



Oregon State
University

Climate-Smart Potatoes from the Pacific Northwest

Managing Soil Health for Climate-Smart Outcomes

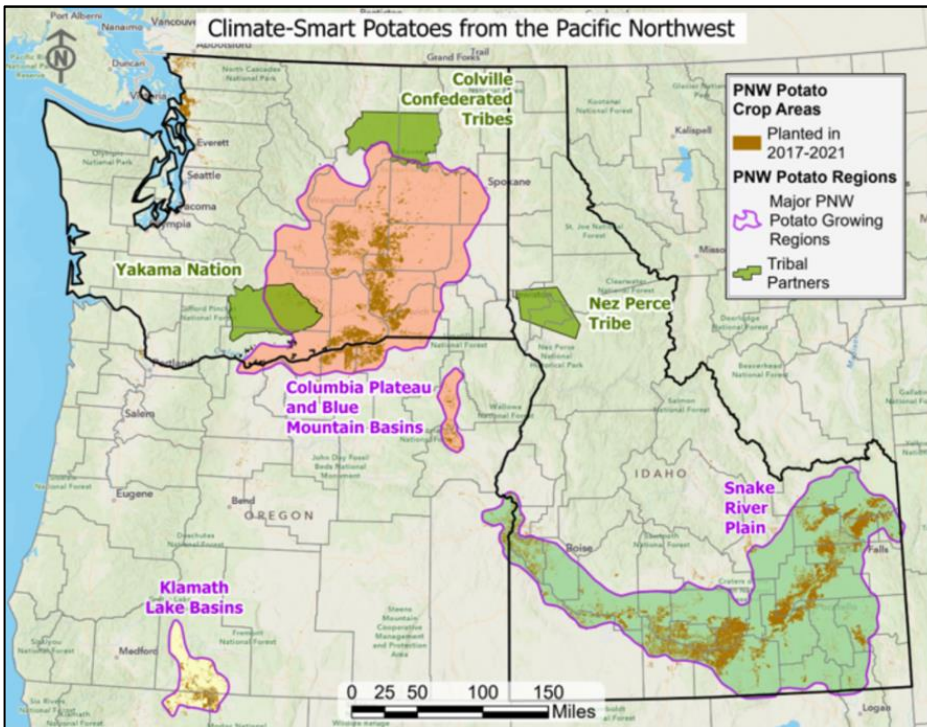
Jeffrey Steiner, Oregon State University

Greg Harris, Threemile Canyon Farm

Shelby Leighton, Nez Perce Tribe Enterprise



Climate-Smart Potatoes from the Pacific Northwest

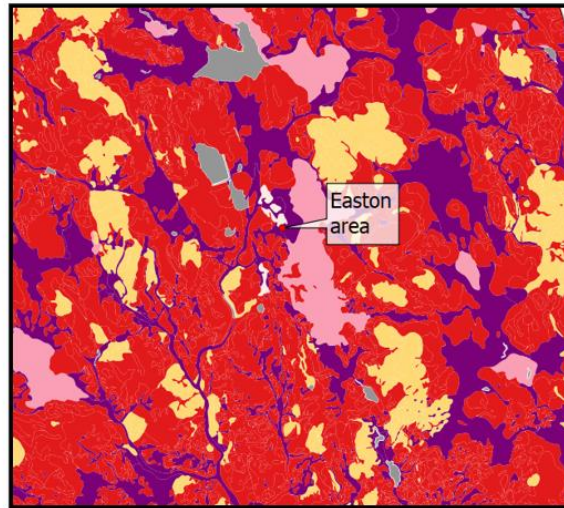


Three primary production regions and three Native American reservations:

- Snake River Plain
- Columbia Plateau and Blue Mountain basin
- Klamath Lake Basin
- Nez Perce Tribe
- Confederated Tribes and Bands of the Yakama Nation
- Confederated Tribes of the Colville Reservation



Climate-Smart Potatoes from the Pacific Northwest

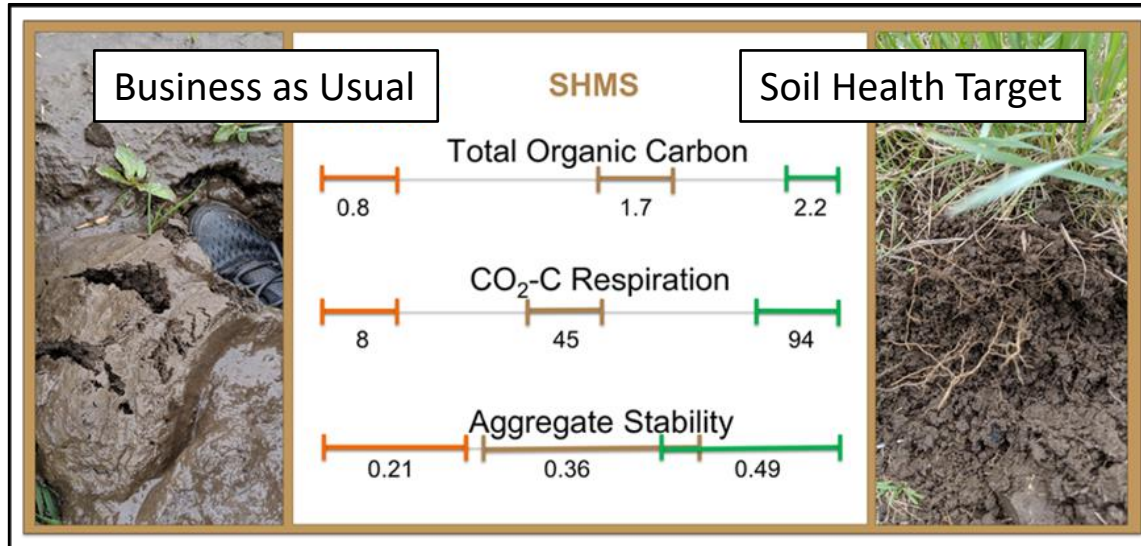


Achieving scale by grouping similar soils

Establish Soil Health and Carbon Targets

- Develop Soil Health management classes
- Set numerical target for management classes
- Adopt Climate-Smart practices or management system
- Employ COMET Planner to estimate GHG emission reductions

Climate-Smart Potatoes from the Pacific Northwest



Impacts of soil health management on the same soil in two fields separated by a fence in the Washington Palouse Region

Resulting impacts of soil health management


- Reduce operation costs
- Build water holding capacity
- Suppress pathogens
- Reduce nutrient and leaching
- Contribute other co-environmental benefits



Climate-Smart Potatoes from the Pacific Northwest

USDA United States Department of Agriculture
Natural Resources Conservation Service

Climate-Smart Agriculture and Forestry (CSAF) Mitigation Activities List^[1] FY2023



Climate Change Mitigation Practice Categories	Code	Conservation Practice Standard Name ⁽¹⁾ (units)	CSP Enhancement Code	Conservation Stewardship Program (CSP) Bundle and Enhancement Activity	
Soil Health	327	Conservation Cover (acres)	B000BF1	Buffer Bundle#1*	
			B000CPL24	Cropland soil health management system*	
			B000CPL25	Climate smart advanced soil health*	
	328	Conservation Crop Rotation (acres)		E327A	Conservation cover for pollinators and beneficial insects
				E327B	Establish Monarch butterfly habitat
				E328A	Resource conserving crop rotation
				E328B	Improved resource conserving crop rotation
				E328E	Soil health crop rotation
				E328F	Modifications to improve soil health and increase soil organic matter
	329	Residue and Tillage Management, No Till (acres)		E328G	Crop rotation on recently converted CRP grass/legume cover for soil organic matter improvement
				E328N	Intercropping to improve soil health
				E328O	Perennial grain crop conservation rotation
				E329A	No till to reduce soil erosion
				E329B	No till to reduce tillage induced particulate matter
				E329C	No till to increase plant-available moisture
	332	Contour Buffer Strips (acres)		E329D	No till system to increase soil health and soil organic matter content
				E329E	No till to reduce energy
					None Available
					None Available
	340	Cover Crop (acres)		E340A	Cover crop to reduce soil erosion
				E340B	Intensive cover cropping to increase soil health and soil organic matter content
				E340C	Use of multi-species cover crops to improve soil health and increase soil organic matter
				E340D	Intensive orchard/vineyard floor cover cropping to increase soil health
				E340F	Cover crop to minimize soil compaction
				E340G	Cover crop to reduce water quality degradation by utilizing excess soil nutrients
				E340H	Cover crop to suppress excessive weed pressures and break pest cycles
				E340I	Using cover crops for biological strip till
				E345A	Reduced tillage to reduce soil erosion
				E345B	Reduced tillage to reduce tillage induced particulate matter
				E345C	Reduced tillage to increase plant-available moisture
				E345D	Reduced tillage to increase soil health and soil organic matter content
	386	Field Border (acres)		E345E	Reduced tillage to reduce energy use
E386A				Enhanced field borders to reduce soil erosion along the edge(s) of a field	
E386B				Enhanced field borders to increase carbon storage along the edge(s) of the field	
E386C				Enhanced field borders to decrease particulate emissions along the edge(s) of the field	
392	Filter Strips (acres)		E386D	Enhanced field borders to increase food for pollinators along the edge(s) of a field	
			E386E	Enhanced field borders to increase wildlife food and habitat along the edge(s) of a field	
412	Grassed Waterways (acres)		E393A	Extend existing filter strip to reduce water quality impacts	
			E412A	Enhance a grassed waterway	
484	Mulching (acres)		E484A	Mulching to improve soil health	
			E484B	Reduce particulate matter emissions by using orchard or vineyard generated woody materials as mulch	
585	Stripcropping (acres)				
601	Vegetative Barriers (feet)			None Available	
603	Herbaceous Wind Barriers (feet)			None Available	

Describe Climate-Smart Practices to be used from USDA NRCS standards :

- Farmers/managers decide what works for their specific conditions
- Implement management systems that store soil carbon in the rotation phase
- Focus on multiple-year rotation effects
- Add-in practices to enhance effects in potato production year
- Identify additional natural resources enhancement practices



Climate-Smart Potatoes from the Pacific Northwest



Recruit producers and landowners

- Potato processing/handling companies that provide access to their producer networks
- Native American tribal nations
- Commodity associations and networks of small-farm producers and Independent growers

Lamb Weston, Frito-Lay, Threemile Canyon Farm, Mart Produce, Simplot, GMP Orchards, Selkirk Ag, Triangle Ranch, Lazarus Naturals, Independent growers, Nez Perce Tribe, Confederated Tribes and Bands of the Yakama Nation, and Confederated Tribes of the Colville Reservation.

Climate-Smart Potatoes from the Pacific Northwest



Technical Assistance, Outreach, and Training

Training for Extension specialists/Tribal farm managers

- Soil Health training
- Grower education program
- Cultural awareness training

Technical and financial assistance to project partners

- Estimate grower profitability
- Financial Assistance Plan for producers
- Implement Climate-Smart practices payments
- Implement opportunity loss payments

Climate-Smart Potatoes from the Pacific Northwest



Measure, Monitor, Verify, and Report

Submit Annual Climate-Smart Management Plans

- Establish Soil Health Target
- Annual modeled and measured GHG estimates for each enrolled farm
- Other water, air, and habitat-related benefits



Leverage resources for project fit into broader policy context – other federal and state programs

Climate-Smart market development and labeling

USDA Climate Smart





**Oregon State
University**

Climate-Smart Potatoes from the Pacific Northwest

*Managing Soil Health for Climate-Smart
Outcomes*



**Oregon State
University**



University of Idaho



**SOIL HEALTH
INSTITUTE**



**Oregon State University
Global Hemp
Innovation Center**



7 GENERATIONS Industrial Hemp Association of WA