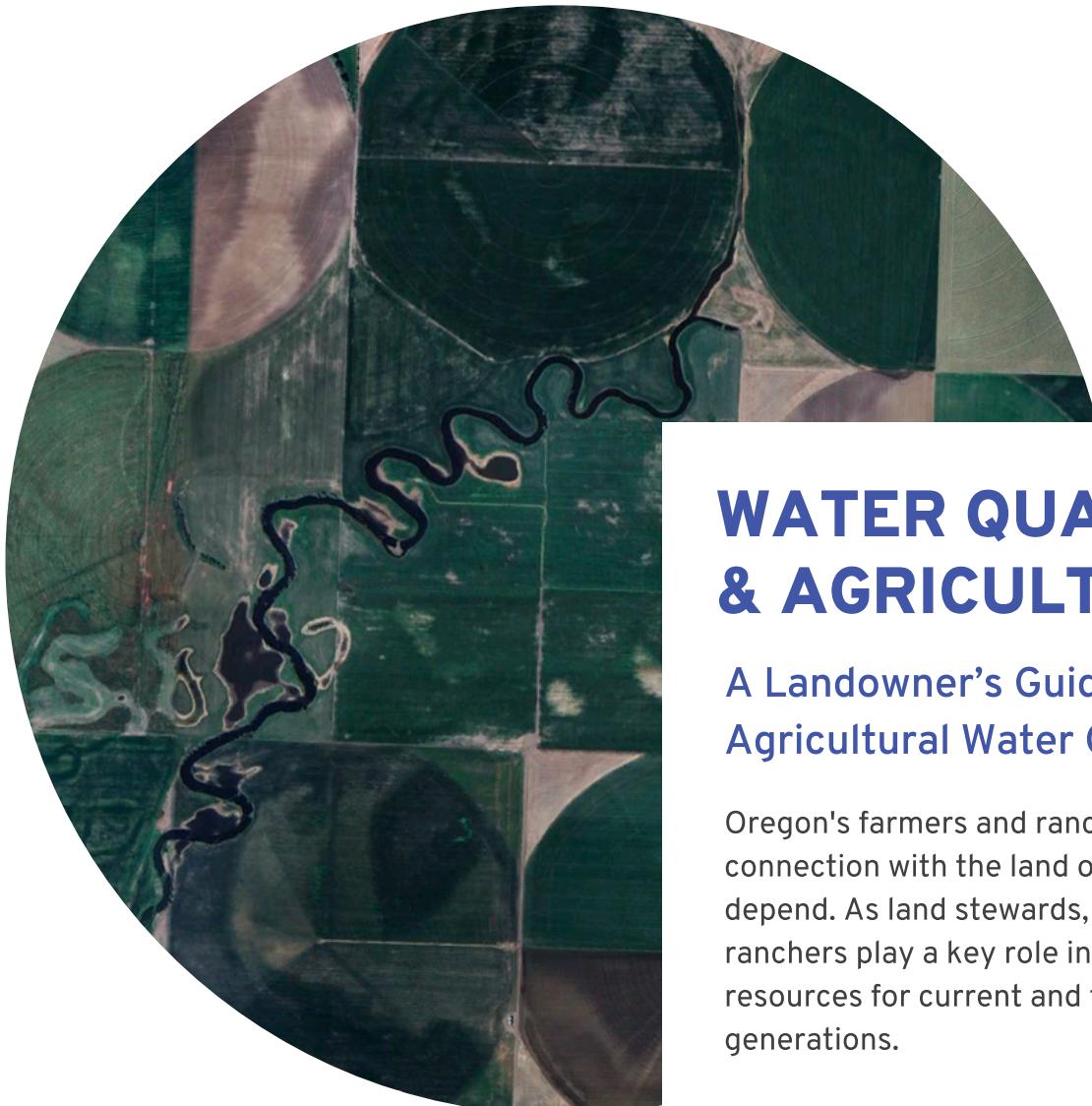




OREGON
DEPARTMENT OF
AGRICULTURE



Aerial imagery of agricultural lands influenced by pivot irrigation.

WATER QUALITY & AGRICULTURE

A Landowner's Guide to Oregon's Agricultural Water Quality Program

Oregon's farmers and ranchers have a deep connection with the land on which they depend. As land stewards, farmers, and ranchers play a key role in protecting natural resources for current and future generations.

ABOUT THE AGRICULTURAL WATER QUALITY MANAGEMENT PROGRAM

In 1972, the federal Clean Water Act was passed by congress. The Act's purpose is to clean up water pollution from activities like forestry, factories, and farms.

Oregon's Agricultural Water Quality Management Act (Act) was passed in 1993. The Act helps farmers and ranchers address water pollution.

The Act is the foundation of the Oregon Department of Agriculture's (ODA) Agricultural Water Quality Management Program. The Water Quality program regulates the industry in preventing and controlling pollution.

There are 38 watershed-based Agricultural Water Quality Management Areas. Each Management Area has a set of Area Rules. The rules ensure that all landowners prevent and control water pollution.

In Management Areas, ODA staff work with stakeholders who serve as Local Advisory Committee (LAC) members. Each LAC identifies local agricultural water quality programs and opportunities for improvement. The LACs helped create Area Plans and Area Rules.

DOES AGRICULTURE CONTRIBUTE TO WATER POLLUTION?

Unfortunately, yes. We know agriculture contributes to water pollution in Oregon. The Clean Water Act requires water quality monitoring. Oregon's Department of Environmental Quality (DEQ) is the lead agency for monitoring water quality in Oregon. Many streams flowing through agricultural lands are considered polluted.

HOW WOULD MY ACTIVITIES AFFECT WATER QUALITY?

Agricultural lands can protect or impair water quality depending on how they are managed. Poor management can lead to soil erosion, warm stream temperatures, excess nutrients, and bacteria. These pollutants can harm people and wildlife.

Examples include:

- Sediment from eroding fields, pastures, and streambanks.
- Erosion and runoff from farm roads.
- Nutrients from animal waste and fertilizers.
- Bacteria from animal manure.



HOW IS THE PROGRAM ENFORCED? WILL MY PROPERTY BE INSPECTED?

ODA investigates complaints or ODA-identified concerns about water pollution from agricultural activities. If violations are found, corrective actions must be taken. ODA works with landowners and operators to create solutions to violations that fit the operation. ODA does this through education and technical assistance. Landowners and operators who refuse to solve a violation are subject to enforcement. Enforcement actions can include fines.

WHAT IS REQUIRED?

Compliance with the Area Rules is required by state law. Area Rules for each of the 38 Management Areas prohibit water pollution. This includes activities that pollute or may lead to polluted water.

It is up to each landowner to ensure that their operation does not pollute Oregon's waters. Each landowner can decide the solutions that best fit his or her operation. Most agricultural operations already are in compliance. However, ODA investigates complaints or concerns associated with water pollution from agricultural activities.

ISN'T AGRICULTURE ALREADY WORKING TOWARD WATER QUALITY?

Absolutely. Many farmers and ranchers are dedicated land stewards already protecting water quality:

- Livestock operators use rotational grazing and provide off-stream water sources. In addition, manure is stored under cover away from water.
- Nurseries recycle irrigation water to reduce chemical inputs.
- Dryland farmers use direct seed drills and other conservation practices to minimize soil erosion.
- Hazelnut growers and orchardists maintain vegetation between tree rows. These vegetation strips limit field runoff and soil loss.
- Viticulturists allow vegetation strips between rows and along streambanks. This protects soil and water quality.
- Landowners protect streamside vegetation. The vegetation stabilizes streambanks, slows erosion, keeps water cooler, and provides wildlife habitat. Some landowners plant native trees and shrubs along streams to protect water quality.
- Some landowners plant additional trees and shrubs along streams to protect water quality and enhance wildlife habitat.

A hazelnut orchard with cover crops and grasses between tree rows prevents soil erosion.



HOW CAN I HELP IMPROVE WATER QUALITY?

The following recommendations may help improve operations water quality impacts. These practices can help you operate within the guidelines of your Area Plan and comply with water quality Area Rules. It's likely that you already are doing one or more of these management activities. You may choose the approach that works for your operation, as long as it complies with the Area Rules and the Area Plans.

LIVESTOCK GRAZING

Grazing systems should promote and maintain adequate vegetation. Vegetative cover protects water quality. The intensity, frequency, duration, and season of grazing can impact vegetation.

Landowners and managers can manage their grazing to improve the pasture plant community. The improved plant community may have more forage, less weeds, and support animal health. Appropriate grass height will depend on whether you live on the east or west side of the Cascades. A general rule is to graze when pasture grasses are 6-8 inches tall and to remove animals when grasses are 3-4 inches tall.

Recommendations include:

- Rotate grazing among two or more pastures. Rotational grazing allows vegetation in one pasture to recover while the other is being grazed. This reduces erosion and runoff.
- Allow grasses to regrow before autumn frosts or the dormant season.
- Don't graze when soils are saturated. This grazing compacts soils and destroys roots.
- Provide off-stream water and minerals in each pasture. This practice reduces overgrazing of streamside areas and increases use of forage away from streams.
- Add exclusion fencing to prevent overgrazing of streamside areas.



OFF-STREAM WATER OPTIONS

Livestock can have detrimental effects to the riparian area of a stream or creek. Adding fencing to keep livestock out of the area can protect vegetation. The vegetation can keep soil in place and provide shade for the stream.

LIVESTOCK MANURE AND HEAVY USE AREAS

Areas used for feeding and handling livestock is critical to the success of livestock operations. Management of these areas can also affect water quality.

On ranches and pastures:

- Prevent runoff of sediment and manure from winter feeding and calving areas
- Place feed, water, and minerals as far as possible from streams to prevent overuse of streamside areas.

For penned animals:

- Store manure on concrete pads and cover with a tarp or roof. This helps keep nutrients in the manure rather than leaching to water. Store manure away from surface water to prevent nutrient and bacteria runoff.
- Cover heavily used animal walkways with sand, rock, and/or geotextile fabric. Regularly clean confinement areas for better rainwater infiltration. These practices can keep livestock out of mud and muck.
- Capture clean rainwater in a tank to use as drinking water for livestock.
- Establish a heavy use area away from streams and cover with a thick layer of sand, gravel, or hog fuel. A heavy use area protects pastures from compaction during the winter months. The protection improves plant health and growth, as well as animal health. It also helps rest pastures during the year to allow grasses to grow to proper grazing height.
- Install gutters and downspouts on buildings next to heavy use areas. Route the clean water away from the heavy use area to a waterway, pasture, or tank. This lessens mud in heavy use areas.



Livestock has degraded the streamside area in this photo. The lack of vegetation has lead to soil erosion into the stream.

MANURE AND NUTRIENT APPLICATION

Crop nutrients like manure and commercial fertilizers should be applied in a way that they do not enter streams or groundwater. The below nutrient application practices can help prevent loss of excess nutrients and reduce operation costs. Nutrients should be applied:

- Evenly to pastures.
- When soils are not frozen or saturated.
- When plants are able to uptake the nutrients.
- After soil testing to ensure the correct nutrients are being applied.
- Only as much as your crops or pasture can use; known as the agronomic rate.

Applying nutrients at an agronomic rate ensures that plants receive the correct nutrients for growth. This helps makes crops more competitive against weeds. It is also a good way to empty your manure storage area to make room for the next season's storage requirements.

To find out agronomic rates, Oregon State University has fertilizer guide recommendations (search for 'fertilizer' on [Oregon State's fertilizer guide](#)). To avoid the expense and time of over-application, have your manure and soil tested for nutrient content.

IRRIGATION

Diverting water for irrigation can reduce stream flows enough to degrade fish habitat. Runoff or leaching of irrigation water from farm fields can deliver pollution to ground or surface water. Sediment, manure, warm water, fertilizer, and pesticide residues are potential pollutants.

Recommended irrigation practices include:

- Schedule irrigation based on crop needs, soil type, climate, topography, infiltration rates, and existing water rights.
- Monitor irrigation to avoid over-watering and subsequent leaching of nutrients and other pollutants.
- Minimize or eliminate irrigation runoff.
- Improve irrigation efficiency by maintaining existing systems in good condition.

Consider upgrading to a more efficient delivery system.

Hand line irrigation shown in this photo is less efficient than drip irrigation. Swapping to a different irrigation system could save this land manager money, time, and water.



STREAMSIDE VEGETATION

Agricultural activities must allow the establishment and growth of vegetation along waterways. Vegetation can be plants that grow along the stream naturally, given the soil type, elevation, and climate. Plants need a chance to establish and grow to maturity.

Healthy streamside vegetation provides shade and stabilizes banks. In addition, vegetation filters nutrients and sediment from entering water. This can provide fish and wildlife habitat.

Recommended practices include:

- Plant shrubs, trees, and other vegetation appropriate for your area to give nature a head start.
- Fence livestock away from streams or limit streamside grazing by rotating pastures.
- Provide an off-stream livestock water system.
- Harden access points or stream crossings with rock to reduce erosion from trampling and allow plants to establish. Monitor crossings to prevent them from becoming sources of pollution.

UPLANDS AND EROSION CONTROL

A protective cover of crops, crop residue, grass, shrubs, or trees will capture, store, and safely release precipitation. This reduces the potential runoff of soil or pollutants. Keep soil where it belongs – on your fields.

Some erosion prevention recommendations include:

- Maintain trees, shrubs, and grasses on steep slopes, drainage canals, ditches, and other waterways.
- Seed bare ditches to create grassed waterways after construction or maintenance activities.
- Use direct seed or reduced tillage methods to leave high amounts of crop residue on fields to enhance soil health, reduce runoff, and improve yields.
- Minimize areas of bare soil to maximize water infiltration.
- Catch and store rainwater from barn and shed roofs for other uses.
- Capture eroding soil and slow runoff with filter strips, grassed waterways, and structures such as terraces and sediment basins.

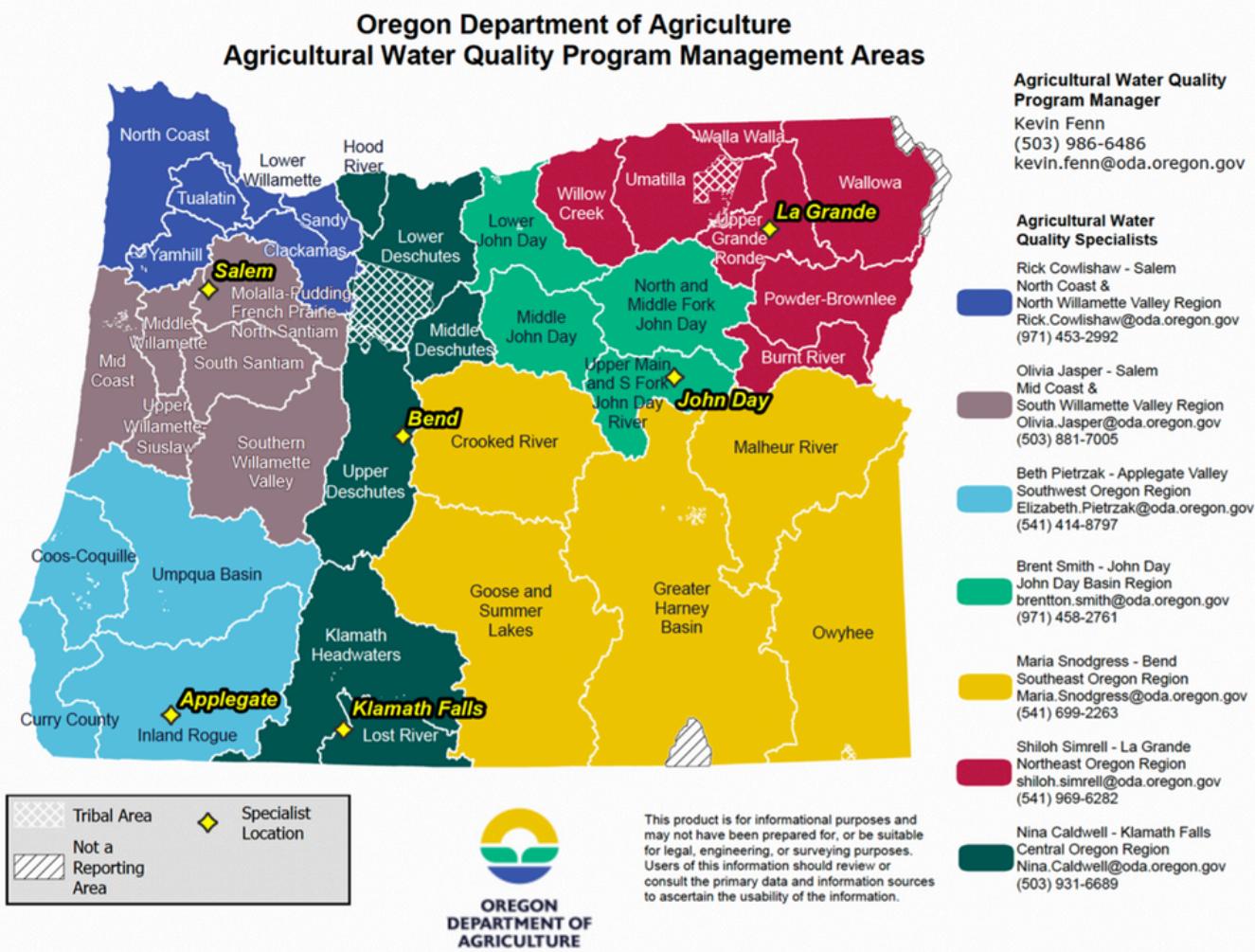


Water is a necessary piece of all our lives, but especially needed in agriculture. Conserving water and keeping it clean is paramount for the continued success of agriculture.

WHERE CAN I GET HELP?

Technical assistance is available at no charge. SWCDs, watershed councils, the Natural Resource Conservation Service, Oregon State University Extension Service, and ODA can assist.

Funds are available through grants and programs that deal with water quality issues. Implementing management alternatives can help make operations more productive and profitable. Management alternatives often help the environment as well.



Information about Area Plans is available at: <https://oda.direct/AgWQPlans>.

ODA's Water Quality Program website has information about regulations and recommended management activities. There is also information on SWCDs, water quality, and agricultural issues. The Program webpage is available at: <https://oda.direct/AgWQResources>.