

Nutrient Tracking for Surface and Groundwater Protection

Innovative Research for a Sustainable Future

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Project Team Members



Oregon
Department
of Agriculture



State of Oregon
Department of
Environmental
Quality



Oregon State
UNIVERSITY
Extension Service



Linn Soil & Water
Conservation District



Project support:
EPA for lysimeters, isotopes, contract
DEQ for chemistry analysis in-kind
ODA Fertilizer Fund
SWCD Soil analysis
NRCS, SWCS, GWMA, Land owners
Contracts with WP, LCOG

RARE
Regionally Applied Research
Effort Grant Program
ENVIRONMENTAL PROTECTION AGENCY

Objective of the RARE project

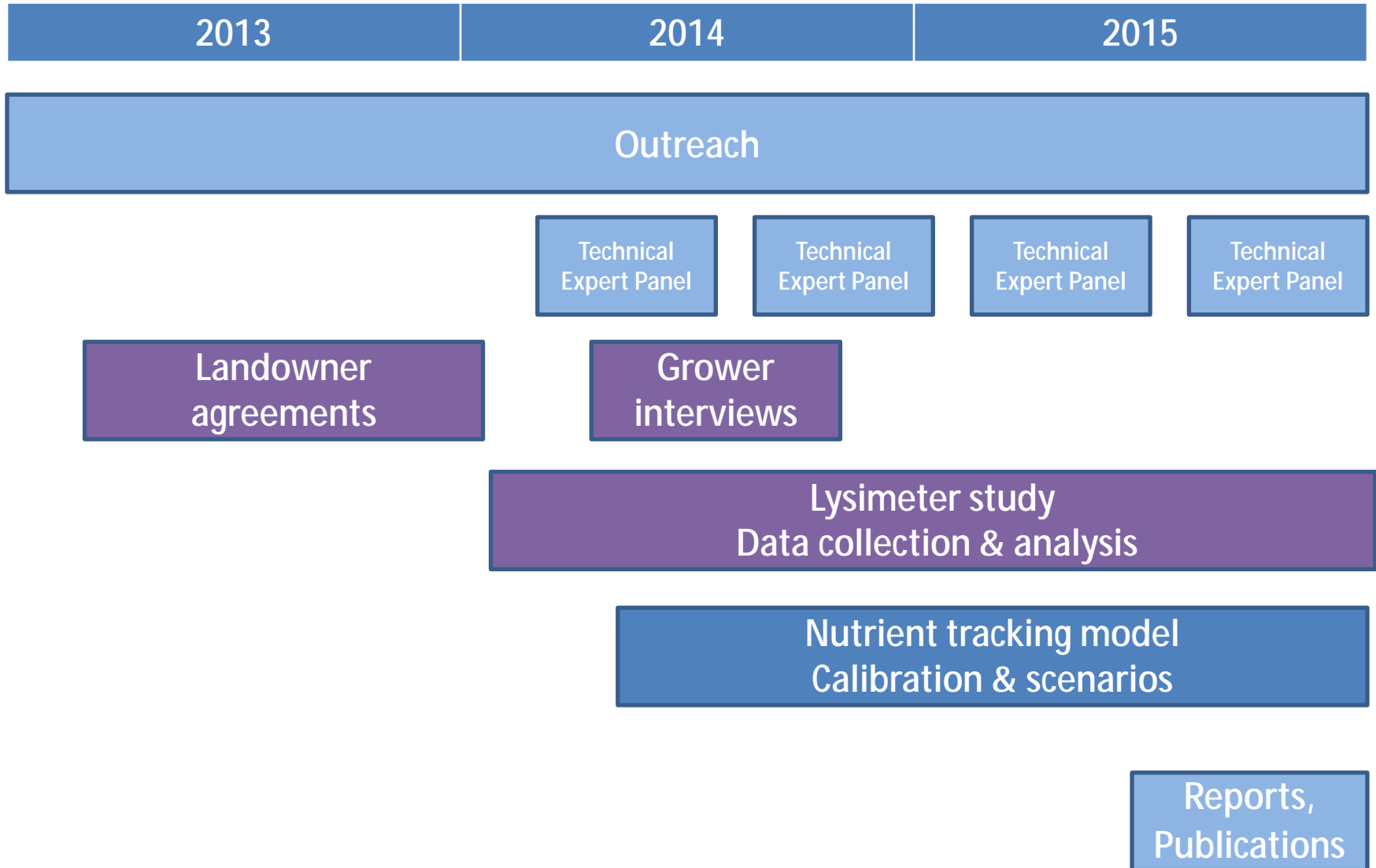
Provide a tool that will help farmers, managers and conservation groups quantify the water quality benefits of practices that they are conducting or funding and use that information to set priorities and inform water quality trading.



Goals of the RARE project

1. Build stakeholder involvement
2. Determine the effectiveness of current practices in reducing nitrate leaching
3. Calibrate and validate USDA APEX and NTT Models
4. Apply model to GWMA stakeholder questions
5. Provide information on practice effectiveness and on the use of USDA models.

Timeline for project



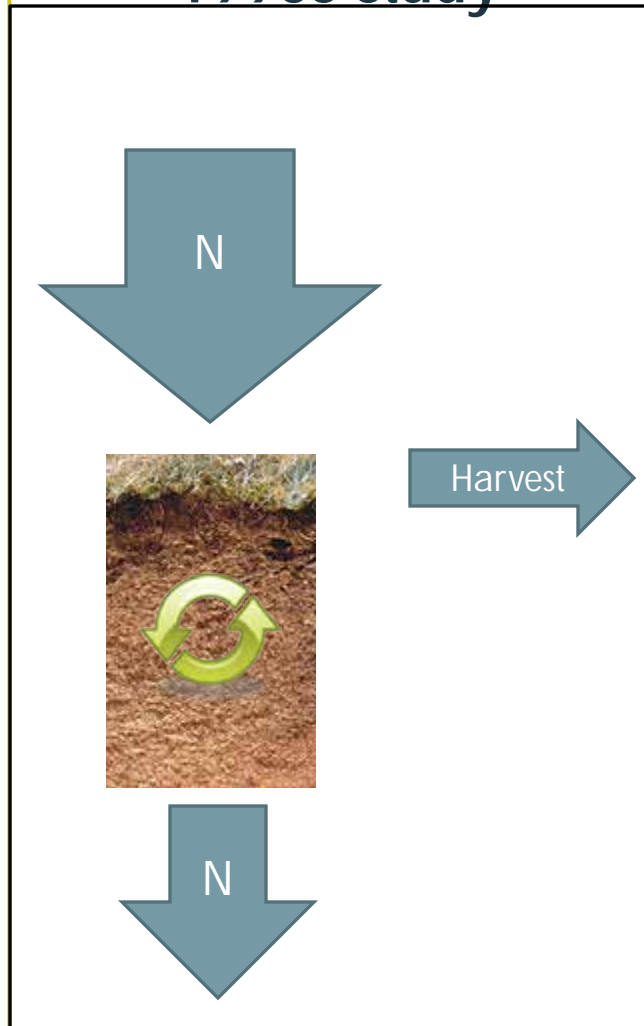
Lysimeter Installation and Monitoring Progress in the GWMA

Susanna Pearlstein, Donna Schmitz
Audrey Eldridge and Jana Compton



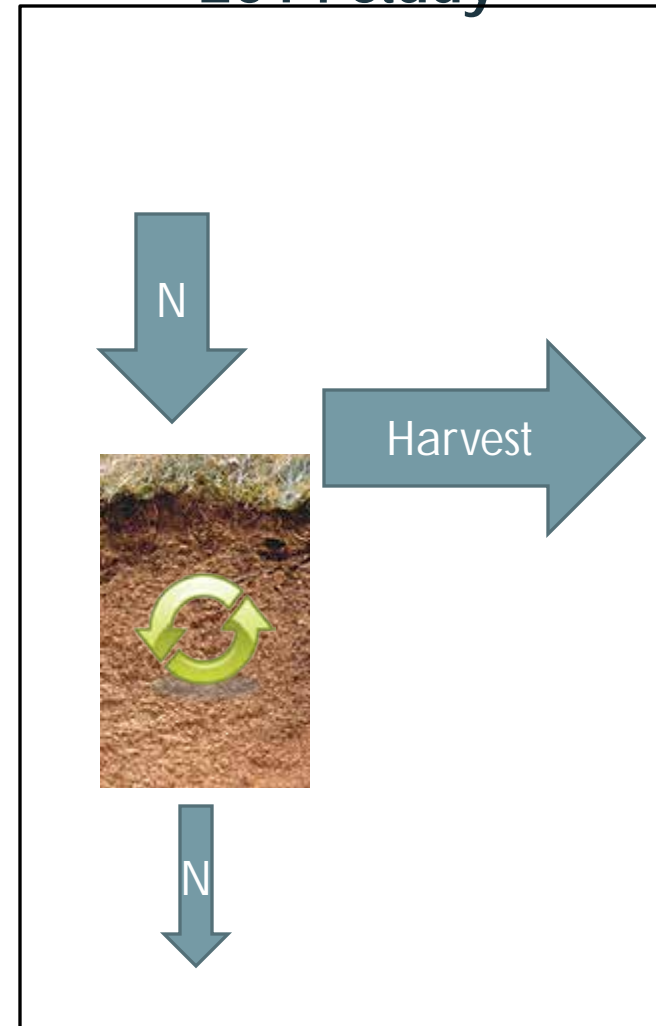
Study expectations based on changing practices

1990s study



Improvements
Irrigation Practices
Breeding, production
Fertilizer management
 üRight source
 üRight rate
 üRight time
 üRight place

2014 study



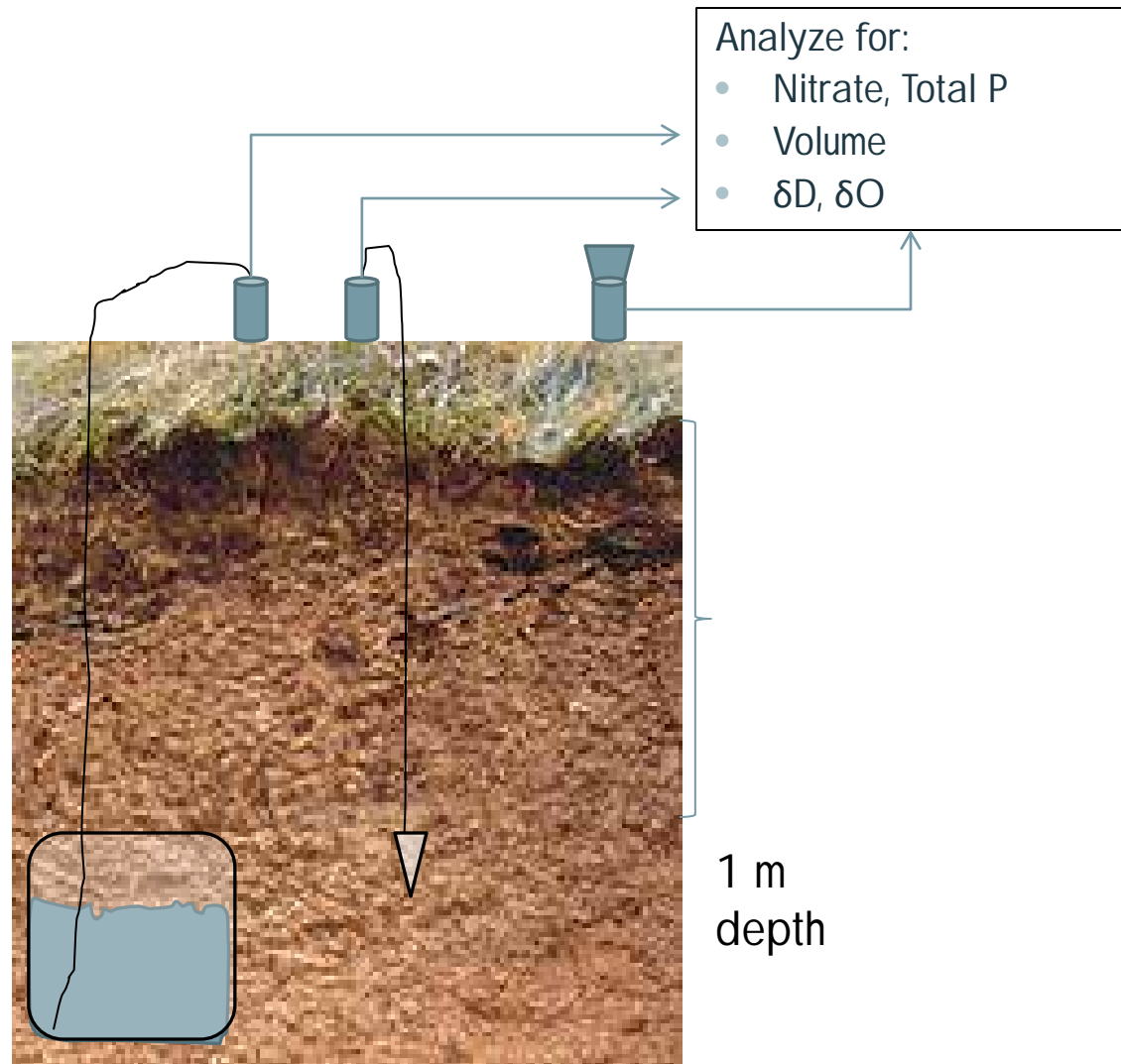
On site measurements

Farm information

- Crop production
- Irrigation
- Fertilizer type, timing

Soil information

- Soil quality measures
- Soil profile



1990s PCAPS

2014 Prenarts

Current Sites

1 Mint



1 Hazelnut



1 Blueberry



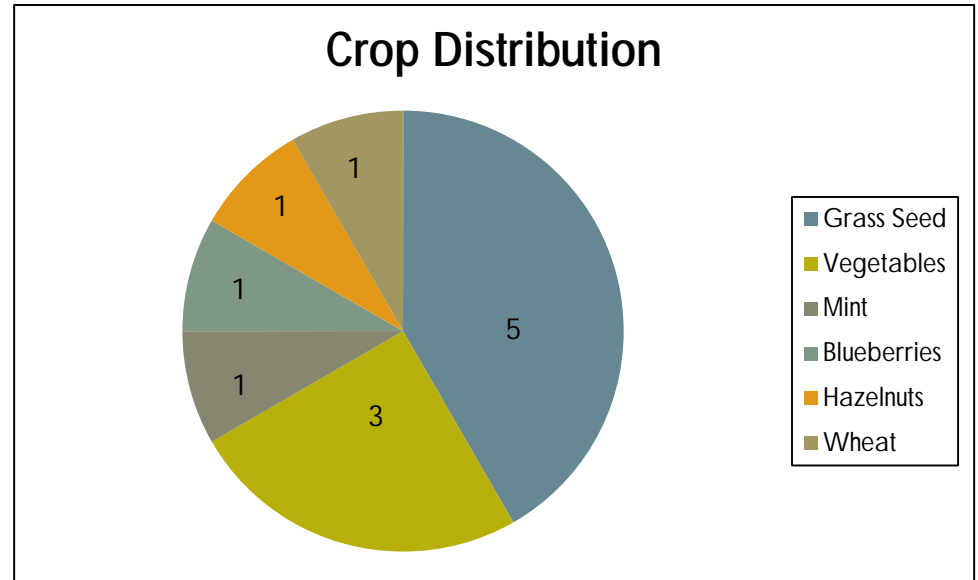
1 Wheat



3 Vegetable



5 Grass Seed



Farmer Interviews

- Conservation Practices
- Soil Management
- Crop Rotation
- Crop Management
- Tillage
- Nutrient Inputs
- Pest Management
- Irrigation



Farmer Interview Specifics

- Where do you buy fertilizer?
- What's a typical crop sequence?
- What is the estimated planting density?
- Tillage equipment type
- How often do you scout for pests?
- Do you calibrate your irrigation system each year?



Goals of Farmer Interviews



- Field specific historical look at crop management in the GWMA, correlated with lysimeter data
- Used with the present and 1990's lysimeter data to calibrate the APEX model to the Southern Willamette Valley

APEX

- Agricultural Policy/Environmental eXtender
- Long-term continuous simulations for modeling impacts on
 - Nutrient management practices
 - Tillage operations
 - Alternate cropping systems
 - Conservation practices

Technical Expert Panel

- Agricultural Interests
- Groundwater
- Hydrology
- Soil science
- Ecology



UPPER WILLAMETTE SOIL & WATER CONSERVATION DISTRICT

Your partner for Clean Water, Productive Soil and Wildlife Habitat

Linn Soil & Water
Conservation District



Timeline for project

