NYWGF RESEARCH -FINAL REPORT TEMPLATE for 2022-2023

SECTION 1:

Project title: Identifying clean nursery stocks for a sustainable New York viticulture – Phase 3

Principal Investigator with contact info: Marc Fuchs, Cornell Agritech at New York State Agricultural Experiment Station, 15 Castle Creek Drive, Geneva, NY 14456; mf13@cornell.edu; 315 7872487

Co-PI Collaborators with contact info: n/a

New Research ☐ **Continued Research** ☒

Amount Funded **$**15,077

SECTION 2:

Project Summary Impact Statement: Indexing of vine stocks at three local nurseries revealed that only 0.2% (69 of 28,021) of the leaf samples collected from vine stocks and tested for nine viruses in 2021 were infected. This is a salient milestone, as the number of vines infected with a detrimental virus in increase vineyard blocks managed by the three New York nurseries is extremely low. Infected vines were culled. This work is a salient and encouraging milestone for the production and adoption of clean vines derived from virus-tested vine stocks, and the reinstatement of a grape certification program in New York that is anticipated to provide a competitive edge to the thriving New York grape, juice, and wine industries. I am extremely gratefully to the New York Wine and Grape Foundation for its patronage of this program.

Objectives:
1.- Index vine stocks at NY nurseries for detrimental viruses
2.- Communicate virus test results to the New York State Department of Agriculture and Markets in support of a certification program
3.- Disseminate information on the production of virus-tested, clean stocks and ongoing efforts to reinstate a grape certification program in New York to the wine and grape industry

Materials & Methods:
In coordination with Double A Vineyards, Amberg Grapevines and Hermann J. Wiemer nursery, horticultural inspectors of the New York State Department of Agriculture and Markets collected leaf samples from 11,901 vine stocks in spring (June-July) and from 16,120 vine stockss in late summer/fall (September-October) of 2021. Leaf samples were shipped or delivered to the Fuchs lab, Cornell AgriTech at New York State Agricultural Experiment Station. June samples were processed and tested for grapevine fanleaf virus (GFLV), tomato ringspot virus (ToRSV), tobacco ringspot virus (TRSV) and arabis mosaic virus (ArMV) by enzyme-linked immunosorbent assay; and fall samples were processed and tested for grapevine leafroll-associated virus 1 (GLRaV-1), grapevine leafroll-associated

virus 2 (GLRaV-2), grapevine leafroll-associated virus 3 (GLRaV-3), grapevine leafroll-associated virus 4 (GLRaV-4) by enzyme-linked immunosorbent assay and for grapevine red blotch virus (GRBV) by polymerase chain reaction using established protocols. Virus test results were communicated to the New York State Department of Agriculture and Markets in a timely manner. In turn, the New York State Department of Agriculture and Markets in a timely manner communicated actionable strategic decisions to Double A Vineyards, Amberg Grapevines and Hermann J. Wiemer nursery.

Results/Outcomes/Next Steps:
In June and July of 2021, a total of 11,901 leaf samples was collected from vine stocks at the three New York nurseries. Leaf samples were processed and tested for the presence of GFLV, ArMV, ToRSV and TRSV. Test results revealed an extremely low presence of viruses (0.3%, 41 of 11,901). Specifically, ToRSV (0.3%, 33 of 11,901), GFLV (0.03%, 4 of 11,901), and TRSV (0.03%, 4 of 11,901) were detected but not ArMV (0%, 0 of 11,901).

In late summer and fall of 2021, a total of 16,120 leaf samples were collected from vine stocks at the three New York nurseries, processed and tested for the presence of GLRaV-1, GLRaV-2, GLRaV-3, GLRaV-4, and GRBV. Test results revealed an extremely low presence of viruses (0.2%, 28 of 16,120). Specifically, GLRaV-1 (0.02%, 4 of 16,120), GLRaV-2 (0.06%, 1 of 16,120), GLRaV-3 (0.1%, 20 of 16,120), and GRBV (0.02%, 3 of 16,120) were detected but not GLRaV-4 (0%, 0 of 16,120).

Together, indexing of vine stocks at three local nurseries revealed that only 0.2% (69 of 28,021) of the leaf samples tested for nine viruses in 2021 were infected. Infected vines were culled.

Technology Transfer Plan:
Project results were communicated to the wine and grape industries. Communication efforts focused on raising awareness in terms of the value of virus-tested, clean stocks, the impacts of viruses on vineyard productivity and fruit quality, and the status of the New York grape certification program. Presentations were made via an extension article in Appellation Cornell and at two growers conferences:

Hesler, S., Cox, R. Loeb G. and Fuchs, M. 2021. Vineyard trial demonstrates effectiveness of roguing and replanting to curtail the spread of grapevine leafroll disease. Research Focus in Appellation Cornell, December Issue, pp. 1-8.

Fuchs, M. 2021. Red blotch disease: transmission and management. Webinar of the Canadian grapevine certification network, January 21 (participants = 120, length in hours = 1.5, total contact hours = 180).

Fuchs, M. 2021. Leafroll and Red Blotch Viruses – Identification and Management. Meeting of the Maryland Grape Grower Association, January 13 (participants = 55, length in hours = 1.0, total contact hours = 55).

Attachments: relevant charts and graphs, photos etc.