.

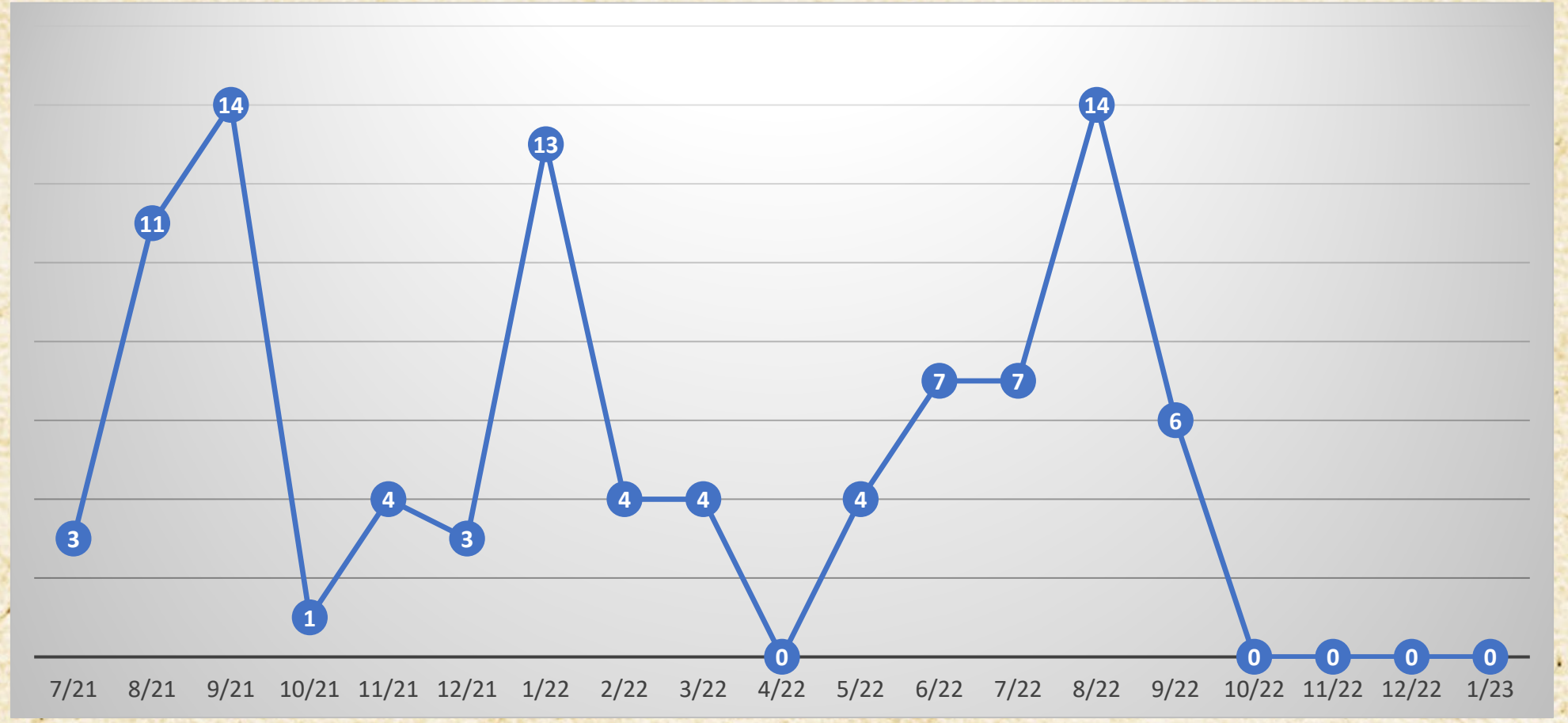
California Detections By Region
January - December 2022

	Coast		Desert		San Joaquin Valley		
	Santa Barbara	Ventura	Coachella Valley	Imperial	Fresno	Tulare	Kern
Trees Inspected	2,797	2,776	37,308	41,624	29,397	10,863	10,701
Trees with ACP	113	133	310	396	1	1	0
Percent of Trees Inspected w/ACP	4.0%	4.8%	.8%	.9%	.003%	.009%	-
Alerts Confirmed	98%	99%	94%	91%	11%	4%	-
TA Accuracy	100%	100%	96%	92%	97%	94%	100%

CDFA ACP Detection Canine Working Group
Feb. 16, 2023

- Purpose of this group was to assess the possibility of CPDPP utilizing the ACP dogs and to make recommendations to the operations sub-committee.
- Discussed CDFA's use of the dogs since July 2021 and the challenges CDFA faces.

Days per Month CDFA Utilized Canine Team 7/2021 -1/2023



CDFA ACP Detection Canine Working Group Action Items

1. Jennifer- Book a CDFA management meeting to discuss where in the program they believe they can use the dogs. This has been scheduled.
   - Victoria commented that CDFA staff cannot decide if the program will utilize the dogs, where in the program they will be used, or how it is funded. That is done through the processes of CPDPC.
2. Lisa- Develop a Food Safety Risk Assessment with the goal of submitting it to Primus for pre-approval.

Data Department Update

Rick Dunn

CRB Director of Data and Information Management

3/8/2003

Data Management Department Activity,

March 8, 2023
Richard Dunn - Data, Information & Management Director

UCKAC GIS Facility

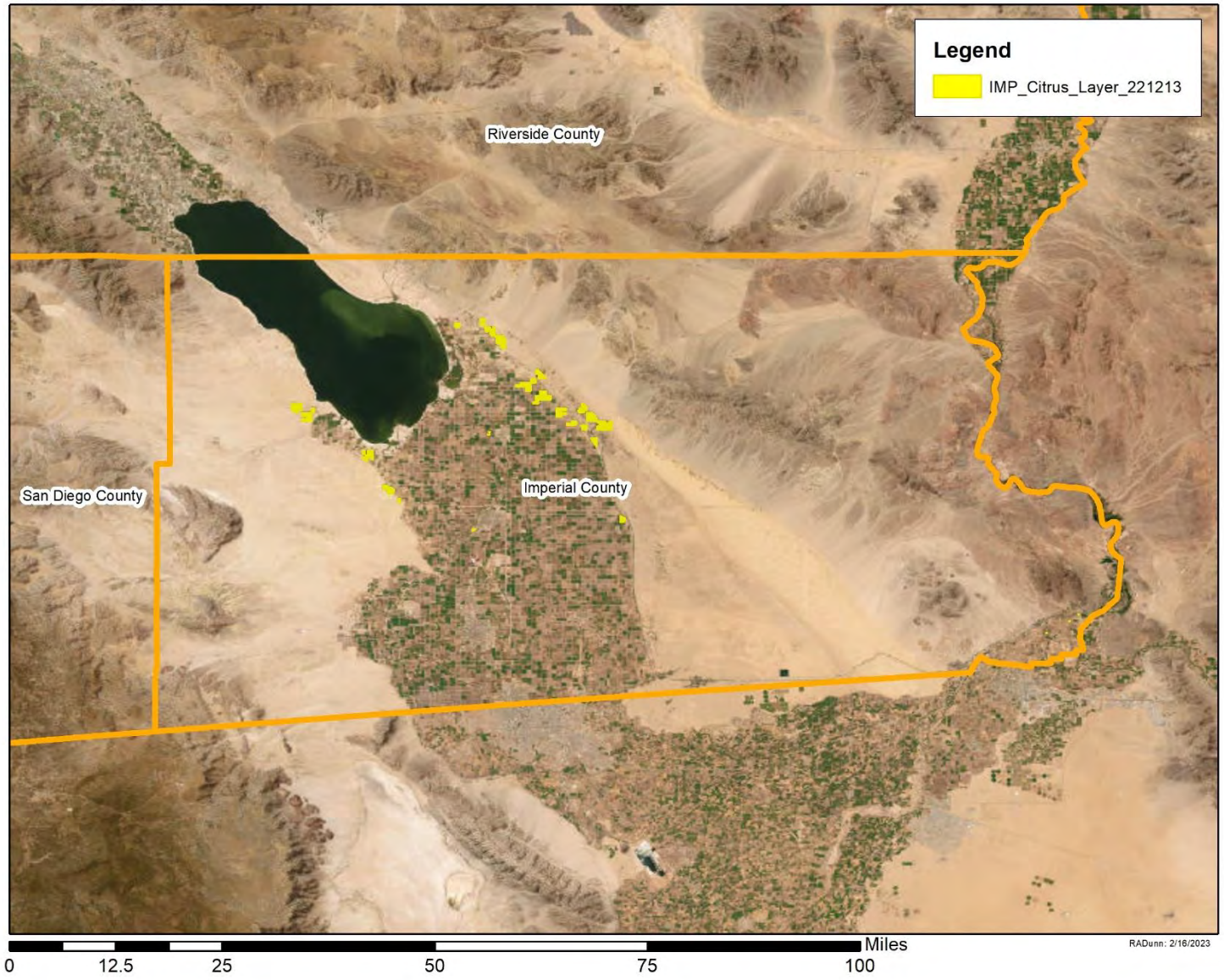
- Robert Johnson continues to assist with Statewide Citrus Layer maintenance and keeping the UCANR interactive web map updated with ACP, Biocontrol, CLas+ACP, and HLB detection data. http://ucanr.edu/acpmap

CRB Data Department

- Director is supporting Psyllid Management Area group activities and regional ACP / HLB Task Force groups in various counties with mapping support services. Revising the Statewide Commercial Citrus Layer as information is received. Imperial county has been completed. San Diego County is in progress. Director is collaborating with CDFA PDAS and CPDPD GIS staff on development of a NOMAD replacement system. Initial beta testing of the new iPhone app will begin shortly. Department staff being trained on the new system as it evolves. Director is proposing modification of the Area Wide buffer trapping schedule.
- GIS Analyst Nancy Ying is conducting routine data scrubbing, quality control, and map production tasks.
- Search for new DATOC Program Manager continues. Former DATOC Analyst Dr. Sandra Olkowski is helping out in the interim.
- Staff continue to support the CPDPP commercial grove trapping / sampling program. Supplying trappers with individualized GIS Trapsite and Samplesite layers updated weekly for use on their NOMADs. We produce and distribute ACP / HLB detection overview maps, PDR 800M maps, Biocontrol Workgroup activity maps, CPDPP Trapping progress maps, CPDPP Sampling progress maps, Trapping catch per day maps, Sampling close-up maps, and ArcGIS Online detection / collection heat maps, as well as monthly summary data, ACP situation data, and statistical reports.

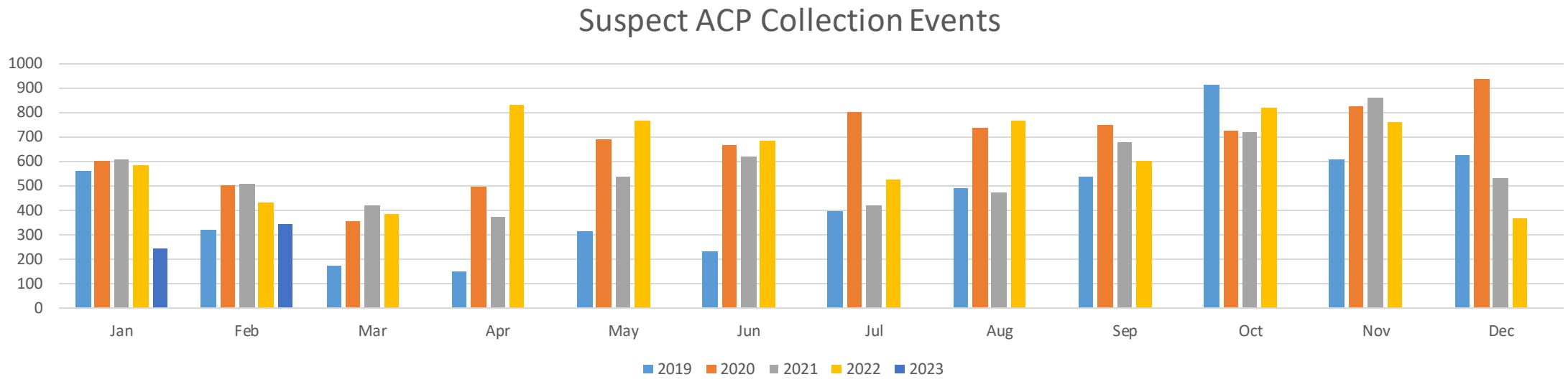
CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

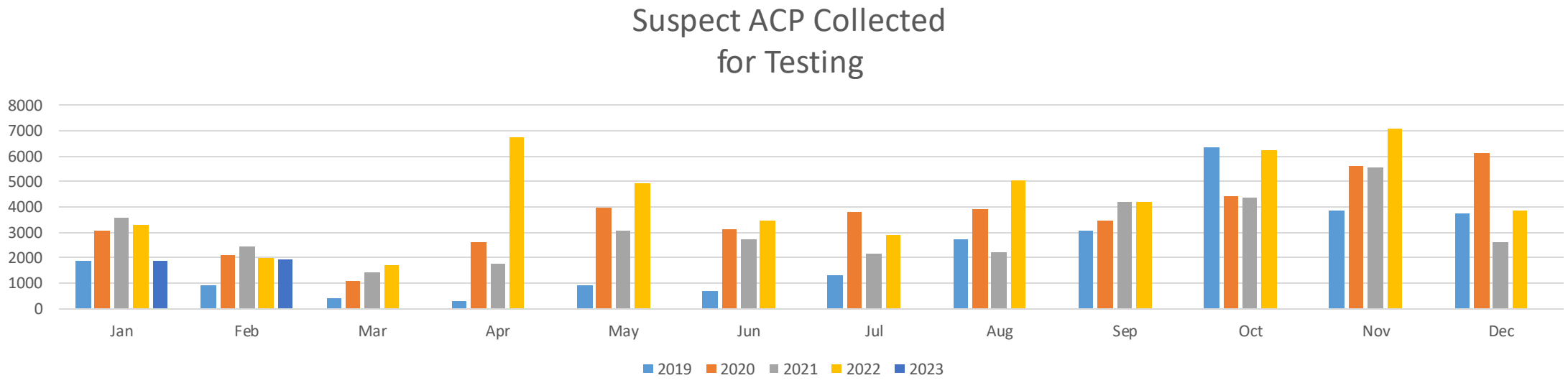
Imperial County Citrus Layer



- 378 blocks mapped
- 7,222 acres total (based on GIS)
- 12 Pesticide Use Permits

CPDPD Commercial Grove Sampling Program
November 2022 update





Proposed Modification of CASS Area-Wide Buffer Trapping Program

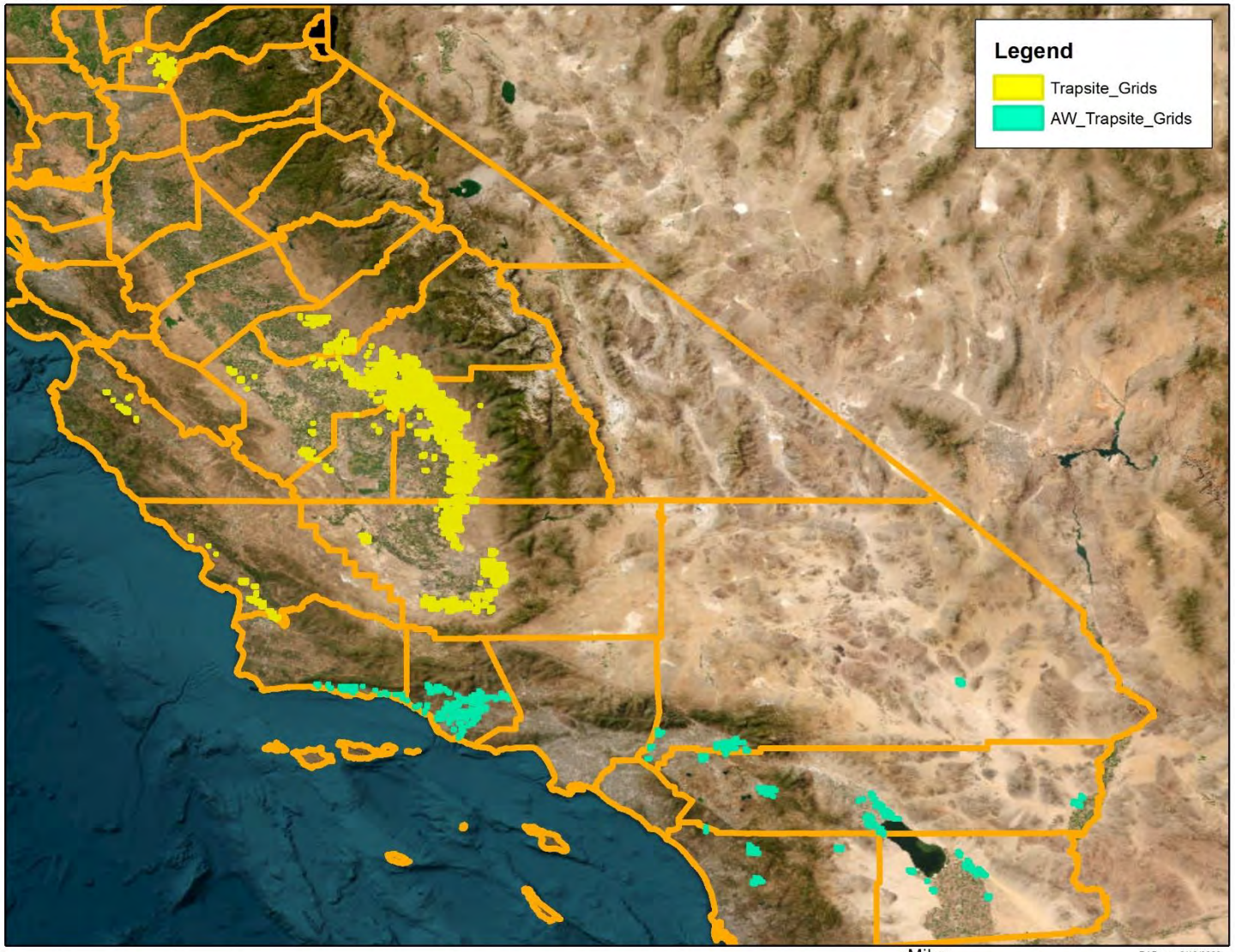
Rick Dunn

CRB Director of Data and Information Management

3/8/2003

CITRUS PEST & DISEASE PREVENTION DIVISION
CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Commercial Grove Trap Placement



- 5,130 Commercial grove traps
  - Approx. 1/50 acres of commercial citrus
  - Serviced twice a month
  - For the purpose of detection
- 431 Area-Wide buffer traps
  - 1/Square mile grid
  - Serviced once a month
  - For the purpose of verification
- 9216 Sentinel tree sample sites
  - In SoCal, not shown
  - Inspected twice a year
  - For the purpose of live ACP collection
  - Insects collected are tested for CLas

TIMING FOR INSECTICIDE TREATMENT OF RESIDENTIAL CITRUS IN THE BUFFER AROUND COMMERCIAL GROVES*

	Winter Tempo*								Summer/fall Merit-Tempo			
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Santa Barbara	Yes	Yes	Yes						Yes	Yes	Yes	
Ventura	Yes	Yes	Yes						Yes	Yes	Yes	
Riverside - city area/hemet	Yes	Yes	Yes					Yes	Yes	Yes	Yes	
San Bernardino	Yes	Yes	Yes					Yes	Yes	Yes		
San Diego	Yes	Yes	Yes						Yes	Yes		
Riverside - Coachella	Yes	Yes	Yes							skip**	skip**	
San Diego - Borrego	Yes	Yes	Yes							skip**	skip**	
Imperial	Yes	Yes	Yes							skip**	skip**	

*Timing as recommended by Beth Grafton-Cardwell

PROPOSED REVISED TIMING FOR CASS TRAPPING OF CITRUS IN THE AREA-WIDE TREATMENT AREAS

	Winter Tempo*								Summer/fall Merit-Tempo			
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Santa Barbara	Yes	Yes	Yes				*		Yes	Yes	Yes *	
Ventura	Yes	Yes	Yes				*		Yes	Yes	Yes *	
Riverside - city area/hemet	Yes	Yes	Yes			*		Yes	Yes	Yes	Yes *	
San Bernardino	Yes	Yes	Yes			*		Yes	Yes	Yes	*	
San Diego	Yes	Yes	Yes				*		Yes	Yes	*	
Riverside - Coachella	Yes	Yes	Yes							skip**	*	
San Diego - Borrego	Yes	Yes	Yes							skip**	*	
Imperial	Yes	Yes	Yes							skip**	*	
*Re-install traps late in this month												
Service traps in this month												

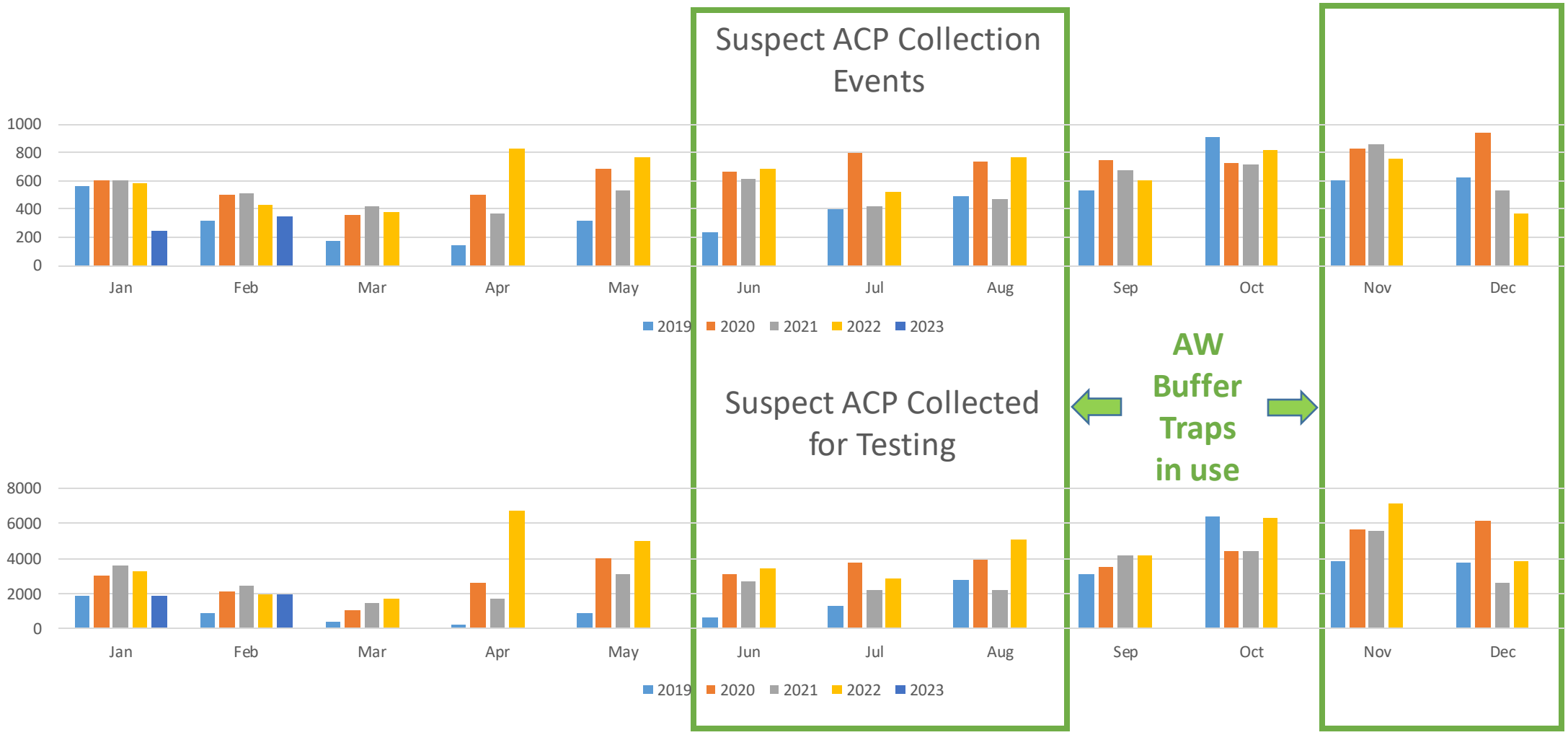
- Currently, the AW Buffer traps are being serviced and screened monthly by CASS staff, year-round.
- If ACP are trapped and confirmed in the 1- 2 months prior to a treatment window, that information verifies the pest is present and the treatment is scheduled.
- The proposed change would free up CASS Grove trapping field staff to conduct additional ACP sampling in the months when traps are not in place. (Approximately 19 man-days per month)

MONTHS WHEN WE CATCH ACP ON THE AW BUFFER TRAPS*

	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Santa Barbara	+++	++	++	++	++	++	++	+++	+++	+++	+++	+++
Ventura	++++++	+++++	++++	++++	+++++	+++++	+++++	+++++	+++++	+++++	++++++	+++++++
Riverside	++	++	+	++	++	++	++	+	+	++	++	++
San Bernardino	+++	+++	+++	+++	++++	++++	++++	++++	+++	+++	++++	++++
San Diego	++++++	++++++	++++++	+++	++++	++++	++++	++++	++++	++++++	++++++	+++++++
Coachella, Borrego, Imperial	+	+	+	+	+	+	+	+	-	+	++	++
*Based on trapping results July 2018 - November 2022												

- In addition, the proposed change will free up CASS project staff to process additional ACP collections and screen traps from detection and delimitation programs in other regions of the state.

CPDPD Commercial Grove Sampling Program
March 2023 update



In summary:

- I propose a reduction in the months in which CASS Area-Wide traps are in use in southern California.
- This change will permit the continued collection of ACP trap data and verification as required, just prior to AW treatment of groves in the nearby Psyllid Management Areas.
- This change will reduce the cost of AW trapping efforts with CASS staff being redirected to sampling. This should increase the both the number of ACP samples collected in commercial groves and insects being tested for CLas.