

Adaptation Resources for Agriculture

A Case Study: Ridgeway Farm in Kenai, Alaska

USDA Northwest Climate Hub & Natural Resources Conservation Service - Alaska



Photo credit: Ridgeway Farm

Alaska is already experiencing significant climate change impacts and warming faster than any other state in the US. Farmlands make up a small portion of the state, but provide an important and highly valued source of food. The growing season is expected to increase by 20-40 days by mid-century, posing challenges and providing opportunities to Alaska's farmers to adapt and thrive. There is a growing awareness that adaptation strategies are needed for sustainable agriculture in current and future conditions in Alaska. In an effort to facilitate peer-to-peer learning among farmers, the Natural Resources Conservation Service (NRCS) in Alaska and the Northwest Climate Hub partnered to showcase innovative adaptive

farming practices and planning processes that are already underway. This case study provides an example of how producers in Alaska are utilizing a 5-step adaptation process to document management choices to address climate change impacts to their operations.

Ridgeway Farm and the Kenia Peninsula Farming Community

Ridgeway Farm is an original homestead family farm located eight miles east of Kenai. Abby Ala and her family have worked the land since 1948. Currently most of the farm's income is generated from fruit and vegetable production for a community supported agriculture group (CSA). The main farm includes 35 acres in vegetable production and horse pasture, 35 on-farm acres of hay fields, and an additional 20 acres in hay production nearby.



Photo credit: Ridgeway Farm

1 DEFINE: Ridgeway's primary management goals are to increase CSA membership and restaurant supply, increase hay production, improve forage quality on seven small pastures, and increase soil organic matter. The farm is working with NRCS to increase vegetable production by adding additional high tunnels, expanding irrigation in outdoor gardens, and installing a new well. To augment soil and forage quality, the farm will spread composted manure and split existing pastures into smaller systems with electric fencing. As the length of the growing season expands due climate change, additional cuts of hay per season may be possible.

2 ASSESS: Temperature in Alaska has been rising at twice the global rate, with 2019 setting the record for warmest year. Annual precipitation is expected to increase in many areas, but higher average temperatures may alter the timing and reduce the amount of water available. Several climate change related opportunities and challenges are expected at Ridgeway. Benefits include the potential for higher quality hay production and more diverse produce, whereas challenges include the possibility of ice damage from increased winter freeze-thaw events, increases in pests like slugs, and increases in invasive plants.

3 EVALUATE: Ridgeway Farm thought of how climate change may result in different management challenges and opportunities that may affect their objectives under current farm management.

Step 3: Evaluate Management Objectives Given Projected Impacts and Vulnerabilities

Land Unit	Objective	Challenges	Opportunities
Entire farm	Improve and maintain soil health	Time, costs, and weeds	Increase output of vegetable and hay production
Vegetable gardens	Increase crop diversity and increase production	Managing pests, pathogens, and invasive species	Increase variety of local produce, decrease need to heat hoop houses
Pasture	Improve forage quantity & quality and increase hay production	Increased management demand from weeding, mowing, and pasture rotation	Potential to feed on-farm livestock less hay and sell multiple hay cuttings

4 IDENTIFY: Generating producer-specific tactics that can be implemented to enhance a farm’s ability to adapt to climate change and meet management goals is a key step in the planning process. **Tactic 1:** maintain and improve soil while reducing fertilizer needs and costs. **Approach:** cover crop vegetable gardens, rotate and spread composted manure on pastures. **Tactic 2:** adapt to changing conditions by diversifying existing systems and altering timing of management. **Approach:** selecting crop varieties suited to warmer temperatures and longer growing seasons, and adjust the timing of planting and harvest. Disinfect greenhouses annually to reduce pests and disease. **Tactic 3:** use structures to increase environmental control for plant crops. **Approach:** apply mulch to gardens to increase soil temperature to enable earlier planting and expansion of crop varieties.

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[Contact your local NRCS staff for assistance](#)

5 MONITOR: Ongoing monitoring will be essential to maximize the long-term success of adaptation efforts at Ridgeway Farm. Finer-scale nutrient management planning for each unit (e.g. hoop house) can help facilitate long-term soil health objectives. Recording daily air and soil temperatures outdoors and in greenhouses will help optimize plant variety choices and timing of planting.



Photo credit: Ridgeway Farms

The Take-Away

Farmers in the Kenai Peninsula and all farmers in Alaska face the challenge of coping with rapid climate change. In an effort to make the most of potential opportunities, such as those associated with a longer growing season, these farmers are planning ahead and innovating to adapt to these changes. Ridgeway Farm is working to harness the cost-savings and production potential of healthy soils, expand their current business, fortify water infrastructure, and manage for potential pest and disease risks. Management approaches like pasture rotation and cover cropping come with costs, yet through careful planning and partnership Ridgeway Farm is growing their business and leading the way in showcasing how adaptation efforts can help other farmers in their area. A guide for on-farm adaptation planning, [Adaptation Resources for Agriculture: Responding to Changes in Climate in Alaska](#) is a valuable tool for agricultural producers interested in identifying challenges and opportunities that may occur due to climate change.

For more information on the USDA Northwest Climate Hub please visit:

<https://www.climatehubs.usda.gov/hubs/northwest>