



Washington Guide to Sustainable Viticulture

WHOLE FARM ECOSYSTEM

HOW DO I MANAGE MY VINEYARD AND SURROUNDING ECOSYSTEM FOR OPTIMAL LAND HEALTH, PRODUCTIVITY, AND PROFITABILITY?

The concept of land stewardship requires a whole systems approach to farming and goes beyond farm borders to encompass the agroecosystem. Emphasis is placed on the health of the ecosystem, with value placed on natural habitat and desire to work with nature instead of against it. By taking a whole systems approach to vineyard management, consideration is given to intended and unintended consequences of your actions, with steps taken to mitigate negative impacts. The vineyard is established and managed in ways to avoid later problems that could require additional farm inputs (i.e., planting vigorous variety in fertile soil on a trellis system that encouraged shading and mildew problems).

CHECKLIST OF QUESTIONS TO ANSWER

1. What are the components of your agroecosystem?

- Soil- fertility, tith, erosion control, conservation
- Water- quality and quantity
- Air- impacted by burning crop residue, air pollution from fossil fuel-burning equipment, greenhouse gasses
- Plants- diverse species present, streamside buffers, plant hedgerows
- Animals- diverse species present
- Energy-using renewable source, reducing energy needs by using variable rate irrigation pump, switching from fossil fuel fertilizers, using energy efficient frost protection
- Humans- safe working environment

Tip: One way to think of the components of your agroecosystem is to consider the impact of their flows—how do your farming practices affect the flow of water (quality and quantity) on and off your farm? Is the soil healthier or less healthy from your farming practices? Is the air quality degraded from burning prunings or improved from growing a perennial crop? Are the plant and animal species more or less diverse as a result of your practices? Consider your use of energy and energy-driven inputs and how they can be reduced or switched to renewal sources, such as moving away from fossil fuel-made fertilizer to compost.

2. What are the steps to improving the health of your agroecosystem and profitability?

- a. Inventory your farmscape, describing all aspects of your farm and mapping the area, including endangered species and consider the seven components—Soil, Water, Air, Plants, Animals, Energy and Humans (SWAPAEH)
- b. Develop agroecosystem goals for SWAPAEH
 - Address all areas of farming, such as pest control, soil conservation, wildlife enhancement, biodiversity, climate modification
- c. Develop a plan to implement agroecosystem goals
Plan should include:
 - Conserve and safeguard present species/habitat (maintaining natural wildlife corridors)
 - Restore habitat (installing nesting boxes and roosts for predator birds and raptors)
 - Improve biodiversity (planting different plant species on vineyard borders)
 - Prevent/control invasive species and noxious weeds
 - Mitigate or change farming practices that have negative effects on components of your agroecosystem (manage nutrients to avoid leaching or runoff, use cover crops to prevent wind and water erosion, minimize tillage to avoid soil compaction, selectively use pesticides to avoid killing beneficial insects, prune vines to 'balanced' levels to encourage ripening and timely maturation while avoiding need for labor intensive or fuel burning practices like leaf removal and crop thinning, and provide a buffer zone along water flow areas, roads to slow run off and absorb pollutants)
- d. Cooperate with local landowners
 - Work in conjunction with local farmers/landowners to enhance/conservate natural resources and local watershed
- e. Monitor and revise your whole farm ecosystem goals and plans periodically
 - Update your farmscape map every three years
 - Evaluate your progress
 - Revise plan and priorities when needed
- f. Evaluate new farming practices before implementation for their impact on ecosystem, seeking practices that offer solutions to sustainable issues instead of practices that create new problems

3. What incentives are available for improving your farm ecosystem?

- a. Programs like the Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentive Program (WHIP), administered by USDA's Natural Resource Conservation Service, can provide up to 75% of the cost of implementing certain practices on qualifying farms.
- b. Value can be added to your product through market-based certification and labeling programs (i.e. Food Alliance, Salmon Safe, LIVE, certified organic, etc.)?
- c. Will educating consumers of your product about your ecosystem practices add value?



DEFINITIONS:

Agroecosystem: A dynamic association of crops, pastures, livestock, other flora and fauna, atmosphere, soils, and water. Agroecosystems are contained within larger landscapes that include uncultivated land, drainage networks, rural communities, and wildlife. (U.S. Environmental Protection Agency, Mid Atlantic Integrated Assessment)

Functional biodiversity: Part of the biodiversity that can be of direct use or service to the farmer. Biodiversity operates at three levels—genetic diversity, diversity of species, and diversity in communities of organisms including the environment. (International Organization for Biological and Integrated Control of Noxious Animals and Plants (IOBC))

Sensitive or problem areas could include occupied homes, schools, day care centers, wells used for drinking water or abandoned wells, streams, wet spots in fields, other crops nearby.

KEY KNOWLEDGE AREAS

Plant diversity considerations- Perennial species can be planted near vineyards to increase biodiversity and attract beneficial insects, but several factors should be considered, including:

- Locating plantings in a “pesticide free” zone to encourage beneficial predators and insects.
- Irrigation, mulching, and/or weed control needs of the perennial species.
- Avoiding plant species that are hosts for invasive pests of commercially grown crops in the area (i.e. hawthorn that attracts apple maggot).
- Planting bed width (mowing is easier if bed is planted to the width of your mower).
- Avoiding plants that are poisonous, irritants, or aggressive.
- Plant spacing—too close may cause plants to runt out if not periodically divided.

(Oregon State University article, Perennial Plant List to Increase Biodiversity in Vineyards)



RESOURCES:

Boller, E.F., Hani F., and Poehling, H. 2004. Ecological Infrastructures: Ideabook on Functional Biodiversity at the Farm Level. Swiss Centre for Agricultural Extension and Rural Development, Lindau, Switzerland.

Wild Farm Alliance promotes ecological farming that protects and restores the natural environment through efforts of sustainable agriculture, conservation, biodiversity, and such: <http://www.wildfarmalliance.org>

USDA Natural Resources Conservation Service programs (both EQIP and WHIP) <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs>

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NatureServe Web site provides information on rare and endangered species according to state watersheds.
<http://www.natureserve.org/explorer>

Benefits of Biodiversity, published by the Council for Agricultural Science and Technology: http://www.cast-science.org/publications/?benefits_of_biodiversity&show=product&productID=2839

Salmon Safe Web site: <http://www.salmonsafe.org>

American Farmland Trust Web site (conservation easements): <http://www.farmland.org>

