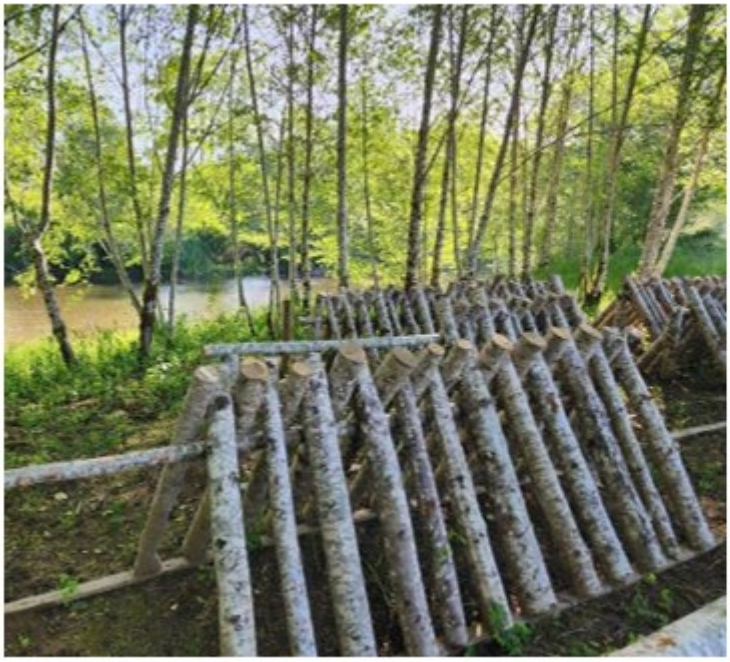
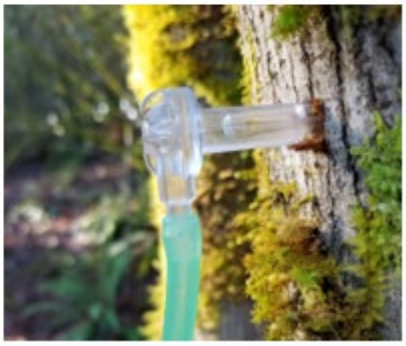
WASHINGTON STATE UNIVERSITY
Extension Forestry





Working Riparian Lands Program

2024 Needs Assessment

Patrick Shults
Washington State University
Extension Forester
patrick.shults@wsu.edu

Background:

Riparian habitat is defined as lands that occur along the edges of rivers, streams, lakes, and other water bodies. Functional riparian ecosystems benefit a multitude of species and provide numerous environmental services. In the Pacific Northwest, restoring and preserving riparian habitats is a key component of salmon restoration, a broad effort to revitalize declining salmon populations. Private farm and forest owners manage land at low elevations that encompass critical waterways and salmon habitat. Riparian buffers, which are strips of forest vegetation that are planted or preserved along waterways, are a primary tool for restoring fish habitat because of their ability to moderate water temperature, providing woody debris inputs, and protect and enhance water quality. Although they are effective at achieving restoration goals, removing land from production to establish a riparian buffer may not be feasible for farm and forestry enterprises, and the costs of implementing and maintaining a buffer, as well as the technical knowledge required, can be additionally prohibitive. Agroforestry practices, which combine trees and shrubs into crop and animal farming systems, offer a potential pathway for designing "working" riparian buffers that provide environmental benefits while maintaining production in those spaces to mitigate or eliminate financial burdens on landowners.

The Washington Department of Ecology Office of the Chehalis Basin provided funding to Washington State University Extension to pilot a Working Riparian Lands Program that would explore and develop agroforestry practices that can be applied to riparian lands in the region. This informal needs assessment was administered to gauge interest among forest owners and farmers in working riparian lands practices and direct future funding priorities, programming, and resource development.

Approach:

The needs assessment was administered via an online Qualtrics-based survey in June of 2024. It was shared through WSU Extension and partner agency email list serves, newsletters, and social media platforms. The survey received 152 responses. Submissions were anonymous unless respondents volunteered their contact information for follow-up purposes.

Definitions within this survey:

Riparian buffer - a 50-foot-wide strip of vegetation adjacent to a waterway that is comprised of mostly native trees and shrubs and is removed from agricultural or forestry production.

Working riparian buffer – a riparian buffer that utilizes agroforestry practices to allow continued agricultural production while retaining most or all the environmental benefits of a traditional buffer.

Forest Farming – the cultivation, management, and sustainable harvest of non-timber forest products and specialty crops beneath a forest canopy.

Silvopasture – the combined management of livestock, forage, and forestry on the same unit of land.

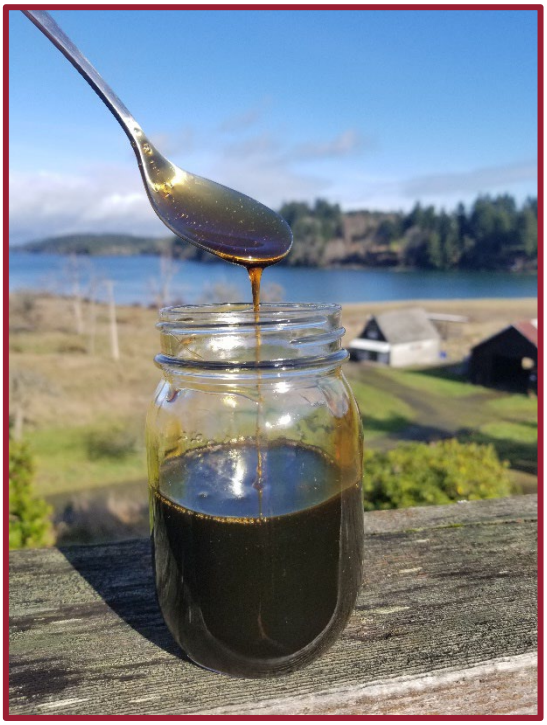
Alley Cropping – the planting of rows of trees and/or shrubs to create alleys within which agricultural crops are produced.

Forest Farming Coalition – An organization composed of farmers, forest owners, and natural resource professionals that promote networking, information sharing, market development (which can include aggregating harvests for wholesale), and other resource development to advance forest farming

Results

Demographics

- 72% of respondents owned and/or managed forestland, 49% identified as a commercial or homestead farmer (24% and 25%, respectively), and an additional 10% identified as aspiring to own and manage land soon.
- The leading counties with respondents were Lewis (26%), Thurston (12%), Grays Harbor (12%), Clark (12%), Pacific (7%), Snohomish (6%), Mason (5%), Jefferson (5%), and Skagit (5%). Other counties included Clallam, Columbia, Cowlitz, Island, King, Kitsap, Lincoln, Okanogan, Pierce, San Juan, Skamania, Stevens, Wahkiakum, Walla Walla, Whatcom, and two out-of-state respondents.
- 77% of respondents that own or manage land said that land contains or borders a perennial water feature (stream, creek, wetland, etc.).
- 88% of respondents that own or manage land said that land contains or borders a non-perennial riparian feature (seasonal stream, seep, etc.).



Bigleaf maple syrup (Photo: Patrick Shults, WSU).

- 61% of respondents that own or manage land that contains or borders a riparian feature confirmed at least one of those features is fish bearing. An additional 8% suspected a water feature was fish bearing but could not confirm.
- 52% of respondents that own or manage land that contains or borders a riparian feature confirmed one or more of those features has no buffer or is only partially buffered.

Buffer Interest

- 58% of respondents that own or manage land that contains or borders a riparian feature expressed interest in adopting a traditional riparian buffer.
- Respondents that own or manage land that contains or borders a riparian feature selected the below as the primary barriers or concerns to adopting a riparian buffer:
    - Costs associated with implementation and maintenance (34%)
    - Concern over regulatory restrictions limiting ability to manage riparian lands (30%)
    - Lack of experience in buffer planting and design (27%)
    - Concern over ability to get trees and shrubs established due to site conditions (25%)
    - Costs associated with removing land from production (17%)
    - Lack of technical resources available (17%)
- 74% of respondents said that applying working riparian buffer concepts would increase their interest in adopting a riparian buffer on their property.

Forest Farming

- 85% of respondents expressed interest in adopting forest farming practices in an existing riparian buffer or new buffer. An additional 48% expressed interest in forest farming on other parts of their property.
    - Expressed reasons for interest in forest farming:
        - As an opportunity to expand and preserve forestland (89%)
        - As an opportunity to grow forest crops for personal use (77%)
        - As an opportunity to increase income (58%)
        - As an opportunity to diversify farm production (54%)
        - As an opportunity to access payments for forest carbon (30%)
- Respondents ranked the following as forest farming species they would most like to learn more about:
    1. Log-grown shiitakes
    2. Other forest cultivated mushrooms (oysters, truffles, etc.)
    3. Huckleberry
    4. Elderberry
    5. Hazelnuts
    6. Oregon grape
    7. Currants and gooseberries
    8. Tree syrups
    9. Ginseng
    10. Wasabi

    Notable mentions: Tea plant, serviceberry, nettle, ramps, forest-grown nursery stock and seed

Log-grown shiitake mushroom (Photo: Patrick Shults, WSU Extension).

- Respondents selected the following as the technical components of forest farming they would most like to learn about:
    - Selecting and growing understory crops (68%)
    - Silvicultural practices to support forest farming (56%)
    - Sustainable harvesting of non-timber forest crops (40%)
    - Marketing non-timber forest crops (35%)
    - Managing pests and disease (35%)
    - Overstory tree selection (35%)
    - Tree/shrub planting (29%)
- Of those interested in forest farming, respondents ranked the following as anticipated or experienced barriers to adoption:
    1. Availability or cost of labor (including their time) (68%)
    2. Poorly defined markets or market access for forest farming crops (51%)
    3. Lack of opportunities to learn from other farmers (50%)
    4. Availability or cost of plant materials (49%)
    5. Availability of on-site technical assistance (41%)
    6. Lack of region-specific technical resources (36%)

7. Regulatory land-use barriers (27%)
8. Problems with pest and disease (24%)

- 88% of respondents said a regional forest farming cooperative to support marketing of forest crops would increase their likelihood of adoption.

Silvopasture

- 46% of respondents expressed interest in adopting silvopasture practices in an existing riparian buffer or new buffer. An additional 20% expressed interest in adopting silvopasture on other parts of their property.
    - Expressed reasons for interest in silvopasture:
        - As an opportunity to improve shade benefits in existing grazing system (69%)
        - As an opportunity to increase income (60%)
        - As an opportunity to grow crops for personal use (60%)
        - As an opportunity to diversify farm production (60%)
        - As an opportunity to expand and preserve forestland (57%)
        - As an opportunity to access payments for forest carbon (40%)

Silvopasture under Ponderosa pine (Photo: Patrick Shults, WSU)

- Respondents selected the following as the technical components of silvopasture they would most like to learn about:
    - Managing canopy shade for forest growth (56%)
    - Rotational grazing (50%)
    - Forage species selection and improvements (50%)
    - Selecting livestock breeds (44%)
    - Thinning existing forest into silvopasture (44%)
    - Tree maintenance (29%)
- Of those interested in silvopasture, respondents ranked the following as anticipated or experienced barriers to adoption:
    - Availability or cost of labor (including their time) (71%)
    - Availability of on-site technical assistance (47%)
    - Regulatory land-use barriers (47%)
    - Availability or cost of plant materials (38%)
    - Lack of region-specific technical resources (35%)
    - Poorly defined markets or market access for tree crops (35%)
    - Lack of opportunities to learn from other farmers (32%)
    - Problems with pest and disease (18%)

Alley Cropping

- 32% of respondents expressed interest in utilizing alley cropping to transition an area into a riparian buffer or expand an existing buffer. An additional 22% expressed interest in adopting alley cropping on other parts of their property.
    - Expressed reasons for interest in alley cropping:
        - As an opportunity to increase income (61%)
        - As an opportunity to diversify farm production (61%)
        - As an opportunity to grow crops for personal use (50%)
        - As an opportunity to expand tree cover on their property (42%)
        - As an opportunity to access payments for forest carbon (42%)
- Of those interested in alley cropping, respondents ranked the following as anticipated or experienced barriers to adoption:
    - Availability or cost of labor (including their time) (66%)
    - Lack of region-specific technical resources (45%)
    - Lack of opportunities to learn from other farmers (45%)
    - Availability or cost of plant materials (45%)
    - Availability of on-site technical assistance (39%)
    - Poorly defined markets or market access for tree crops (39%)
    - Regulatory land-use barriers (26%)
    - Problems with pest and disease (16%)

Resource Development

- When asked what organizations they would most likely reach out to for support in land management, respondents ranked the following:
    1. Conservation districts (74%)
    2. Washington State University Extension (66%)
    3. Washington Department of Natural Resources (44%)
    4. Natural Resource Conservation Service (38%)
    5. Farmer or woodland owner associations (26%)
    6. Service-based non-profits (22%)
    7. Washington Department of Fish and Wildlife (15%)
    8. Washington Department of Agriculture (12%)
    9. Paid (for-profit) consultants (7%)
- When asked how they engage with these organizations, respondents listed the following:
    - To access new research and learn about new management practices (72%)
    - To learn how to manage my farm or forest more sustainably (68%)
    - To learn how to deal with emerging land management challenges (63%)
    - To receive financial assistance for implementation and maintenance (56%)
    - To support forestry and agriculture in my region (51%)
    - To network with researchers and technical service providers (46%)
    - To network with other land managers (33%)
    - To increase the efficiency and/or outputs from their farm or forest (24%)
    - To gain access to specialized equipment (19%)

- When asked what specific resources they would most like to see developed or increased regarding working riparian lands, respondents listed the following:
    - Free planning and design assistance from WSU, CDs, NRCS, etc. (67%)
    - Opportunities to tour farms using these practices (62%)
    - In-person workshops and trainings (58%)
    - Demonstration farms highlighting multiple practices, owned/operated by Extension, CDs, non-profits, etc. (51%)
    - Technical training videos and webinars (46%)
    - Written technical resources like manuals, fact sheets, etc. (38%)
    - Direct mentorship from other landowners and managers (32%)
    - Peer-to-peer learning through communities of practice (ex: coalition) (32%)
    - Paid consultants to offer technical design, implementation, and management (9%)
- When asked what specific financial and capital assistance they would most like to see developed for working riparian land practices, respondents listed the following:
    - Cost-share funding to support implementation (72%)
    - Cost-share funding to support maintenance (55%)
    - Efforts to increase access to seed and planting stock (54%)
    - Shared equipment or equipment rental programs (31%)
    - Cost-share funding to support agroforestry equipment purchases (25%)
    - Commercial kitchen access for developing value-added products (17%)
- 80% of respondents said that a forest farming coalition would be valuable to developing forest farming practices and market access in the region.

Key Takeaways

This survey successfully reached its target audience. Most respondents reported owning or managing forestland, and half identified as an agricultural producer. Over 60% of respondents were from counties that contain land within the Chehalis River Basin. Almost 90% of respondents had land that contained or bordered a riparian feature, over half of which were confirmed fish-bearing. Half of the respondents with a riparian feature said they lacked adequate buffers (defined as at least 50' of mostly native woody vegetation). It's worth noting that some level of bias was likely given 1) the survey was advertised through agency outreach tools which respondents would have volunteered to join, indicating they have interest in the subject, and 2) it was advertised as a "Working Riparian Lands Survey" so people with interest in that topic were more likely to respond. Outreach for the survey did not include any mention of forest farming, silvopasture, or alley cropping but did mention agroforestry. A raffle prize was offered to help attract responses from a diverse audience.

Japanese wasabi grown in a forest (Photo: Patrick Shults, WSU).

Based on the responses, there is clear interest among forestry and agricultural producers in adopting working riparian lands practices either in existing riparian buffers or as motivation for establishing new buffers. Many respondents expressed interest in traditional buffers but noted key barriers, including cost and maintenance, regulatory uncertainty, and lack of training in designing and establishing a buffer. The average respondent identified at least two barriers preventing them from adopting a riparian buffer, highlighting the need for a multi-pronged approach with cross-agency partnerships in programs attempting to promote riparian restoration. Nearly three-quarters of respondents said that agroforestry practices would further motivate them to adopt a riparian buffer along water features that lacked adequate protection.

Of the three agroforestry practices described, most respondents were interested in applying forest farming to riparian buffers. Silvopasture was the second agroforestry practice of interest and was likely lower due to less landowners managing livestock. That was followed by alley cropping. Motivations for the three practices varied, but increasing income, growing crops for personal use, preserving forestland, providing shaded grazing space, and diversifying farm production ranked consistently high. Of the anticipated or experience barriers to adoption among the practices, availability or cost of labor was consistently the highest, but lack of opportunities to learn from other farmers, lack of region-specific technical resources, market access, and regulatory uncertainty also consistently ranked high. The vast majority of respondents (88%) also said a forest farming cooperative that improved market access would increase their likelihood of adoption.

Oregon grape root (Photo: Patrick Shults, WSU Extension)

It is clear from the respondents that conservation districts and WSU Extension provide key access to new research and sustainable land management practices, support for dealing with emerging land management issues (ex: climate change), and financial assistance. Respondents reported demand for free planning and design assistance, peer-to-peer learning opportunities, field-based workshops, demonstration farms, and further cost-share funding to support implementation.

Recommendations for Future Efforts

Based on the data collected from respondents, the following should be considered as priorities for developing working riparian lands in the Chehalis River Basin and the greater region. These are not listed in order of priority.

- **Develop knowledge of regional forest farming crops** – Several crops were ranked as high interest by respondents but, among the top ten, few have been researched and documented for

cultivation in forest settings in our region. Information regarding understory crop selection and management was identified as a priority in the survey. Additional trials are needed to explore and produce best management practices for growing these crops in forests. This information should be packaged and disseminated in workshops, farm tours, and technical resources, while leveraging trials for demonstration opportunities.

- **Address regulatory uncertainty** – Many respondents noted concern and uncertainty about what practices can and cannot be applied in riparian lands according to state and local regulations. Developing written resources that clarify regulations in the context of working riparian lands would empower landowners to adopt eligible practices. Educators within regulator agencies should be engaged when conducting working riparian lands outreach.
- **Pilot a forest farming coalition** – Poorly defined markets, poor market access, and lack of opportunities to learn from other farmers were all identified as key barriers to adopting forest farming. A forest farming coalition would serve the role of connecting farmers, natural resource professionals, and researchers for information sharing and develop opportunities for farmers and professionals to develop marketing strategies for forest crops, including aggregate harvests.
- **Develop demonstration sites** – Resources should be allocated to developing demonstration farms that highlight riparian agroforestry crops and practices for both research and educational purposes. These sites could be owned and operated by trusted entities like WSU Extension or conservation districts, or on partner landowner properties to develop peer-to-peer learning opportunities.
- **Develop professional training resources** – Costs of implementation, including labor and materials, were identified as significant barriers to adoption and there is significant demand for on-site technical assistance in this field. However, many technical assistance providers are untrained in these practices. As knowledge of riparian agroforestry develops and the information is disseminated to producers, efforts should be made to also train professionals that support farm and forest owners, especially those that offer on-site technical or financial assistance (conservation districts, NRCS).
- **Increase access to plant stock and seed** – Cost and availability of plant stock and seed for agroforestry projects was identified as a concern for many respondents. Efforts to increase access to agroforestry plant materials should be prioritized to increase adoption. Examining plant stock and seed as a forest farming crop would increase access and open up opportunities for farmer-to-farmer plant exchange networks, which could be facilitated through a forest farming coalition.

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