Pacific Northwest Cover Crop Decision Aid System (PaNDAS)

A new WSARE project designed to test the effects of diversified cover crops and termination date on soil moisture, follow-on crop performance, and ecosystem services

Sanford Eigenbrode and others, University of Idaho and PCD

Farmer's Network Coffee Hours

June 28, 2023

WESTERN SARE Sustainable Agriculture Research & Education

University of Idaho

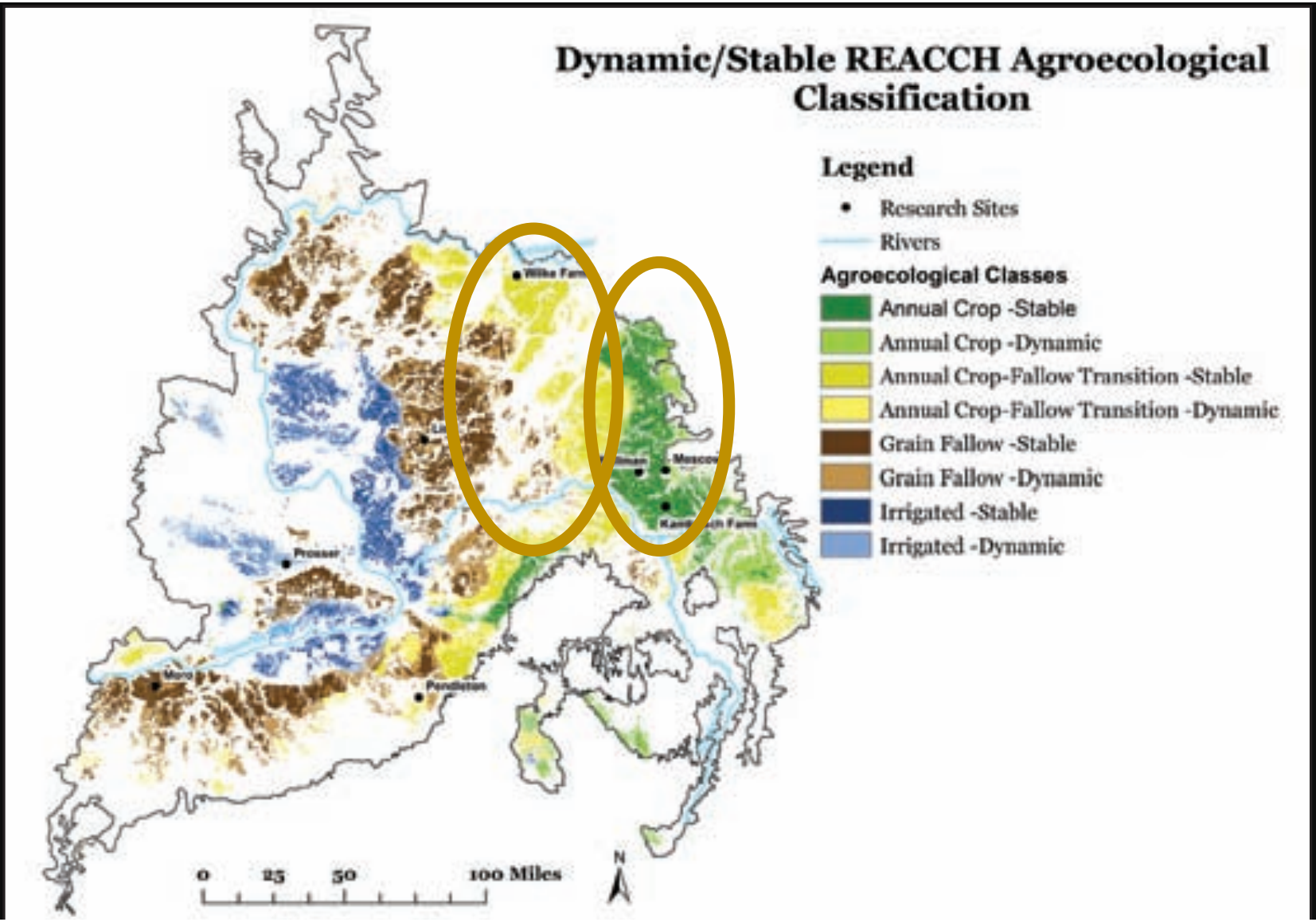
Producer Cooperators

Transition Cropping Zone

- Tracy Erickson
- Mark Greene
- Bruce Petty
- Doug Schuster

Annual Cropping Zone

- Aaron Flansburg
- Garry Esser
- Frank Wolf
- Clint Zenner


Dynamic/Stable REACCH Agroecological Classification
Legend
Research Sites
Rivers
Agroecological Classes
Annual Crop -Stable
Annual Crop -Dynamic
Annual Crop-Fallow Transition -Stable
Annual Crop-Fallow Transition -Dynamic
Grain Fallow -Stable
Grain Fallow -Dynamic
Irrigated -Stable
Irrigated -Dynamic
Moscow
Prosser
Pendleton
0 25 50 100 Miles
N

UI and PCD Team

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University of Idaho

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University of Idaho

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Research and Monitoring Coordinator

Palouse Conservation District

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University of Idaho

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University of Idaho

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University of Idaho

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University of Idaho

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Research Specialist, College of Agricultural and Life Sciences

University of Idaho

Fernanda Gomes Moojen (Researcher)
Postdoctoral Fellow, Department of Natural Resources and Society

University of Idaho

PaNDAS Project Objectives

1. (Research) Compare cover crop mixtures and termination dates for effects on cover crop performance, water infiltration rates, bulk density, nitrogen availability, weed and insect biodiversity, performance of the subsequent cash crop
2. (Research) Compare the effects of treatments in Objective 1 on soil moisture profiles during the season and after different termination dates
3. (Education) Use information from Objectives 1 and 2, existing literature and data, and grower interviews to develop the first comprehensive online support system for iPNW cover crop management.

Objective 1

Three cover crop mixtures:

- LD (low diversity) – 3 species: one grass, one legume, one brassica
- HD (high diversity) – 9 species: 3 of each, grass, legume, brassica
- PC (producer's choice) – any mixture as determined by the cooperator

Three termination dates (herbicide) – early, mid, and late

- June 1; first legume flower; first legume pod set?
- June 1 or later; 50% legume bloom; before seed set

- Replicated trials on the eight cooperator farms

Producer Choice Mixtures

Erickson (Tracy, Devin, Kye)	Large: Horizon spring peas, Keystone winter peas, Common vetch, Meeker Chuckling vetch. Small: White Props millet, common radish, Golden flax, *Phacelia tanacetifola* wildflower
Green, Mark	Horizon spring peas (63%), Everleaf 126 oats (35%), Purple top turnip (2%)
Petty, Bruce	Horizon spring peas (63%), Everleaf 126 oats (35%), Purple top turnip (2%)
Shuster, Doug	Austrian winter peas (30%), Japanese millet (25%), Dixie crimson clover (15%), Attack mustard (8%), Purple top turnip (8%), common radish (7%), *Phacelia tanacetifolia* (7%) wildflower; and canola, yellow peas, and barley leftover from previous years
Wolf, Frank	Lavina beardless spring forage barley (22%), Hayden Spring oats (22%), Thor 879684836 triticale (22%), Spring forage pea (16%), Dixie Crimson clover (5%), Fixation Balansa clover (1%), Broadleaf mustard (2%), black oil sunflower (2%), Indi Gold oriental mustard (2%), Nitro radish (2%), Purple top turnip (2%)
Flansberg, Aaron	Austrian winter peas (45%), buckwheat (15%), triticale (25%), common vetch (15%)
Zenner, Clint	Gunner triticale (50%), Horizon spring peas (38%), Black oil sunflower (4%), medium red clover (3%), yellow blossom sweet clover (3%), Purple top turnip (1%), Anaconda radish (1%)
Esser, Garry	yellow blossom sweet clover (50%), alfalfa (50%)

Reasons: Nitrogen fertilization, Weed suppression, Bio-drilling, Increasing organic matter, Grazing income

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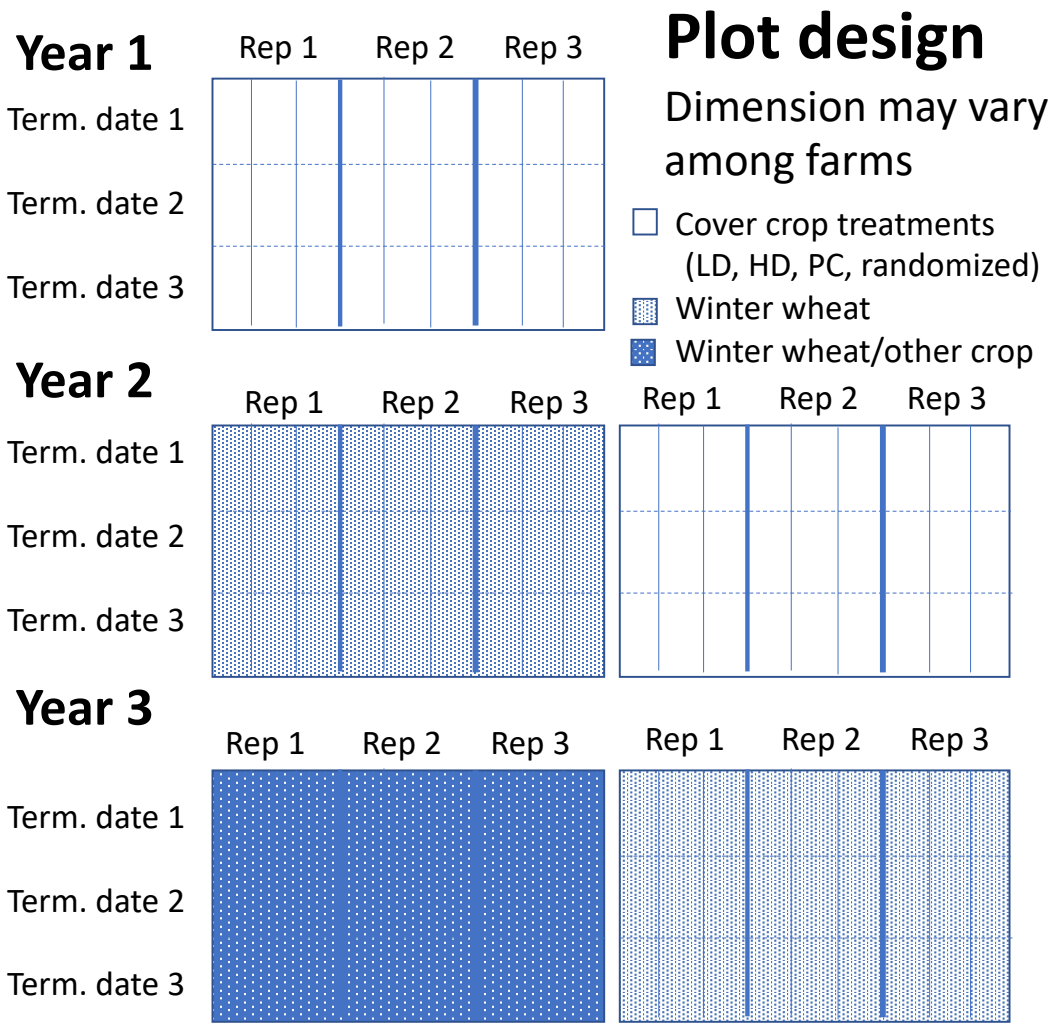
On Each Farm

≈ 4 acres/farm



Objectives 1 and 2

Measurements

Soil Physical Properties (Annual)

Penetration resistance, bulk density, and water infiltration rates

Soil N and Organic Matter (Annual)

Weed and Insect Pressure and Biodiversity (Annual)

Gravimetric Soil Moisture (Annual - at beginning and end of season)

Volumetric Soil Moisture Three Depths – continuously monitored

TD2 and TD3, one replicate block per farm

Crop performance: Cover crop biomass and winter wheat yield and quality

Objective 3
Education

University of Idaho

Producer Interviews

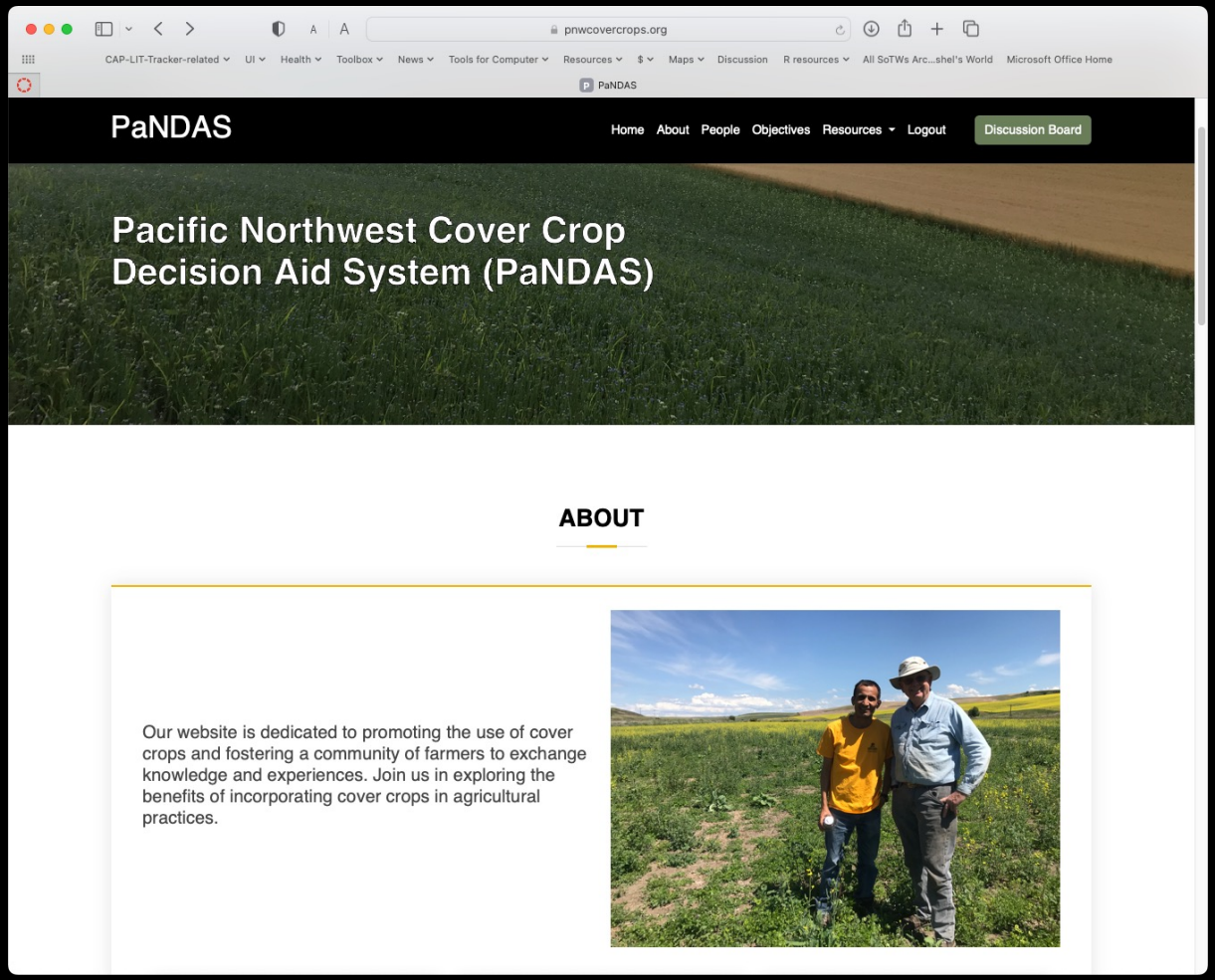
Palouse Alternative Cropping Symposium

Field Days

Case Studies

Cereal Schools and Other Regional Meetings

PaNDAS website (pnwcovercrops.org)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Pacific Northwest Cover Crop Decision Aid System (PaNDAS)
ABOUT
Our website is dedicated to promoting the use of cover crops and fostering a community of farmers to exchange knowledge and experiences. Join us in exploring the benefits of incorporating cover crops in agricultural practices.

First year: Spring 2023

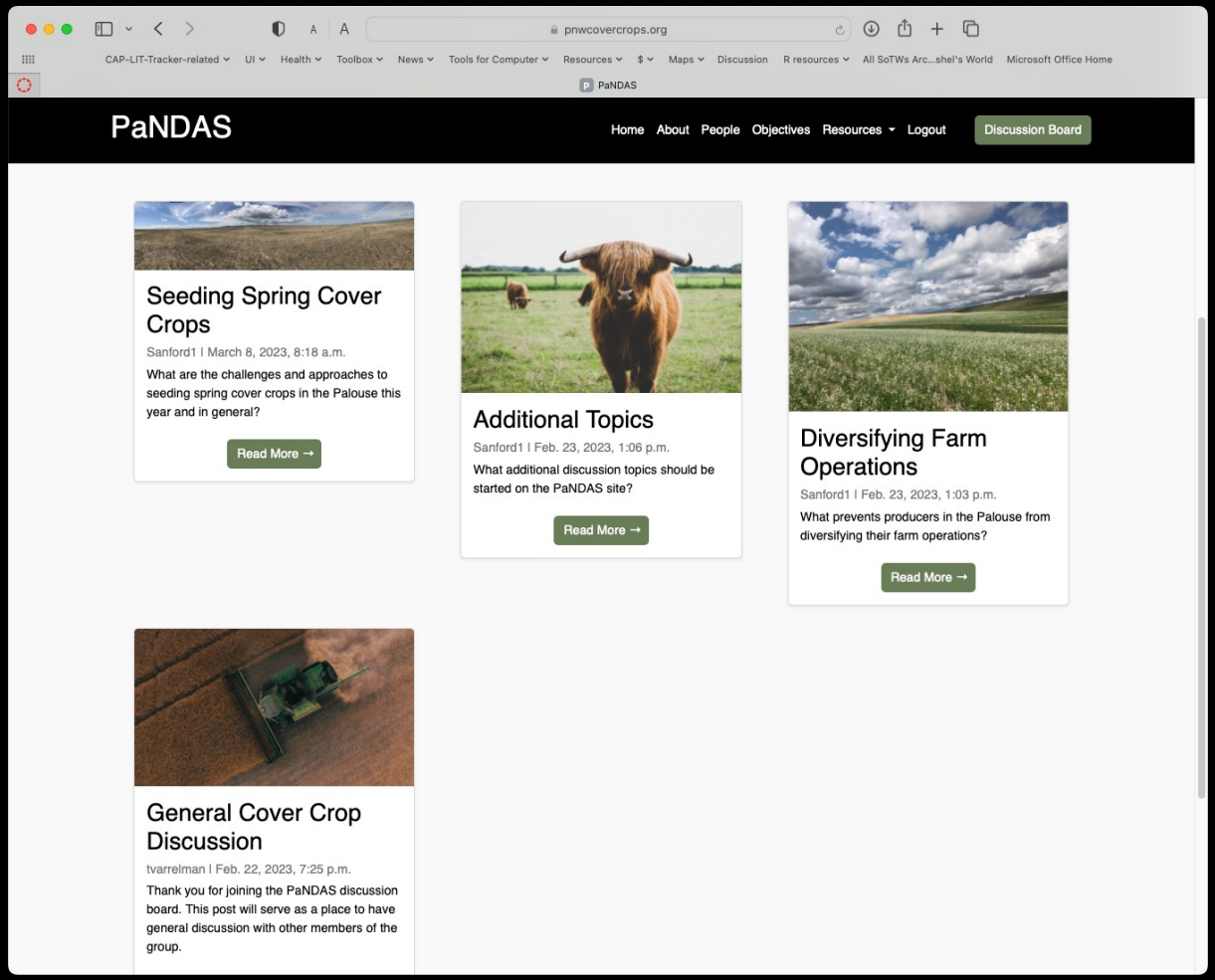
- First and second terminations have been successfully executed, although dates needed to be adjusted based on weather.
- Sampling for stand counts, soil cores, insect diversity, and weeds have been completed.
- This presentation was aired as part of the Soil Health Coffee Hour.
- Sites are being visited for interviews and recordings of activities to post here. Stay tuned!

First year: Spring 2023 – the crops






First year: Spring 2023 - measurements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Seeding Spring Cover Crops
Sanford1 | March 8, 2023, 8:18 a.m.
What are the challenges and approaches to seeding spring cover crops in the Palouse this year and in general?
Read More →
Additional Topics
Sanford1 | Feb. 23, 2023, 1:06 p.m.
What additional discussion topics should be started on the PaNDAS site?
Read More →
Diversifying Farm Operations
Sanford1 | Feb. 23, 2023, 1:03 p.m.
What prevents producers in the Palouse from diversifying their farm operations?
Read More →
General Cover Crop Discussion
tvarrelman | Feb. 22, 2023, 7:25 p.m.
Thank you for joining the PaNDAS discussion board. This post will serve as a place to have general discussion with other members of the group.