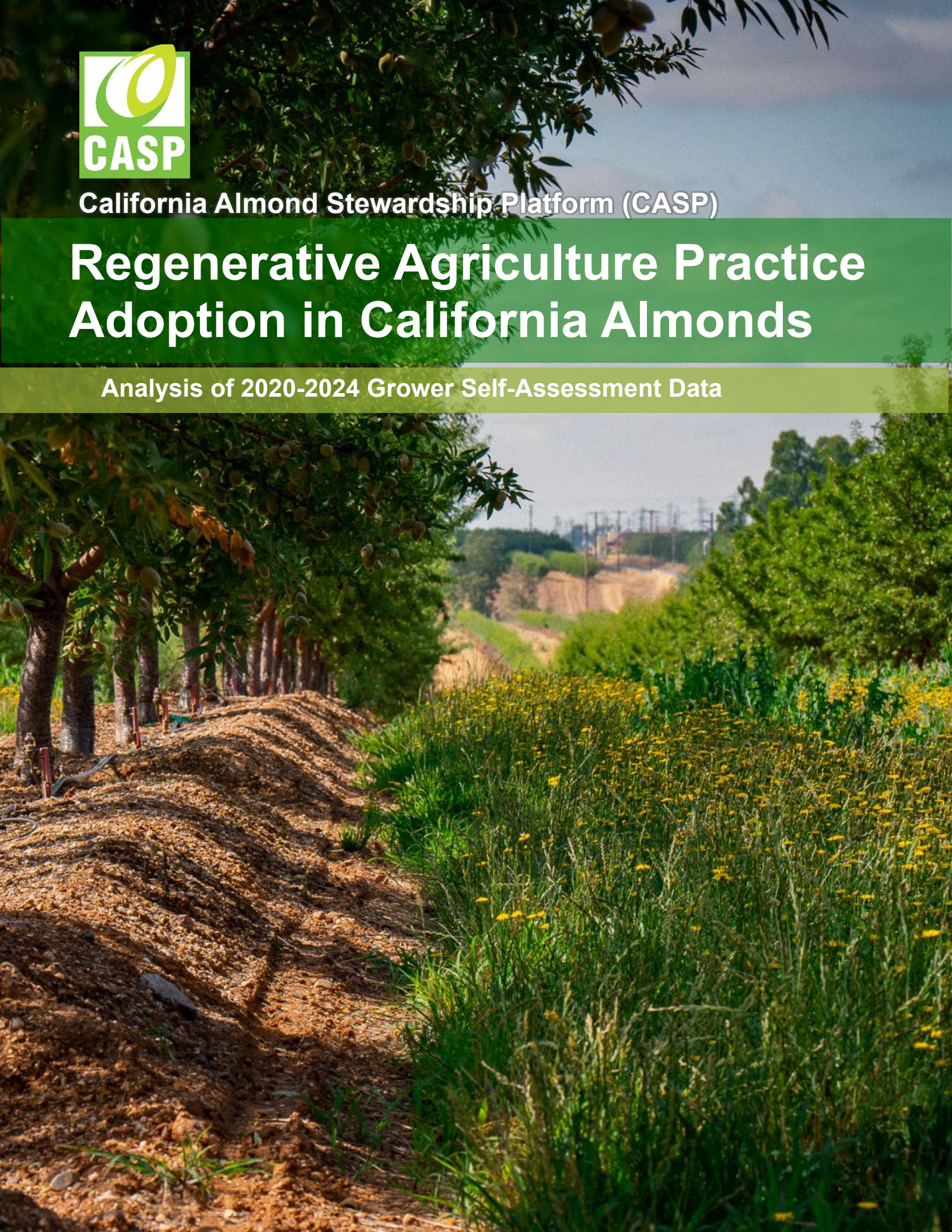


California Almond Stewardship Platform (CASP)

Regenerative Agriculture Practice Adoption in California Almonds

Analysis of 2020-2024 Grower Self-Assessment Data

This report was prepared by SureHarvest in collaboration with the Almond Board of California.

May 2026

Authors
Eric S.J. Harris, PhD, SureHarvest
Franklin Dlott, MSc, SureHarvest

Editors
Gabriele Ludwig, PhD, Almond Board of California
Danielle Veenstra, Almond Board of California

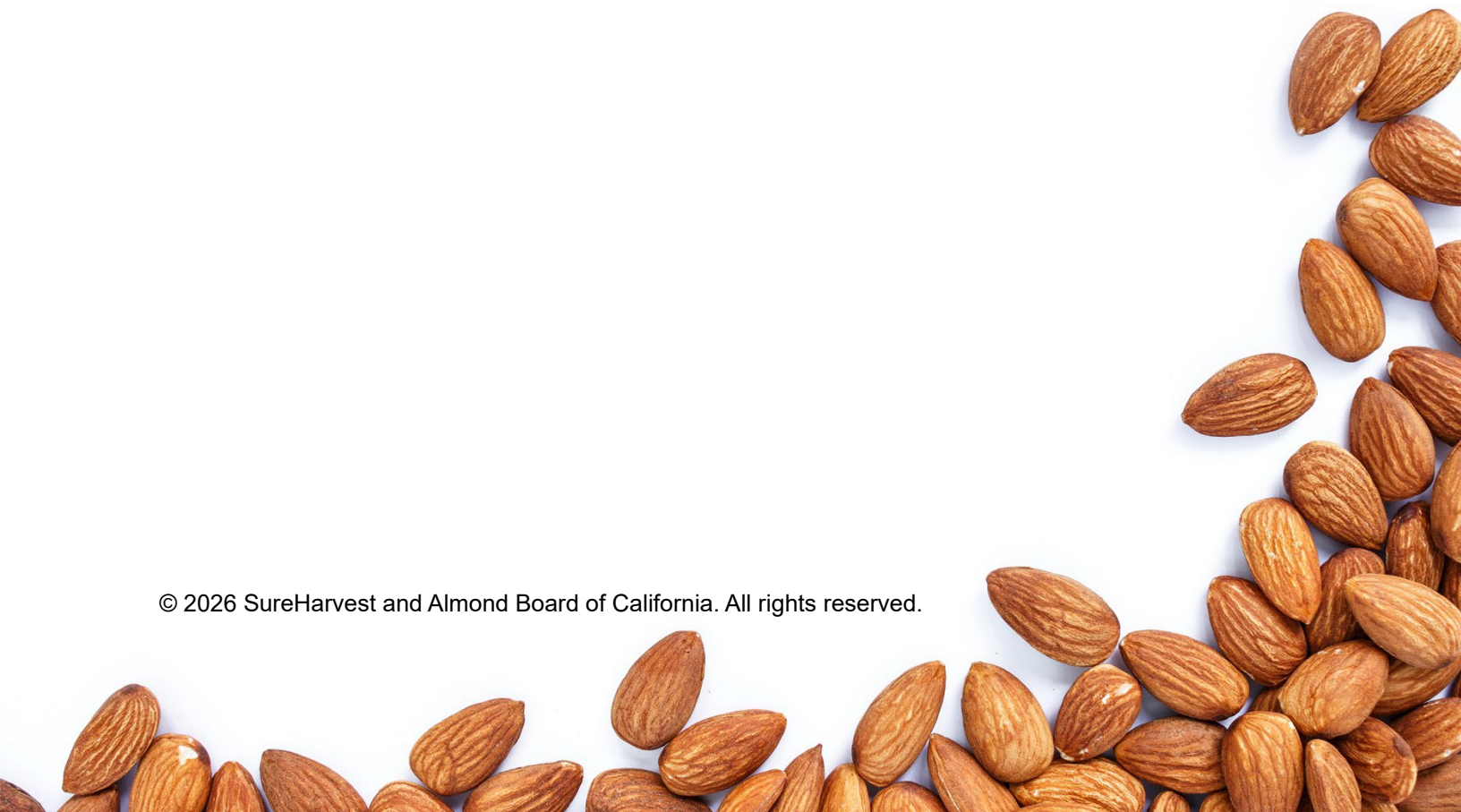


TABLE OF CONTENTS

EXECUTIVE SUMMARY

Regenerative agriculture encompasses a range of practices with no single agreed-upon definition, a gap that is especially pronounced for perennial crops like almonds, as most existing regenerative frameworks focus on annual systems. This report addresses that challenge by synthesizing frameworks relevant to California almond production and applying the resulting structure to assess trends in grower adoption using data from the California Almond Stewardship Platform (CASP). To inform the analysis, relevant definitions and programs were reviewed, including SAI Platform's Regenerating Together, RegenScore, and the California Department of Food and Agriculture's (CDFA) definition of regenerative agriculture. These were compared to identify key regenerative categories and practices most relevant to California almond production. The analysis identified 5 core categories of regenerative agriculture and 20 practices, summarized in the table below.

Category	Regenerative Practices
Soil Health	• Cover Crops • Organic Soil Amendments • Whole Orchard Recycling • Reduced Tillage • Reduced Passes • Reduced Wind Erosion
Biodiversity	• Ecosystem Management Plans or Easements • Maintain Margin Vegetation • Bird Boxes and Perches • Pollinator Habitat • Hedgerows • Riparian Buffers
Water	• Groundwater Recharge • Microirrigation
Input Efficiency	• Optimized Nutrient Management • Integrated Pest Management • Energy Conservation • Onsite Renewable Energy
Community	• Competitive Compensation and Professional Development • Community Contributions

The adoption rates for the 20 regenerative practices were calculated based on CASP self-assessment questions for 2020-2024 crop years:

- 8 of the 20 regenerative practices have consistently high adoption rates above 90%.
- 3 practices show an increase of more than 5% comparing values in 2020 to 2024. These practices include adoption of hedgerows, pollinator habitat, and onsite renewable energy.

For the most recently analyzed crop year (2024), aggregate results were encouraging:

- More than three-quarters (80%) of orchard acres assessed in 2024 reported adoption of 11 or more regenerative practices, and nearly all use 6 or more practices.
- 75% of orchards (2,127 out of 2,836) representing about 189,000 out of 233,000 assessed acres in 2024 reported implementing at least one practice in each regenerative category (soil health, biodiversity, water, input efficiency, community).
- 37% of orchards reported stacking of two or more out of three key soil health practices (cover crops, organic soil amendments, whole orchard recycling).
- About one third (31%; 890 out of 2,836) of orchards implemented three biodiversity practices for supporting pollinators and other beneficial wildlife (margin vegetation, pollinator habitat, hedgerows).

(I) INTRODUCTION

Regenerative agriculture has been receiving increased attention as a pathway to enhance the long-term sustainability and resilience of agricultural systems, particularly in the face of environmental change and climate variability, soil health degradation, and biodiversity loss (e.g., Giller et al., 2021; Jayasinghe et al., 2023; Newton et al., 2020; Schreefel et al., 2020). Perennial cropping systems such as almonds grown in California offer unique advantages for regenerative approaches, including reduced soil disturbance from the absence of annual replanting and continuous presence of living roots for the lifespan of the crop (Martinez-Nuñez et al., 2024; Scott et al., 2022). In addition to these inherent advantages, there are multiple practices that can be implemented on almond orchards to advance regenerative outcomes.

The California Almond Stewardship Platform (CASP) self-assessment uses grower-submitted production information to help growers document on-farm practices and provide context for evaluating their alignment with environmentally and socially responsible farming principles. CASP enables the generation of aggregate, anonymized statistics on industry-wide practice adoption, many of which align with regenerative principles. The self-assessment includes about 350 questions that cover all aspects of growing California almonds. The program started in 2007 and over the last 4 years approximately 20% of California's almond-bearing acreage has been assessed each year (SureHarvest, 2025). The program has been benchmarked with internationally recognized sustainability programs, such as the SAI Platform Farm Sustainability Assessment (FSA) where, together with federal and state regulations, it achieved gold level alignment.

This report presents findings from a project examining definitions of regenerative agriculture relevant to almond production in California and assessing practice adoption trends using CASP grower self-assessment data. The goal of the project was to better clarify regenerative agriculture approaches in the context of California almonds and to identify key strengths and opportunities related to adoption of regenerative practices by California almond growers.

(II) IDENTIFICATION OF REGENERATIVE PRACTICES

While the term "regenerative agriculture" has been in use since the 1980s (Giller et al., 2021), it still lacks a universally accepted definition (Newton et al., 2020). To guide the analysis, a select set of existing regenerative agriculture definitions and programs were compared. Existing frameworks for regenerative agriculture have largely focused on annual row crop systems and may not fully capture the distinct characteristics of perennial crops. Therefore, while general principles of regenerative agriculture were considered (e.g., Girgis, n.d., *shown in* Figure 1) this project prioritized programs most relevant to tree cropping systems like California almonds. These included SAI Platform's Regenerating Together program (SAI, 2024), RegenScore (2025), and the California Department of Food and Agriculture's (CDFA) definition of regenerative agriculture (CDFA, 2025). Select Natural Resources Conservation Service (NRCS) Conservation Practices were included based on their reference in the CDFA definition. CASP is benchmarked to the SAI Platform's Farm Sustainability Assessment (FSA), and the Regenerating Together program was developed to be broadly applicable to crop and livestock systems. RegenScore provides a California-specific approach tailored to tree nuts.

- Respect site-specific context
- Minimize soil disturbance
- Maximize living roots year-round
- Maximize plant diversity
- Keep the soil covered
- Integrate livestock

Figure 1. Example Principles of Regenerative Agriculture. *Adapted from Girgis (n.d.)*

The principles, outcomes, and practices included in the regenerative agriculture programs were reviewed to help identify aligned practices within the CASP self-assessment. Table 1 provides a summary of the comparison of principles and outcomes of the reference programs.

	cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE	RegenScore™	Regenerating Together Programme BY SAI PLATFORM
Category	**CDFA Regenerative Agriculture Outcomes (CDFA, 2025)**	**RegenScore Principles (RegenScore, 2025)**	**SAI Regenerating Together Outcomes (SAI, 2024)**
SOIL HEALTH	• Building soil health, soil organic matter, and biodiversity. (Healthy Soils Program) • Increasing statewide implementation of conservation practices that improve soil health, sequester carbon, and reduce greenhouse gases (USDA NRCS Conservation Practice Standards)	• Reduce disturbance • Increase ground cover	• Increase soil health and fertility
BIODIVERSITY	• Building soil health, soil organic matter, and *biodiversity*. (Healthy Soils Program)	• Foster biodiversity	• Enhance on-farm habitat provision • Increase cultivated crop and pasture diversity
WATER		• Maximum water use efficiency	• Increase water use efficiency
CLIMATE	• Increasing statewide implementation of conservation practices that improve soil health, sequester carbon, and *reduce greenhouse gases* (USDA NRCS Conservation Practice Standards)		• Reduce greenhouse gas emissions
NUTRIENT MANAGEMENT		• Tighten nutrient cycles	• Increase nutrient use efficiency
PEST MANAGEMENT	• Furthering sustainable pest and integrated pest management to reduce the reliance on pesticides (Accelerating Sustainable Pest Management: A Roadmap for California); (UC Statewide Integrated Pest Management), (USDA NRCS pest management conservation system)	• Reduce inputs	• Optimize crop protection
LIVESTOCK MANAGEMENT	• Protecting the welfare and care of animals in agriculture; (Animal Care Program)		• Improve manure management
COMMUNITY	• Building healthy, local communities (Ag Vision) • Protecting spiritual and cultural traditions as well as supporting Native-led stewardship practices;	• Promote equity/worker welfare	
HOLISTIC FARM MANAGEMENT	• Minimizing negative impacts to other target outcomes		
FARMER LIVELIHOODS	• Maintaining positive impact on the economic vitality/livelihoods of farmers and ranchers		*SAI's framework focuses on environmental outcomes but recognizes that the socioeconomic viability of farmers is a prerequisite to regenerative agriculture.*

Table 1. Regenerative Agriculture Outcomes and Principles Across Selected Programs. *This table summarizes the outcomes and principles of regenerative agriculture programs selected for their relevance to California almond production. Categories were developed to facilitate comparison across frameworks.*

While there is broad alignment between the programs, SAI's Regenerating Together approach focuses on environmental categories whereas RegenScore and the CDFA definition also include references to social responsibility, community, and farmer livelihoods. Soil health was a common element to all approaches. Biodiversity and responsible pest management were also commonly referenced. In addition to differences in content, the programs vary in their overall approach. The SAI Regenerating Together program specifically focuses on regenerative outcomes supported by relevant practices specific to regional and agricultural-system context. RegenScore includes both practices and outcomes in the calculation of an overall farm score. In contrast, the CDFA definition was developed to help align and inform state policies and programs, making its application distinct from the supply chain focus of the SAI and RegenScore frameworks.

The key regenerative outcomes or principles that were identified from SAI, RegenScore, and CDFA span several areas: soil health, water, biodiversity, climate, nutrient and pest management, livestock management, community, holistic farm management, and farmer livelihoods (*see* Table 1). For the purpose of reviewing CASP practices, nutrient and pest management were combined along with climate/greenhouse gas (GHG) emissions reductions under the concept of "input efficiency," which also includes fuel and electricity use. Because livestock are typically not present on almond orchards for food safety reasons, livestock management (e.g., animal health and welfare) is generally not relevant to almond production and was therefore excluded. "Holistic farm management" considers the farm as an integrated system, accounting for trade-offs between different practices. Because this orientation is difficult to track through specific practices, it was excluded from further analysis. However, it should be noted that the approach to almond sustainability that forms the conceptual foundation of CASP aligns with this philosophy (Almond Board of California, 2025). Finally, like the approach taken by SAI's Regenerating Together, farmer livelihoods and financial viability were considered as a precondition and foundation for the implementation of all other practices. That is, practice adoption is considered viable only if it is also economically feasible for growers. Because this baseline is assumed throughout rather than treated as one practice among many, this aspect was not specifically included as part of the practice analysis.

Based on this initial comparison, five core categories emerged that encompass key almond regenerative agriculture practices: soil health, biodiversity, water, input efficiency, and community. While they are listed as separate categories, it is important to acknowledge that they may overlap. For example, soil biodiversity is related to both soil health and biodiversity topics and is supported by practices in both sections.

Using this framework, the regenerative practices referenced in the different programs of SAI, RegenScore, CDFA, and select NRCS Conservation Practice Standards[1] were aligned and compared to the questions in the CASP self-assessment. Within these categories, a total of 20 regenerative practices were identified. Table 2 provides a summary of the topics and regenerative practices that were identified. Six practices (biochar, mulch, livestock integration, perennial cropping, intercropping, crop rotation) that were highlighted in the comparison of

[1] Although the CDFA regenerative agriculture definition addresses multiple regenerative categories broadly, the practice alignment with the CDFA definition was limited to a selection of NRCS Conservation Practice Standards (CPS) related to soil health, given the reference to NRCS practices in the CDFA definition. For the full list of CPS practices that were included, see Supplemental Information.

regenerative programs were omitted from the adoption analysis. Explanations related to those practices are provided following Table 2.

Category	Regenerative Practices
Soil Health	Cover Crops Organic Soil Amendments (Compost, Pruning Recycling, *Mulch, Biochar*) Whole Orchard Recycling Reduced Tillage Reduced Passes Reduced Wind Erosion *Livestock Integration* *Perennial Cropping*
Biodiversity	Ecosystem Management Plans or Easements Maintain Margin Vegetation Bird Boxes and Perches Pollinator Habitat Hedgerows Riparian Buffers *Intercropping* *Diversified Crop Rotation*
Water	Groundwater Recharge Microirrigation
Input Efficiency	Optimized Nutrient Management Integrated Pest Management Energy Conservation Onsite Renewable Energy
Community	Competitive Compensation and Professional Development Community Contributions

Table 2. Regenerative agriculture categories and practices aligned with the CASP self-assessment. *Practices shown in italics were not reviewed further in the analysis.*

The following practices were not considered for further analysis in this project:

- *Mulch.* Because almonds are harvested from the ground, mulch (e.g., wood chips) is not applied to the orchard floor to prevent being picked up along with the nuts during harvest. Mulch may be applied to associated areas such as roads to reduce dust – practices that are captured in CASP – but this use does not impact soil health across the orchard. Returning hulls and shells to orchard floors is a practice currently being assessed and may be included in the CASP self-assessment in the future.
- *Biochar.* Application of biochar to almond orchard soils is not currently included in the CASP self-assessment. When used as a soil amendment, biochar has the potential to offer soil health benefits, such as increased water holding capacity. Biochar may also contribute to storing carbon (GHG) in the soil, although research findings in this area have been mixed (Shrestha et al., 2023). The outcomes from biochar can vary due to differences related to feedstock and the pyrolysis conditions used in its production. Ongoing studies are exploring the use of biochar in almond production systems, and findings from this research may inform future inclusion of biochar practices in the CASP self-assessment.

- *Livestock integration.* Integration of livestock is not currently a recommended practice in almond production due to the risk of introducing human pathogens, such as *Salmonella,* to the orchard floor, which is where the almonds are shaken from the trees to dry during the harvesting process. After the industry experienced two outbreaks (e.g., Isaacs et al., 2005), there was significant investment in research to assess the risks and mitigation options. Because of that extensive work and the food safety program that was adopted, almond growers are currently exempt from some aspects of the Food Safety Modernization Act (FSMA) by the U.S. Food and Drug Administration (FDA). Until there is evidence that temporary livestock grazing on almond orchards does not increase the risks, the industry is not advised to allow animals in the orchard. However, it is worth noting that research in almonds has found that the introduction of animals provides a significant increase in soil biodiversity (Marshall et al., 2025).
- *Perennial cropping.* As a perennial crop, almonds are grown for 20 to 30 years rather than replanted each season. There are inherent soil health benefits to perennial cropping systems since the soil is disturbed less often than with annual crops. Since this practice is by default true of all almond orchards, it was not included as a part of the analysis nor is it a question in the CASP self-assessment.
- *Intercropping.* Intercropping, including the cultivation of cash crops between almond rows, is not widely practiced on almond farms in California. While intercropping may occasionally be implemented during the first year of almond establishment (e.g., with a grain crop) it can present challenges. Managing irrigation and fertilization to meet the distinct needs of both almonds and the intercrop is complex and often impractical. Currently CASP captures use of cover crops (i.e., non-cash crops planted between almond rows), but the practice of intercropping is not tracked.
- *Diversified crop rotation.* Crop rotation typically does not apply to perennial systems such as almonds.

It should also be noted that California's robust regulatory framework further strengthens farm adoption of practices related to all of the core categories of regenerative agriculture, with strong laws and initiatives supporting soil health, climate, biodiversity, and water, as well as oversight of inputs such as pesticides and fertilizers. Particularly notable is the state's leadership in social responsibility, where California sets some of the highest standards in the world for worker and community well-being. Key regulations include California Division of Occupational Safety and Health (Cal/OSHA) standards for workplace safety (Cal/OSHA Title 8), California’s minimum wage and overtime laws (California Labor Code §§ 1182.12, 1182.13, and 860), and additional labor protections enforced by the Division of Labor Standards Enforcement (DLSE). Further requirements governing mandatory rest and meal breaks (Labor Code §§ 226.7 and 512), heat illness prevention (Title 8, Section 3395), and pesticide use (e.g., California Food and Agriculture Code §§ 12972 and 12973) collectively ensure that agricultural operations support the health and safety of both workers and surrounding communities.

(III) REGENERATIVE PRACTICE CALCULATION APPROACH

The categories and associated practices that emerged from the review of regenerative agriculture principles and outcomes across CDFA, SAI, and RegenScore served as the basis for identifying corresponding questions in the CASP self-assessment. For each regenerative practice, a specific CASP question or group of questions was aligned, and responses were used to determine adoption status. In most cases, adoption of the regenerative practice was determined as "Yes" if one or more related CASP practices were implemented, with some practices including additional conditions or exclusions based on applicability of the practice. In some cases, the alignment was with a single CASP question (e.g., groundwater recharge) and in others with a set of questions (e.g., optimized nutrient management). An example of the calculation approach and corresponding CASP questions related to organic soil amendments is provided in Box 1. Further details for calculation of each of the 20 regenerative practices identified in the project are provided in the Supplemental Information.

Box 1. Example calculation logic for the regenerative practice "organic soil amendments."

Calculation Approach: Orchards considered to be using organic soil amendments if they use any of the four practices listed. Response to "Organic Soil Amendments" is "Yes" if A, B, C, or D is "Yes."

Relevant CASP Practices:

- (A) Were the following sources of nitrogen used in this orchard in the past year? *Response:* Compost
- (B) Were organic soil amendments (e.g., compost) used to stabilize soil by increasing moisture retention and reducing compaction?
- (C) Have organic soil amendments periodically been applied or has between-row ground cover (pre-existing or planted) been intentionally grown to improve water penetration and moisture retention?
- (D) Were prunings used productively (e.g., chipped or composted and used on-site, used for energy generation or used on unpaved roads) and not burned?

Analyses were conducted on a CASP self-assessment data extract from November 2025 that was taken after the close of the 2024 assessment year. The CASP assessment period runs from November 1 to October 31 and is retrospective. Data analyses were carried out using the R statistical package (R Core Team, 2021).

(IV) ADOPTION TRENDS AND ANALYSIS

Individual Practice Adoption

Orchard adoption rates for the individual regenerative practices in 2024 are shown in Table 3. There are multiple examples of regenerative practices with adoption rates of 90% or greater (e.g., use of reduced passes is 93%; adoption of energy conservation methods is 98%).

Category	Regenerative Practices	Current Adoption (% orchards, 2020 to 2024)	Acres Using Practice (2024)
Soil Health	1. Cover Crops	42%	99,005
	2. Organic Soil Amendments	87%	247,964
	3. Whole Orchard Recycling: Previous Orchard	9%	18,329
	4. Reduced Tillage	71%	197,949
	5. Reduced Passes	93%	253,273
	6. Reduced Wind Erosion	92%	261,606
Biodiversity	7. Ecosystem Management Plans or Easements	37%	107,977
	8. Maintain Margin Vegetation	70%	166,261
	9. Bird Boxes and Perches	55%	149,882
	10. Pollinator Habitat	59%	170,939
	11. Hedgerows	54%	139,971
	12. Riparian Buffer	98%	17,493
Water	13. Groundwater Recharge	12%	26,029
	14. Microirrigation	88%	254,484
Input Efficiency	15. Optimized Nutrient Management	92%	263,696
	16. Integrated Pest Management	97%	271,656
	17. Energy Conservation	98%	271,430
	18. Onsite Renewable Energy	40%	144,596
Community	19. Competitive Compensation and Professional Development	96%	217,762
	20. Community Contributions	93%	255,704

Table 3. Almond Regenerative Categories and Practices with Current Adoption Rates and Assessed Acres. *Adoption rates are based on the unique orchard self-assessments in the period of 2020 to 2024. Practices 3, 5, 8, 11, 12, and 19 have a "Not Applicable" option. These practices show the percentage adoption out of applicable orchards rather than the total number of orchards. On average 4,500 unique orchards were assessed for each practice in 2020-2024, with roughly 275,000 assessed acres for each question in 2024.*

In some cases, additional analyses were conducted to provide supporting information to help interpret results for the regenerative practices summarized in Table 3. Details on the practices with supporting analyses are provided below.

- *Cover Crops* – The main analysis reports overall cover crop adoption, including both intentionally planted cover crops and resident vegetation. Supporting analyses disaggregate adoption into resident vegetation and planted cover crops. Of the 42% of orchards that reported cover crops, adoption rates in 2020-2024 for the different types are as follows:
    - Resident cover: 23%
    - Planted cover: 19%

- *Organic Soil Amendments* – The main analysis summarizes adoption of any of four CASP practices related to compost application or the productive use of orchard pruning materials. Supporting analyses show compost use and pruning recycling separately with 2020-2024 orchard adoption rates as follows:
    - Compost: 55%
    - Pruning recycling: 84%

- *Whole Orchard Recycling* – The analysis summarizes whole orchard recycling (WOR) adoption rates among orchards that reported the practice for the previous planting. This practice is contingent on removing an orchard prior to replanting and also depends on whether the current farm owner or manager was responsible for the orchard at the time of removal. As a result, there are very limited responses to this question. There is additional data collected in CASP on whether WOR was carried out on parts of the orchard in the prior year, which is summarized as supporting information and included in Supplemental Information.
    - WOR carried out on the previous planting, if previous planting was a perennial crop and owned or managed by the current grower: 9%
    - WOR carried out on parts of the orchard in the prior year: 48%

- *Microirrigation* – The results show the percentage of orchards using either drip or micro-sprinkler irrigation. Supporting analyses provide adoption rates for individual irrigation system types (drip, micro-sprinkler, sprinkler, flood or furrow irrigation). In addition, supporting analyses summarize adoption across the five categories of the Almond Board's Irrigation Improvement Continuum (system performance, applied water, orchard water requirements, soil moisture, and plant water status) which looks at the quality of the irrigation management (Schwankl et al., 2020). The orchard adoption rates for each irrigation system type in 2020-2024 are provided below. The total is greater than 100% because some orchards may have multiple types of irrigation systems.
    - Drip: 60%
    - Micro-sprinkler: 41%
    - Sprinklers: 9%
    - Flood or furrow: 17%

- *Integrated Pest Management (IPM)* – The analysis reports overall adoption of IPM practices. Supporting analyses examine adoption patterns across five integrated pest management systems that are important in almond production: navel orangeworm, web-spinning mites, *Alternaria*, hull rot, and weeds. The orchard adoption rates for practices related to these IPM systems in 2020-2024 are as follows:
    - Navel orangeworm: 93%
    - Web-spinning mites: 94%
    - Alternaria: 65%
    - Hull rot: 83%
    - Weeds: 87%

- *Onsite Renewable Energy* – The analysis shows overall adoption of any type of renewable energy. Supporting analyses provide adoption rates by technology type, including solar, wind, and biogas digesters. Orchard adoption rates for these individual renewable energy practices in 2020-2024 are as follows:
    - Solar: 38%
    - Wind: 1%
    - Biogas digester: 0.4%

- *Community Contributions* – The data on community contributions represents an aggregation of three different categories related to charitable giving, volunteering, and participation in community activities. Supporting data provides additional details on the orchard adoption rates of these component practices, which in 2020-2024 were as follows:
    - Charitable giving: 80%
    - Volunteering: 79%
    - Community activity participation: 65%

Year-Over-Year Trends of Individual Practices

Each of the 20 regenerative agriculture practices were examined for changes over time by analyzing adoption rate over a five-year period from 2020 to 2024. The detailed results are shown in Figure 2.

- 8 of the regenerative practices have consistently high adoption rates above 90%, including reduced passes, reduced wind erosion, riparian buffers (for applicable farms), optimized nutrient management, integrated pest management, energy conservation, competitive compensation and professional development, and community contributions.
- 3 of the regenerative practices show increased adoption over time, defined as a 5% increase or more of adoption rates in 2024 as compared to 2020. The three practices that increased in this way were: pollinator habitat, hedgerows, and onsite renewable energy. Further investigation of these practices and others would be needed to confirm statistical significance of the trends.

Groundwater recharge (12%) and whole orchard recycling of the previous crop (9%) had the lowest adoption rates of the practices analyzed. The limited uptake may be because both are relatively new practices with site-specific requirements. Groundwater recharge requires access to excess water, which may depend on weather as well as appropriate soils suitable for infiltration. Whole orchard recycling is only possible when an orchard is removed, which in almonds occurs on average after 25 years.

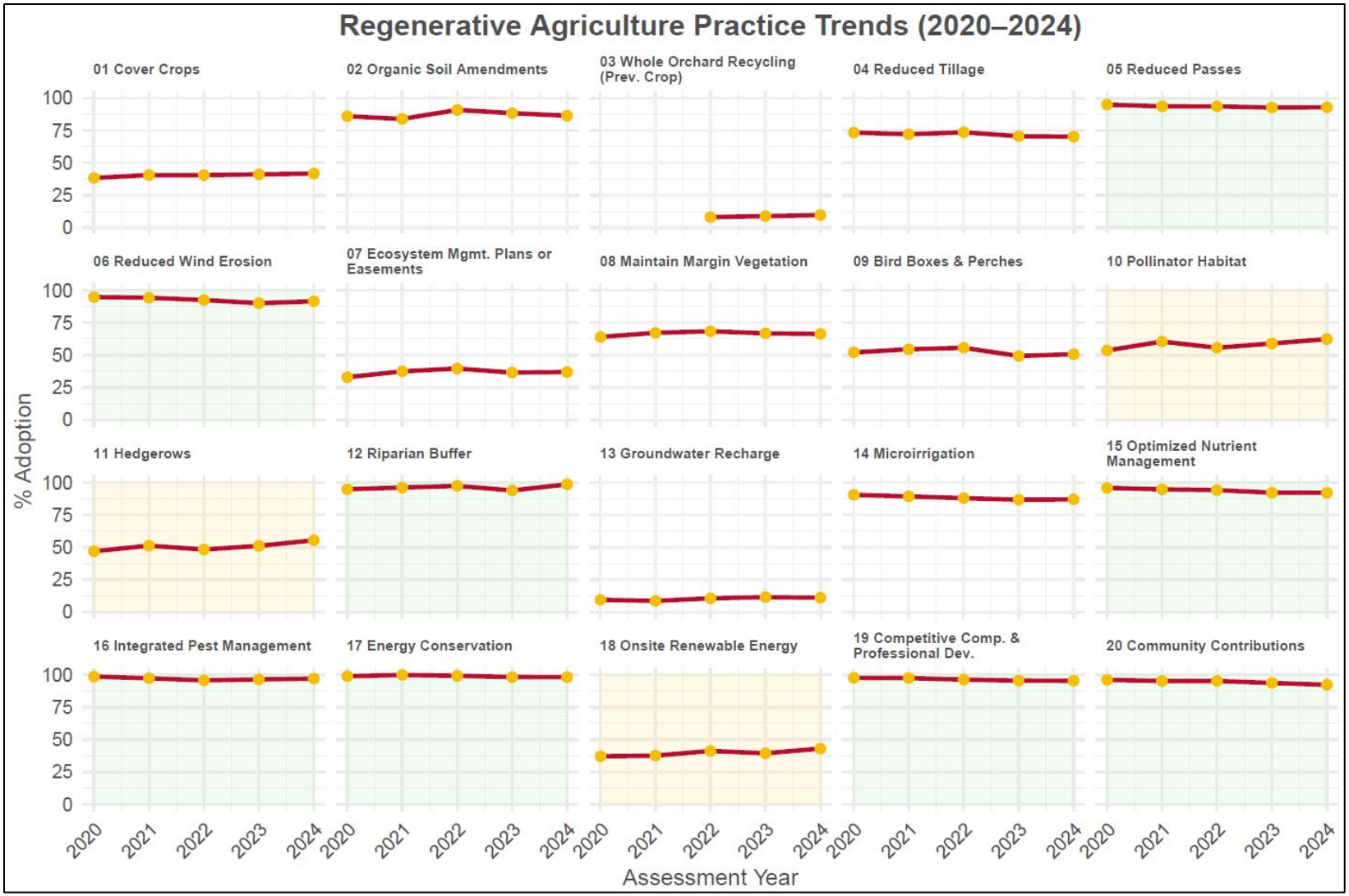


Figure 2. Trends in Regenerative Practice Adoption from 2020 to 2024. *Practices 3, 5, 8, 11, 12, and 19 have a "Not Applicable" option. These practices show the percentage adoption out of applicable orchards rather than the total number of orchards. Practices with a green background had an adoption rate of at least 90% for all five years. Practices with a yellow background increased by at least 5% when comparing 2020 to 2024. The questions related to whole orchard recycling of the previous crop were added in the 2022 assessment year so only three years of data are shown for that practice.*

Aggregate Adoption of Regenerative Practices

Orchards and their corresponding acreage were evaluated for the total number of the 20 regenerative practices implemented in the 2024 crop year. Based on this analysis, 75% of orchards (2,127 out of 2,836) representing about 189,000 out of 233,000 assessed acres in 2024 reported implementing at least one practice in each regenerative category (soil health, biodiversity, water, input efficiency, community).

In addition, almost all assessed orchards/acres in 2024 reported implementing 6 or more regenerative practices. More than three-quarters (80%) of orchard acres assessed in 2024 reported 11 or more regenerative practices. Examples of commonly adopted practices included: energy conservation, IPM, reduced passes, optimized nutrient management, community contributions, reduced wind erosion, organic soil amendments, and microirrigation. The results of the analysis of adoption of regenerative agriculture practices by cumulative acreage are shown in Figure 3. Additional details of the analyses are provided in the Supplemental Information.

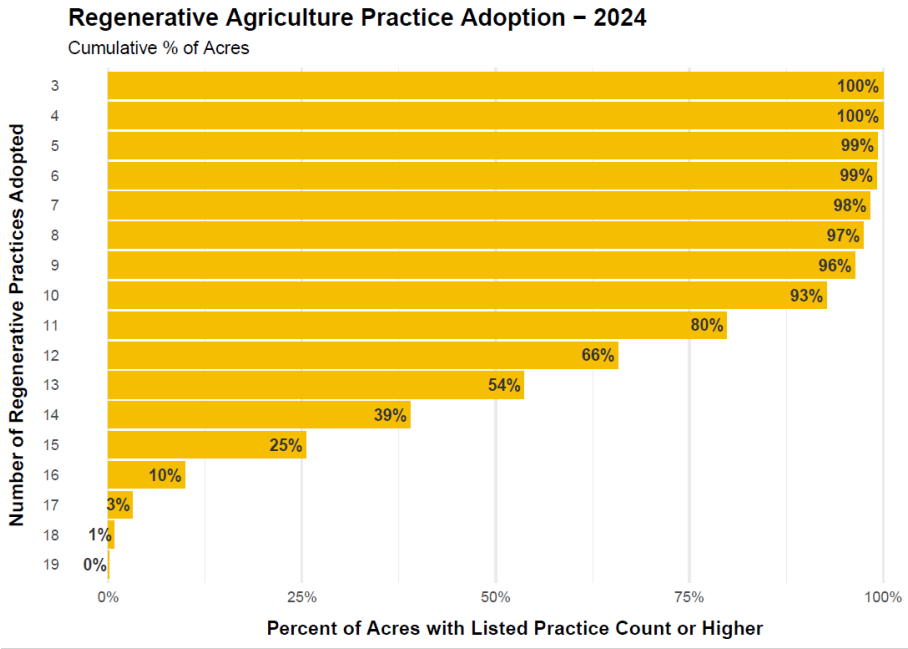


Figure 3. Regenerative Agriculture Practice Adoption (2024), Cumulative % of Acres. *Graph shows cumulative percentage of acres with listed regenerative practices or higher. For example, the graph shows that 80% of orchard acres assessed in 2024 had adopted 11 or more regenerative practices, and almost all orchards (99%) adopted at least 6 practices.*

Orchards for the 2024 crop year were examined to determine average adoption within each of the identified regenerative agriculture categories (soil health, biodiversity, water, input efficiency, community). Detailed results of adoption of average number of regenerative practices per category are provided in the Supplemental Information.

In the 2024 crop year, orchards reported adoption of an average of:

- 12 out of 20 total regenerative practices.
- 4 out of 6 soil health practices.
- 3 out of 6 biodiversity practices.
- 1 out of 2 water practices.
- 3 out of 4 efficient input practices.
- 2 out of 2 community practices.

Stacking Soil Health Practices

Recent research has shown that applying a diverse and stacked combination of soil health practices can be one of the most effective strategies to enhance soil ecosystem functionality and rebuild soil health in California's almond orchards (Marshall et al., 2025). To investigate this in the CASP self-assessment dataset, an analysis of stacking three key practices related to soil health (cover crops, use of organic soil amendments, and whole orchard recycling prior to planting of the orchard) was carried out. The use of organic soil amendments includes applying compost, using materials to enhance soil stability and water infiltration, and/or productively reusing prunings on-site. Cover crops refer to both resident vegetation and/or intentionally planted species. The details of the stacking analysis are shown in Figure 4.

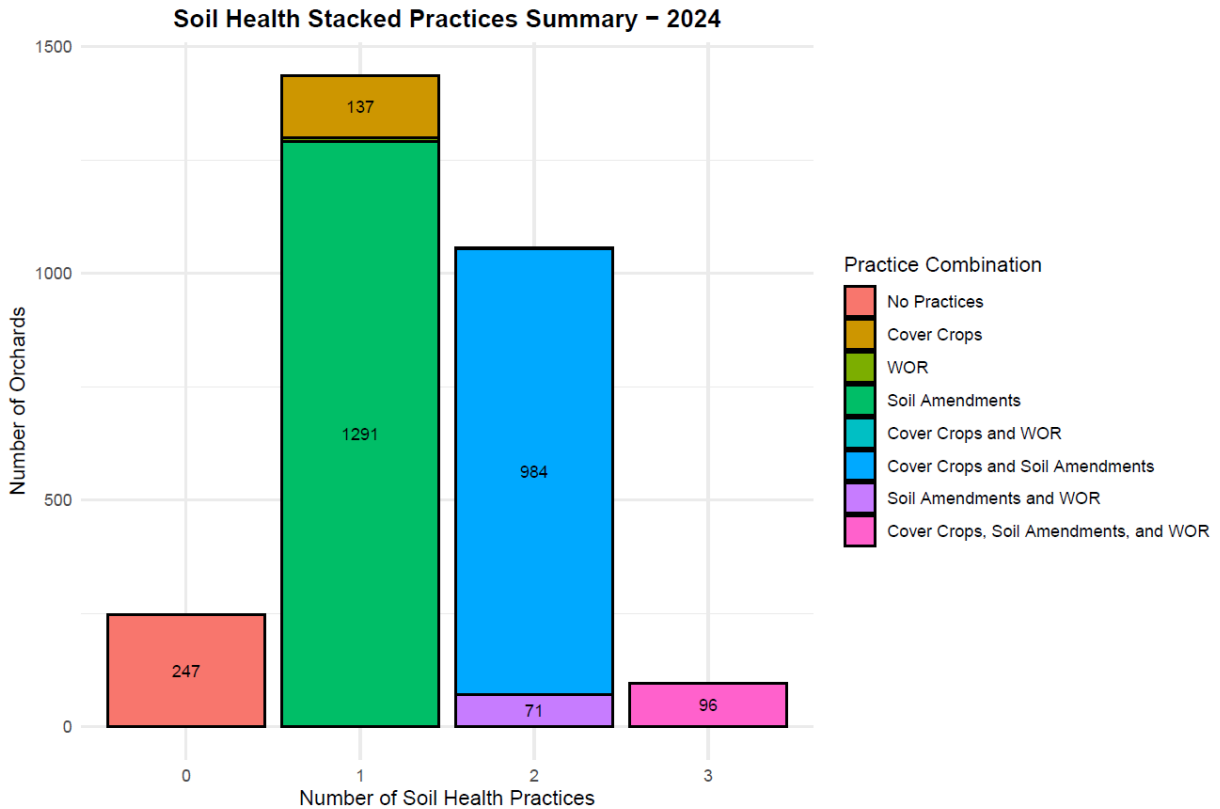


Figure 4. Soil Health Practices – Cover Crops, Soil Amendment, and Whole Orchard Recycling. *Graph shows results from all orchards in 2024 that answered all relevant questions in the CASP catalog. Total sample size is 2,836 orchards representing about 233,000 acres. The number of orchards for each stacking combination is shown on the graph. The number values for combinations with less than 10 orchards are not shown.*

- In the 2024 crop year, 9% of orchards (247 orchards) reported not implementing any of the three practices. Half (51%; 1,436 of 2,836) of orchards had adopted one of the practices, 37% (1,057 of 2,836) had adopted two practices, and 3% (96 orchards) had adopted all three practices.
- Among orchards implementing a single practice, the vast majority (1,291 out of 1,436) reported applying some form of organic soil amendment. In contrast, of orchards only implementing a single practice, 137 orchards reported using cover crops and only 8 orchards reported whole orchard recycling. The reason for the lower reporting of whole orchard recycling is partly because the CASP question is related to what was done with the planting prior to the current orchard. This question only applies if the grower owned or managed the orchard prior to replanting and had previously grown a perennial crop on the site.
- Of orchards implementing two practices, the majority implemented cover crops and soil amendments (984 of 1,057).
- Most orchards that reported using cover crops also implemented additional soil health practices, such as organic soil amendments. In fact, nearly all orchards with cover crops reported them in combination with other practices. Of orchards with cover crops, only 11% (137 out of 1,219) reported cover crops as a standalone practice. In contrast, about half of the orchards that reported using soil amendments (53%; 1,291 out of 2,442) were using them as a single practice. These results suggest that growers that implement cover crops might do that after adoption of other practices, such as soil amendments.

Stacking Biodiversity Practices

An analysis was conducted on three biodiversity practices that are focused on providing habitat for pollinators or beneficial wildlife (habitat and biodiversity conservation, pollinator habitat, hedgerows). Riparian buffers were excluded from the analysis due to their limited presence in orchards, as few sites reported adjacent water bodies. Unlike soil health stacking results, there was no clear adoption pattern in biodiversity practices.

- In the 2024 crop year, about one third (31%; 890 out of 2,836) of orchards implemented all three practices. By comparison, about 26% of orchards (724 out of 2,836) did not implement any of the selected biodiversity practices. The remainder reported the adoption of either one or two practices.
- The presence of hedgerows appears most commonly in combination with the other practices. Of orchards with hedgerows, only a small fraction reported implementation of hedgerows alone (20 orchards). Most orchards with hedgerows were implementing all three practices, or in combination with pollinator habitat.

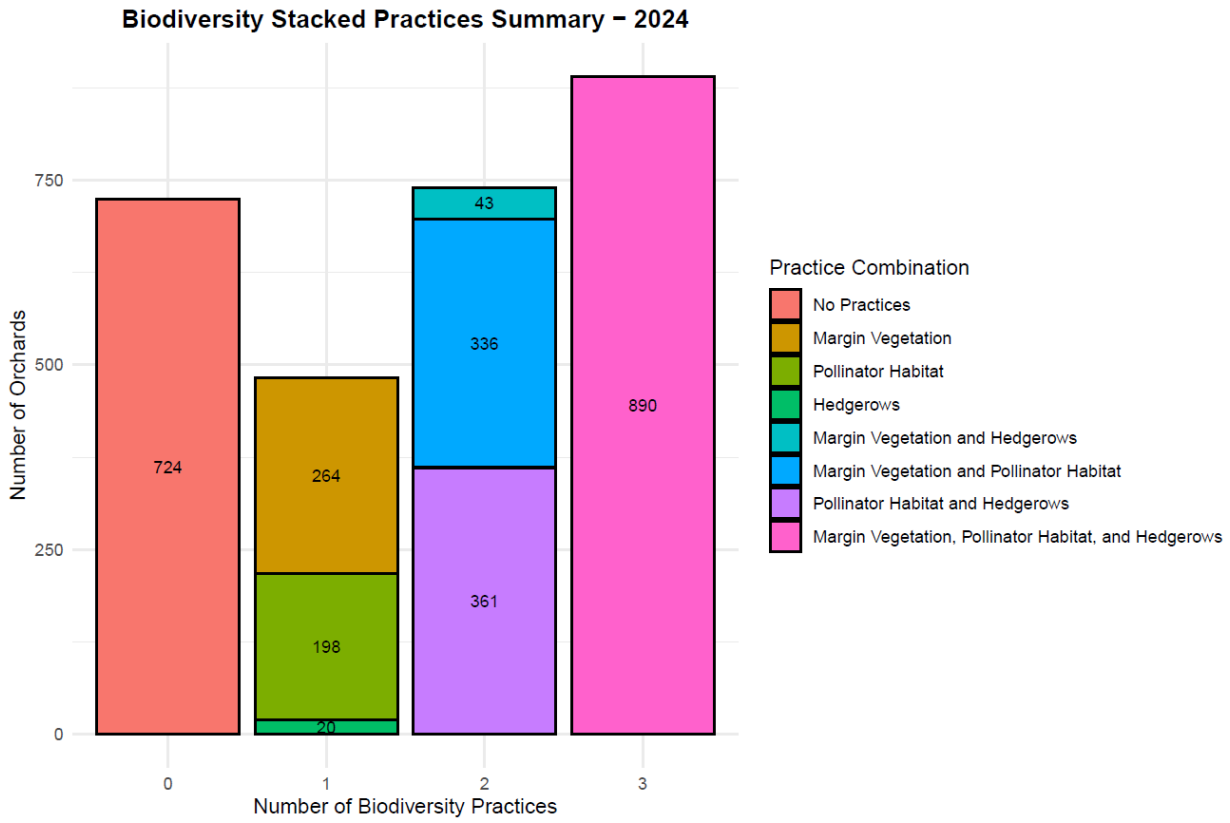


Figure 5. Biodiversity Practices – Habitat and Biodiversity Conservation, Pollinator Habitat, and Hedgerows. *Graph shows results from all orchards in 2024 that answered all relevant questions in the CASP catalog. Total sample size is 2,836 orchards representing about 233,000 acres.*

(V) CONCLUSIONS

The comparison of CASP self-assessment questions with relevant regenerative agriculture approaches and programs (SAI Platform's Regenerating Together, the CDFA definition of regenerative agriculture, and RegenScore) demonstrates strong alignment. With some limited exceptions, most regenerative practices identified across these frameworks are captured within CASP, affirming its utility as a tool for tracking regenerative adoption among California almond growers.

The analysis identified 5 categories of regenerative agriculture and 20 associated practices spanning soil health, biodiversity, water, input efficiency, and community. Adoption patterns are encouraging: 8 of the 20 practices have consistently high adoption rates above 90%, and 3 (hedgerows, pollinator habitat, and onsite renewable energy) show increases of more than 5% between 2020 and 2024.

Results for the 2024 crop year further underscore the breadth of adoption. More than three-quarters of orchard acres (80%) reported adoption of 11 or more regenerative practices, and nearly all reported using at least 6. Three-quarters of orchards implemented at least one practice across all 5 regenerative categories, reflecting engagement across the full range of practices rather than concentration in a single domain.

Taken together, these findings indicate that California almond growers are engaging with regenerative agriculture at scale, with strong baseline adoption and positive directional trends. The results also highlight areas where adoption remains low, pointing to opportunities for potential support and continued improvement.

(VI) REFERENCES

Almond Board of California. (2025). *California Almond Stewardship Platform*. https://www.almonds.com/almond-industry/stewardship-platform Accessed July 2025.

CDFA. (2025). *Defining Regenerative Agriculture for State Policies and Programs*. https://www.cdfa.ca.gov/State_Board/docs/staff_draft_regenerative_ag_final_jan_revise.pdf

Giller, K. E., Hijbeek, R., Andersson, J. A., & Sumberg, J. (2021). Regenerative Agriculture: An agronomic perspective. *Outlook on Agriculture*, *50*(1), Article 1. https://doi.org/10.1177/0030727021998063

Girgis, C. L. (n.d.). The Fundamental Principles of Regenerative Agriculture and Soil Health (Nobel Research Institute). https://www.noble.org/regenerative-agriculture/soil/the-fundamental-principles-of-regenerative-agriculture-and-soil-health/ Accessed January 2026.

Isaacs, S., Aramini, J., Ciebin, B., Farrar, J. A., Ahmed, R., Middleton, D., Chandran, A. U., Harris, L. J., Howes, M., Chan, E., Pichette, A. S., Campbell, K., Gupta, A., Lior, L. Y., Pearce, M., Clark, C., Rodgers, F., Jamieson, F., Brophy, I., & Ellis, A. (2005). An International Outbreak of Salmonellosis Associated with Raw Almonds Contaminated with a Rare Phage Type of Salmonella Enteritidis. *Journal of Food Protection*, *68*(1), 191–198. https://doi.org/10.4315/0362-028X-68.1.191

Jayasinghe, S. L., Thomas, D. T., Anderson, J. P., Chen, C., & Macdonald, B. C. T. (2023). Global Application of Regenerative Agriculture: A Review of Definitions and Assessment Approaches. *Sustainability*, *15*(22), 15941. https://doi.org/10.3390/su152215941

Marshall, K., Hodson, A. K., Bowles, T., Jarvis-Shean, K., & Gaudin, A. C. M. (2025). Stacking soil health practices is necessary to enhance soil ecosystem multifunctionality of semi-arid almond agroecosystems. *Applied Soil Ecology*, *210*, 106066. https://doi.org/10.1016/j.apsoil.2025.106066

Martinez-Nuñez, C., Velado-Alonso, E., Avelino, J., Rey, P. J., Ten Hoopen, G. M., Pe'er, G., Zou, Y., Liu, Y., Antwi-Agyei, P., Rusch, A., Staver, C., Priyadarshana, T. S., Sonwa, D. J., Buchori, D., Garibaldi, L. A., Concepción, E. D., Lewis, O. T., Perfecto, I., & Bartomeus, I. (2024). Tailored policies for perennial woody crops are crucial to advance sustainable development. *Nature Sustainability*, *8*(2), 133–141. https://doi.org/10.1038/s41893-024-01483-8

Newton, P., Civita, N., Frankel-Goldwater, L., Bartel, K., & Johns, C. (2020). What Is Regenerative Agriculture? A Review of Scholar and Practitioner Definitions Based on Processes and Outcomes. *Frontiers in Sustainable Food Systems*, *4*, 577723. https://doi.org/10.3389/fsufs.2020.577723

R Core Team. (2021). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing, Vienna, Austria. https://www.R-project.org/

RegenScore. (2025). https://regenscore.org/ Accessed July 2025.

SAI. (2024). *Regenerating Together Programme: A Global Framework for Regenerative Agriculture. Narrative 1.1*. SAI Platform. https://saiplatform.org/wp-content/uploads/documents/22943/regenerating-together-programme-framework-narrative-oct24.pdf

Schreefel, L., Schulte, R. P. O., de Boer, I. J. M., Schrijver, A. P., & van Zanten, H. H. E. (2020). Regenerative agriculture – the soil is the base. *Global Food Security*, *26*, 100404. https://doi.org/10.1016/j.gfs.2020.100404

Schwankl, L., Prichard, T., & Fulton, A. (2020). *Almond Irrigation Improvement Continuum*. Almond Board of California. https://www.almonds.org/sites/default/files/2020-02/Almond-Irrigation-Improvement-Continuum.pdf

Scott, E. I., Toensmeier, E., Iutzi, F., Rosenberg, N. A., Lovell, S. T., Jordan, N. R., Peters, T. E., Akwii, E., & Broad Leib, E. M. (2022). Policy pathways for perennial agriculture. *Frontiers in Sustainable Food Systems*, *6*. https://doi.org/10.3389/fsufs.2022.983398

Shrestha, R. K., Jacinthe, P., Lal, R., Lorenz, K., Singh, M. P., Demyan, S. M., Ren, W., & Lindsey, L. E. (2023). Biochar as a negative emission technology: A synthesis of field research on greenhouse gas emissions. *Journal of Environmental Quality*, *52*(4), 769–798. https://doi.org/10.1002/jeq2.20475

SureHarvest. (2025). *California Almond Stewardship Platform (CASP) Self-Assessment Data Repository. Grower Participation and Repository Data through October 31, 2025.*

Regenerative Agriculture Practice Adoption in California Almonds:
Analysis of 2020–2024 Grower Self-Assessment Data

SUPPLEMENTAL INFORMATION

May 2026

SUPPLEMENTAL INFORMATION

The supplemental information provided in this document accompanies the report “Regenerative Agriculture Practice Adoption in California Almonds: Analysis of 2020–2024 Grower Self-Assessment Data.”

The supplemental information is organized into multiple appendices as follows:

- APPENDIX A. CASP Questions and Calculation Approach
- APPENDIX B. Whole Orchard Recycling Details
- APPENDIX C. Additional Year-Over-Year Trends
- APPENDIX D. Regenerative Agriculture Aggregate Results – 2024
- APPENDIX E. Regenerative Agriculture Aggregate Results by Category
- APPENDIX F. Comparison of Practices with Soil Organic Matter
- APPENDIX G. Regenerative Agriculture Analysis Summary Grid

The report and accompanying supplemental information were prepared by SureHarvest in collaboration with the Almond Board of California.

Authors
Eric S.J. Harris, PhD, SureHarvest
Franklin Dlott, MSc, SureHarvest

Editors
Gabriele Ludwig, PhD, Almond Board of California
Danielle Veenstra, Almond Board of California

APPENDIX A. CASP Questions and Calculation Approach

This appendix provides details on the regenerative practices and related CASP questions used to calculate adoption. Questions are identified by their unique four-digit numeric identifier (ID), with corresponding 2024 crop year assessment question catalog number provided in parentheses for reference.

1. Cover crops

Relevant CASP Practices:

- **0279**. Was a cover crop (pre-existing or planted ground cover) intentionally grown between orchard rows? (NS-28)
- **0807**. Was the ground cover purposely planted? (NS-29)

Calculation Approach: Overall cover crop adoption is calculated using responses to 0279. Among respondents who answered "Yes" to 0279, responses to 0807 are used to distinguish planted cover crop (Yes) from resident cover (No).

2. Organic soil amendments (compost, pruning recycling)

Relevant CASP Practices:

- **0511**. Were the following sources of nitrogen used in this orchard in the past year? -- *Response:* Compost (NS-09)
- **0007**. Were organic soil amendments (e.g., compost) used to stabilize soil by increasing moisture retention and reducing compaction? (NS-27)
- **0913**. Have organic soil amendments periodically been applied or has between-row ground cover (pre-existing or planted) been intentionally grown to improve water penetration and moisture retention? (Subset IM-38)
- **0024**. Were prunings used productively (e.g., chipped or composted and used on-site, used for energy generation or used on unpaved roads) and not burned? (EA-20)

Calculation Approach: Orchards considered to be using organic soil amendments if they use any of the four practices listed. The practice of organic soil amendments is considered as “Yes” if 0511, 0007, 0913, or 0024 are “Yes.”

As supporting metrics, orchards are considered to be using compost if any of 0511, 0007, or 0913 are “Yes.” Orchard use of pruning recycling is based on the response to 0024.

3. Whole orchard recycling

There are two different sections in the CASP Self-Assessment that ask about whole orchard recycling – one set of questions asks about what was done to a previous planting (shown below as 3a; CASP IDs 1096, 1100), and another asks if there was any removal or redevelopment in the prior year (3b; CASP IDs 1054, 1056). The overall calculation for regenerative practices relies on the first approach of what was done with the planting that preceded the current almond orchard (3a). Year over year individual practice trends are shown using responses to the question about what was done on the orchard in the prior year.

Previous orchard
Relevant CASP Practices:

- **1096**. Were the current farm owners or managers responsible for this orchard prior to the current almond planting? (OS-22)
- **1100**. Prior to this planting, trees or vines were whole orchard recycled (WOR). WOR involves grinding whole trees into chips, spreading the chips evenly on the soil surface, then incorporating them into the soil before replanting. (Subset OS-25)

Calculation Approach: Orchards are considered to have used whole orchard recycling for the previous planting of a perennial crop if an acreage value is entered in 1100. If response is "No" to 1096, then the response for this practice is "Not Applicable." These questions were added to the CASP catalog starting in the 2022 crop year assessment.

Supporting metric: Whole orchard recycling: Prior year
Relevant CASP Practices:

- **1054**. Was any acreage on this orchard removed or redeveloped in the past year? (YW-11)
- **1056**. Whole Orchard Recycled (WOR). WOR involves grinding whole trees into chips, spreading the chips evenly on the soil surface, then incorporating them into the soil. (Subset YW-12)

Calculation Approach: Orchards are considered to be using whole orchard recycling if an acreage value is entered in 1056. If response is "No" to 1054, then the response for this practice is "Not Applicable."

4. Reduced tillage

Relevant CASP Practice:

- **0944**. Over the past three years, how frequently was the orchard floor tilled (excluding floating, smoothing or rolling)? (NS-26)

Calculation Approach: Response to reduced tillage is "Yes" if 0944 is "0 times in the past 3 years", otherwise the response is "No."

5. Reduced passes

Relevant CASP Practice:

- **0008**. Was a plan implemented to minimize passes by equipment and motorized vehicles in the orchard? (EA-12)

Calculation Approach: Adoption calculated using responses to 0008. A response option to 0008 is "Not Applicable" for growers not using equipment or when in-field operations were outsourced and not under the grower's control.

6. Reduced wind erosion

Relevant CASP Practices:

- **1033**. Was at least one type of low-dust harvester used? (EA-37)
- **0011**. Did unpaved roads have posted speed limits of 15 mph or less to reduce dust generation? (EA-21)
- **0014**. Were applications of water or organic dust suppressants (e.g., road oil or polymers) made or was layering of mulches, chips (during winter), sand or gravel used on unpaved roads and/or on unpaved equipment yards? (EA-22)

Calculation Approach: Orchards considered to be taking steps to reduce wind erosion if they use any of the three practices listed. Reduced wind erosion is considered as "Yes" if 1033, 0011, or 0014 are "Yes."

7. Ecosystem management plans or easements

Relevant CASP Practices:

- **0569**. Were some or all of the natural areas of the farm property protected by a natural resources conservation easement? (EM-10)
- **0570**. Were some areas or the entire farm protected by an agricultural conservation easement? (EM-11)
- **0592**. Was a documented ecosystem/habitat management plan completed for the farm that includes goals for production areas, goals for managing areas not used for farming or processing, and a monitoring protocol to measure improvement over time? (EM-22)

Calculation Approach: Orchards considered to be promoting ecosystem management if they use any of the three practices listed. Ecosystem management plans or easements is considered as "Yes" if 0569, 0570, or 0592 are "Yes."

8. Maintain margin vegetation

Relevant CASP Practices:

- **0575**. Was vegetation such as grasses, trees or shrubs maintained along roadsides, ditch-banks, headlands and/or irrigation canals, to provide habitat for beneficial wildlife and to serve as vegetative filter strips to slow and retain water and filter contaminants? (EM-12)
- **0576**. Were beneficial trees (besides almonds) that existed before farm establishment maintained, and/or were beneficial trees planted after establishment (such as along roadsides), to provide habitat for beneficial wildlife? (EM-13)

Calculation Approach: Orchards are considered to be maintaining margin vegetation if they use either of the two practices listed. Maintenance of margin vegetation is considered as "Yes" if 0575 or 0576 are "Yes." Both questions have a "Not Applicable" option, so if both are "Not Applicable" then the practice response is "Not Applicable."

9. Bird boxes and perches

Relevant CASP Practice:

- **0311**. Was biological control of burrowing vertebrate pests encouraged by installing nest boxes or perches for predatory birds (e.g., owls or hawks) at orchard margins? (PM-97)

Calculation Approach: Adoption calculated using responses to 0311.

10. Pollinator habitat

Relevant CASP Practices:

- **0574**. Was vegetation maintained on or adjacent to the farm that provided pollen and nectar sources for pollinator bees before and/or after almond bloom (includes nutritional ground cover)? (BP-24)
- **0875**. Was the cover crop recommended for providing forage to pollinators (e.g., mustards, clovers, vetch and/or wildflowers)? (Subset NS-30)

Calculation Approach: Orchards considered to be promoting pollinator habitat if they use either of the two practices listed. Pollinator habitat is considered as "Yes" if 0574 or 0875 are "Yes."

11. Hedgerows

Relevant CASP Practice:

- **0573**. Were hedgerows of flowering shrubs, such as coyote brush, maintained along at least some edges of the farm to provide alternative nutrition sources for managed and native pollinators and pest natural enemies? (BP-23)

Calculation Approach: Adoption calculated using responses to 0573. A response option to 0573 is "Not Applicable."

12. Riparian buffers

Relevant CASP Practices:

- **0578**. Were riparian habitat, swales, vernal pools or water courses present on the farm property? (EM-14)
- **0779**. Did a water course(s) exist on the farm property? (Subset EM-17)
- **0583**. Were the banks of the water course(s) maintained with resident non-woody vegetation (excluding noxious weeds)? (Subset EM-18)
- **0584**. Were the banks of the water course(s) maintained with a mix of grasses, trees and shrubs? (Subset EM-19)

Calculation Approach: The practice of riparian buffers is considered as "Yes" if 0583 or 0584 are "Yes." Both questions are only applicable if the orchard has indicated that there is a water course on the property. If no water course is present (i.e., 0578 or 0779 are "No"), then the response to this practice is "Not Applicable."

13. Groundwater recharge

Relevant CASP Practice:

- **1062**. Was the orchard intentionally irrigated or flooded for groundwater recharge? (IM-41)

Calculation Approach: Adoption calculated using responses to 1062.

14. Microirrigation

Relevant CASP Practice:

- **0548**. What type of irrigation system is used for this orchard (not counting separate systems for frost control)? It is recommended that you assess one irrigation set at a time. If you wish to assess an orchard with multiple types of irrigation systems, please select all appropriate types. (IM-03)

Calculation Approach: Adoption calculated using responses to 0548. Orchards that responded that irrigation system type was either “Drip,” “Micro-Sprinklers” or both are considered as “Yes.” Orchards with only sprinklers or flood/furrow are considered as “No.”

Supporting Metric: Efficient irrigation management

Calculation Approach: Adoption calculated using responses to the Irrigation Improvement Continuum. An orchard response is “Yes” if they are on the continuum for at least 3 of the 5 continuum systems. The five systems include: irrigation system performance, applied water, orchard water requirements, soil moisture, and plant water status.

15. Optimized nutrient management

Relevant CASP Practices:

- **0362**. To ensure overall nitrogen use efficiency, was a documented comprehensive nitrogen management plan and budget used for this orchard? (NS-01)
- **0347**. Were plant tissues sampled and tested for nutrient content to guide the amounts of fertilizer applications? (NS-18)
- **0928**. Has the soil been sampled and tested to identify any problems impacting nutrient availability or to guide management decisions? (NS-20)
- **0782**. Were the applied amounts of nitrogen fertilizer calculated from yield estimates, nitrogen credits from other sources (e.g., irrigation water, compost and/or cover crops), and results of early season leaf sampling? (NS-23)
- **0933**. Were all fertilizer applications made at recommended timings (coinciding with crop growth and demand)? (NS-24)

Calculation Approach: An orchard is considered as following optimized nutrient management if they responded “Yes” to the following three practices (0362, 0782, 0933), and “Yes” to either 0347 or 0928.

16. Integrated pest management

Relevant CASP Practice:

- **0121**. Were integrated pest management (IPM) techniques used to reduce the likelihood of treatments for insect, disease and weed control and associated energy use? IPM may reduce the need for equipment passes. (PM-01)

Calculation Approach: Adoption calculated using responses to 0121.

Supporting Metric: Key Pest Specific IPM
Calculation Approach: Adoption calculated based on adoption of pest specific integrated pest management systems. An orchard response is "Yes" if they are considered to have adopted at least 3 of 5 pest specific systems. The five pest specific systems include: navel orangeworm (NOW), web-spinning mites, Alternaria, hull rot, and weeds. The calculation and related CASP questions for each pest specific system are provided below.

Navel orangeworm (NOW)
Relevant CASP Practices:

- **0256**. Was a mating disruption program for navel orangeworm (NOW) used for this orchard? (PM-45)
- **0227**. To reduce outbreaks of NOW, were mummy nuts counted and removed, as needed, during the winter, so that less than two mummies per tree remained by February 1? (For the southern San Joaquin Valley and any almond orchard within 3 miles of pistachio orchards, this rate must be less than one mummy nut per tree). (PM-42)

Calculation Approach: Orchards considered to be meeting the navel orangeworm system if they are using either of the practices listed. NOW is considered as "Yes" if either 0256 OR 0227 are "Yes." Both questions have a "Not applicable" option, so if both are "Not applicable" then the NOW system response is "Not applicable."

Web-spinning mites
Relevant CASP Practices:

- **0797**. Were mite predators (e.g., predatory mites and six-spotted thrips) also monitored to estimate the amount of biological control and to make management decisions that reduced pests and preserved natural enemies? (PM-61)
- **1071**. Were mites sprayed in the past year? (PM-62)
- **1072**. Were miticides only applied after mite populations exceeded an established threshold of 25 percent of leaves infested (if there were no natural enemies), or 40 percent of leaves infested (if natural enemies were present)? (PM-64)

Calculation Approach: Orchards are considered to be meeting the web-spinning mites system if they are using either 0797 or 1072. Web-Spinning Mites is considered as "Yes" if either 0797 or 1072 are "Yes." 1071 is included because if the response to 1071 is "No" then 1072 is skipped. If 0797 is "Not applicable" and 1071 is "No" then the response is "Not applicable."

Alternaria
Relevant CASP Practice:

- **1075**. Were temperature and leaf wetness duration monitored and used in a disease severity value (DSV) model to help forecast Alternaria leaf spot? (PM-68)

Calculation Approach: Orchards considered to be meeting the Alternaria system based on their response to 1075.

Hull rot
Relevant CASP Practices:

- **0809**. Was Strategic Deficit Irrigation (SDI) used throughout the hullsplit period to provide a uniform hullsplit, increase drying on the tree, and facilitate a rapid, timely harvest? (IM-10)
- **0782**. Were the applied amounts of nitrogen fertilizer calculated from yield estimates, nitrogen credits from other sources (e.g., irrigation water, compost and/or cover crops), and results of early season leaf sampling? (NS-23)

Calculation Approach: Orchards considered to be meeting the hull rot system if they are using both practices listed. Hull rot is considered as "Yes" if 0809 and 0782 are "Yes." Both questions have a "Not applicable" option, so if both are "Not applicable" then the NOW system response is "Not applicable."

Weeds
Relevant CASP Practice:

- **0295**. Were herbicides generally applied only within the tree rows (not in orchard middles)? (PM-90)

Calculation Approach: Orchards considered to be meeting the weeds system based on their response to 0295. If the response to 0295 is "Not applicable" then the response to the weeds system is also "Not applicable."

17. Energy conservation

Relevant CASP Practices:

- **0068**. Instead of tractors or larger vehicles, were bicycles or vehicles with smaller motors/engines (e.g., ATVs, motorcycles, golf carts, and self-propelled light-spray rigs) used for on-site transportation requiring less horsepower? (EA-07)
- **0069**. Were calculated horsepower needs and fuel efficiency factored into purchasing decisions for tractors or other heavy, fuel-powered equipment? (EA-08)
- **0008**. Was a plan implemented to minimize passes by equipment and motorized vehicles in the orchard? (EA-12)
- **1283**. Were zero emission vehicles (e.g., electric, hydrogen) used by the business? (EA-09)

Calculation Approach: Orchards considered to be conserving energy if they use any of the four practices listed. Energy conservation is considered as "Yes" if 0068, 0069, 0008, or 1283 are "Yes." 1283 was introduced in 2022 crop year assessment, so only 0068, 0069, and 0008 are considered in prior crop year assessments.

18. Onsite renewable energy

Relevant CASP Practices:

- **0030**. Did on-site renewable energy sources (e.g., solar, wind, biogas digester or fuel cells) supply at least some electricity or heat requirements? (EA-01)
- **0976**. Was on-site solar energy used to generate electricity or heat (e.g., hot water or processing heat)? (EA-02)
- **0977**. Was on-site wind power used to generate electricity? (EA-03)
- **0978**. Was an on-site biogas digester(s) or fuel cell(s) used to generate electricity or heat? (EA-04)

Calculation Approach: Orchards considered to be using renewables based on response to 0030. Additional supporting information on types of renewable energy is provided by adoption to 0976, 0977, and 0978.

19. Competitive compensation and professional development

Relevant CASP Practices:

- **0624**. Did the farm offer employees competitive compensation packages to ensure competitive salaries and limit attrition? (WM-02)
- **0630**. Were employees provided the opportunity for professional development and further enhancement of skills and competencies through in-house or external company sponsored-training or education? (WM-06)

Calculation Approach: Orchards that do not employ workers (i.e., responded 0 employees to ID 622) are considered “Not Applicable” for this practice. If the orchard had employees and responded “Yes” to either 0624 or 0630, then the response is “Yes.”

20. Community contributions

Relevant CASP Practices:

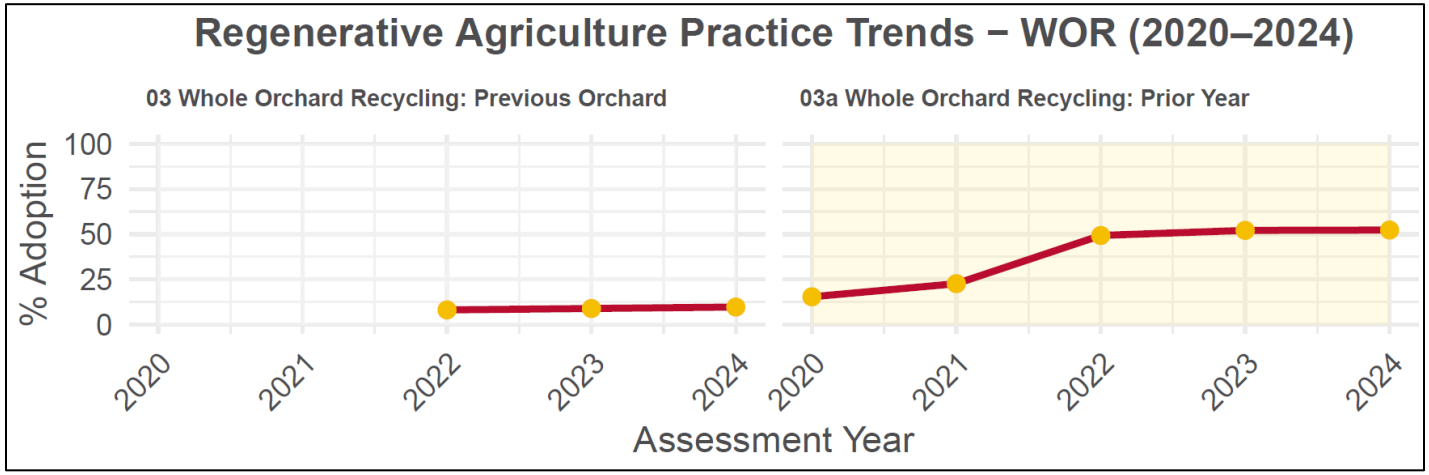
- **0672**. Did the farm make contributions (e.g., money, products and/or time) to charitable organizations? (NC-10)
- **0687**. Did employees and management participate in activities (e.g., served on Boards of Directors, volunteered with community organizations, programs, and/or industry organizations) that contribute to community well-being? (NC-11)
- **1275**. For which of the following areas did members of the farm participate in activities that contribute to community well-being? (NC-12)

Calculation Approach: An orchard is considered as “Yes” to community contributions if they responded “Yes” to either 0672 or 0687 or had at least one of the following four responses to 1275:

- housing
- land/environmental planning, protection or restoration
- public health and safety
- school/educational

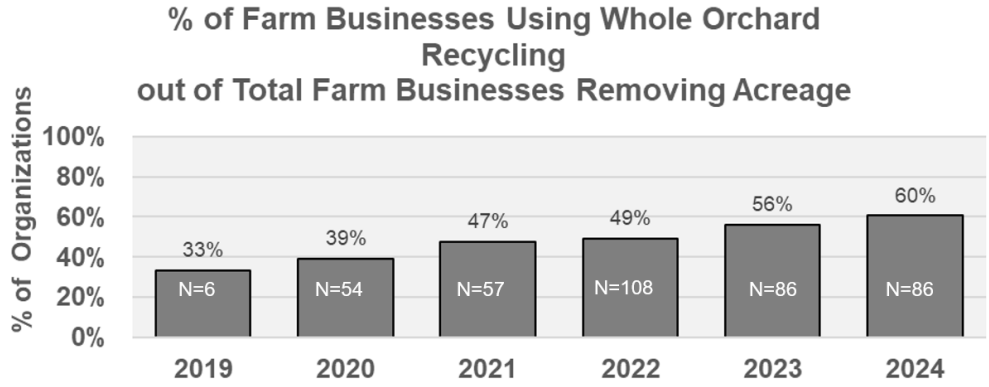
APPENDIX B. Whole Orchard Recycling Details

For the report, whole orchard recycling is measured as the percentage of orchards that reported implementing whole orchard recycling in the previous year or prior to the current planting. These results are illustrated in the figure to the right.



A limitation of calculating the regenerative agriculture practice (WOR: Previous Orchard) is that the question can only be answered when the current farm owner or manager was also responsible for the crop prior to the current planting AND when the previous planting was a woody perennial crop.

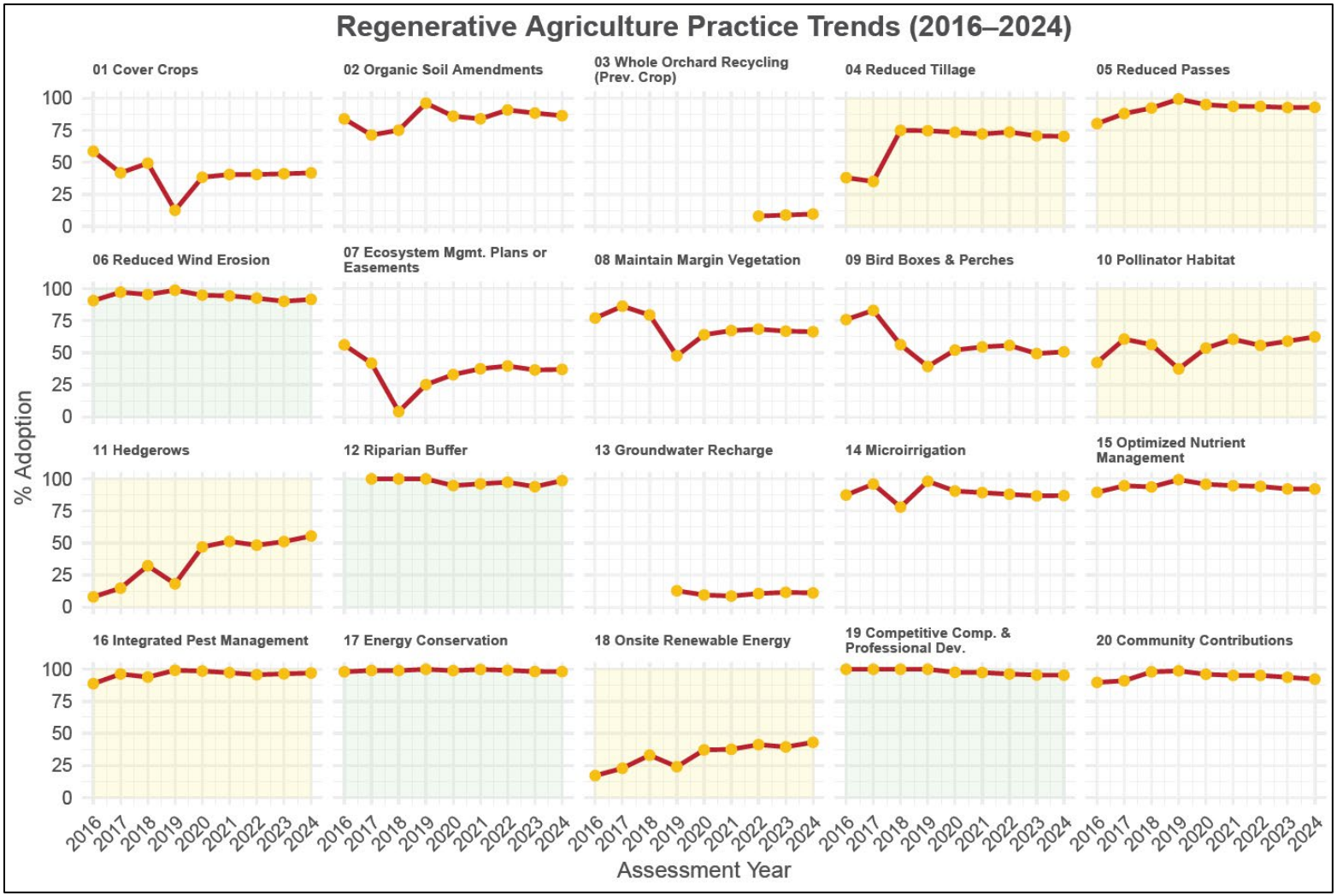
Similarly, the supporting metric of (WOR: Prior Year) only asks whether any acreage was removed or replanted in the prior year. In some cases, users appear to have cloned or directly copied responses from one orchard to another or from an earlier assessment year for this question. To help ensure data quality for analyses involving question 03a, the dataset was therefore restricted to organizations that reported having used WOR on at least one orchard. These results align with the results by orchard above and are shown in the graph to the right.



Percent of farm businesses that removed acreage that using whole-orchard recycling. Calculation was based on organizations that had at least one orchard reporting acreage with whole-orchard recycling (i.e., ID1056 >0) out of all organizations that had at least one orchard that removed or redeveloped acreage (i.e., "yes" to ID 1054). Graph shows an increase in the percent of businesses using WOR from 33% in 2019 to 60% in 2024. Sample sizes have increased from 6 businesses in 2019 to 86 in 2024.

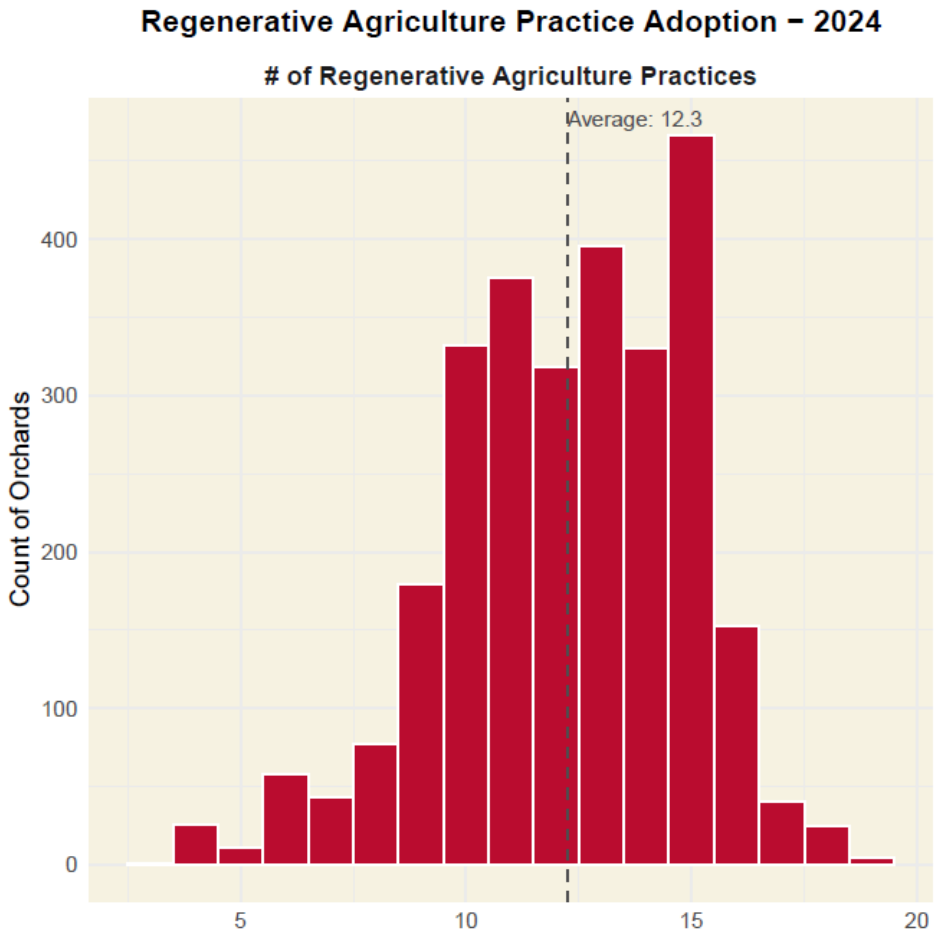
APPENDIX C. Additional Year-Over-Year Trends

The graph below presents trends over nine crop years (2016–2024). These analyses were conducted for exploratory purposes. Yellow shading indicates increase of at least 5% comparing 2016 to 2024 crop years, and green shading indicates adoption of at least 90% for every year shown. Results in the 2018 crop year and prior had smaller sample sizes leading to variability in the results.



APPENDIX D. Regenerative Agriculture Aggregate Results – 2024

Graphs show results from all orchards in 2024 that answered all relevant questions in the CASP catalog. Total sample size is 2,836 orchards representing 232,613 acres. There is a total of 20 regenerative agriculture practices, of which 6 have a not applicable response option. The results show that on average, orchards in the 2024 crop year implemented 12 of the 20 practices.



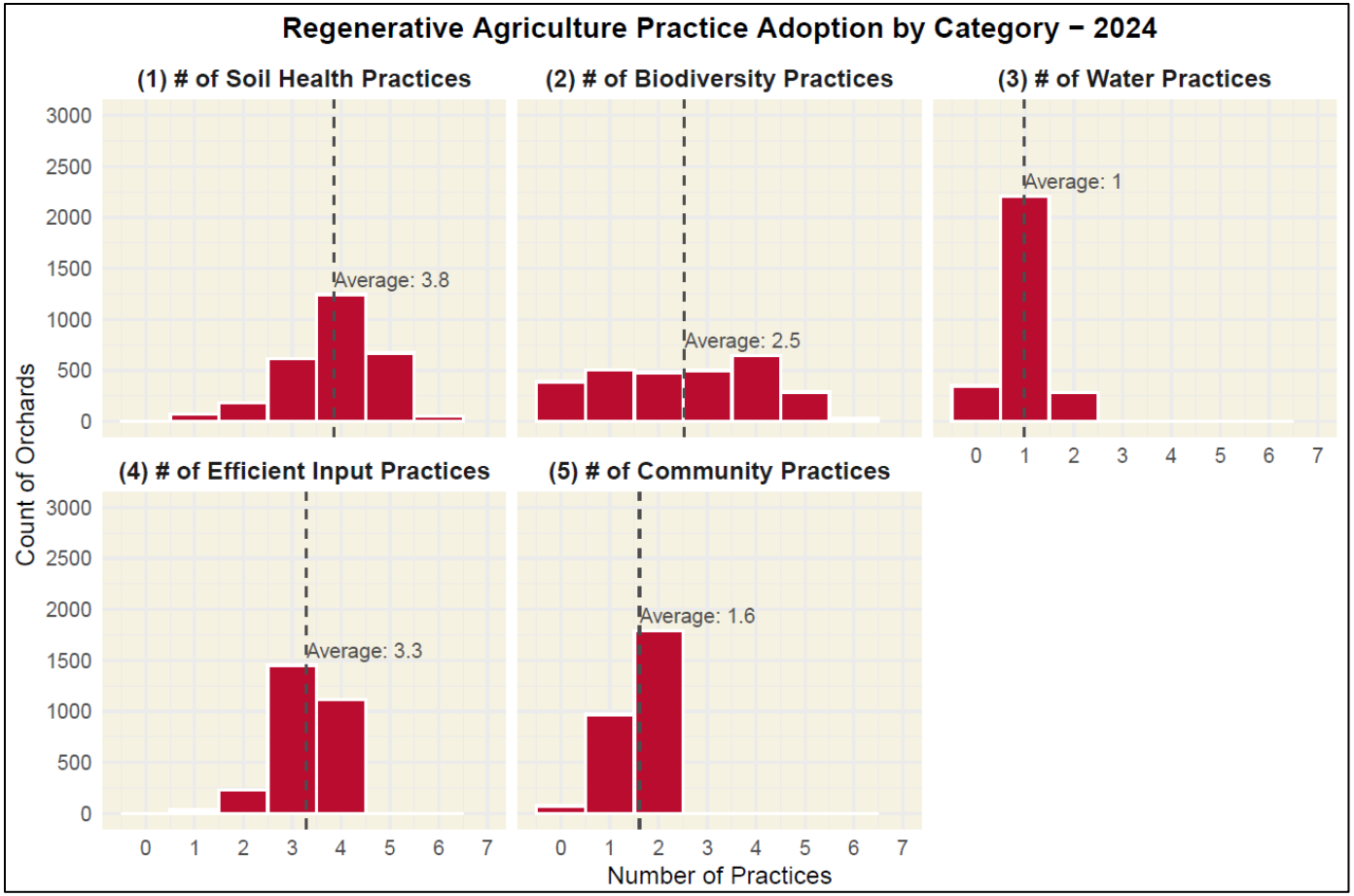
Graph shows the number of orchards in 2024 according to the number of regenerative practices that were adopted. For example, more than 450 orchards reported adoption of 15 regenerative practices.

Additional summary numbers based on the analysis of aggregate performance:

Number of Regenerative Practices	ORCHARDS				ACRES			
	Number	%	Cumulative Number (at the number and higher)	Cumulative % (at the number and higher)	Number	%	Cumulative Number (at the number and higher)	Cumulative % (at the number and higher)
1	0	0%	2,836	100%	0	0%	232,613	100%
2	0	0%	2,836	100%	0	0%	232,613	100%
3	1	0%	2,836	100%	5	0%	232,613	100%
4	26	1%	2,835	100%	1746	1%	232,608	100%
5	11	0%	2,809	99%	295	0%	230,862	99%
6	58	2%	2,798	99%	1927.88	1%	230,567	99%
7	43	2%	2,740	97%	2067.2	1%	228,639	98%
8	77	3%	2,697	95%	2501.02	1%	226,572	97%
9	179	6%	2,620	92%	8500.49	4%	224,071	96%
10	332	12%	2,441	86%	29884.86	13%	215,571	93%
11	375	13%	2,109	74%	32735.11	14%	185,686	80%
12	318	11%	1,734	61%	28161.76	12%	152,951	66%
13	396	14%	1,416	50%	34232.58	15%	124,789	54%
14	330	12%	1,020	36%	31280.12	13%	90,556	39%
15	467	16%	690	24%	36324.74	16%	59,276	25%
16	153	5%	223	8%	15794.77	7%	22,951	10%
17	40	1%	70	2%	5363.43	2%	7,157	3%
18	25	1%	30	1%	1511.9	1%	1,793	1%
19	5	0%	5	0%	281.3	0%	281	0%
20	0	0%	0	0%	0	0%	0	0%

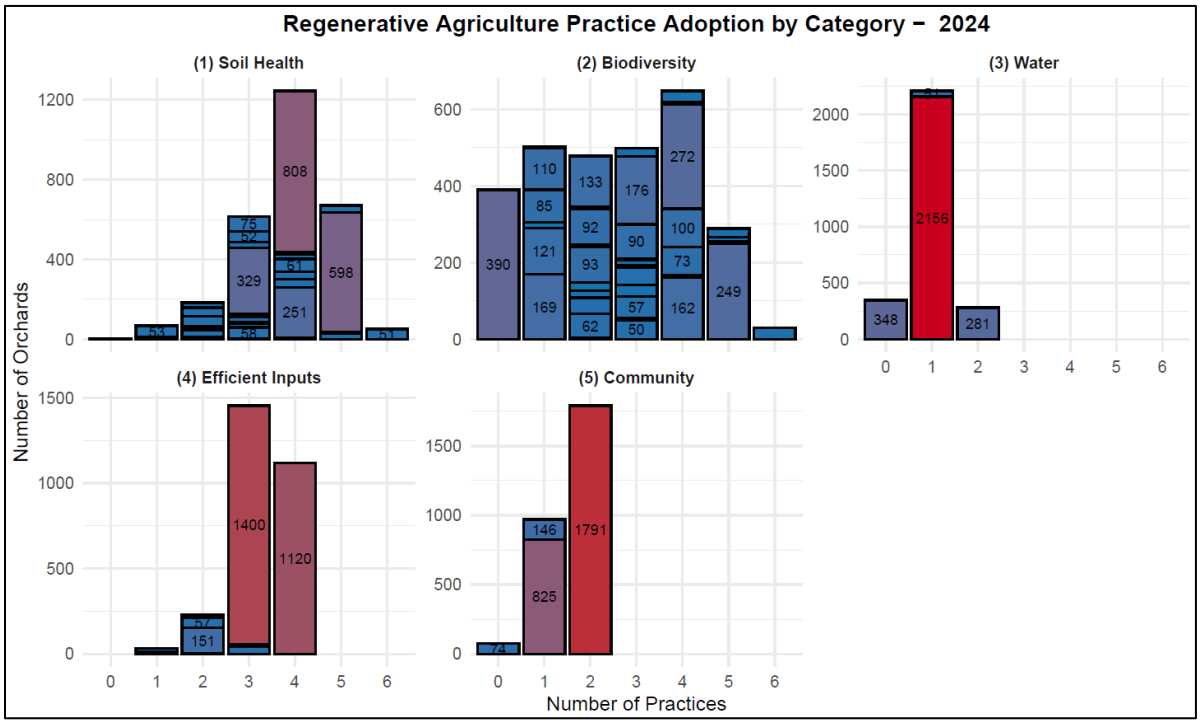
APPENDIX E. Regenerative Agriculture Aggregate Results by Category

Graphs show results from all orchards in 2024 that answered all relevant questions in the CASP catalog. Total sample size is 2,836 orchards representing 232,613 acres. There is a total of 20 regenerative agriculture practices, of which 6 have a not applicable response option. Of the categories, soil health has a total of 6 practices, biodiversity has a total of 6 practices, water has a total of 2 practices, efficient inputs has 4 practices, and community has 2 practices. The histograms below show the number of orchards based on the number of responses for each regenerative category. For example, on average, orchards reported implementing 4 (or 3.8) out of 6 soil health practices.



Combinations of Practices in Each Regenerative Category

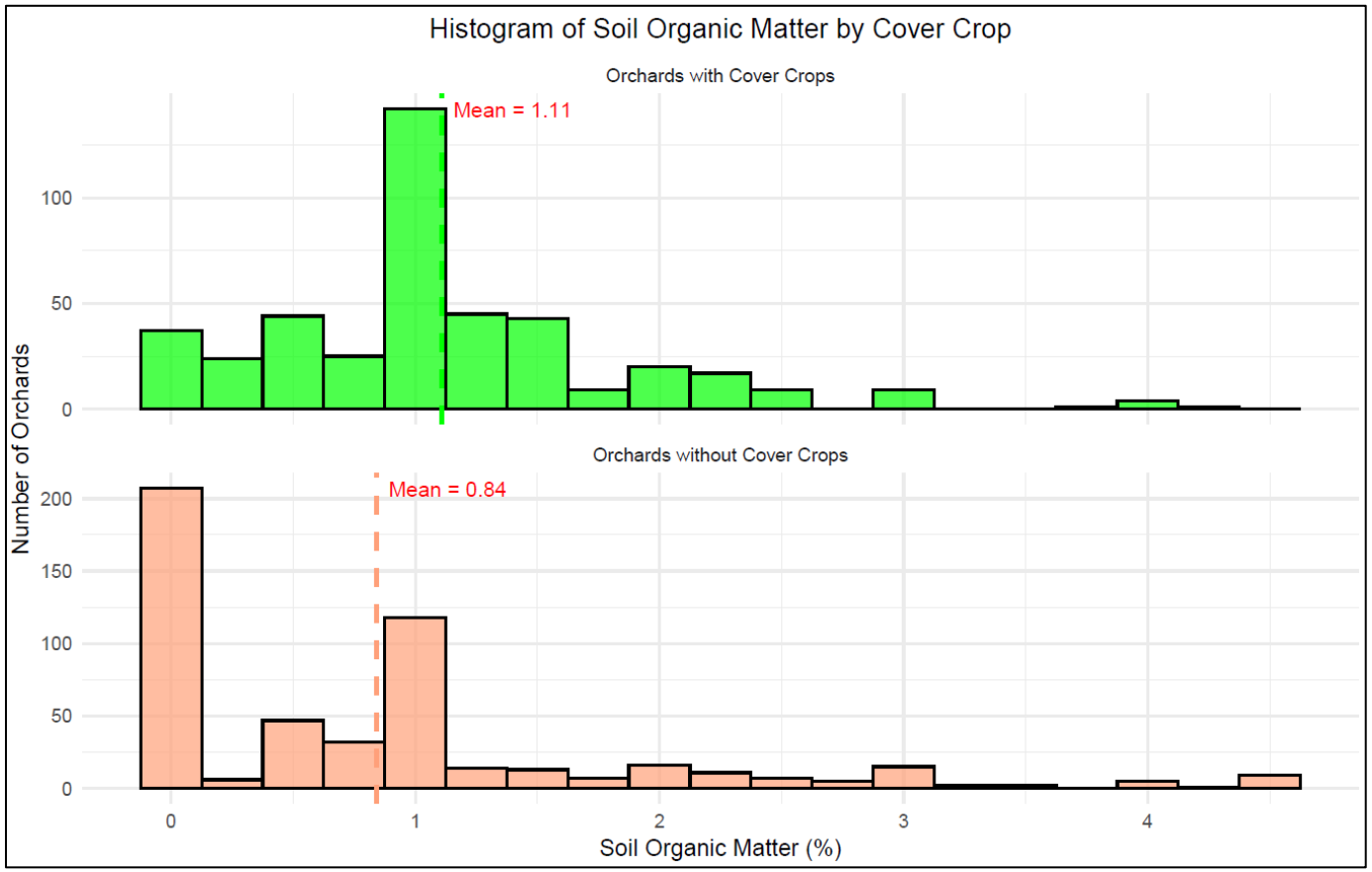
The graphs below show the number of orchards based on the number of practices for each regenerative agriculture category. The color and values indicate combinations of practices. Values for combinations of practices with fewer than 50 orchards are not shown. Note that the y-axis scales are variable.



- In the soil health category, more than half of orchards (65%; 808 out of 1,244) with 4 practices had a combination of soil amendments, reduced tillage, reduced passes, and reduced wind erosion. For orchards with 5 practices, the majority (89%; 598 out of 671) represent all practices except for whole orchard recycling.
- There were no strong trends within the biodiversity category. Few orchards reported a water body onsite, so riparian buffers were frequently not applicable.
- In the water category, most orchards that implemented one practice (98%; 2,156 out of 2,207) were employing microirrigation.
- In the efficient inputs category, most orchards that implemented three practices (96%; 1,400 out of 1,455) reported adoption of optimized nutrient management, responsible pest management, and energy conservation practices.
- In the community category, most orchards that implemented a single practice (85%; 825 out of 971) were providing community contributions.

APPENDIX F. Comparison of Practices with Soil Organic Matter

Initial analyses were conducted to compare the soil organic matter % values on orchards that were implementing soil health practices, with orchards that did not implement the practice. This analysis was done for the 2024 crop year assessment. An initial example of comparison of orchards with and without cover crops suggests that orchards with cover crops have a slightly higher SOM%. For the example of cover crops, the average soil organic matter value for orchards that had cover crops was 1.11% as compared to 0.84% for orchards without cover crops. This was significant according to a two-sample t-test ($p < 0.05$). The sample of orchards used in the analysis was 948 orchards representing orchards with responses to all regenerative practice questions and with values between 0% and 5% SOM. These initial results should be considered as exploratory and require further investigation to confirm.



APPENDIX G. Regenerative Agriculture Analysis Summary Grid

Detailed results of the CASP regenerative agriculture analysis are presented in the accompanying summary grid. The summary grid includes the data fields as described below.

1. **Category**
   One of 5 regenerative agriculture categories identified for the analysis, including soil health, biodiversity, water, input efficiency, and community.

2. **Where Applicable**
   Some CASP questions aligned with regenerative agriculture practices include a "Not Applicable" response option, which is indicated in this column with an "x." For the purposes of this analysis, adoption rates were calculated using only applicable responses. For example, the regenerative practice of establishing riparian buffers is relevant only for orchards with a water body on or adjacent to the site. Accordingly, the reported adoption rate for riparian buffers represents the percentage of orchards with riparian buffers among those orchards that indicated the presence of onsite or adjacent water.

3. **Practice**
   Main regenerative practices identified for the analysis are written in bold and numbered. Practices written in italics represent supporting information for the primary metrics used in the analysis. For example, the practice microirrigation reflects the adoption of orchards using drip or micro-sprinkler irrigation. More detailed adoption data for individual irrigation system types (drip, micro-sprinkler, sprinkler, flood, or furrow irrigation) are provided as supporting information and are written in italics.

4. **Definition Alignment**
   The columns indicate whether the reference programs used in the analysis include each practice (as indicated by an "x"). The reference programs include SAI Platform's Regenerating Together, RegenScore, and the California Department of Food and Agriculture (CDFA)'s regenerative agriculture definition.

5. **ORCHARDS** – Analysis results based on adoption rate of orchards.

6. **Current Adoption Rate, % of Orchards (2020-2024)**
   Percent (%) of orchard responses that were using the practice in the five-year period from 2020 to 2024. If an orchard was assessed more than once, only the most recent assessment was used within this period.

7. **2024 Adoption Rate, % of Orchards**
   Percent (%) of orchard responses that were using the practice in the 2024 assessment year.

8. **5-Year Change (2020 to 2024)**
   Difference in adoption rate between overall adoption rate in 2024 as compared to adoption rate in 2020.

9. **ACREAGE** – Analysis results based on adoption of orchard acres.

10. **Current Adoption Rate, % of Acreage (2020-2024)**
    Percent (%) of respondent acres that were using the practice in the five-year period from 2020 to 2024. If an orchard was assessed more than once, only the most recent assessment was used within this period.

11. **2024 Adoption Rate, % of Acreage**
    Percent (%) of respondent acres that were using the practice in the most recent completed assessment year.

12. **5-Year Change (2020 to 2024)**
    Difference in adoption rate (% acres) between overall adoption rate in 2024 as compared to adoption rate in 2020.

13. **Acres with Practice in 2024**
    Total orchard acres that were using the practice in the 2024 assessment year.

14. **Total Acres Assessed for Practice in 2024 (excludes Not Applicable)**
    Total acres assessed for the practices in the most recent assessment year. The value excludes acres of orchards that selected “Not Applicable.” For example, the practice of riparian buffers only shows the total acres of orchards that reported having a water body on or adjacent to the orchard.

15. **Average Category Adoption in 2024**
    Results for aggregate adoption of practices within each category in 2024. For example, within the soil health category, orchards in 2024 adopted an average of 4 out of 6 practices. The column also reports cumulative adoption levels. For example, 69% of orchards reported adopting four or more soil health practices in 2024.

California Almond Industry Regenerative Agriculture Analysis

75% of orchards implemented at least one practice across all regenerative categories (2024 crop year)

1. Category	2. Where Applicable		3. Practice	4. Definition Alignment			5. ORCHARDS			9. ACREAGE					15. Average Category Adoption in 2024
				SAI Platform's Regenerating Together	RegenScore	California Department of Food & Agriculture*	6. Current Adoption Rate, % of Orchards (2020-2024)	7. 2024 Adoption Rate, % of Orchards	8. 5-Year Change† (2020 to 2024)	10. Current Adoption Rate, % of Acreage (2020-2024)	11. 2024 Adoption Rate, % of Acreage	12. 5-Year Change† (2020 to 2024)	13. Acres with Practice in 2024	14. Total Acres Assessed for Practice in 2024 (excludes Not Applicable)	
Soil Health		1	**Cover Crops**	x	x	x	**42%**	42%	↗ 3%	**41%**	36%	↓ -6%	99,005	276,304	**4 of 6** **69%** of orchards reported adoption of 4 or more soil health practices.
			Resident cover	x	x	x	**23%**	22%	↗ 4%	**21%**	19%	↘ -3%	*51,100*	*275,895*	
			Planted cover	x	x	x	**19%**	20%	↘ -2%	**20%**	17%	↓ *-5%*	*48,034*	*275,895*	
		2	**Organic soil amendments**	x	x	x	**87%**	86%	=	**92%**	90%	=	247,964	276,422	
			Compost	x	x	x	**55%**	52%	↘ -3%	**62%**	64%	↗ 3%	*175,799*	*276,422*	
			Pruning recycling		x		**84%**	82%	↘ -3%	**87%**	84%	↘ -5%	*222,230*	*265,469*	
	x	3	**Whole orchard recycling: Previous orchard**		x		**9%**	10%	new question‡	**10%**	10%	new question‡	18,329	185,343	
	x		*Whole orchard recycling: Prior year*		x		**48%**	52%	↑ 37%	**57%**	60%	↑ 32%	6,541	10,958	
		4	**Reduced tillage**	x	x		**71%**	70%	↘ -3%	**71%**	72%	↘ -1%	197,949	276,304	
	x	5	**Reduced passes**	x			**93%**	93%	↘ -2%	**95%**	95%	↘ -3%	253,273	267,799	
		6	**Reduced wind erosion**	x	x	x	**92%**	92%	↘ -3%	**96%**	96%	↘ -2%	261,606	273,003	
			Livestock integration		x		*not currently recommended for almonds for food safety reasons; no data*								
			Perennial cropping		x		*almond farming is inherently perennial cropping; no data*								

California Almond Industry Regenerative Agriculture Analysis

75% of orchards implemented at least one practice across all regenerative categories (2024 crop year)

1. Category	2. Where Applicable		3. Practice	4. Definition Alignment			5. ORCHARDS			9. ACREAGE					15. Average Category Adoption in 2024
				SAI Platform's Regenerating Together	RegenScore	California Department of Food & Agriculture*	6. Current Adoption Rate, % of Orchards (2020-2024)	7. 2024 Adoption Rate, % of Orchards	8. 5-Year Change† (2020 to 2024)	10. Current Adoption Rate, % of Acreage (2020-2024)	11. 2024 Adoption Rate, % of Acreage	12. 5-Year Change† (2020 to 2024)	13. Acres with Practice in 2024	14. Total Acres Assessed for Practice in 2024 (excludes Not Applicable)	
Biodiversity		7	Ecosystem management plans or easements	x		x	37%	37%	↗ 4%	45%	39%	↘ -5%	107,977	274,387	3 of 6 **52%** of orchards reported adoption of 3 or more biodiversity practices.
	x	8	Maintain margin vegetation	x	x		70%	66%	↗ 2%	72%	70%	↗ 1%	166,261	236,915	
		9	Bird boxes and perches		x		55%	51%	↘ -1%	60%	54%	↘ -7%	149,882	275,496	
		10	Pollinator habitat		x	x	59%	62%	↑ 9%	59%	62%	↑ 11%	170,939	274,582	
	x	11	Hedgerows	x	x	x	54%	55%	↑ 9%	54%	62%	↑ 18%	139,971	226,985	
	x	12	Riparian buffers 6% of orchards indicated that a water body was onsite.	x	x	x	98%	99%	↗ 4%	100%	99%	↗ 4%	17,493	17,594	
			Crop Rotation	x	x		*as a perennial crop, almonds can't be rotated; no data*								
			Intercropping		x		*outside of initial years 1-2 of orchard life, not recommended for almonds; no data*								

California Almond Industry Regenerative Agriculture Analysis

75% of orchards implemented at least one practice across all regenerative categories (2024 crop year)

1. Category	2. Where Applicable	3. Practice		4. Definition Alignment			5. ORCHARDS			9. ACREAGE					15. Average Category Adoption in 2024
				SAI Platform's Regenerating Together	RegenScore	California Department of Food & Agriculture*	6. Current Adoption Rate, % of Orchards (2020-2024)	7. 2024 Adoption Rate, % of Orchards	8. 5-Year Change† (2020 to 2024)	10. Current Adoption Rate, % of Acreage (2020-2024)	11. 2024 Adoption Rate, % of Acreage	12. 5-Year Change† (2020 to 2024)	13. Acres with Practice in 2024	14. Total Acres Assessed for Practice in 2024 (excludes Not Applicable)	
Water		13	**Groundwater recharge**		x		**12%**	11%	↗ 2%	**10%**	9%	↘ -1%	26,029	276,247	
		14	**Microirrigation**		x		**88%**	87%	↘ -4%	**94%**	92%	↘ -4%	254,484	276,545	
			Drip				**60%**	58%	↘ -1%	**62%**	62%	↑ 5%	172,582	276,545	
			Micro-sprinkler				**41%**	41%	↘ -1%	**52%**	44%	↘ -5%	121,593	276,545	
			Sprinklers				**9%**	9%	↗ 2%	**7%**	8%	↗ 4%	21,668	276,545	
			Flood or furrow irrigation				**17%**	20%	↑ 6%	**8%**	10%	↗ 4%	27,905	276,545	
			Efficient irrigation management (three of five categories at level 1 or above) *"Use at least 3 out of 5 irrigation best practices"*	x	x		**81%**	83%	↘ -1%	**81%**	88%	↑ 8%	244,158	277,488	**1 of 2** **88%** of orchards reported aoption of 1 or more water practices.
			System performance		x		**68%**	67%	=	**69%**	72%	↗ 2%	198,644	277,488	
			Applied water		x		**67%**	66%	↘ -3%	**72%**	75%	↗ 3%	206,770	277,488	
			Orchard water requirements		x		**66%**	65%	↘ -2%	**69%**	71%	↗ 3%	196,870	277,488	
			Soil moisture		x		**76%**	79%	↘ -2%	**76%**	82%	↗ 4%	228,192	277,488	
			Plant water status		x		**92%**	96%	↗ 3%	**86%**	95%	↑ 10%	264,501	277,488	

California Almond Industry Regenerative Agriculture Analysis

75% of orchards implemented at least one practice across all regenerative categories (2024 crop year)

1. Category	2. Where Applicable	3. Practice		4. Definition Alignment			5. ORCHARDS			9. ACREAGE					15. Average Category Adoption in 2024
				SAI Platform's Regenerating Together	RegenScore	California Department of Food & Agriculture*	6. Current Adoption Rate, % of Orchards (2020-2024)	7. 2024 Adoption Rate, % of Orchards	8. 5-Year Change† (2020 to 2024)	10. Current Adoption Rate, % of Acreage (2020-2024)	11. 2024 Adoption Rate, % of Acreage	12. 5-Year Change† (2020 to 2024)	13. Acres with Practice in 2024	14. Total Acres Assessed for Practice in 2024 (excludes Not Applicable)	
Input Efficiency		15	**Optimized nutrient management**	x	x		**92%**	92%	↘ -4%	**96%**	95%	↘ -3%	263,696	276,342	**3 of 4** **91**% of orchards reported adoption of all 3 or more input efficiency practices.
		16	**Integrated pest management (IPM)**	x	x		**97%**	97%	↘ -2%	**99%**	99%	↘ -1%	271,656	275,536	
			Key Pest Specific IPM (uses three of five pest specific practices)				**95%**	95%	↘ -1%	**97%**	96%	↗ 0%	265,444	275,479	
			Navel Orangeworm				**93%**	92%	↘ -2%	**96%**	94%	↗ 0%	253,683	269,404	
			Web-Spinning Mites				**94%**	93%	↘ -5%	**97%**	95%	↘ -4%	259,235	273,094	
			Alternaria				**65%**	68%	↓ -7%	**71%**	75%	↘ -3%	206,130	275,496	
			Hull Rot				**83%**	82%	↓ -6%	**86%**	87%	↗ 3%	239,219	276,384	
			Weeds				**87%**	87%	↗ 2%	**89%**	86%	↗ 4%	233,672	272,357	
		17	**Energy conservation**		x		**98%**	98%	↘ -1%	**99%**	98%	↘ -1%	271,430	275,857	
		18	**Renewable energy (onsite)**		x		**40%**	43%	↑ 6%	**48%**	52%	↑ 6%	144,596	275,857	
			Solar				**38%**	40%	↗ 2%	**46%**	50%	↗ 1%	137,463	275,857	
			Wind				**1%**	1%	↘ -1%	**1%**	1%	↘ -1%	2,935	275,857	
			Biogas digester				**0%**	0%	↘ -2%	**0%**	0%	↘ -2%	918	275,857	
			Non-GHG and Renewable Electricity in CA (Total Power Mix)				**62%**		**+8%**	Percent (%) of electricity from non-GHG and renewable sources data from: https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2024-total-system-electric-generation					

California Almond Industry Regenerative Agriculture Analysis

75% of orchards implemented at least one practice across all regenerative categories (2024 crop year)

1. Category	2. Where Applicable	3. Practice		4. Definition Alignment			5. ORCHARDS			9. ACREAGE					15. Average Category Adoption in 2024
				SAI Platform's Regenerating Together	RegenScore	California Department of Food & Agriculture*	6. Current Adoption Rate, % of Orchards (2020-2024)	7. 2024 Adoption Rate, % of Orchards	8. 5-Year Change† (2020 to 2024)	10. Current Adoption Rate, % of Acreage (2020-2024)	11. 2024 Adoption Rate, % of Acreage	12. 5-Year Change† (2020 to 2024)	13. Acres with Practice in 2024	14. Total Acres Assessed for Practice in 2024 (excludes Not Applicable)	
Community	x	19	**Competitive compensation and professional development**		x		**96%**	95%	↘ -2%	**98%**	97%	↘ -1%	217,762	223,967	**2 of 2** **63**% of orchards reported adoption of all community practices.
		20	**Community contributions**				**93%**	92%	↘ -4%	**94%**	92%	↘ -3%	255,704	276,576	
			Charitable giving				**80%**	78%	↘ -1%	**85%**	81%	↘ -2%	223,637	276,576	
			Volunteering				**79%**	79%	↓ -9%	**82%**	81%	↓ -9%	223,545	276,576	
			Community Activity Participation				**65%**	63%	new question‡	**69%**	65%	new question‡	180,533	276,380	

Footnotes:

** Although the CDFA regenerative agriculture definition addresses multiple regenerative categories broadly, the specific practices marked as aligned with CDFA represent a selection of NRCS Conservation Practice Standards (CPS) related to soil health that are implied by that definition, including: Conservation Cover (CPS 327), Soil Carbon Amendment (CPS 336), Cover Crop (CPS 340), Dust control on unpaved roads and surfaces (CPS 373), Hedgerow Planting (CPS 422), Mulching (CPS 484).*

† Small increases or decreases in adoption rates between 2020 and 2024 should be interpreted with caution. These shifts may not necessarily reflect true changes in practice adoption, but rather the evolving nature of the dataset. Self-assessment participation numbers have expanded in recent years which can lead to shifts in composition of participants.

‡ The questions related to whole orchard recycling prior to the current planting and community activities were added for the 2022 crop year, so trend data is not available.