

**Plain Language Research Summary - AgriScience Grape & Wine Cluster - 2023-2024**

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

Principal Investigator(s): Dr. Mehdi Sharifi, Dr. David Ensing (AAFC Summerland)

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

This research is about finding ways to use the natural and cultivated plants (non-crop vegetation) in vineyards alleys and rows to enhance the environment sustainability, and the yield and quality of wine grapes. The researchers want to understand how these plants can benefit vineyards in Canada, especially in dry environments. They are looking into how different types of plants and managing them in certain ways can help with things like controlling pests, improving the health of the soil, and making sure the grapes grow well and make good quality wine. They will study the plants that already grow there and also try out drought-resistant cover crops to see which ones work best. The idea is to figure out how to use these plants to make grape growing better for the environment and more efficient, possibly by reducing the need for artificial inputs like fertilizers and pesticides. Additionally, they plan to create a tool online to help vineyard owners choose the best plants to grow alongside their grapevines to achieve these goals.

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

Work completed on 2 existing cover crop sites. This was the 3<sup>rd</sup> year of cover crop testing on the 2 sites. Cover crop growth, soil total nitrogen and carbon, soil nitrate and ammonium, vine nutrient status, yield and yield quality were measured. Soil samples were collected at the end of the season for microbial analysis which will be conducted this spring/summer. Birds foot trefoil has a great under-vine establishment at the northern vineyard with medium soil texture. Yield in general was low due to winter bud damage in previous winter.

**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?**

The research aims to significantly benefit the Canadian grape and wine industry in several ways:

- **Environmental sustainability:** By understanding and utilizing non-crop vegetation, the research intends to promote ecological balance within vineyards. This can lead to reduced reliance on chemical inputs like fertilizers and pesticides, which are often used to manage soil health and pests. Natural vegetation management can enhance biodiversity and ecosystem services, contributing to a healthier and more sustainable environment.
- **Improved grape quality and productivity:** Through the study of non-crop vegetation's influence on grape quality and vineyard productivity, the research could lead to the development of new methods to enhance the quality of wine grapes. Better grape quality directly translates to higher quality wine, which can improve market competitiveness for Canadian wineries.
- **Cost reduction and economic efficiency:** Identifying drought-tolerant cover crops and effective vegetation management strategies can lead to more resilient vineyard ecosystems, especially important in semi-arid regions. This can reduce the need for irrigation and other costly interventions, lowering operational costs for grape growers.
- **Pest and disease management:** By exploring how vegetation influences pests and soil-borne diseases, the research could help in developing natural pest and disease control strategies. This not only helps in reducing damage and loss of crops but also minimizes the use of harmful pesticides, leading to healthier vineyards and potentially reducing costs related to pest and disease management.
- **Knowledge and technology transfer:** The development of a web-based decision-making tool for selecting cover crops will provide growers with accessible, science-based guidance to make informed decisions about their vineyard management practices. This can lead to improved vineyard health and productivity, benefiting the entire grape and wine production chain.

Consumers will benefit from this research through access to wines of higher quality and produced in a more environmentally sustainable manner. Overall, the intended impact is to create a more sustainable, economically efficient, and environmentally friendly Canadian grape and wine industry.

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

Below article is published at “IVES International Viticulture and Enology Society”:

[https://ives-openscience.eu/wp-content/uploads/2023/07/Sharifi\\_Biomass-carbon.pdf](https://ives-openscience.eu/wp-content/uploads/2023/07/Sharifi_Biomass-carbon.pdf)

YouTube video: “Exploring Cover Crop Strategies in a Vineyard”. Interview by FarmFolk CityFolk (<https://farmfolkcityfolk.ca/>). BC Climate Agri-Solutions Fund via IAF. URL:

<https://www.youtube.com/watch?v=A6jggFlebr0>