NYWGF RESEARCH - FINAL REPORT TEMPLATE

Please fill in by typing over the red directions in each section and change font to black.

Funding for fiscal year: 2025

SECTION 1:

Project title: Investigating Vineyard Designs to Facilitate Sheep Grazing

Principal Investigator with contact info: Justine Vanden Heuvel, Justine@Cornell.edu

Co-PI Collaborators with contact info: None

New Research ☐ **Continued Research** ☒

Amount Funded **$** 15,300

SECTION 2: (This section should be in depth and akin to an academic report)

Project Summary Impact Statement: The impact of this project will be a set of recommendations for appropriate training systems for growers to use in vineyards where they intend to conduct in-season sheep grazing.

Objectives: The objective of this project is to determine appropriate training systems for integrating sheep into hybrid vineyards. More specifically, we will determine the impact of grazing four training systems on leaf area to fruit ratio, vine growth and productivity. Our Year 1 objective was to determine the impact of sheep grazing on leaf area and pruning weight of Traminette on four training systems. Years two to four of the project will include analyses of yield, fruit composition, and wine sensory analysis.

Materials & Methods: A 360-vine vineyard of 'Traminette' with four training systems was planted at Cornell AgriTech in May 2024 with the goal of investigating optimal vineyard designs for inclusion of animals in the vineyard. Training systems are Mid cordon with catch wires, High cordon, Lyre with vertical division, and Low cordon (Figure 1). These systems were specifically chosen for accommodating in-season grazing and targeting specific ecosystem services such as mowing, suckering, and fruit zone leaf removal while reducing potential negative impacts of grazing such as reduced yield. The vineyard design is a randomized complete block with five replications of each system with each experimental unit consisting of 18 vines. We hypothesize that differences among training systems will be most impacted by the grazing height of the sheep, which will remove leaf area up to that height. For example, in Low cordon sheep will easily reach the fruit zone for leaf plucking, but they will reach fewer leaves in Mid cordon and Lyre, and no leaves in the fruit zone of high wire.

For 2025, our intention was for the entire vineyard block to be grazed by sheep for several weeks in the spring (June) and pre-harvest (September). However, an operational constraint in May – where the AgriTech field staff applied a pre-emergent herbicide that required a 60-day exclusion of animals from the block – resulted in us conducting only a September graze. Additionally, the drought of 2025 had resulted in poor vine growth. By the time we were able

to get the sheep in (due to the required animal exclusion), the vines were suffering from excessive weed competition and a lack of water (Figure 2).

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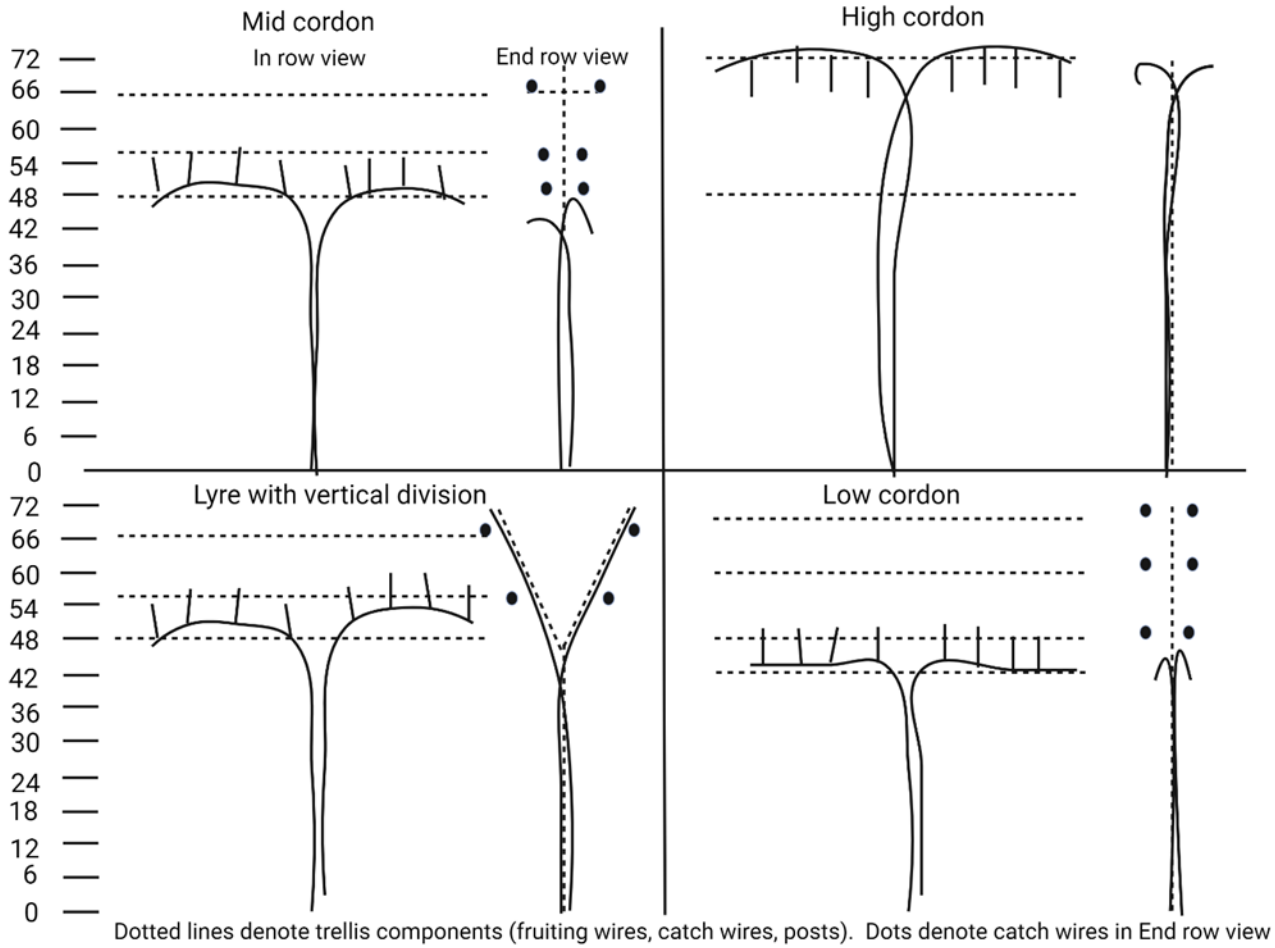

Figure 1: Training systems in grazing vineyard at Cornell AgriTech

Results/Outcomes/Next Steps: The results of this project were severely impacted by both the erroneous herbicide application in the vineyard and the drought, which resulted in weak vine growth. As a result, the outcomes from year 1 of the study are observational in nature and reported in Section 3.

Technology Transfer Plan: None for 2025 due to problems mentioned above. The trial will be a stop for the Fruit Field Day participants at AgriTech on July 30, 2026.

Attachments:

Figure 2: Sheep grazing in the Traminette vineyard in September 2025. Note poor vine growth as well as Goldenrod around vines that were not grazed by the sheep.

SECTION 3:

Project summary and objectives: In-season sheep grazing is of significant interest to NY winegrape growers, however there are no recommendations for optimizing this practice. This project investigates how grazing impacts different training systems planted in a grazing vineyard planted in 2024 at Cornell AgriTech. Data collection was intended to include leaf area, pruning weight, yield, disease incidence, and eventually fruit and wine composition. Outcomes were intended to include data-based recommendations on training systems that successfully enable integrated grazing while allowing producers to meet production goals relating to yield and fruit quality, but field conditions resulted in the bulk of this work being moved into the 2026 growing season.

Importance of research to the NY wine industry: In New York, deep, fertile soils and heavy precipitation complicate grape growing through increased growth of both ground vegetation and the vine, which offers opportunities to incorporate in-season animal grazing. A preliminary trial of sheep grazing in a high-trained Noiret vineyard indicated that sheep could accomplish vineyard tasks such as mowing and trunk suckering (Jackson, 2021),

resulting in the elimination of herbicide application, as well as a reduction in fuel use and hand labor. However, this study was small and resulted in a reduced yield effect in the grazed treatments that the researchers were unable to explain. We believe that the yield of the vines may have been impacted by the reduced leaf area to fruit ratio in the grazed plots as a function of grazing height of the sheep. Many questions remain regarding the effects of in-season grazing on vineyards.

Project Results/next steps: Due to the erroneous herbicide application resulting in only a late graze, as well as the poor vine growth due to the drought, our results from the 2025 growing season are observational:

1) When the sheep grazed the vineyard in September, the leaves were beginning to yellow (Figure 2). Surprisingly, the sheep had no interest in eating leaves that were yellowing.
2) Sheep grazed on only vines that had dark, healthy leaves.
3) By the time the 60-day required exclusion had passed, the goldenrod was tall enough that the sheep would not graze it (Figure 2).
4) Sheep grazing was to a height of 48 inches on vines if leaves were healthy.

Supporting attachments: (Choose a maximum of 1 supporting figure or table to demonstrate results if desired)
See Figure 2.