UCCE Northern San Joaquin Valley Processing Tomato Production Meeting: **Broomrape Update**

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ZACH BAGLEY, CALIFORNIA TOMATO RESEARCH INSTITUTE

530-405-9469

ZACH@TOMATONET.ORG

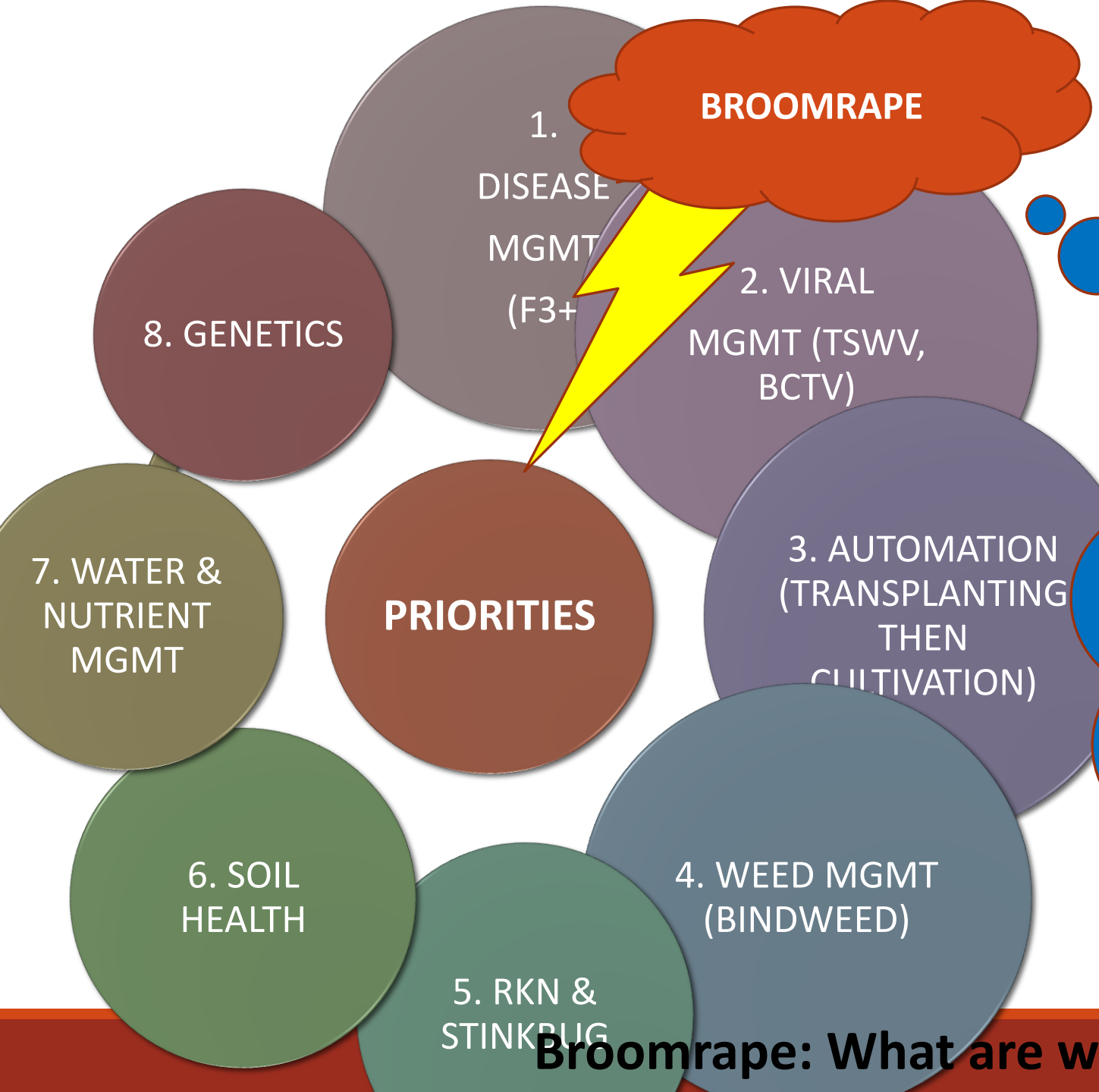
California Tomato Research Institute

www.tomatonet.org/branchedbroomrape

- Be Aware,
- Work with Growers or grower representatives to limit spread,
- Clean equipment (in known, suspected, or adjacent areas),
- Support voluntary and long-term mechanisms for funding Industry response

Slide Credit: Brad Hanson

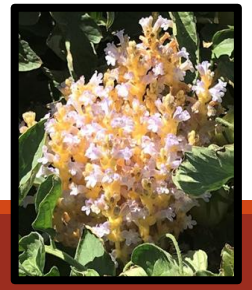
Broomrape: What are we up against?

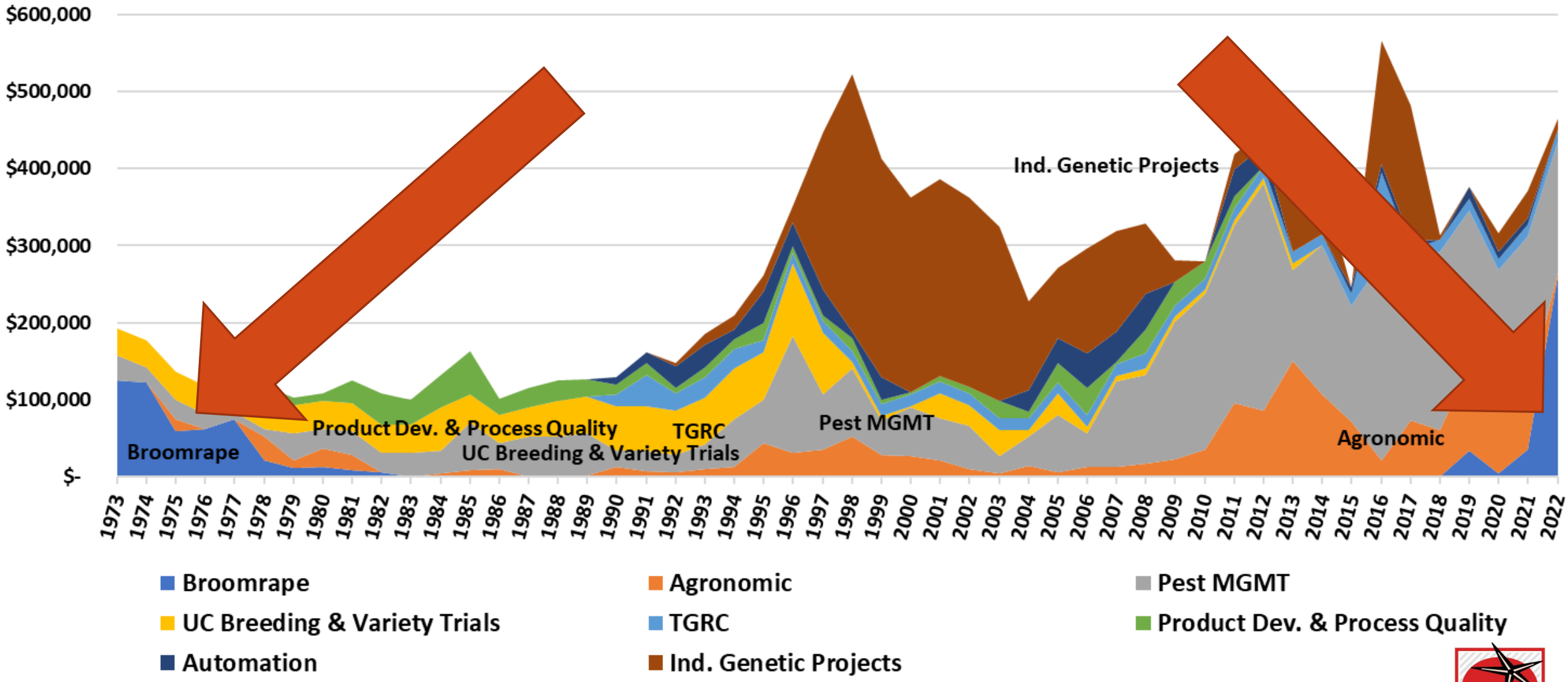


"Broomrape is the single biggest threat to our industry today and it should be our number one focus. Nothing is a close second. All of the other weeds mentioned above have ways to control them, Broomrape threatens the tomato industry as well as many other crops that we grow."
– comment from our 2020 survey

Broomrape: What are we up against?

- Documented up to 80% crop loss in heavily infested areas globally;
- Prolific seed producer;
- Longevity in the soil;
- Extensive suitable host range that overlaps with our economically important rotational crops;
- No findings to date of easily transferable resistance genetics;
- Methods of control used elsewhere costly, unproven, and use currently unregistered chemistries;
- CDFA Class A Quarantine level pest;





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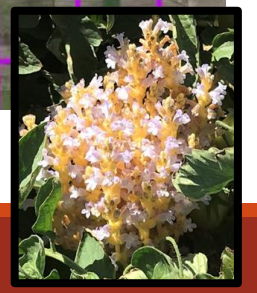
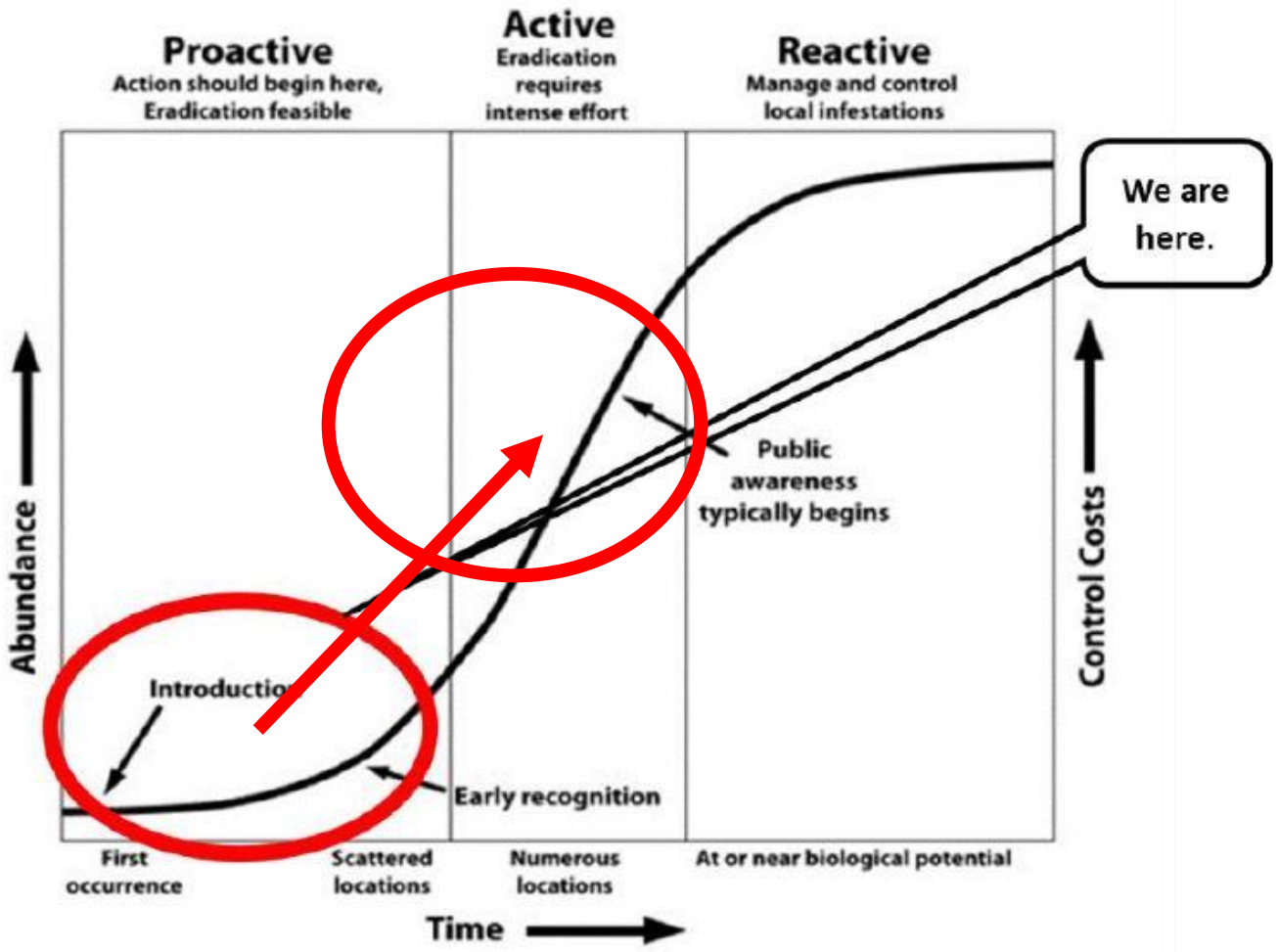
Broomrape: What is our history with this pest?

Broomrape: Known Extent

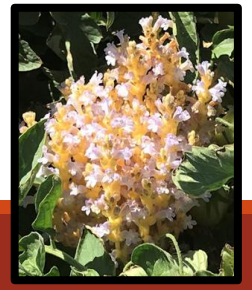
- 5 mile radius around the town of Yolo.
- 50,000 acres are in that circle.
- Egyptian broomrape: 3 finds in Solano County within 2 miles.
- 9 impacted growers cover ~16,000 tomato acres annually and deliver to a combined 10 facilities.
- 2014 – San Joaquin County
- 2009 – San Benito County



Broomrape: What is the Goal?



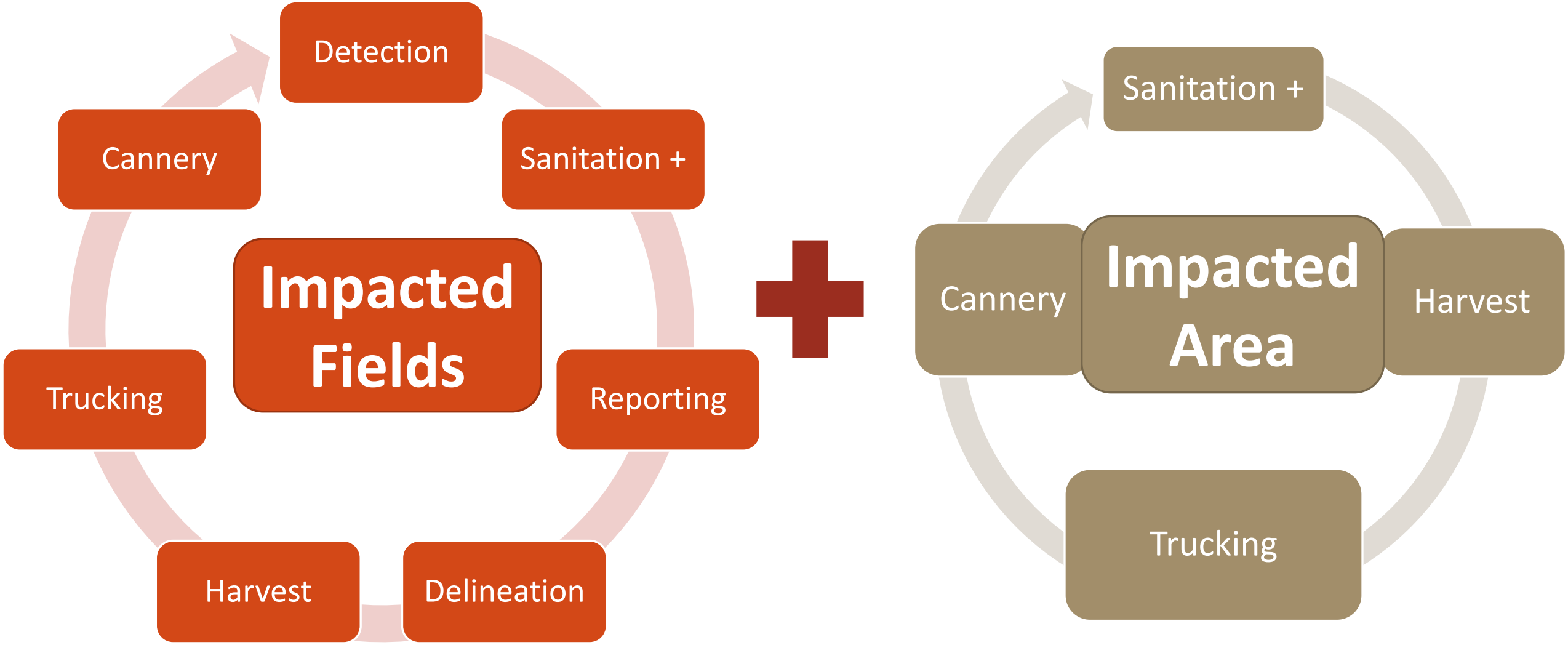
Phases of Invasive Species Invasion and Control



Broomrape: Industry Action Plan

- Broomrape Control Program Legislation – AB 1620, has been introduced by Assembly Member Aguiar-Curry from Yolo County on January 10th.
- Sanitation, detection, and delineation BMPs with growers and processors that can be signed off on by counties.
- Fumigation – voluntary funding from 2021 and 2022 to be supplanted by official program in the future.
- Crop Insurance (Industry and/or Federal).
- Continued research.

Broomrape: Protocols



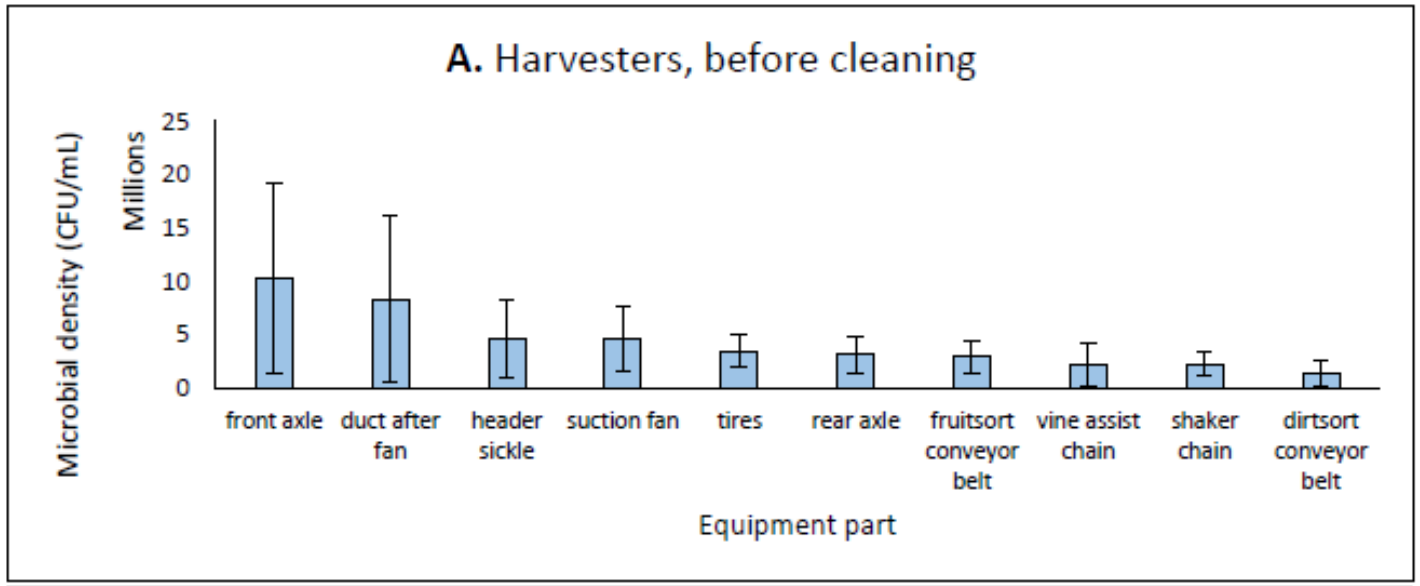
Broomrape: Getting from here to there

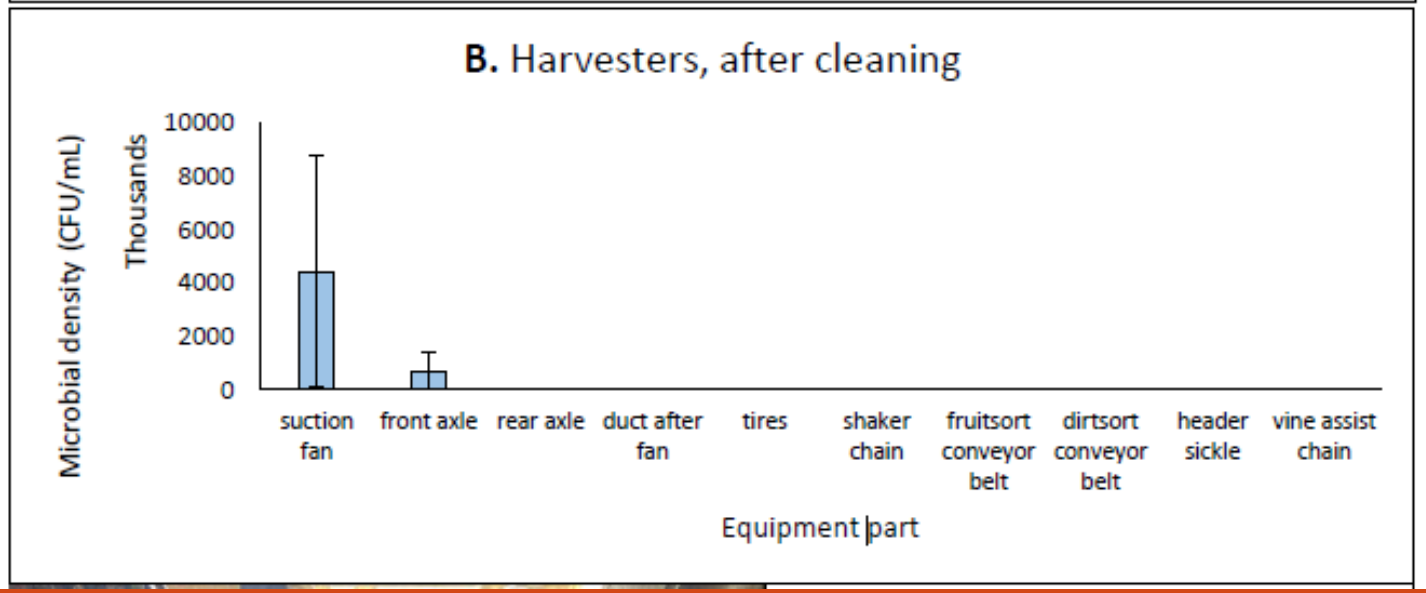
Broomrape: 2022 New and Continuing Research

2022 California Tomato Research Institute BROOMRAPE Funding					
2020 Start	Branched broomrape: PICKIT adaptation, rimsulfuron, ActiGard, variable planting date and Anhydrous in California commercial field conditions	Brad Hanson	UC Davis	$	42,531
2021 Start	Branched broomrape: Chile collaboration for PICKIT, rimsulfuron, and variable planting date	Brad Hanson	UC Davis	$	34,034
2021 Start	Developing best equipment sanitation practices for broomrape and other high-profile soil borne pathogens; to mitigate field-to-field spread	Cassandra Swett	UC Davis	$	49,922
2022 New	Branched broomrape: Tolerance/resistance of commercial varieties	Matt Fatino	UC Davis	$	22,215
2022 New	Determining the population structure of Peliphanche ramosa and Orobanche aegyptiaca field detections in California	Tera Pitman	UC Davis	$	16,652
2022 New	Inducible Suberin for Tomato Drought Tolerance (root architecture)	Siobhan Brady	UC Davis	$	12,552
2022 New	Branched broomrape: genetic approaches to blocking strigolactone movement from root to seed	Neelima Sinha	UC Davis	$	83,475
2022 New	Branched broomrape: Genetics consortium	Dani Zamir	Hebrew University	$	25,000
2022 Broomrape Proposal TOTAL Requests:					**$ 286,381**

Broomrape: Getting from here to there

Broomrape: 2022 New and Continuing Research





- Critical control points where improved sanitation is needed: harvester undercarriage and suction fan; access has been identified as a key barrier to sanitation.
- Of equipment evaluated for relative level of soil/plant debris and microbial contamination to this date, harvesters have the highest level of contamination relative to transplanters, tractors, and trailers.

From work done in 2021 by Cassandra Swett and team

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Thank you! Questions?

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