


Notes on the use of these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.

Water, agriculture, & economics in a post-SGMA California

CSAC Ag, Environment, and Natural Resources Policy Committee

April 12th, 2023, Sacramento CA

Caitlin A. Peterson, PhD



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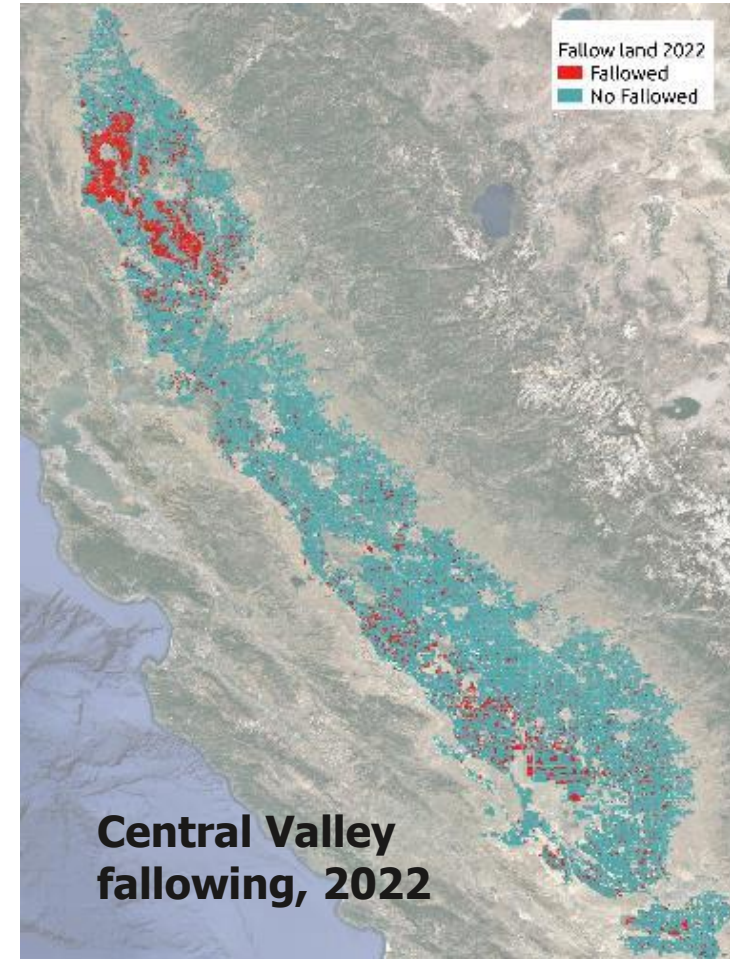
PPIC

PUBLIC POLICY
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PPIC WATER POLICY CENTER

Water challenges for California agriculture

- Hotter, more intense droughts
 - 400,000 of acres fallowed in 2021, 700,000 in 2022
 - Increased groundwater pumping



Source: J. Medellin-Azuara et al. (2022) "Economic Impacts of the 2021 and 2022 Drought on California's Agriculture" (CDFA-supported project).

Water challenges for California agriculture

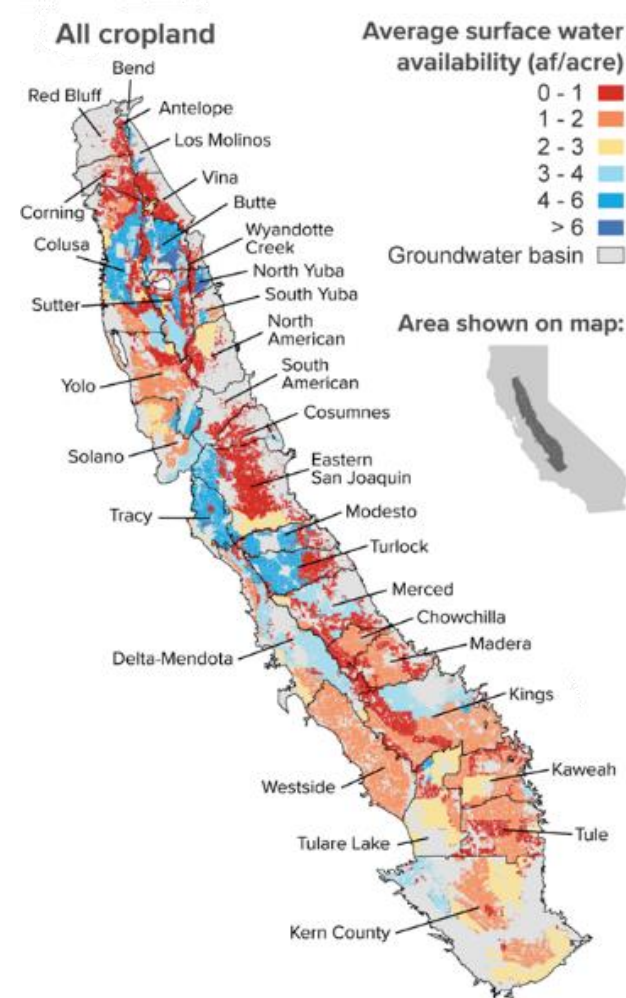
- Hotter, more intense droughts
 - 400,000 of acres fallowed in 2021, 700,000 in 2022
 - Increased groundwater pumping
- Growing flood risk



Image: CA Strawberry Commission

Water challenges for California agriculture

- Hotter, more intense droughts
 - 400,000 of acres fallowed in 2021, 700,000 in 2022
 - Increased groundwater pumping
- Growing flood risk
- SGMA
 - Many changes and pain points— but opportunities as well



Source: Ayres et al.
Improving CA's Water Market ([PPIC 2021](#))

Water challenges for California agriculture

- Hotter, more intense droughts
 - 400,000 of acres fallowed in 2021, 700,000 in 2022
 - Increased groundwater pumping
- Growing flood risk
- SGMA
 - Many changes and pain points— but opportunities as well
- Pressures beyond water
 - Labor market, supply chain issues, inflation



Image: R. Rago, New York Times

POLICY BRIEF · FEBRUARY 2023

Policy Brief: The Future of Agriculture in the San Joaquin Valley

Alvar Escriva-Bou, Ellen Hanak, Spencer Cole, and Josué Medellín-Azuara, with research support from Annabelle Rosser



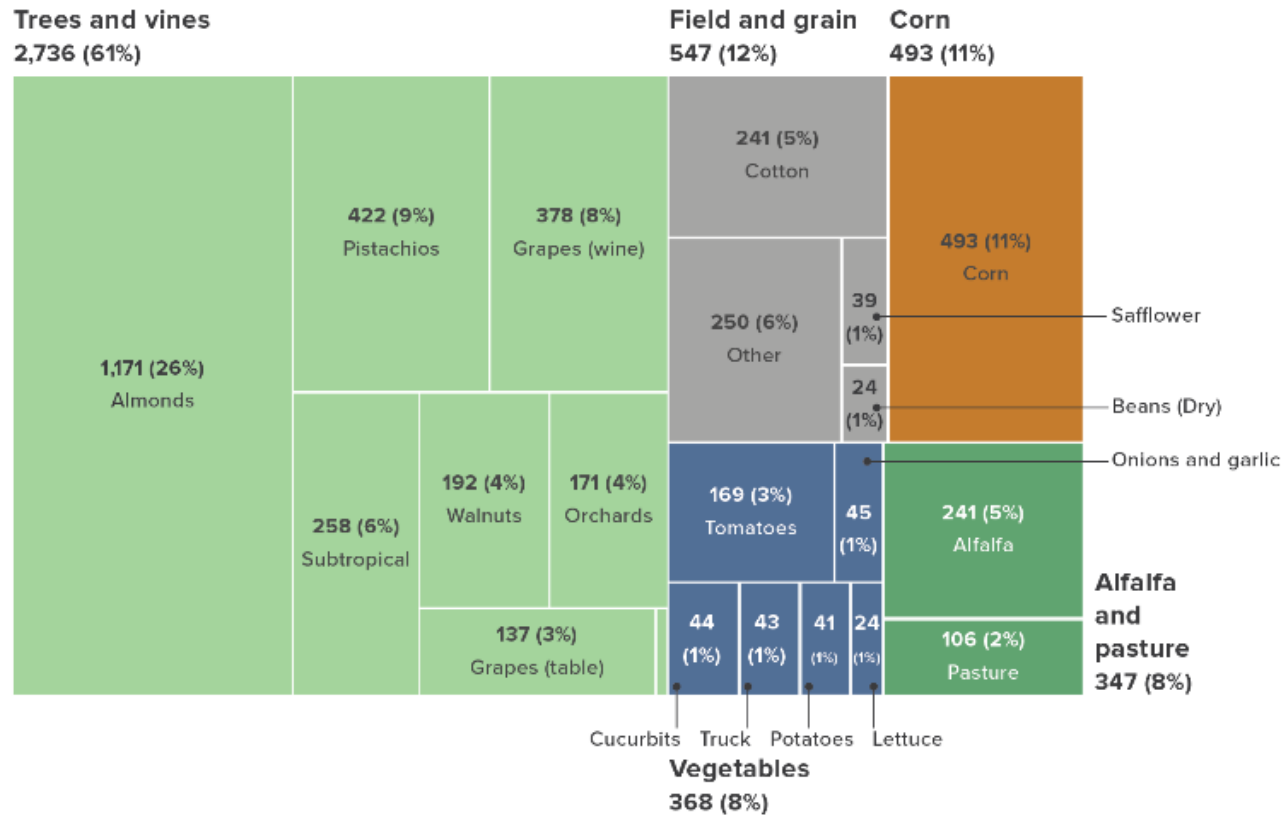
Agriculture is a key driver of San Joaquin Valley economy

- Average annual water supplies could decline 20% by 2040
 - 50,000 jobs lost, 2.3% decline in economic activity
- Careful management can help soften the blow:
 - Improved trading rules
 - Water infrastructure; recharge
 - Improved ag productivity
 - Incentivizing alternative uses for irrigated lands



Without new supplies, nearly 900,000 acres could go fallow, most of them high-value perennial crops

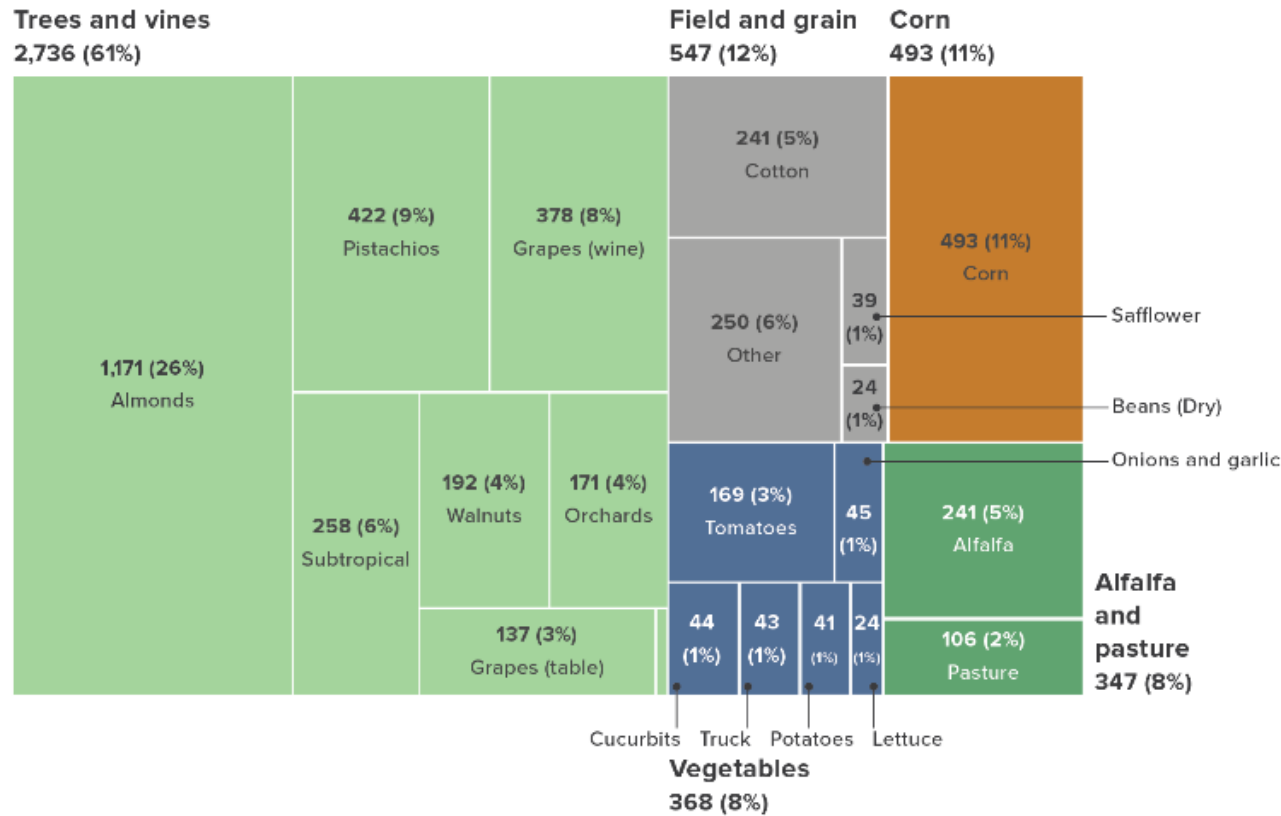
Current crop mix in the valley



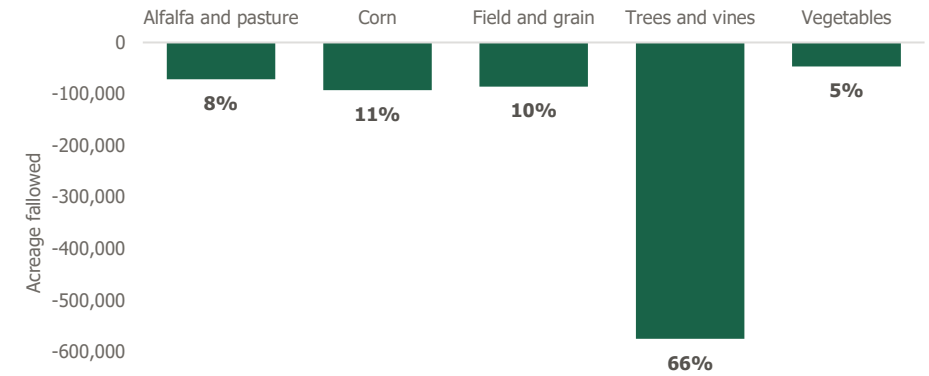
Source: Escrivá-Bou et al. *The Future of Agriculture in the San Joaquin Valley* (PPIC 2023)

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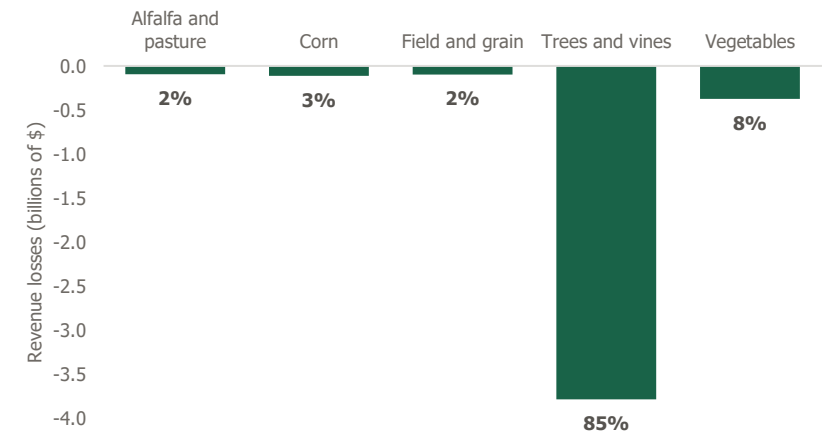
Current crop mix in the valley



Acres followed by crop



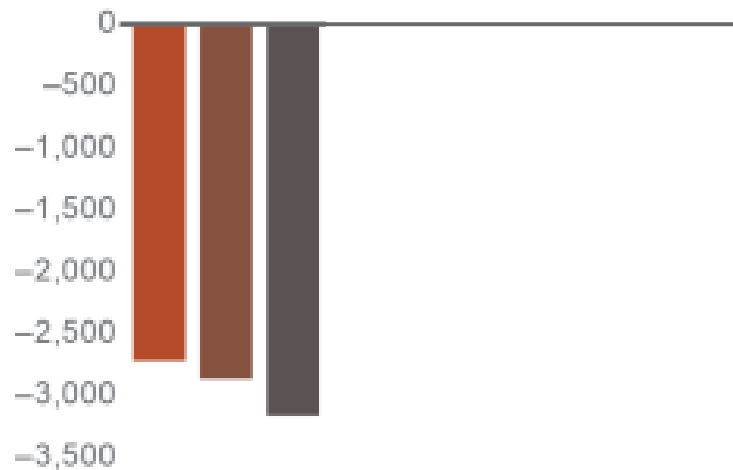
Revenue losses by crop



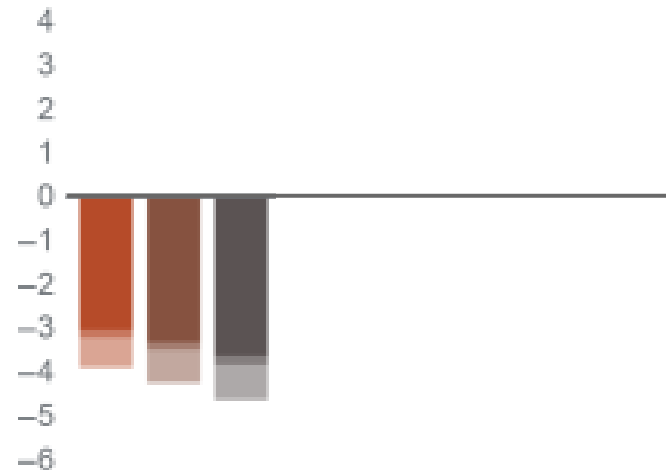
Source: Escrivá-Bou et al. *The Future of Agriculture in the San Joaquin Valley* (PPIC 2023)

Water reductions by 2040 will reduce farm GDP (and jobs)

Reductions in applied water
(Thousands of acre-feet)



Agricultural GDP losses
(Billions of \$)



Scenario

- SGMA
- SGMA + Climate Change
- SGMA + CC + E-flows

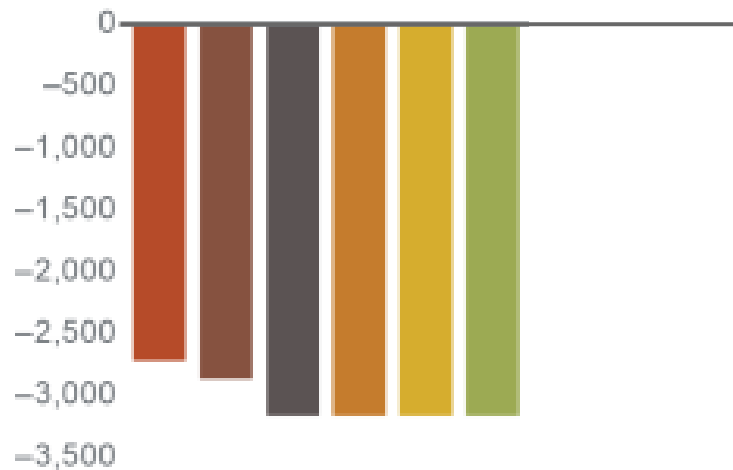
Economic Sector

- Crop production
- Dairy and beef products
- Processing industries

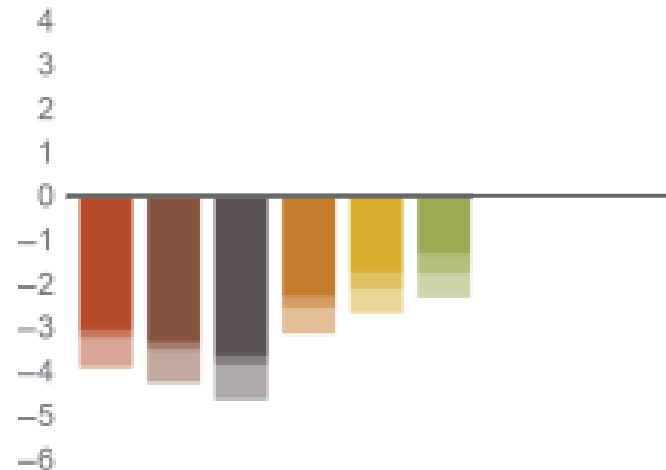
Source: Escriva-Bou et al. *The Future of Agriculture in the San Joaquin Valley* (PPIC 2023)

Water trading could significantly cushion the costs of water supply reductions

Reductions in applied water
(Thousands of acre-feet)



Agricultural GDP losses
(Billions of \$)



Scenario

- SGMA
- SGMA + Climate Change
- SGMA + CC + E-flows
- Local trading
- Basin trading
- Valley trading (surface water only)

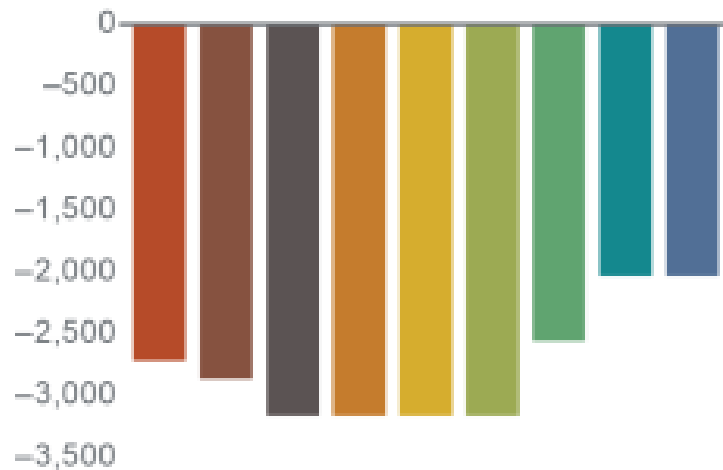
Economic Sector

- Crop production
- Dairy and beef products
- Processing industries

Source: Escriva-Bou et al. *The Future of Agriculture in the San Joaquin Valley* (PPIC 2023)

New supplies and increased productivity could further soften the blow

Reductions in applied water
(Thousands of acre-feet)



Agricultural GDP losses
(Billions of \$)



Scenario

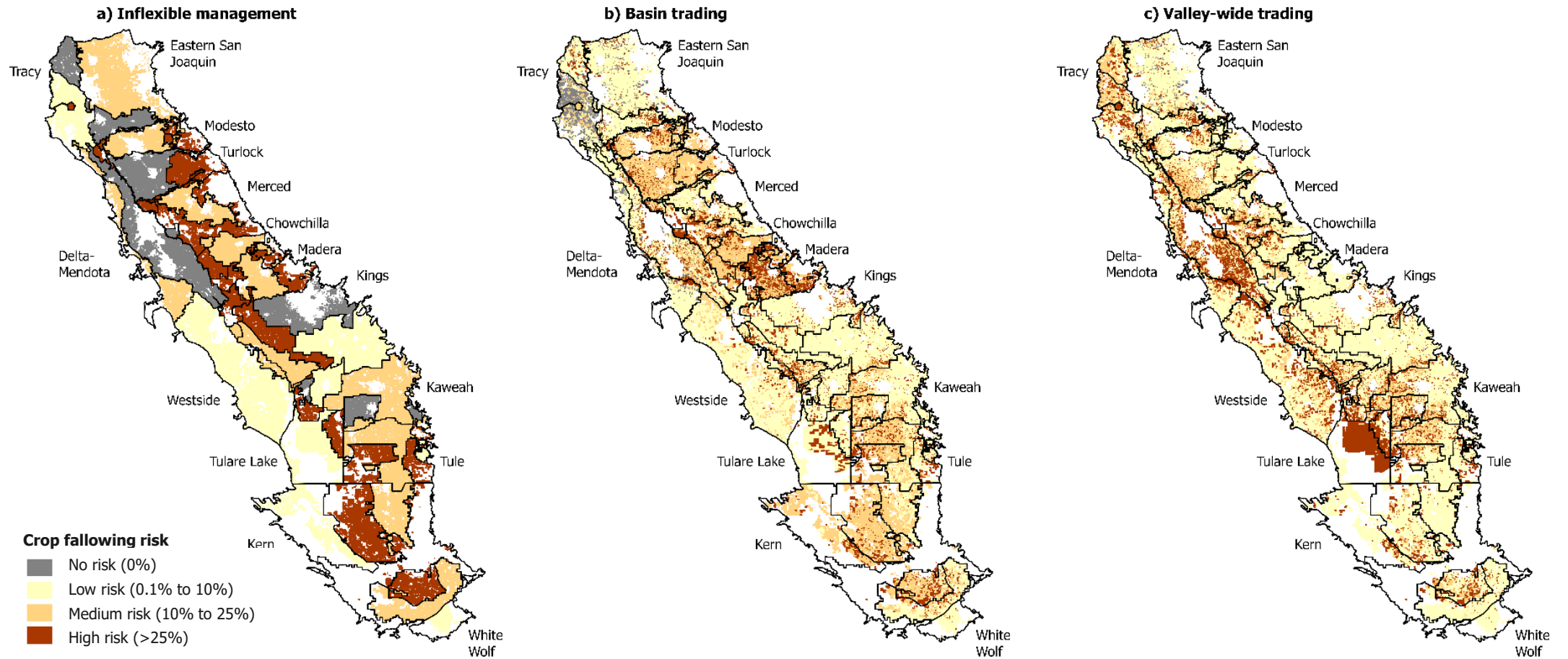
- SGMA
- SGMA + Climate Change
- SGMA + CC + E-flows
- Local trading
- Basin trading
- Valley trading (surface water only)
- Expanded supplies (0.5 maf)
- Expanded supplies (1 maf)
- Increased productivity
- ▨ Cost of new supplies

Economic Sector

- Crop production
- Dairy and beef products
- Processing industries

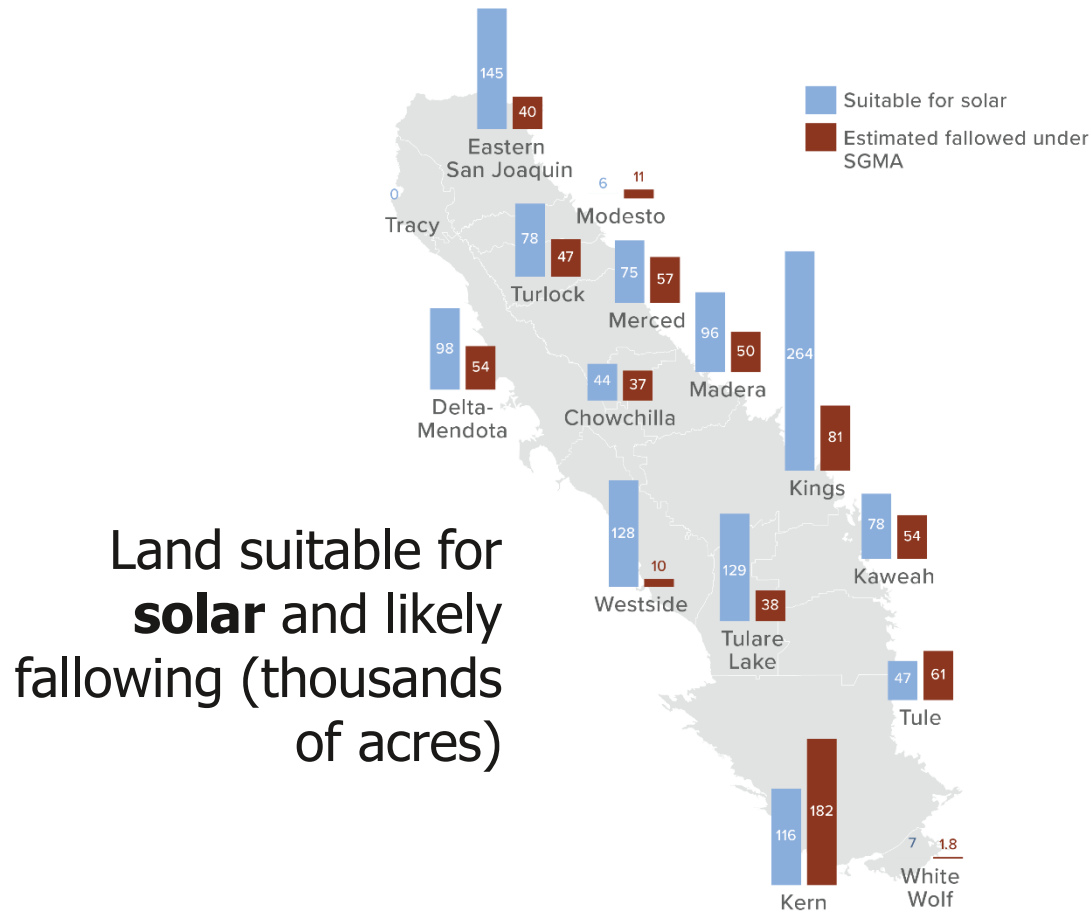
Source: Escrivá-Bou et al. *The Future of Agriculture in the San Joaquin Valley* (PPIC 2023)

Trading would shift the following risk, moving water to reduce costs of following



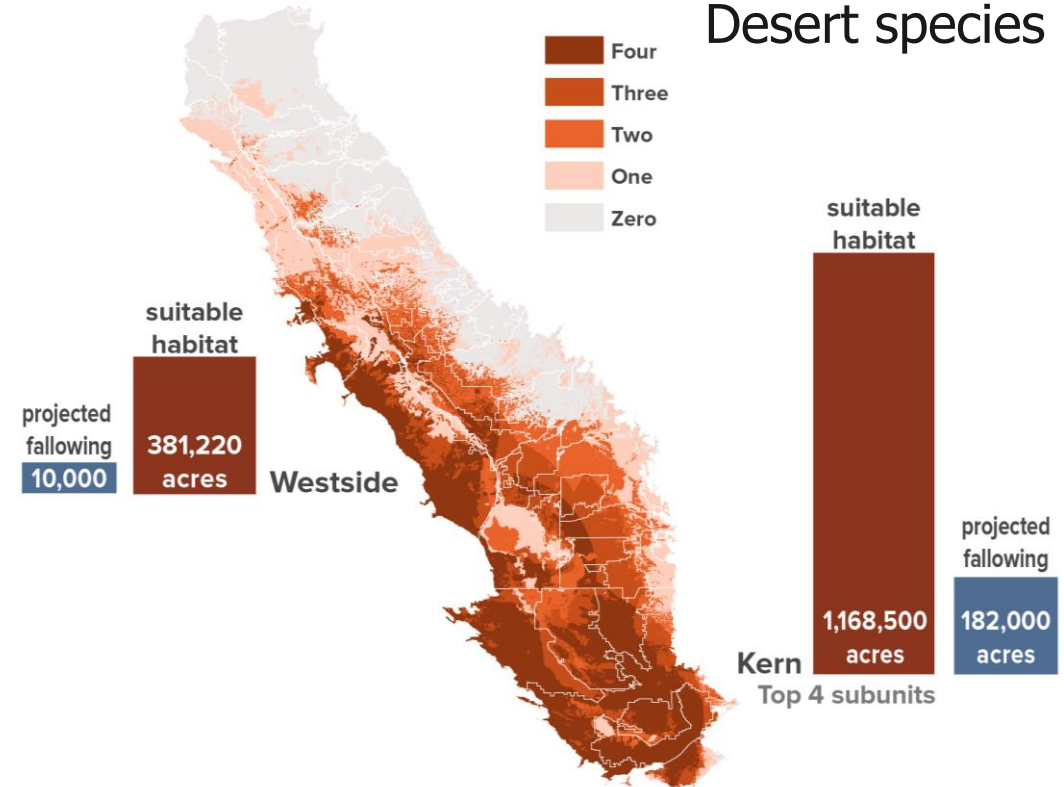
Source: Escriva-Bou et al. *The Future of Agriculture in the San Joaquin Valley* (PPIC 2023)

Many areas have solar energy and habitat assets



Land suitable for **solar** and likely following (thousands of acres)

Suitable **habitat** for x number of San Joaquin Desert species

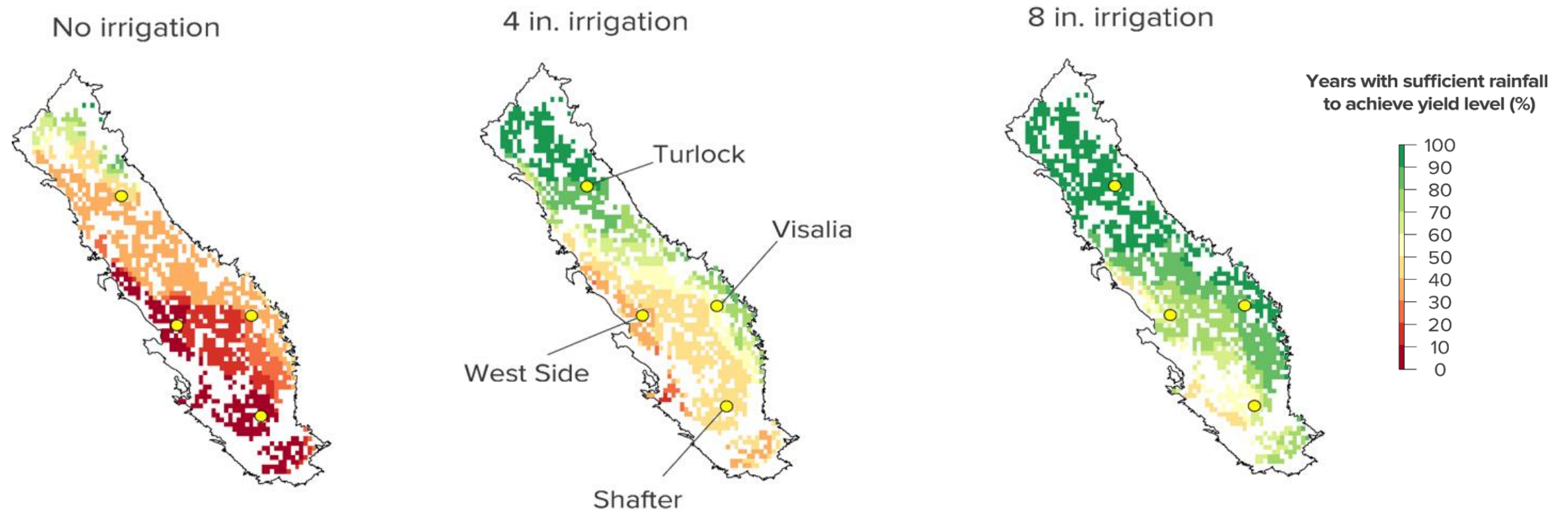


Source: Ayres et al. *SGMA and Solar Energy Development in the San Joaquin Valley* ([PPIC 2022](#))

Source: The Nature Conservancy, PPIC (map by Shayan Kaveh)

Other areas could be suitable for water-limited forage production

Five-ton forage yield (winter wheat)



Source: Peterson, Pittelkow, and Lundy *Exploring the Potential for Water-Limited Agriculture in the San Joaquin Valley* (PPIC 2022)

The big picture:

- California's irrigated agriculture footprint will shrink with SGMA, changing climate
- Reduced water supplies will call for both supply- and demand-side adaptations
- Careful management can help soften the blow:
 - Flexible water use (trading)
 - Investments in infrastructure, ag productivity
 - Incentives to productively repurpose ag lands



Counties can play an important role in planning and implementation

- Facilitating transparent and responsible water trading, groundwater banking
- Supporting well mitigation efforts
- Investing in local conveyance, flood protection
- Enabling coordinated farmland transitions



Thank you!

