Comments on the CDFA CA Resiliency Strategic Plan

Below is a draft set of comments prepared on behalf of the Center for Regenerative Agriculture & Resilient Systems (CRARS) at California State University, Chico, in response to the California Department of Food and Agriculture (CDFA) "Climate Resilience Strategy for California Agriculture" (RSA) draft. We appreciate CDFA's leadership in producing this comprehensive strategy and offer these constructive suggestions to strengthen the document's alignment with regenerative agriculture, resilient systems, equity, and measurable outcomes.

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1. Introduction / Overall Approach

Support:

- We commend the RSA for articulating three major pillars — *Support a Thriving & Resilient Food Sector*, *Protect Natural Systems Critical to Agriculture*, and *Encourage Resilient Agricultural Practices* — and for embedding equity principles throughout.
- We appreciate the inclusion of "climate-smart, resilient and regenerative food systems" as a strategic priority in California's Ag Vision.

Recommendations:

- We urge CDFA to more explicitly define what "regenerative agriculture" means in the context of this strategy and how the document will promote transitions to regenerative practices. While the Executive Summary references regenerative systems, the detailed chapters could more consistently reflect regenerative principles (e.g., building soil organic matter, biodiversity, closed loops, agroecological design).
- We suggest strengthening the linkage between resilience and regeneration: resilience tends to imply resistance and recovery, while regenerative implies building capacity for systems to evolve, adapt and provide multiple ecosystem goods. An explicit framing of regeneration (not just resilience) would align well with CRARS's mission.
- We ask for clearer articulation of metrics and performance indicators: the RSA describes goals and actions, but many of the "Implementation Tables" lack specific measurable targets and timelines. We recommend including SMART (Specific-Measurable-Achievable-Relevant-Time-bound) indicators for each objective so that progress can be tracked and reported.

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2. Equity and Access

Support:

- The inclusion of six equity principles (e.g., financial viability, technical assistance capacity, accessibility, health & wellbeing, accountability & transparency, cultural relevancy) is strong.
- Acknowledgement of the diversity of California farms (e.g., small farms, tribal stewardship, underserved communities) is welcomed.

Recommendations:

- We recommend that technical assistance (TA) funding and capacity-building support explicitly target under-resourced, small-scale, historically disadvantaged producers, and those transitioning to regenerative systems. Many TA programs focus on conventional practices; a dedicated stream for regenerative transitions would help close the gap.
- We encourage CDFA to disaggregate data by farm size, commodity type, region, and producer demographic (including BIPOC, tribal, beginning farmer/rancher) in the monitoring framework. This will help identify whether equity goals are being met.
- We suggest including mechanisms for producer co-design in program development (not only feedback after the fact). That is, underserved stakeholders should be in leadership roles in shaping TA, outreach, and incentive delivery.

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3. Pillar 1: Support a Thriving & Resilient Food Sector

Strengths:

- The RSA articulates key objectives such as improving the economic resilience of farms and ranches, ensuring water system resilience, supporting workforce wellbeing, protecting animal health, and advancing energy efficiency.
- The strategy rightly acknowledges that climate change affects yields, nutrition, pest/disease pressure, heat stress, etc.

Recommendations:

- On **economic resilience** (Chapter 1): We encourage stronger emphasis on diversification of revenue streams (e.g., value-added processing, local/regional markets, circular economy opportunities), regenerative enterprises (e.g., agroforestry, perennial crops), and ecosystem service payments (soil carbon, biodiversity credits) that support farming systems adaptation. While Action 1.7.1 references "expand the CA Grown Marketing Campaign to include climate-smart products," it could go further in identifying markets for regenerative agriculture.
- On **water system resilience** (Chapter 2): The draft mentions nature-based solutions / healthy soils for on-farm water-holding capacity. We recommend integrating regenerative soil and landscape water-management practices (e.g., managed infiltration, cover crops, reduced tillage, agroforestry) as core elements. Also, ensure that small/under-capitalized farms have access to funding for such landscape scale investments.

- On **workforce wellbeing** (Chapter 3): Recognizing extreme heat and weather events as occupational hazards is important. We request specific actions to tailor TA/training for worker health in regenerative systems (which may differ from conventional systems), and to consider mental health, labor equity, housing, and community resilience in agricultural communities.
- On **animal health** (Chapter 4): Given the increasing risks of heat stress, vector-borne disease, and pathogen spillover under climate change, we support the proactive and research-oriented measures. To align with regenerative systems, consider promoting pasture-based systems, diversified forages, integrated crop-livestock systems that enhance ecosystem resilience.
- On **energy/decarbonization** (Chapter 5): We support the inclusion of electrification, demand flexibility, energy efficiency. We suggest adding regenerative agriculture practices that reduce energy demand (e.g., reduced tillage, cover crops reducing irrigation needs) and exploring on-farm bioenergy or bio-economy opportunities linked to organic waste/compost. Also ensure that subsidies/financing are accessible to small and mid-sized producers.

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4. Pillar 2: Protect Natural Systems Critical to Agriculture

Strengths:

- The draft recognizes the need to conserve productive farmland (Chapter 6), deploy sustainable pest management (Chapter 7), boost biodiversity on farmlands (Chapter 8).
- The document links these natural-systems objectives to resilience and adaptation.

Recommendations:

- On **farmland conservation** (Chapter 6): The protection of strategic farmland is critical. We suggest stronger integration of regenerative land-use planning and incentives for converting marginal cropland to perennial systems, agroforestry, hedgerows, riparian buffers, which support resilience and biodiversity. Also, include policies to discourage conversion of farmland to low-resilience land uses (like monoculture expansions) and encourage ecological intensification.
- On **pest management** (Chapter 7): We strongly endorse integrated pest management (IPM) and adaptive monitoring of pests and diseases under climate change. We recommend inclusion of regenerative-based pest management approaches (e.g., diversified rotations, habitat for beneficial insects, agroecological design) as distinct pillars, not simply as adjuncts to conventional IPM. The strategy could specify support for research on microbial, biological, and cultural pest controls aligned with climate resilience.
- On **biodiversity** (Chapter 8): The draft includes actions to increase beneficial biodiversity and improve seed supply. We recommend strengthening this by:

    - Prioritizing on-farm habitat enhancements (e.g., native hedgerows, corridors, pollinator habitat) that co-benefit soil health, water infiltration, carbon sequestration.
    - Including metrics for soil biodiversity, microbial diversity, arthropod beneficial insects, not just crop biodiversity.
    - Ensuring funding streams for long-term biodiversity monitoring on farms, especially for small and diverse farms transitioning to regenerative systems.

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5. Pillar 3: Encourage Resilient Agricultural Practices

Strengths:

- This is a core pillar for CRARS. The chapters on clean-air communities (Chapter 9), climate-smart & healthy soils (Chapter 10), sustainable ranching & rangeland management (Chapter 11), and dairy sustainability (Chapter 12) are thorough.
- In particular, the soils chapter clearly links to nature-based solutions and sets measurement/monitoring goals.

Recommendations:

- On **healthy soils** (Chapter 10): We commend the inclusion of standardizing methods for soil health measurement, expanding eligibility under the Healthy Soils Program, and promoting compost. For stronger alignment with regenerative agriculture, we recommend:
    - Inclusion of explicit targets for soil organic carbon sequestration, aggregate stability, infiltration rates across farm types and regions.
    - Dedicated funding and outreach for practices such as multi-species cover crops, reduced/zero tillage, perennial rotations, agroforestry, crop-livestock integration, which build resilience.
    - A protocol for tracking and reporting greenhouse-gas benefits of soil health practices, including inter-temporal monitoring and co-benefits (nutrient retention, yield stability, drought/flood resilience).
    - Ensure that small, diversified, and organic producers are eligible and prioritized for support under soils programs.
- On **clean-air communities** (Chapter 9): Recognizing air-quality co-benefits of regenerative practices is critical. We suggest explicit inclusion of practices such as reduced tillage (less dust), cover cropping (less wind erosion), hedgerows for dust filtration, and on-farm renewable generation supporting local clean-air goals. Also ensure outreach to communities adjacent to farms and ranches, particularly low-income or historically disadvantaged communities.
- On **ranching & rangelands** (Chapter 11): CRARS strongly supports resilience in grazing systems. We encourage CDFA to distinguish regenerative grazing systems (rotational, adaptive, ecological) from simply “sustainable” or conventional grazing, and to include monitoring of soil carbon, biodiversity, infiltration, and wildfire fuel loads

under grazing practices. Also, ensure funding and TA are accessible for ranchers transitioning to regenerative ranching.
- On **dairy farming sustainability** (Chapter 12): The methane-reduction target (40 % below 2013 levels by 2030 via SB 1383) is noted. We encourage that beyond just emissions reduction, the strategy includes regenerative dairy models (e.g., pasture-based dairying, integrated crop-livestock systems, manure-to-energy and compost applications) that unlock co-benefits (soil health, nutrient cycling, ecosystem services). We also encourage metrics for nutrient leaching, groundwater protection, and worker health tied to dairy transitions.

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6. Monitoring, Reporting & Program Effectiveness

Recommendations:

- We encourage CDFA to develop an annual or biennial public dashboard reporting key indicators across the three pillars, disaggregated by region, farm size, commodity, and producer demographic.
- For each Strategy Action, include responsible lead agencies, timelines, funding needs, performance indicators, baseline values, and target values (e.g., increase X % adoption of cover-crops by 2030, increase soil organic carbon by Y tons C/ha).
- Encourage third-party, independent evaluation of the strategy's implementation after 3 – 5 years, with adjustments informed by learning.
- Ensure feedback loops: TA providers, producers, tribal and underserved stakeholders should be part of ongoing review and adaptive refinement of the strategy.

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7. Funding, Incentives, and Barriers

Recommendations:

- We suggest CDFA identify and map major funding gaps/barriers for small and transitioning farms to adopt regenerative and climate-resilient practices (capital costs, technical assistance, risk mitigation).
- Consider multi-year cost-share incentives or outcome-based payments (e.g., payments for ecosystem services: carbon, biodiversity, water infiltration) that reward resilience and regeneration.
- Work to simplify program eligibility, reduce administrative burdens, and coordinate across agencies (state, federal, local) to streamline access for diversified and small-scale producers. This aligns with one of the Strategy's goals: "Align and Simplify Policies and Regulations."
- Include targeted support for underserved and BIPOC producers, beginning farmers/ranchers, those on marginal lands, or those transitioning to regenerative systems.

8. Integration with Other State Strategies & Research Needs

Strengths:

- The draft links the RSA to other state strategies (e.g., Natural & Working Lands Climate Smart Strategy, Adaptation Strategy) and emphasizes systemic coordination.

Recommendations:

- We recommend explicit coordination with the Healthy Soils Program, Sustainable Groundwater Management Act (SGMA) efforts, the Farm to Fork Strategy, and other federal programs (e.g., USDA's Climate-Smart Commodities) to avoid duplication and maximize synergies.
- Identify research gaps: we encourage CDFA to maintain a research agenda focused on regionally specific climate-resilient and regenerative practices (e.g., soil carbon measurement in irrigated vs. rain-fed systems, the role of perennial crops, agroforestry in California contexts, regenerative (AMP) grazing effects on carbon/biodiversity).
- Encourage state agencies to partner with universities, community colleges, extension services, and producer networks to pilot and scale resilient systems, including regenerative agriculture models.

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9. Specific Suggestions & Edits

- On page 10 of the draft: the definition of farm size notes that two-thirds of California farms average 383 acres and bring in less than $150,000 gross cash income per year. We suggest adding language to highlight that these smaller farms are also key to resilience and regeneration and need tailored support.
- On the soils chapter (Chapter 10): Action 10.3.1 "Identify land eligibility requirements that enable expanded participation in the Healthy Soils Program" — we suggest that the eligibility criteria explicitly include regenerative transition farms, multi-species cover crop systems, crop-livestock integrations, and agroforestry/perennial systems.
- On the biodiversity chapter (Chapter 8): Action 8.2.3 speaks to seed supply. We suggest expanding to include native plant seeds, on-farm seed banks, farmer-led seed networks, and support for heirloom/regionally adapted cultivars that enhance resilience.
- On the ranching & rangeland chapter (Chapter 11): Consider integrating managed grazing and ecological restoration objectives with wildfire fuel reduction, soil carbon enhancement, and biodiversity objectives — ensuring that grazing is framed as part of a broader ecological system rather than just production.
- On the dairy chapter (Chapter 12): We recommend including small-scale dairy operations and pasture-based dairies explicitly in the strategy, not only larger confinement systems, and ensuring they are eligible for technical assistance and funding.

10. Concluding Thoughts

CRARS strongly supports the RSA's vision of building resilience in California's agricultural sector. We believe that by integrating regenerative-agriculture principles more fully, strengthening equity and access for smaller and under-supported producers, deploying measurable metrics, and ensuring coordinated funding and research, the strategy will be even more effective. We stand ready to partner with CDFA in implementation, especially through research, extension, and outreach focused on regenerative systems, soil health, biodiversity, and climate resilience.

Thank you for the opportunity to submit comments. We look forward to seeing the next iteration of the RSA and its successful implementation across California agriculture.

Sincerely,
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General Recommendations from CRARS TAPs:

1.1 Consistent, year-round funding for Technical Assistance (TA)

CRARS TAPs unanimously emphasize that **stop-and-start funding cycles severely limit the effectiveness of TA providers**. Consistent, uninterrupted funding is essential for:

- maintaining trusted relationships with producers
- ensuring timely application support
- enabling follow-through on practice implementation
- retaining trained staff
- supporting tribal, BIPOC, and small producer outreach

Recommendation: Establish multi-year funding cycles for TA providers to ensure continuity and stability.

1.2 Major gaps in long-term monitoring and evaluation

There are significant missed opportunities to collect long-term ecological, agronomic, and biodiversity data from existing programs such as:

- Healthy Soils Program (HSP)
- Pollinator Habitat Program (PHP)
- manure management or dairy methane programs
- rangeland restoration or grazing pilot projects

Currently, most projects track only a narrow set of indicators (e.g., organic matter), missing key data that would help evaluate carbon sequestration, biodiversity outcomes, ecosystem services, and producer resilience.

Recommendations:

- Expand monitoring frameworks to include:
  - **soil microbial and faunal biodiversity**
  - **infiltration rates**
  - **ACE protein, POX-C, aggregate stability**
  - **pollinator and beneficial insect biodiversity**
  - **GHG flux and soil carbon stock change**
- Require or incentivize multi-year post-implementation monitoring.
- Develop and fund a statewide **adaptive management framework** integrating soil biodiversity assessments.
- Provide research funding for multi-site replication in diverse climate zones.

1.3 Regenerative agriculture should be central—not peripheral—to the strategy

While the Executive Summary references regenerative agriculture, the full RSA rarely integrates it as a core solution. TAP members emphasize that **regenerative systems must be explicitly named and defined**, including:

- living cover
- reduced/no-till
- perennial systems
- agroforestry
- crop-livestock integration
- adaptive multi-paddock grazing
- diverse rotations
- hedgerows and woody perennials

Recommendation: Add a section clearly defining regenerative agriculture and anchor practice recommendations within that framework.

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2. Pillar-Specific Recommendations

Pillar 1: Support a Thriving & Resilient Food Sector

2.1 Market Strategies: Avoid "cart-before-the-horse" carbon markets

TAP feedback emphasizes that carbon markets, eco-labeling, and other market-driven mechanisms **place financial and administrative burdens on producers early in the transition**. Farmers must invest upfront in:

- practice change
- monitoring, reporting, and verification (MRV)
- third-party verification

before receiving any financial benefit.

Recommendations:

- Develop mechanisms that allow consumers to "**vote with their dollar**" *before* producers shoulder transition costs (e.g., Zero Foodprint model).
- Prioritize **public investment** in early-stage practice change over market-only approaches.

2.2 Climate-resilient livestock and heat stress reduction

TAPs highlight missing considerations around animal climate resilience:

- heat-tolerant breeds or genetic selection
- capital-intensive infrastructure needs: shade structures, barn ventilation, shelter belts
- increased water demand for livestock
- climate-induced shifts in grazing timing due to drying seasonal streams and stock ponds

Recommendations:

- Include actions to assess and support heat-tolerant livestock genetics.
- Fund infrastructure for animal welfare under extreme heat.
- Expand water infrastructure support for grazing operations affected by climate-driven hydrologic shifts.

Pillar 2: Protect Natural Systems Critical to Agriculture

2.3 Pollinator habitat: move to a landscape-scale strategy

TAPs emphasize that pollinator and wildlife corridors must be planned at a **landscape scale**, not farm-by-farm.

Recommendations:

- Develop tools for planners and TA providers to map and coordinate **biological corridors**.
- Incentivize neighboring landowners to collaborate on landscape-scale restoration.
- Leverage CRARS's RCPP project, which already funds hedgerows, cover crops, and conservation cover that enhance biodiversity.

2.4 Missed opportunity: Long-term biodiversity data from PHP

The PHP program has generated years of on-the-ground habitat installations, but little systematic biodiversity or ecological data has been collected.

Recommendation: CDFA should create a statewide effort to evaluate biodiversity outcomes from past PHP projects and integrate these results into future program design.

Pillar 3: Encourage Resilient Agricultural Practices

3.1 Healthy Soils: Expand indicators and address compost quality issues

TAPs agree that compost receives heavy emphasis in the RSA—yet concerns about **poor-quality compost** remain widespread.

Recommendations:

- Add a system to flag poor compost batches for review.
- Increase emphasis on **living cover**, including:
    - multispecies cover crops
    - access to diverse seed mixes
    - access to woody perennials for hedgerows and buffers
- Offer an expanded list of optional soil health indicators (ACE protein, POX-C, infiltration, microbial biomass).
- Expand program eligibility to include perennial and agroforestry systems.

3.2 Grazing and Rangelands: A large missed opportunity

TAP experts stress that **well-managed grazing systems (AMP, adaptive rotational)**:

- improve soil health
- increase biodiversity
- enhance infiltration and water retention
- reduce fire fuels
- sequester significant carbon that may offset livestock methane

This potential is barely acknowledged in the RSA.

Recommendations:

- Add grazing-specific metrics (soil carbon, infiltration, vegetation diversity).
- Fund fencing, livestock water infrastructure, and pasture planting—critical for implementing regenerative grazing.
- Incentivize grazing in the WUI to reduce wildfire risk.
- Provide guidance to align rangeland carbon sequestration accounting with methane's short atmospheric lifetime.

3.3 Livestock: Better balance methane with carbon sequestration potential

TAPs indicate methane is overemphasized relative to its short-lived role in the atmosphere and the **net cooling potential** of regeneratively managed rangelands.

Recommendation: Present a balanced, science-based framing acknowledging that grazing systems may have **net climate benefits** when managed regeneratively.

3.4 Digital Tools & Data Systems

TAPs recommend CDFA integrate existing tools directly into the strategy:

- **CARI (California Ag Resilience Index)**
- **Regenerative Ag Planner tool**

Recommendation: Add these as recommended tools within the TA and planning ecosystem.

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4. Program and Agency Coordination

4.1 A statewide TA guide and knowledge hub

TA providers report inconsistent answers depending on which CDFA staff member responds to questions.

Recommendation:
Fund a collaborative effort between TA organizations to create a **statewide technical guide for HSP and related programs**, including:

- an online searchable database of TA questions and answers
- shared lessons learned
- consistent interpretations of program rules
- template resources

This would improve both program efficiency and transparency.

4.2 Fix the CDFA Monthly NOW Report broken link

TAPs report the "Monthly NOW Report" consistently leads to a broken link. This should be corrected.

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5. Strengthening Regenerative Agriculture in the RSA

CRARS strongly recommends that CDFA more fully incorporate regenerative agriculture as a central climate resilience strategy. Specific actions include:

- Adding regenerative systems to every applicable Implementation Table.
- Highlighting perennial systems, agroforestry, hedgerows, and integrated livestock as key resilience tools.
- Including CRARS's RCPP project as a case example of regional incentive delivery for biodiversity + carbon + soil health.

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6. Conclusion

CRARS appreciates CDFA's vision and the opportunity to provide feedback. We strongly support the RSA's overarching goals and believe the strategy will be significantly strengthened by:

- stable, multi-year TA funding
- a robust, expanded monitoring and adaptive management framework
- deeper integration of regenerative agriculture
- improved data systems and long-term ecological tracking
- stronger support for grazing, pollinator habitat, and perennial systems
- a statewide TA knowledge-sharing and guidance platform

CRARS stands ready to partner with CDFA in research, monitoring, TA, and program development to advance climate-resilient and regenerative agricultural systems across California.