

### Plain Language Research Summary - AgriScience Grape & Wine Cluster - 2024-2025

**Activity #4:** Vegetation management for long-term productivity and enhanced ecosystem services in Canadian semi-arid vineyards

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#### 1. What is the overall focus of this research activity?

The overall focus of this research activity is to enhance our understanding of how non-crop vegetation can be managed to augment ecosystem services in vineyard agro-ecosystem, with the broader goals of reducing inputs while maintaining, or enhancing wine grape quality.

This research examines how non-crop vegetation in and adjacent to vineyards can improve grape productivity, wine quality, and environmental health. It evaluates the effects of various plants across climates, identifies drought-tolerant cover crops, and studies their impact on pest control, soil health, water efficiency, and biodiversity. A key outcome is an easy-to-use online decision tool to help vineyard managers select optimal cover crops based on their specific conditions. Research methods include observational and experimental approaches, focusing on vegetation impacts on water use, soil quality, grape quality, and biodiversity.

Stakeholder engagement through workshops and regular communication ensures industry relevance and rapid adoption of findings. This project aims for practical, sustainable vineyard management solutions to strengthen the Canadian wine industry's competitiveness and environmental resilience. Ultimately, this initiative advances ecological agriculture practices applicable to various farming systems, particularly in semi-arid regions.

### 2. What are the main progress updates/milestones in terms of work that was done on this research activity <u>this year</u>?

In 2024, the project started with vineyard site selection (now includes 5 focal and 17 satellite sites), baseline soil and plant data collection, and cover crop screening trials across the Okanagan Valley. Soil samples were tested for nutrients, and irrigation schedule were monitored. Cover crops vegetation growth was tracked, and plant tissue samples were collected and analyzed for carbon and nitrogen. Soil moisture and temperature sensors, weather stations, and data loggers captured field conditions. Researchers also recorded the types and numbers of all plant species under different management practices (drive row and under-vine), in the field margin, and in adjacent natural or semi-natural habitats. Extreme

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winter damage limited yield and pest studies in 2024, but potentially beneficial insects and spiders were sampled using pitfall traps. Cover crops like rye were seeded in fall to prepare for 2025 trials. Meanwhile, teams refined a list of drought-tolerant cover crops, integrated past soil microbial data, and validated lab methods for studying beneficial microbes. Graduate students contributed to all parts of the project, and a vineyard management survey was developed. In 2025, the project will expand cover crop trials, add further satellite sites, focus on soil health, vine growth, and beneficial organisms, and continue building the decision tool. New research will support scientific publications and provide practical advice for vineyard managers.

# 3. What is this research activity's intended impact on the Canadian grape and wine industry? What benefits could/will the growers, wineries, consumers, etc. see as a result of this research?

This research will help Canadian grape growers and wineries improve their vineyards in practical, sustainable ways. By finding the best cover crops and vegetation to grow between grapevines or under-vine, the project will help farmers improve soil health, save water, attract beneficial insects, and grow better-quality grapes. These improvements can lead to stronger, healthier vines, better wine, and lower farming costs over time.

For growers and wineries, the project means new tools and clear advice for choosing the right plants for their vineyards. For consumers, it means higher-quality, sustainably produced Canadian wines. Overall, the project will strengthen the resilience and competitiveness of the Canadian wine industry while protecting the environment for future generations.

## 4. Do you have any communications materials, publications, or other content related to this research activity that you would like CGCN-RCCV to share?

Sharifi, M. \*, Salimi, K., Rosa, D., Hart, M. 2024. Screening cover crops for utilization in irrigated vineyards: A greenhouse study on species' nitrogen uptake and carbon sequestration potential. Plants, 13(14): 1959. [58891]. <u>https://10.3390/plants13141959</u>

Sharifi, M. 2024. Invited speaker and expert panel member. Growing Between the Vines: Cover Crops in Vineyards Panel Discussion. Benjamin Bridge Cover Crop Session, July 24, 2024, NS, organized by Perennia, On-Farm Climate Action Fund, 40 attendees, 1.5-hour session. [Member of panel and presenter]. URL: <u>https://www.perennia.ca/eventer/growing-between-the-vines-cover-crops-in-vineyards-panel-discussion/</u>









Organized and presented "Cover Cropping site visit with the Summerland Research and Development Centre – South Okanagan". Aug 22 2024. Three vineyards in Oliver and Osoyoos area. 12 attendees. URL: <u>https://bclivinglab.ca/event/cover-cropping-site-visit-with-the-</u> <u>summerland-research-and-development-centre-south-okanagan/</u>

YouTube video: "Exploring Cover Cropping in a Vineyard". 2024. Interview by Farm Folk City Folk (https://farmfolkcityfolk.ca/). BC Climate Agri-Solutions Fund via IAF. 200 views. URL: <a href="https://www.youtube.com/watch?v=A6jggFlebr0">https://www.youtube.com/watch?v=A6jggFlebr0</a>

Sharifi, M., Algar, T. 2024. Vegetation Management for Long-Term Productivity & Study Objective Nurse Crops Spring Oats Fall Rye Spring Triticale Enhanced Ecosystem Services in Canadian Semi-Arid Vineyards. Factsheet. URLs:

https://www.cgcn-rccv.ca/site/blog/2024/11/29/new-cover-crop-guide-for-growers

https://www.cgcn-rccv.ca/files/VisualCoverCropGuideV31.pdf



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