

Economic Impacts of the Rose Mosaic Virus

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Funding provided by NCPN Grant Initiative

Last Updated - July 2020

Introduction

For decades, the rose mosaic virus (RMV) has been an issue in garden rose production in the US. In the 1960s, a virus tested collection of roses was established at the University of California at Davis. In recent years, this collection that is maintained by Foundation Plant Services (FPS) has been rejuvenated and expanded with support from the National Clean Plant Network. In addition to these efforts, assessment of the economic effects of establishing and maintaining the virus tested collection of roses has been deemed desirable as part of understanding the value to and the impact of the availability of virus tested rose material on the garden rose production industry. A survey to industry members was implemented to obtain information regarding the economic losses due to RMV. The respondents represented sales of \$71.5 million or around 35% of the rosebush industry value of \$203.5 million (U.S. Department of Agriculture, National Agricultural Statistics Service [USDA-NASS], 2018a).

Based on the survey responses, the economic impacts of losses due to RMV were estimated at 5%, 10% and 15% loss in sales using IMPLAN. Economic multipliers for the rose sector of the economy were used to estimate how a change in one sector affects business activity, income and employment in other sectors of the economy that supply inputs and services to the rose industry. Baseline economic impacts were estimated using the rosebush industry value of \$203.5 million.

Estimated Economic Impacts of Baseline Production

IMPLAN estimates indicate that total business activity nationwide required to support the U.S. rose industry was **\$534 million** annually. This includes rose sales of \$203.5 million, and supporting business activity of \$330.5 million. Farm and related sector income associated with the rose industry was \$194.1 million, of which \$82.6 million was generated in the rose industry and \$111.5 million in supporting sectors such as agriculture services, wholesale trade, truck transportation, and real estate, among others.

Total employment associated with the U.S. rose industry is estimated to be 4,197 jobs. Direct employment was estimated at 2,100 and the balance, 2,097 jobs, is located in sectors of the U.S. economy which support the U.S. rose industry. The most important supporting sectors for jobs are: agriculture services, 294 jobs; restaurants, 103; wholesale trade, 90 jobs; real estate, 70 jobs; hospitals, 46 jobs; truck transportation, 39 jobs; and retail, 28 jobs.

Estimated Economic Impacts of Economic Losses due to RMV

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The table below provides estimates of the economic impact losses of RMV at 5%, 10%, and 15% of sales lost. The sensitivity analysis figures are based on a survey conducted with the rose industry. With a 5% loss rate the total estimated economic impacts are \$28.4 million to the rose industry. The total economic impact losses are estimated at \$56.9 million, and \$85.3 million based on a 10% and 15% loss rate respectively. Future work will estimate and measure the adoption rates in order to obtain more accurate estimates. Table 1 below show the estimated economic impact losses in terms of employment, labor income, value-added and output.

Table 1. Economic Impacts of RMV for 5%, 10% and 15% losses.

<i>Economic Impact of RMV - 5% Losses</i>				
Impact	Employment	Labor Income	Value Added	Output
Direct	97.47	\$3,585,820.22	\$4,821,424.33	\$10,175,000.00
Indirect	52.35	\$2,787,425.46	\$4,466,837.72	\$8,892,784.92
Induced	52.33	\$2,967,164.69	\$5,240,395.77	\$9,376,742.42
Total	202.15	\$9,340,410.36	\$14,528,657.82	\$28,444,527.34
<i>Economic Impact of RMV - 10% Losses</i>				
Impact	Employment	Labor Income	Value Added	Output
Direct	194.94	\$7,171,640.43	\$9,642,848.67	\$20,350,000.00
Indirect	104.70	\$5,574,850.92	\$8,933,675.44	\$17,785,569.84
Induced	104.67	\$5,934,329.38	\$10,480,791.53	\$18,753,484.83
Total	404.30	\$18,680,820.73	\$29,057,315.63	\$56,889,054.67
<i>Economic Impact of RMV - 15% Losses</i>				
Impact	Employment	Labor Income	Value Added	Output
Direct	292.41	\$10,757,460.65	\$14,464,273.00	\$30,525,000.00
Indirect	157.04	\$8,362,276.38	\$13,400,513.16	\$26,678,354.76
Induced	157.00	\$8,901,494.06	\$15,721,187.30	\$28,130,227.25
Total	606.45	\$28,021,231.09	\$43,585,973.45	\$85,333,582.01

Conclusion

The US rose industry is an important sector to the U.S. economy. The potential losses to the rose industry due to RMV are significant. Maintaining disease free plant material helps to ensure the preservation of virus-tested material and to enhance clean plant programs to help reduce the potential economic losses due to RMV and other viruses.

References

U.S. Department of Agriculture, National Agricultural Statistics Service (USDA-NASS). "2014 Census of Horticultural Specialties." 2018a. Internet site: https://www.nass.usda.gov/Publications/AgCensus/2012/Online_Resources/Census_of_Horticulture_Specialties/ (Accessed July 2020).