



Resilient Roots

Supporting a Climate-Smart Food System in Southern California




A PROJECT OF THE CLIMATE SCIENCE ALLIANCE






Our Changing Climate



If you live in Southern California, you are familiar with hot, dry summers, mild winters, and inconsistent rain. In fact, San Diego County has the greatest annual variation in rainfall of any region in the entire United States! We're not the only ones who are familiar with this variable climate - the diverse species of plants and animals that call Southern California "home" have evolved and adapted to thrive here. But what happens when our climate changes?

There will be significant changes to our temperature, precipitation, wildfire, and drought patterns. As the conditions we have all come to depend on could significantly shift, the Southern California we know and love might look and feel very different, affecting all of us.



Climate change is caused by human activities that release pollution from fossil fuels into the environment. By doing things such as driving our cars or using electricity we contribute to this pollution. Our actions release tiny, invisible molecules into the air called greenhouse gases. Over time, these molecules build up and begin to act as a thick blanket that traps heat around the earth.

Learn more about climate impacts to our region at: www.climatesciencealliance.org/sdc-ecosystems-assessment



What Climate Change Looks Like for Southern California



Temperature

Annual and daily average temperature ranges are increasing and will become more extreme.



Precipitation

Precipitation events will become more intense and variable.



Wildfire

Large, high-intensity fires will increase in frequency.



Drought

The number of dry days will increase and become more intense.



The Role of the Food System

Agriculture is an important part of Southern California's past, present and future, holding historic, economic, environmental, and social significance. A changing climate can impact agriculture in multiple ways but also opens up new opportunities for innovation:

Agricultural Production

- High water demand impacts soil health and crop production
- Relocation of croplands as conditions change
- Impact on health and well-being of agricultural workers

Opportunities for Innovation

- Diversify crop varieties and expand areas of production
- Some existing crops could benefit from lower frost risk and longer growing periods

Economic Impacts

- High costs of relocation, changing crop varieties, and increased water demands
- Risk of closing business

Crops & Yields

- Change in quality and yields of top crops
- Shifts in harvest timing

Pests, Pollinators, & Weeds

- New types and expanded range of pests, disease, and weeds
- Decrease in successful pollination

For more information, please visit: [www.climatesciencealliance.org/resilient roots](http://www.climatesciencealliance.org/resilientroots)



Despite the challenges that climate change brings, agricultural lands hold significant potential to reduce climate risks and build resilience. Farmers are already implementing climate-smart practices across the region - benefitting the crops and our planet!

Climate-Smart Agriculture: Agricultural practices that increase soil health, improve water use efficiency, promote productivity, and reduce greenhouse gas emissions.



sustaining permanent crops



growing cover crops



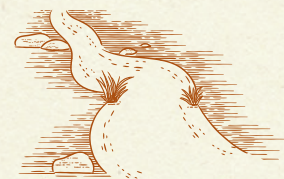
composting and mulching



planting trees and shrubs



no-till or low-till of crops



restoring riparian areas

For more information, please visit: www.rcdsandiego.org/programs/carbon-farming



How Can You Help?

We can all do something to help our earth and support local farms!

We compiled these four seasonal recipes to inspire conversations about our connection to the food we eat. Each recipe was chosen based on seasonally-available, local, and healthy ingredients – but the most important ingredient is to have fun! Before you start, check out these important reminders below.


How to Use This Cookbook

Cooking 101

1. Kids, be sure to always cook with an adult present.
2. Read the recipe through completely and gather your ingredients and materials first.
3. Use caution with hot food and sharp objects. Use oven mitts and keep pot handles turned away from the front of the stovetop. If you don't know how to use a knife correctly, ask an adult for help using knives safely.
4. Clean as you cook to avoid a big mess at the end. Remember to unplug appliances when you are done in the kitchen to save energy!

Ingredients:

When shopping for ingredients, we encourage you to support local farms when possible. If the ingredients aren't available, get creative! Each recipe can be adjusted to work for you.



Which have you eaten?

All of these crops are grown in Southern California! Circle the ones that you have tried before:

Almonds Apples Apricots Asparagus Avocados Beans Beets Blackberries
Blueberries Broccoli Cabbage Cactus Cantaloupes Carrots Cauliflower
Celery Chard Cherries Chives Cilantro Coffee Collard Greens Corn
Cucumbers Dates Eggplant Fennel Figs Garlic Grains Grapes Grapefruit
Kale Kohlrabi Kumquats Leeks Lemons Lettuce Limes Mint Mushrooms
Nectarines Okra Olives Onions Oranges Parsley Passionfruit Peas Peaches
Pecans Peppers Persimmons Pistachios Plums Pomegranates Potatoes
Pumpkins Radishes Raspberries Strawberries Spinach Squash Tangerines
Thyme Tomatoes Turnips Walnuts Watermelons Zucchini

Calling all Youth: Continue learning about the food system in your school with our “Climate Science & Food Systems” Traveling Trunk from our Climate Kids Initiative. These trunks are filled with hands-on science, storytelling, and art activities and can be checked out for a period of two weeks.

Ask your teacher to visit www.climatekids.org/traveling-trunk to check one out today!

Winter Sweet Citrus Salad

WINTER

🕒 Prep Time:

15 minutes

🛒 Ingredients:

- 1 ruby red grapefruit
- 1 valencia orange
- 2 blood oranges
- 1 slice red onion
- Mixed greens
- 1 tbsp. pomegranate seeds
- 1 tbsp. pistachios
- 2 tbsp. champagne or white wine vinegar
- 2 tbsp. local honey
- 1/4 cup olive oil
- salt and pepper

🔪 How to Prepare:

1. To make the dressing: Mix together the honey, olive oil, vinegar, salt and paper and whisk or shake well to incorporate the honey.
Tip: Warming in the microwave for 10 seconds helps to thin the honey.
2. Peel the citrus, cutting away the bitter white pith. Using a serrated knife, slice the citrus into thin rounds.
3. Arrange two plates with mixed greens placing the citrus and red onion on top. Sprinkle with pistachios and pomegranate seeds. Drizzle the salad with the dressing and serve.

Recipe adapted from "Home and Plate" by Ali Randall



🕒 Seasonal Food Highlight: *Oranges*

- Keep in mind how far your food travels. Many oranges sold in stores are sourced from different states. Buying local when you can helps reduce carbon pollution from transportation.
- Southern California citrus trees are at risk of disease and pests that could worsen with increasing temperatures.



👉 DIY Activity: *Natural Household Cleaner*

1. Fill a large mason jar half-way with citrus peels (peels only - no pulp). Pour white vinegar into the jar, making sure the peels are fully covered. Seal the jar with a lid.
2. Let the jar sit in a dark place for two weeks. After two weeks, strain the liquid using a fine mesh sieve or cheesecloth placed over a large bowl. Pour cleaner into a spray bottle.
Tip: Compost the discarded peels to reduce waste even further!
3. Optionally, add herbs or essential oils to the cleaner.

Easy Guacamole



Prep Time:

10 minutes



Ingredients:

- 3 pitted avocados
- Juice of 2 limes
- 1/4 cup freshly chopped cilantro
- 1/2 small white onion, chopped
- 1 small jalapeño, minced
- 1/2 tsp. kosher salt



How to Prepare:

1. In a large bowl, combine avocados, lime juice, cilantro, onion, jalapeño, and salt.
2. Stir, then slowly turn the bowl as you run a fork through the avocados.
3. Once the mixture has reached the desired consistency, season with more salt if needed. Garnish with cilantro before serving.



🕒 Seasonal Food Highlight: *Avocados*

- Climatic shifts in precipitation and water availability may have impacts on avocado production affecting availability and cost.
- Avocado trees are an important crop for sequestering carbon back into the soil.

👉 DIY Activity: *Let it grow!*

1. Fill a jar with water.
2. Wash and dry an avocado pit. Press three toothpicks around the pit and place on top of the jar, so the widest end of the pit is about once inch deep into the water.
3. Place the jar in a warm spot in the sun that doesn't get direct sunlight (such as a window sill).
4. Add more water as needed. The pit should start to sprout in 2-6 weeks; wait until the roots are thick to place in soil.



Prickly Pear Cactus Frozen Treats

SUMMER

🕒 Prep Time:

10 minutes to prep,
overnight to freeze

🛒 Ingredients:

- 3 cups of prickly pear fruit juice*
- 1 cup Fresca**
- 2 tbsp. chia seeds, soaked
- Seasonal fruit chunks (optional)

**Can be substituted for lemon or grape juice*

***Can be substituted for sparkling water*

🔪 How to Prepare:

1. Combine all ingredients together and pour into popsicle molds or paper cups. You can eliminate the soda and add another cup of juice for an all-natural treat.
2. Insert the popsicle sticks through the bottom center of a cupcake liner for each one and turn the liner upside down over the cup like a lid so that the stick stays upright and entered while freezing.
3. Freeze for at least 10 hours. Remove the cupcake liner and enjoy.

Note: The ratio used above is 3:1, which yields 4 cups. You can adjust quantities for the size and number of popsicle molds you are using. Use 4-ounce popsicle molds for 8 servings or 2-ounce paper cup molds for 16 servings. You can double or triple the amount of juice, soda, and chia seeds for large groups.

Recipe adapted from "Cooking the Native Way" by the Chia Café Collective



🔦 Superfood Highlight: *Chia*

- Loaded with nutrients, anti-oxidants, and Omega-3 fatty acids, chia is considered a modern day superfood.
- Did you know we have native chia in Southern California? Learn more from the California Native Plant Society about how you can protect native plants in our region: www.cnps.org

Native Foodways: The intersection of food in culture, traditions, and history is known as a *foodway*. To learn about Native foodways, check out "Cooking the Native Way" from Chia Café Collective here: www.heydaybooks.com/book/cooking-the-native-way



👍 DIY Activity: *What can you add chia to?*

Chia is a versatile seed and can be added to many recipes to make it new, exciting, and nutritious! Try adding chia to some food you might already be eating and see how it might be different:

- | | | |
|---|--------------------------------------|------------------------------------|
| <input type="checkbox"/> Bread | <input type="checkbox"/> Jam | <input type="checkbox"/> Oatmeal |
| <input type="checkbox"/> Cookies | <input type="checkbox"/> Fruit juice | <input type="checkbox"/> Pancakes |
| <input type="checkbox"/> Granola/Cereal | <input type="checkbox"/> Nut milk | <input type="checkbox"/> Smoothies |

Autumn Squash Soup

FALL



Prep Time:

15 minutes



Cook Time:

40 minutes



Ingredients:

- 1 large butternut squash, peeled and cubed (seeds removed)
- 2 potatoes, peeled and chopped
- 3 tbsp. olive oil
- salt and pepper
- 1 tbsp. butter
- 1 yellow onion, chopped
- 1 stalk celery, thinly sliced
- 1 large carrot, chopped
- 1 tbsp. fresh thyme
- 1 quart low-sodium vegetable broth



How to Prepare:

1. Preheat oven to 400°F. On a large baking sheet, toss butternut squash and potatoes with 2 tablespoons of olive oil and season with salt and pepper. Roast until tender, about 25 minutes.
2. Meanwhile, in a large pot over medium heat, melt butter and remaining tablespoon of olive oil. Add onion, celery, and carrot and cook until softened, 7 to 10 minutes. Season with salt, pepper, and thyme.
3. Add roasted squash and potatoes and pour over vegetable broth. Simmer 10 minutes and eat as is or put it in an immersion blender until creamy.
Tip: If you don't have an immersion blender, pour soup into a blender or eat as is. Use caution when pouring!
4. Serve garnished with thyme and pepper.



🕒 Seasonal Food Highlight: *Butternut Squash*

- Squash is an easy vegetable to try growing at home.
- Squash are storage crops, meaning they can last for many months in your pantry without going bad leading to less food waste.



👉 DIY Activity: *Squash Stamps*

1. Keep the ends that you cut from the squash and pat them dry.
2. Using a pencil or marker, draw a shape on the cut end of the squash. Cut around this shape using a kitchen knife, leaving behind the design so it is raised significantly higher than the rest of the surface.
Tip: Press a cookie cutter into the squash and use it as a guide.
3. Apply paint or ink to your new stamp and decorate paper, fabric, or anything else!

Do Your Part!

Along with using these simple recipes, there are so many things you can do to reduce your impact, help protect the earth, and support local farms. Make a commitment to take on one, or more, of these actions today.

1. Eat your fruits and veggies
2. Reduce water use
3. Protect pollinators and native plants
4. Learn about and support Native Foodways
5. Support local farms and farmers markets
6. Shop seasonally and locally
7. Reduce your food waste
8. Create a compost bin
9. Volunteer
10. Tell the story

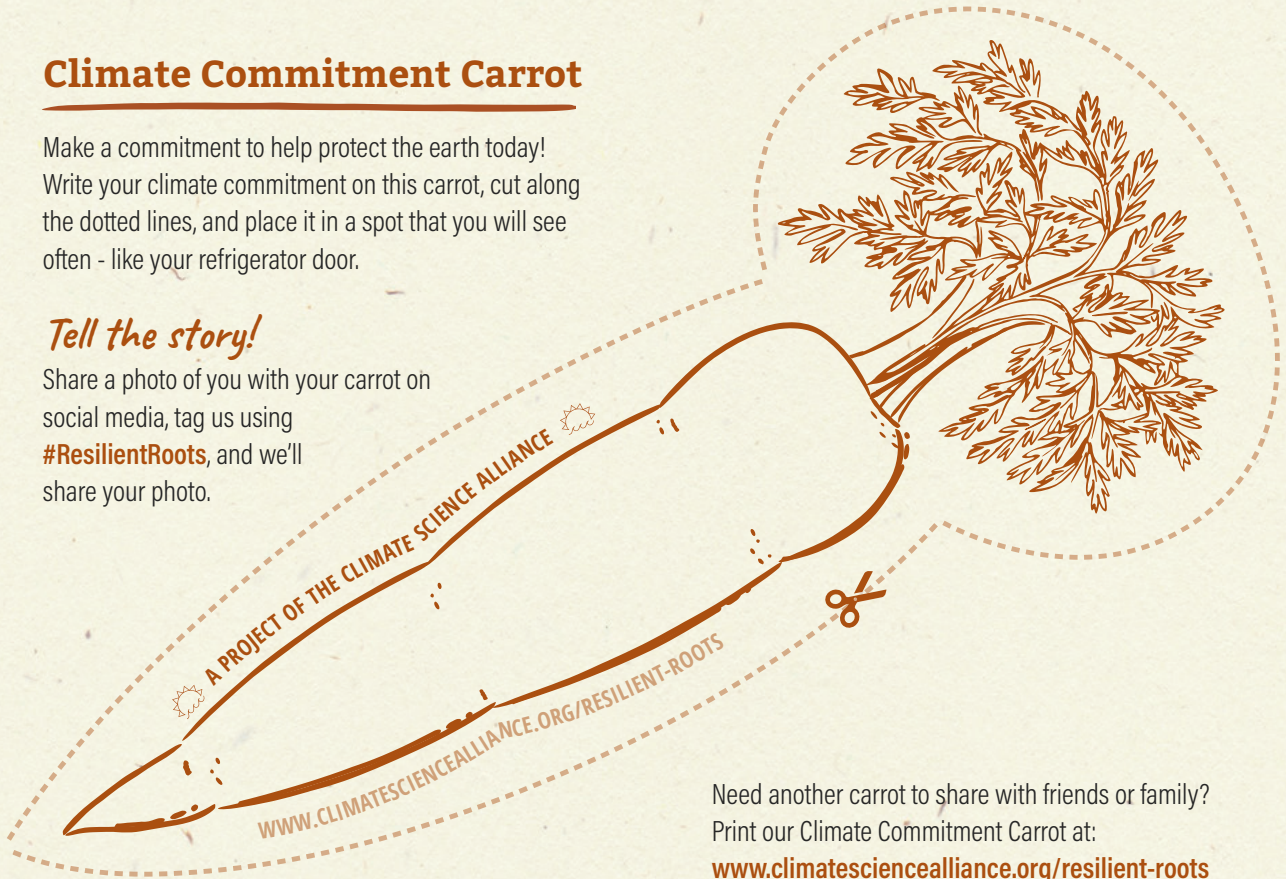


Climate Commitment Carrot

Make a commitment to help protect the earth today!
Write your climate commitment on this carrot, cut along the dotted lines, and place it in a spot that you will see often - like your refrigerator door.

Tell the story!

Share a photo of you with your carrot on social media, tag us using **#ResilientRoots**, and we'll share your photo.



Need another carrot to share with friends or family?
Print our Climate Commitment Carrot at:
www.climatesciencealliance.org/resilient-roots



Get creative!

Can you think of some other ways you can reduce your impact, help protect the earth, and support local farms? Write down your idea:



Find more ways to help

Visit our Climate Kids website to learn more and to download "10 Things You Can Do to Help" lists:

www.climatekids.org/resources



About Climate Science Alliance and Climate Kids

The **Climate Science Alliance** is a boundary spanning network of leaders, scientists, managers, and community members focused on sharing ecosystem-based resiliency approaches to safeguard our communities and natural resources from the impacts of a changing climate. We do this through leading activities and creating partnerships that increase awareness of climate change impacts, promote solutions, and facilitate actions.

Climate Kids is a series of community level collaborative projects that provide education on climate change through science activities, storytelling, and art. Each Climate Kids project brings together local artists, scientists, educators, and storytellers to engage and support community members from all socioeconomic levels and inspire them to become environmental stewards and leaders. Climate Kids is an initiative of the Climate Science Alliance.

To learn more, please visit:
www.climatesciencealliance.org and www.climatekids.org



Photos courtesy of Pauma Living Library IMLS

Connect with Us!



www.climatesciencealliance.org

www.climatekids.org



SPECIAL THANKS TO THE PARTNERS
WHO MAKE THIS WORK POSSIBLE

#ResilientRoots



*Photo of Solidarity Farm,
courtesy of Condor Visual Media*