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**Assessing the economic impact of a NCPN-grapes center
at farm and regional levels in eastern U.S.**

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Assessing the economic impact of a NCPN-grapes center at farm and regional levels in eastern U.S.

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Introduction

Leafroll disease causes large production damages to grapevine growers. Grape production loss caused by leafroll ranges from 30 to 75%. Infected grapevines cannot be treated, but they can be rogued (removed and replaced with a healthy plant). In some cases total vineyard replacement may be optimal for disease management.

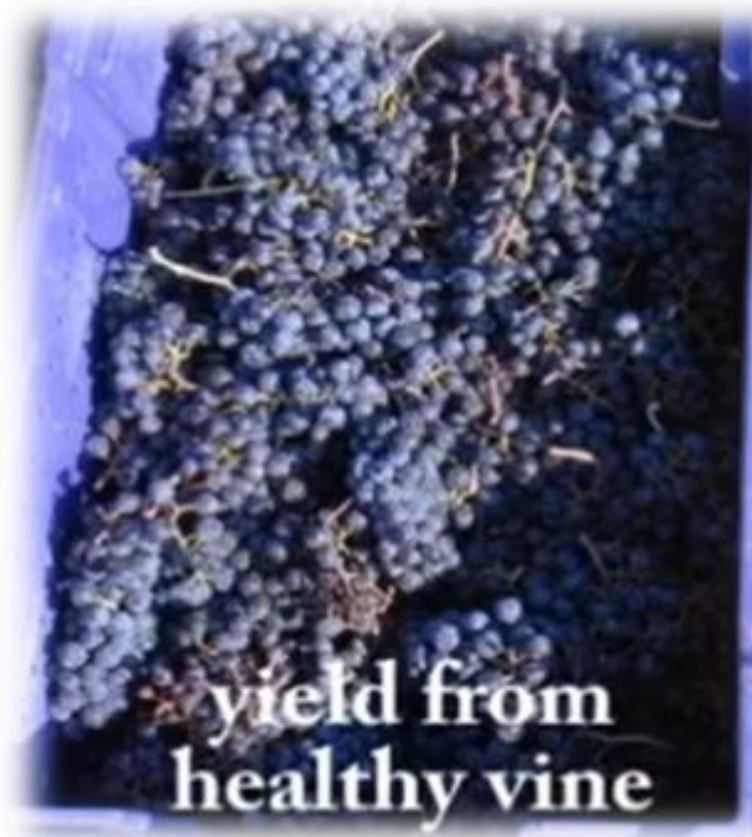
National Clean Plant Network (NCPN) centers provide nurseries with plant material that is tested for leafroll associated viruses, among others, and shown to be clean for propagation and sell to growers. These centers are publicly funded by the USDA-APHIS. Although the benefit to growers of using virus-tested grapevines have been analyzed before, there has been no study that measures NCPN centers' net benefit to society. The main NCPN grapes center are located in Davis, CA; Prosser, WA; and Geneva, NY.

This study estimates the net state benefit of running the NCPN center at Geneva, NY.

Healthy Vines



Infected Vines



Background and Analysis

The benefits of the center are measured by the NPV difference of using clean plant material versus non-certified plant material while managing an optimal strategy to control leafroll disease.

The cost of running the NCPN-grapes center in Geneva, NY is obtained from annual reports and from cost projections.

The NPV of a hectare under various initial infection rates of leafroll and optimal managerial practices are based on Atallah et al. (2012).

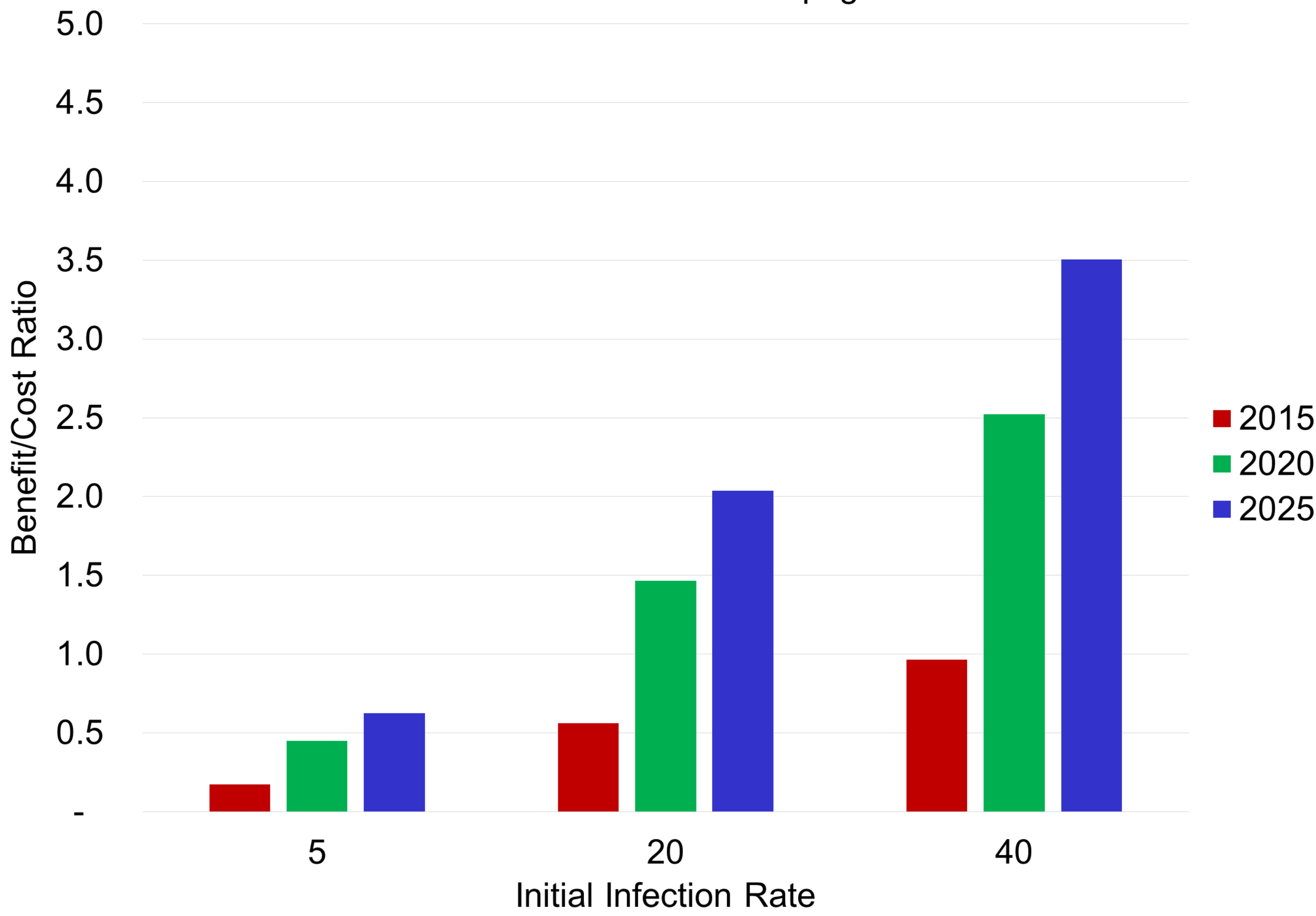
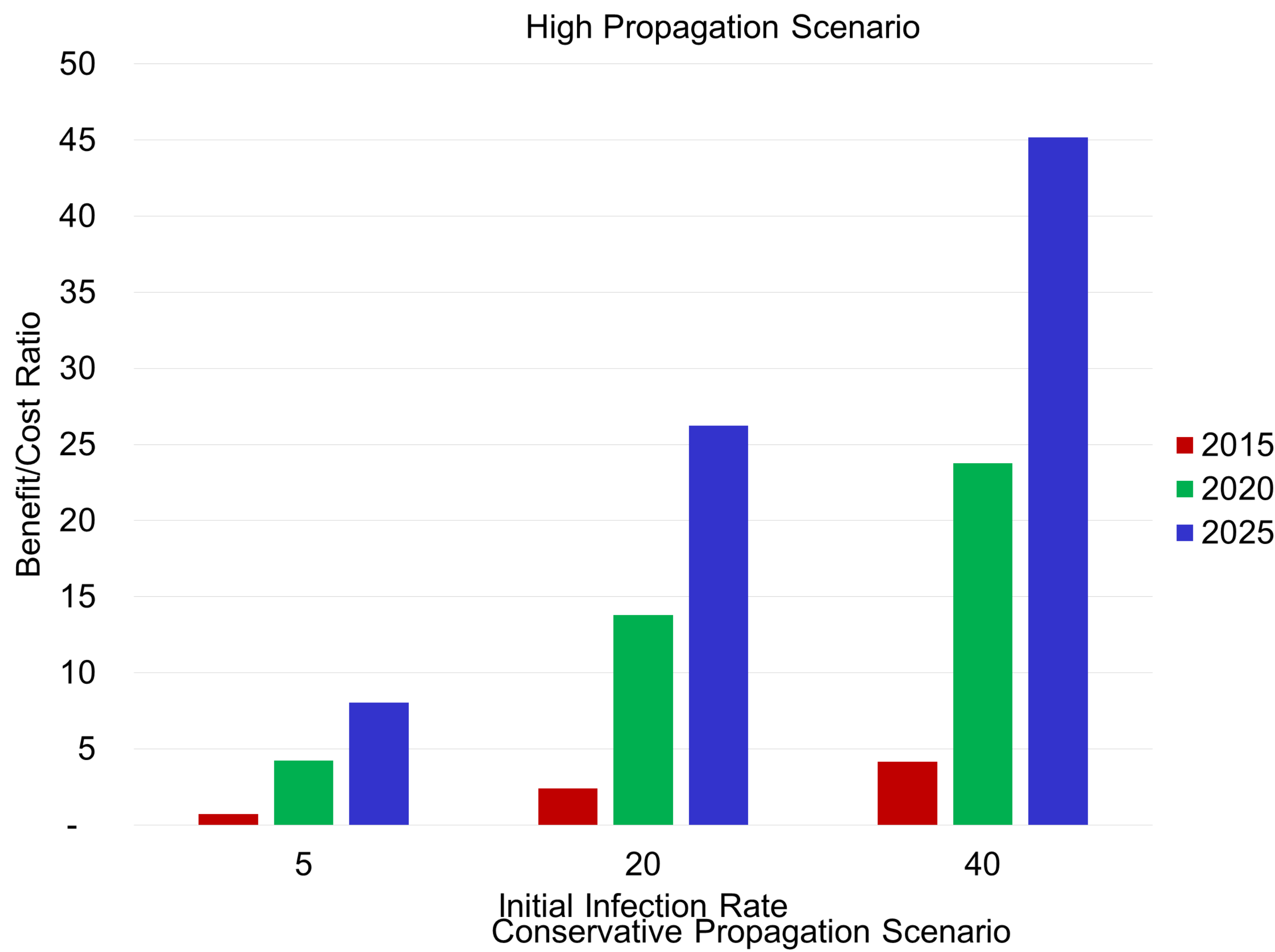
Assumptions:

- NCPN center is established in 2005
- Begins distributing clean plant material (cuttings) to certified nurseries in 2011 at no cost.
- Propagated clean plants can produce 50 cuttings per year after three years.
- Nurseries are assumed to keep 5% (high propagation) and none (conservative propagation scenario) of their propagated plants from cuttings to increase their number of mother plants.
- Nurseries sell all their production.



Results

Cost-Benefit Ratio for three initial infection rates (5, 20 and 40%), three years (2015, 2020 and 2025) and for two propagation scenarios (high and conservative): nurseries keep 5%, and none of propagated plants for mother blocks.



Results

NY State net benefits for different initial infection rates under high propagation scenario (in Million USD).

Initial Infection rate	2015	2020	2025
5%	(0.91)	13.76	37.77
20%	4.88	54.68	134.65
40%	10.91	97.21	235.36

Conclusions

The NCPN-grape center in Geneva, NY provides net positive benefits to NY State as early as 2015, after two years of use of virus-tested plants by growers, given an initial leafroll infection level of 20% or higher. State net benefits are sensitive to initial infection rate. However, even at the rate of 5%, positive net benefits are expected in 2016 (12 years after set up).

At 20% initial infection rate the B/C ratio is 2.4 in 2015, a ROI of 141%. The projected B/C ratio and ROI for 2020 under the same infection rate is 13.8 and 1279%, respectively.

The benefits of the NCPN center is observed 10 years after its establishment. However, the benefits eventually grow quickly because of the yearly increase in the nurseries' mother plants.

Literature cited

Atallah, Shady S.; Gomez, Miguel I.; Fuchs, Marc; and Martinson, Timothy E., "Economic Impact of Grapevine Leafroll Disease on *Vitis vinifera* cv. Cabernet Franc in Finger Lakes Vineyards of New York", AJEV, 2012.

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