

Welcome to the 2023 Polk County Local Working Group Meeting



Housekeeping:

1. This meeting is being recorded
2. Silence phone, mute self on zoom
3. Questions for end
4. (Optional) brunch and networking at end

Purpose:

- To build and expand partnerships
- Evaluate resources
- Collaboratively prioritize and improve identified resource concerns

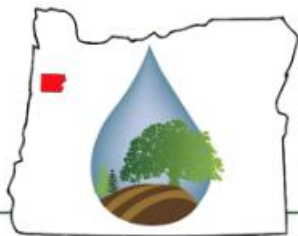
Objectives:

1. Review top 3 priorities
2. Discuss new highlights
3. Present outreach updates and resources offered



Who are we?

POLK



**Soil & Water
Conservation District**



United States Department of Agriculture
Natural Resources Conservation Service

Top 3 priorities under Long Range Plan

I. Soil Health & Water Quality Principles





Soil Health Principles

- Keep the Soil Covered
- Minimize Soil Disturbance
- Maintain Living Roots in the Soil
- Diversify Crops





How to

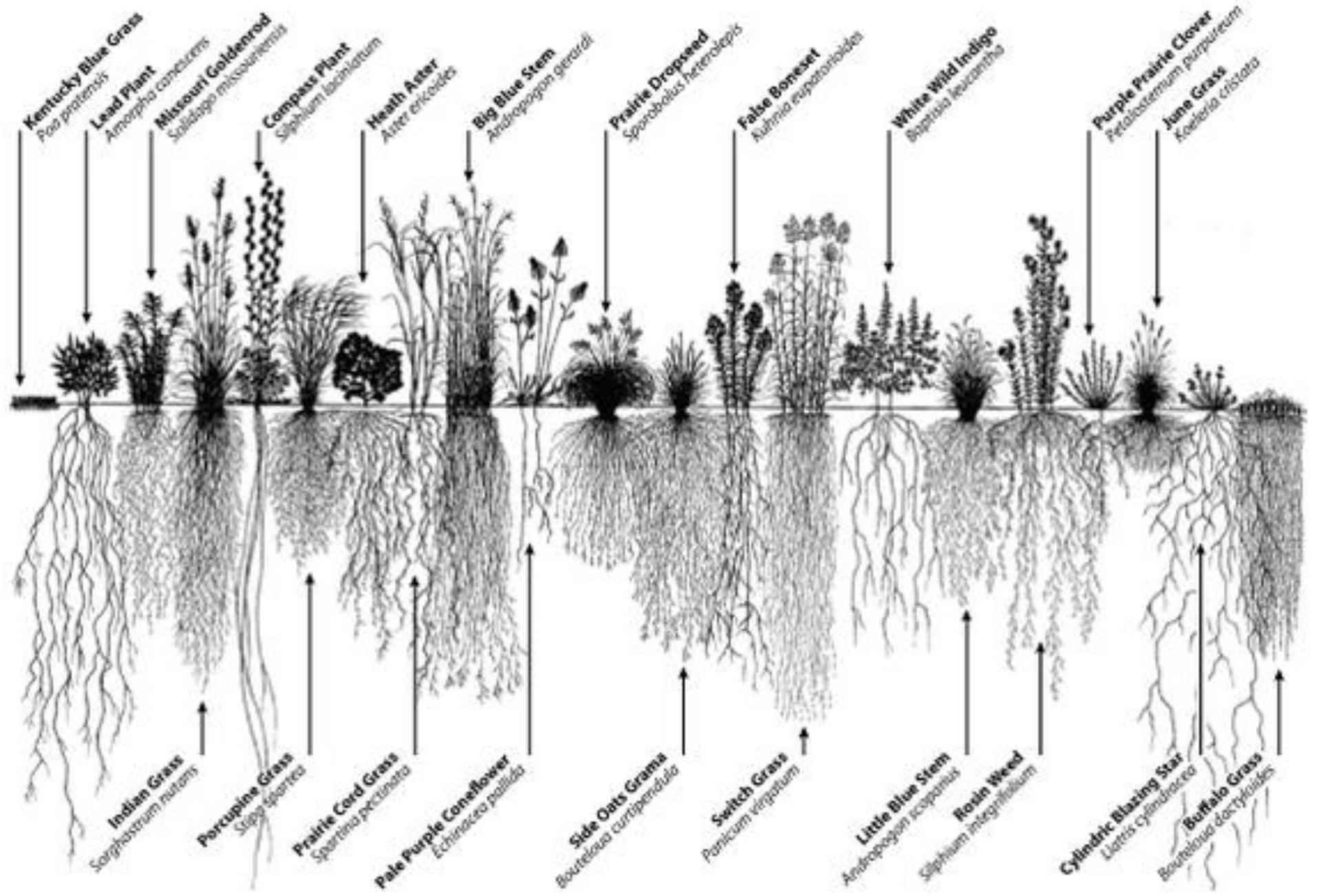
Cover Crops, Perennial Crops, Diverse Crops
Less Tillage

- Eliminates bare soil, crusting and runoff
- Increases organic matter and infiltration
- Reduces sedimentation to surface water
- Improves soil biology/habitat
- Increases nutrients and water availability

Growth
Above

Mirrors

Roots
Below



Roots: an exploration of cover crops belowground

Crimson Clover
(*Trifolium incarnatum*)



Hairy Vetch
(*Vicia villosa*)



Red Clover
(*Trifolium pratense*)



Alfalfa
(*Medicago sativa*)



Yellow Blossom
Sweet Clover
(*Melilotus officinalis*)



Sunn Hemp
(*Crotalaria juncea*)



Annual Ryegrass
(*Lolium multiflorum*)



Triticale
(x *Triticosecale*)



Sorghum
Sudangrass
(*Sorghum bicolor*
x *S. sudanense*)



Tillage Radish
(*Raphanus sativus*)



Winter Annual
Legumes

Biennial and
Perennial Legumes

Summer Annual
Legumes

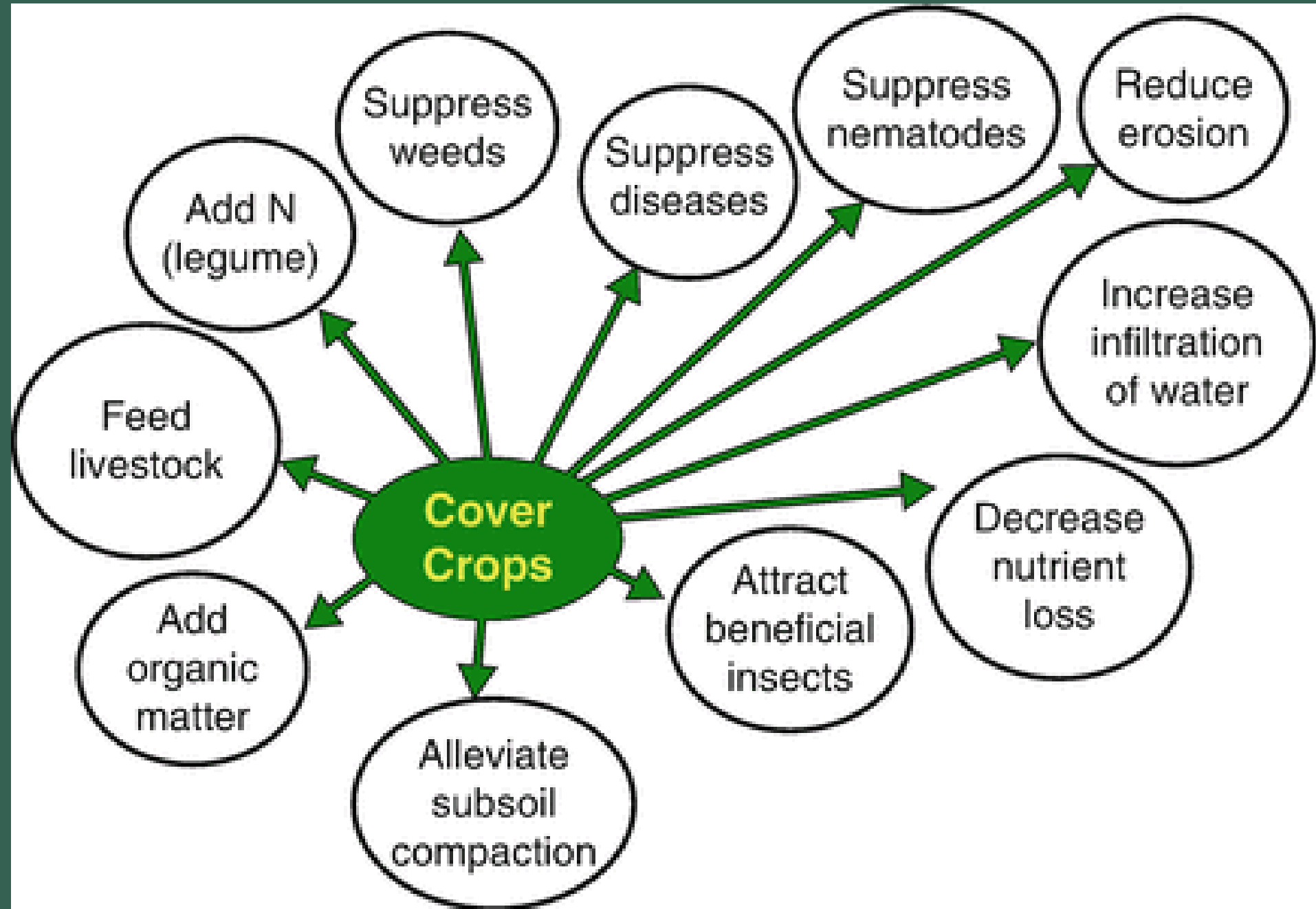
Winter Annual
Grasses

Summer Annual
Grass

Brassica

Cover Crop Systems

Cover Crop Systems





Soil Health Principles

Bare Orchard Floor

- Organic Matter Depletion
- Surface Crusting
- Sheet and rill erosion.
- Sediments transport to surface water



Vegetation Between Rows

- Cover = Soil Organic Matter
- Perennial = Low Disturbance
- Living Roots = Healthy Soil Biology
- Roots = Water Infiltration



Erosion in Orchards

Funding available 2020-2024

- \$25,000 EQIP per year multi-county
- Organic Matter Depletion
- Surface erosion.
- Sediments to surface water





Soil Health Principles

- Keep the Soil Covered
- Minimize Soil Disturbance
- Maintain Living Roots in the Soil
- Diversify Crops

Soil Health = Water Quality

Cover Crop Systems

Oregon NRCS – Plant Materials Center

PNW COVER CROP SELECTION TOOL (7.16 MB)

<https://www.nrcs.usda.gov/plant-materials/pacific-northwest-cover-crop-selection-tool>

<https://www.polkswcd.com/>

<https://www.nrcs.usda.gov/>

Conservation Reserve Enhancement Program - CREP

- Designed to increase WQ, land stability, and habitat quantity and quality
- Partners: Farm Service Agency, Natural Resource Conservation Service
- Riparian Area Buffer Creation and Maintained
 - Cost Sharing, Rental Income
- Expanded enrollment possibilities now



2. Forest Resiliency in The Face of Climate Change



Pine Forest Management: Before and After



Douglas Fir Forest Management: Before



Douglas Fir Forest Management: After



Conifer EQIP Funding 2022-2026

- \$450,000 EQIP per year basin wide - \$50,000 Polk County
- Forest Management Plan Development
- Forest Resiliency and Production
- Wildfire Hazard - Biomass Accumulation
- Terrestrial Habitat for Wildlife and Invertebrates

Forest Practices Act

Dave Thompson

Stewardship Forester

Oregon Department of Forestry

3. Oak Restoration for Wildlife



Oak Restoration Programs

- Polk County Oak Habitat Restoration 2020 (RCPP)
- Meadow Reserve Fund (EQIP)
- Targeting Oak Woodlands, Oak Savanna, and Open Prairie Grassland.
- Comprehensive tool set for restoration
- Map available on NRCS Oregon's page



Other Funding Sources

- OWEB small grants
- Agricultural Efficiency Improvements
- Upland and Riparian Area Wildlife Habitat
- ODFW Fish screens, riparian area tax credit



Other Funding Sources Cont.

- NRCS Agricultural Conservation Easement Program
- Wetland Reserve Enhancement Partnership
- Forest Resiliency in the face of Climate Change
- Animal Feeding Operations
- Erosion in Orchards



EQIP Initiative Funding Opportunities 2023:

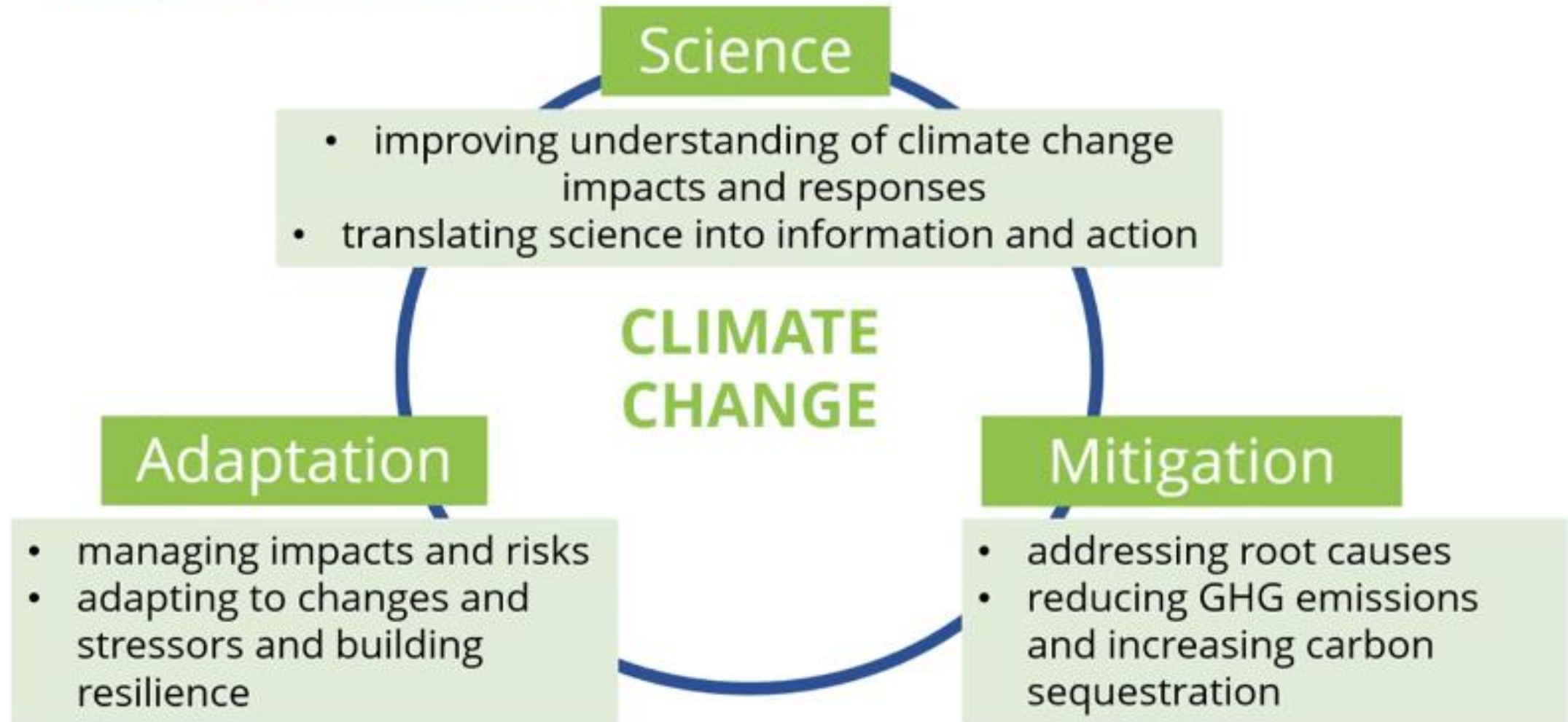
- National Initiatives: High Tunnels, Organic /Transition, Energy, Air Quality
- Conservation Incentive Contracts – Land mgmt. 5 year
- Conservation Stewardship – Ag & Forest stewardship 5 year
- Agricultural Land Easements - Wetlands & Working Ag Lands
- Riparian Restoration: –Conservation Reserve Enhancement Program 10-15 yr

New Highlights

Climate Resiliency for Agricultural Producers



Role of NRCS



Natural
Resources
Conservation
Service

nrcs.usda.gov/



Climate Smart Ag & Forestry



Mitigation: Reducing &
Removing
GHG

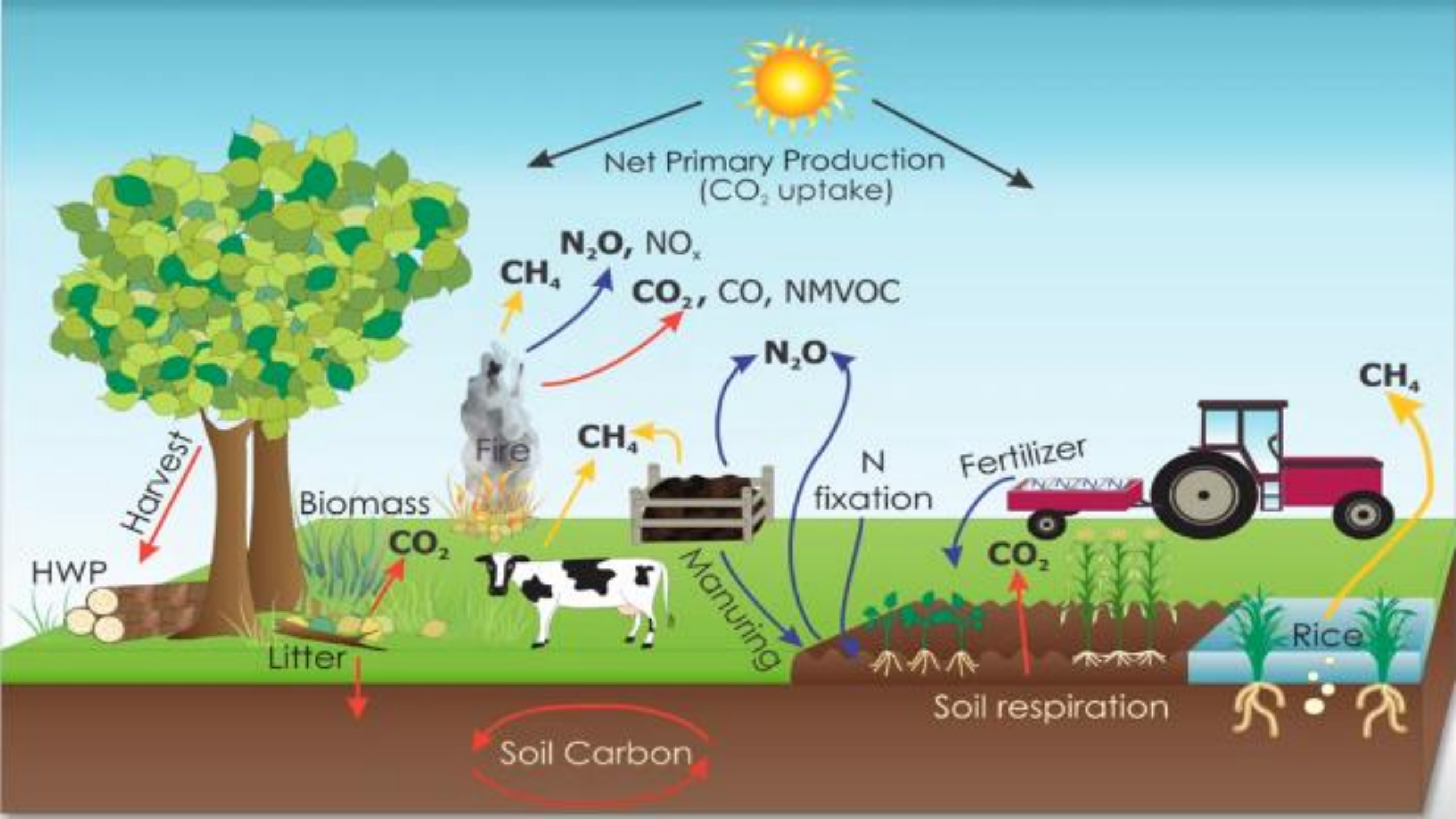
Adaptation: Adapting &
Building
Resilience

While increasing Ag. Productivity, Income &
Sustainability

Understanding the Issue



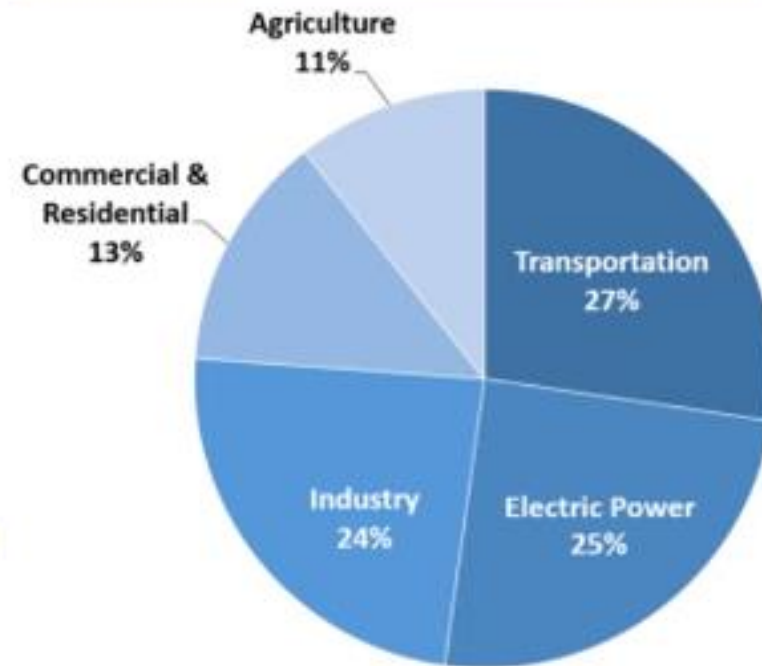
Agriculture Contributes
to about 11% of GHG
Emissions Nationally



Why Agricultural Mitigation?

- 17% of total global GHG emissions in 2018
- 11% of total U.S. greenhouse gas emissions in 2020
 - 42% of methane emissions
 - 80% of nitrous oxide emissions
- The U.S. aims to achieve a **50-52% reduction from 2005 levels in economy-wide net GHG pollution in 2030** – this will require all sectors to take actions.

Sources of U.S. Greenhouse Gas Emissions in 2020



Note: All emission estimates from the [*Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020*](#).

Natural
Resources
Conservation
Service

nrcs.usda.gov/



How Do We Mitigate?



Emissions of Greenhouse Gases – Air Resource Concern

– Resource concern components for:

- Nitrogen fertilizer
- Carbon stock
- Confined animal activities



Natural
Resources
Conservation
Service

nrcs.usda.gov/

NRCS Working Lands Practices... Work!

- as Climate Solutions



Cover crops



Conservation buffers



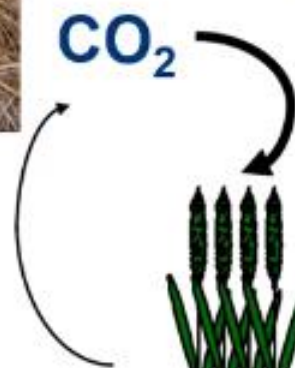
Anaerobic digester



Conservation tillage



CO₂



Soil organic matter



Transition to Riparian Buffer

Conservation Co-Benefits - Soil Health, Atmospheric Carbon, Riparian Health, Sustainability



Natural
Resources
Conservation
Service

nrcs.usda.gov/

Transition to Grazing Management

Conservation Co-Benefits - Soil Health, Atmospheric Carbon, Livestock Health, Sustainability



Natural
Resources
Conservation
Service

nrcs.usda.gov/

Transition to No-Till/Reduced Till and Residue Management

Conservation Co-Benefits - Soil Health, Atmospheric Carbon, Nitrogen Management, Sustainability



Natural
Resources
Conservation
Service

nrcs.usda.gov/

Carbon Sequestration



Windbreak – CPS 380



Perennial Biomass and Soils



USDA employees, Paul Youngstrom and Eric McTaggart, examine a cover crop radish.
NRCS photo by Jody Christiansen.



Cover Crop – CPS 340

EESI **Benefits of Cover Crops**



Reduced GHG Emissions (CO_2 , N_2O , CH_4)

Cost Savings From Precision Agriculture Technologies on U.S. Corn Farms

by David Schimmelpfennig



Nitrogen Management – CPS 590

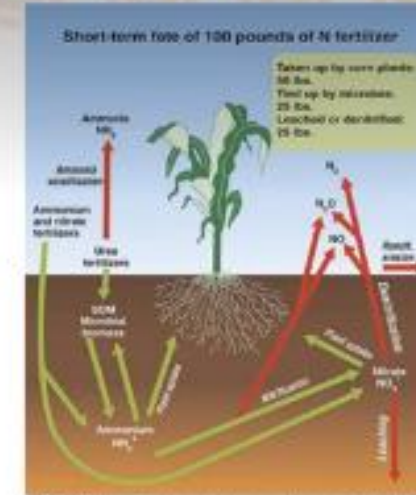


Figure 1: This simplified nitrogen (N) cycle shows the typical fate of 100 pounds of N fertilizer applied to a corn field. The exact amounts vary with soil type, weather and crop. (Source: Ecologically Based Farming Systems, 2007)

Reduced Atmospheric Emissions of Potent GHG - Nitrous Oxide (N_2O)



Finding: Farm Practices & Management

December 31, 2012

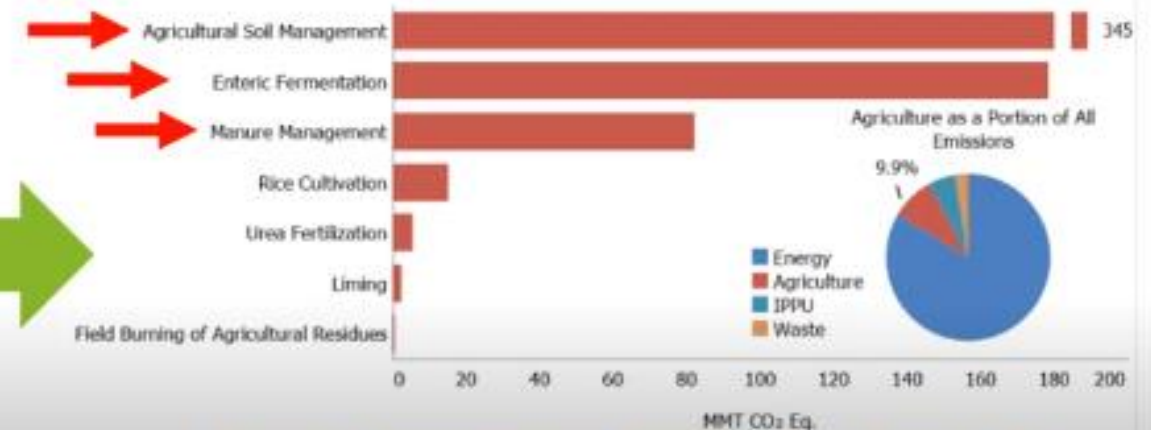
Alternative Policies To Promote Anaerobic Digesters Produce Positive Net Benefits

by Nigel Kay and Stacy Seewinger



Anaerobic Digester – CPS 366

Figure 5-1: 2020 Agriculture Sector Greenhouse Gas Emission Sources

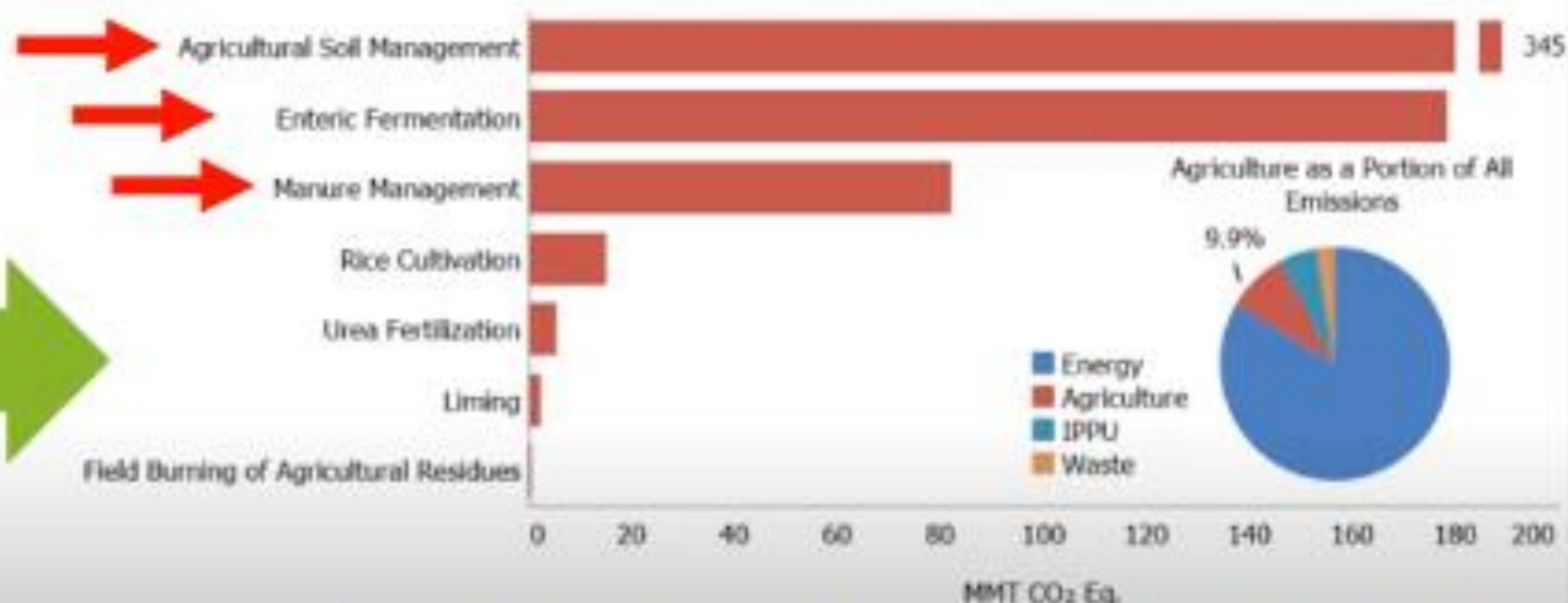


Reduced Atmospheric Emissions of Potent GHG – Methane (CH_4)

nrcs.usda.gov/

Reduced Atmospheric Emissions of Potent GHG - Nitrous Oxide (N₂O)

Figure 5-1: 2020 Agriculture Sector Greenhouse Gas Emission Sources



Reduced Atmospheric Emissions of Potent GHG
– Methane (CH₄)

nrcs.usda.gov/

Resources

- **FY23 Climate Smart Mitigation List**
<https://www.nrcs.usda.gov/conservation-basics/natural-resource-concerns/climate/climate-smart-mitigation-activities>
- **COMET Tools**
 - <https://www.comet-farm.com> – COMET-Farm
 - <https://www.comet-planner.com> – COMET-Planner
- **USDA Quantification Methodologies and USDA GHG Inventory**
 - https://www.usda.gov/sites/default/files/documents/USDATB_1939_07072014.pdf
 - <https://www.usda.gov/sites/default/files/documents/USDA-GHG-Inventory-1990-2018.pdf>
- **US GHG Emissions and Sinks**
 - <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020>



Conservation Innovation Grants

- Electric Automated Tractor Technology
- Energy
- Air Quality & Atmospheric Change

ZERO EMISSIONS
ZERO COMPROMISE
Maximize your annual savings



Making Sustainable Farming
Economically Superior

100% Electric | Driver Optional | Data-Driven

Contact a Specialist

NRCS - Conservation Innovation Grants

National CIG Classic

State CIG Classic

CIG On-Farm Trials

Why New Technology?

MK-V

Experiences

About



Reserve Now



Hopville Farms, Jim Hoffman

Nov 8, 2020

Jim Hoffman, Managing Partner of Hopville farms discusses his interest in Monarch Tractor's autonomy to increase productivity.

Crop Type
Blueberries

Location
Independence, Oregon

Category
Autonomy

New Technology Opportunities in Agriculture

New Technology Opportunities in Agriculture

- All-Electric Monarch Tractor
- Auto-steering capable
- Driverless operation possible
- 40 hp (70 peak)
- Suitable for most vineyard, blueberry or other narrow row applications





Shielded booms reduce drift.

More than just shields!

- Low Drift Nozzles
- Tree Sensing Eye
- Clean air supply for eye
- Quick reacting spray valve



- Automation can be used for many things

- Here, sawdust is dropped at each tree as the tractor moves continuously This process can be used with other soil amendments or fertilizer





- The “Industry Standard”
- High water use
 - 100+ GPA
 - 100+ PSI
- High potential for off target drift
- High horsepower tractor
 - Sealed and pressurized cab
 - \$\$\$ tractor









Arial Drone Spraying



Arial Drone Dry Spreading



Are they durable?





Drip Irrigation



6-8 hour run time

Amity soil

1/2 GPH emitters

.10" inch/hour



No Sawdust!





Coyote and bird damage





Thanks!



Oregon Agricultural Heritage Program

- State Legislature established in 2017
- Was not funded until 2021
- Now open for some services, more coming soon



OSU Extension

Small Farms Program

- Polk and Marion Counties
- Small farm questions
- Classes and Workshops
- Community and industry partnerships





How can I stay in touch?

- Monthly Newsletter
- Farmer to Farmer Email Network
- Facebook
 - Oregon State University Small Farms Program
- Instagram
 - @osusmallfarmsmwv

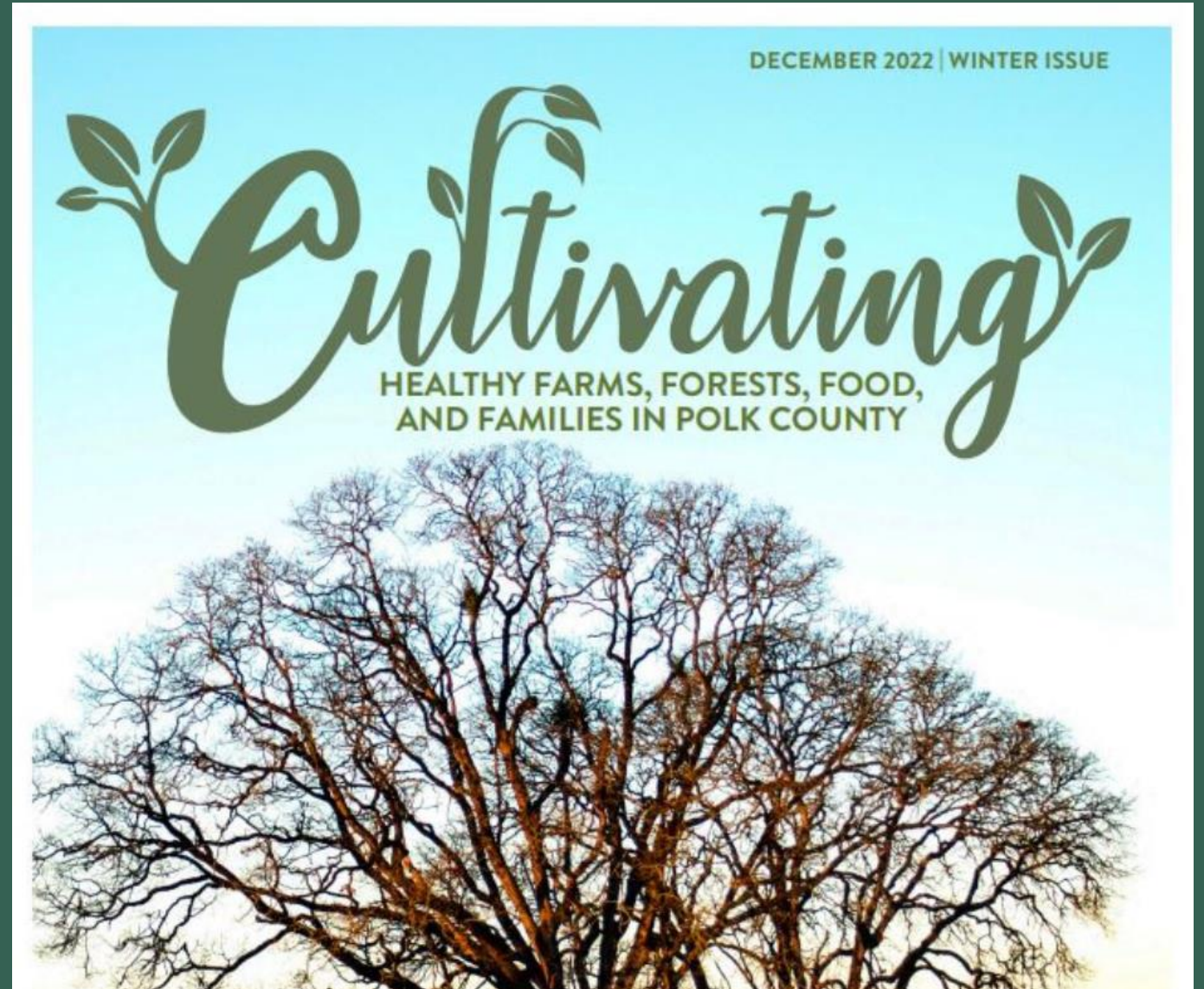
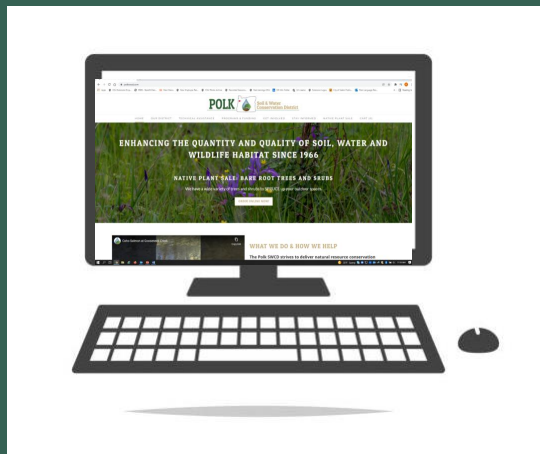
Polk SWCD Outreach & Resources

Outreach Coordinator

- build relationships with community
- promote environmental stewardship
- deliver natural resource conservation education and promote our programs
- establish new *and* strengthen old partnerships with community partners and organizations.

Outreach

- Cultivating
- website
- E-blast

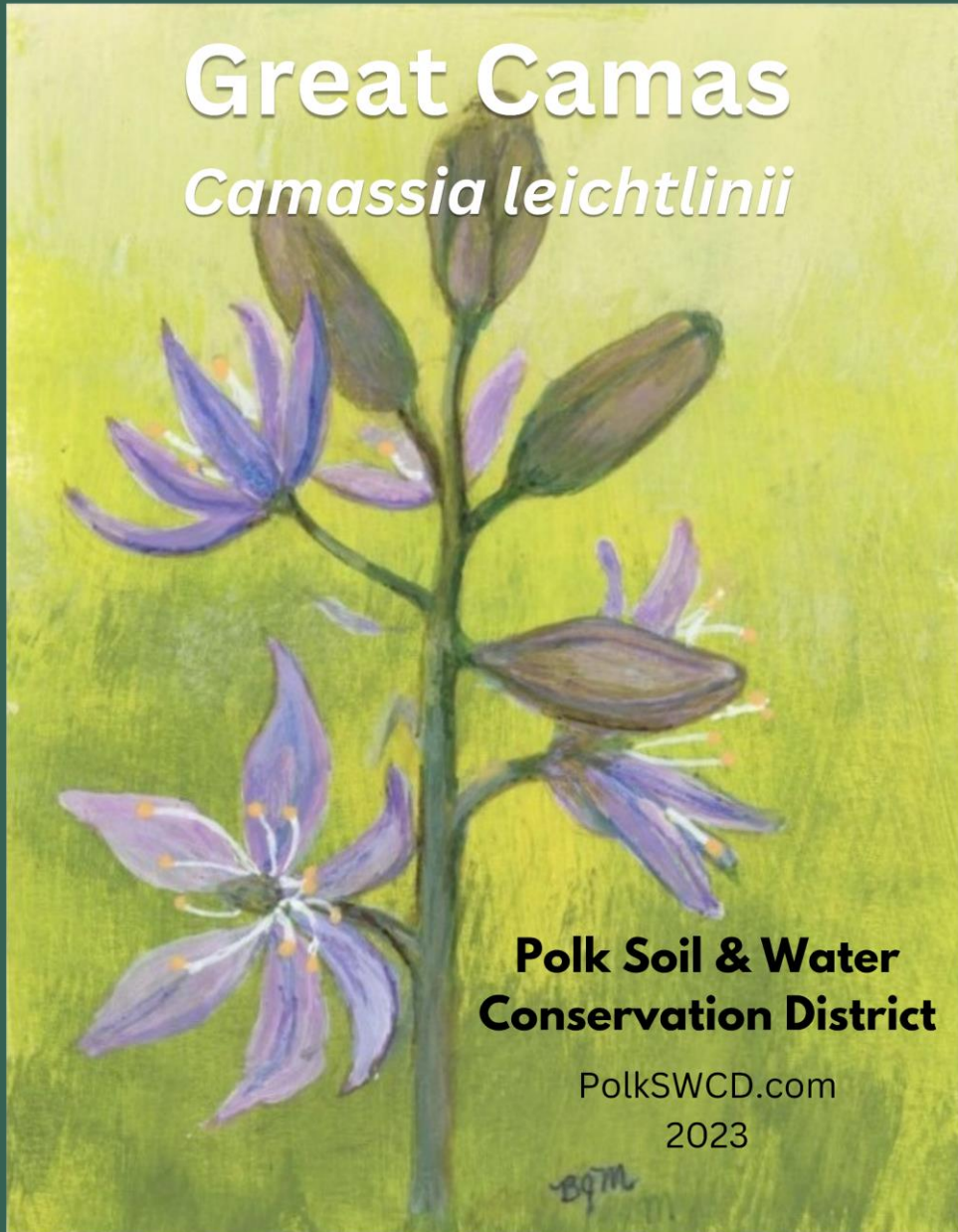


Outreach

- Postcards
- Facebook
- Events:
 - farmer's markets
 - Polk County Fair
 - bird walks
 - plants walk
 - oak restoration tour
 - Webinars
 - Upcoming...



Polk SWCD Stickers



Barn Hall Meetings



Conservation Spotlight

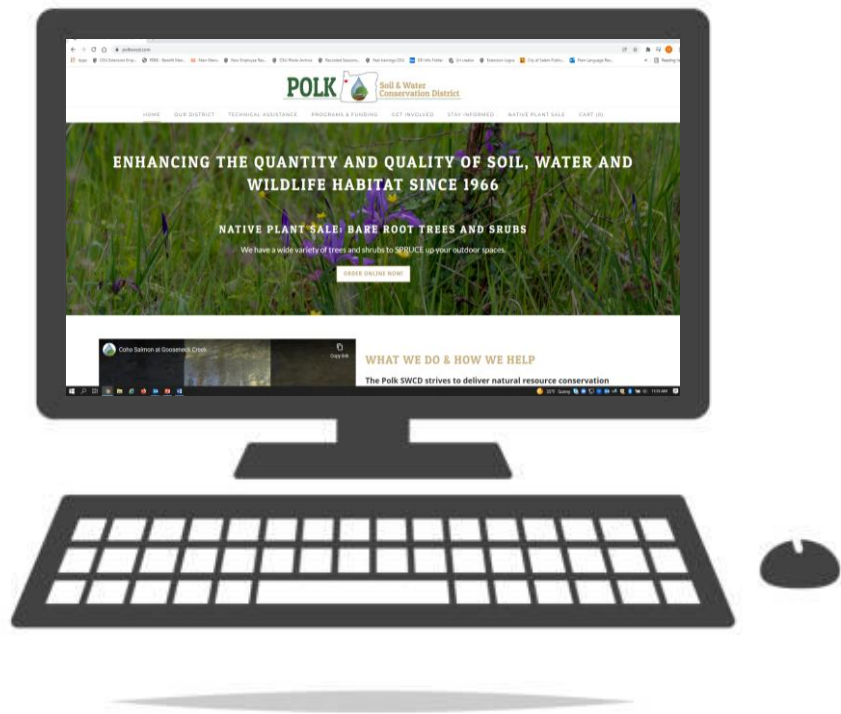


Conservation Crew



Native Plant Sale \$ Scholarship





Resources

Questions