

2018 RURAL DEVELOPMENT FUND GRANT

Application Proposal (FY 18/19)

Michigan Department of Agriculture & Rural Development

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Due Date of Proposal: January 16, 2018

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EMPLOYER ID: 82-2049381

Project Title: Blueberry research infrastructure for addressing critical pest control needs

Duration of Project: start date: April 1, 2018
end date: March 30, 2020

Project Partners

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Trevor Nichols Research Center

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EMPLOYER IDENTIFICATION NUMBER: 38-6005984

DUNS NUMBER: 193247145

State of Michigan Vendor Number: 2386005984

Project Summary:

Michigan leads the nation in production of highbush blueberries, with over 22,000 acres and over 100 million pounds harvested in 2016. Blueberry production in Allegan county totals 2,720 acres of blueberry produced on 63 farms, representing approximately 14% of state-wide production. Historically, blueberry production in Allegan County has represented a significant opportunity for small and large farmer owners to sustain a profitable way of life in rural communities. More recently, however, Michigan blueberry growers have faced serious threats from invasive diseases and insect pests. This project will provide infrastructure investment in the form of a modern blueberry planting for research at the MSU Trevor Nichols Research Center in Allegan County. This will support the expansion and sustainability of blueberry growers in the county, by enhancing the research-based information and products needed to remain nationally and globally competitive and sufficiently prepared to protect crops from domestic and invasive pests.

Project Information / Impact:

Project Description. Michigan leads the nation in production of highbush blueberry, with 22,000 acres and over 100 million pounds harvested in 2016 from the more than 500 blueberry farms across the state. Expansion of blueberry production in the US and elsewhere in the world has put negative pressures on the price, plus production costs keep rising. In recent years, the need for crop protection has been complicated by the arrival of the invasive pest, Spotted Wing Drosophila (SWD) (*Drosophila suzukii*) in 2010 (Asplen et al. 2015). Many blueberry growers in Allegan county were not prepared for the devastating impact of this invasive pest, which hurt profitability, and continues to threaten the sustainability of Michigan blueberry production at large. For example, in 2014, a survey of 28 Michigan Latino blueberry growers reported losses amounting to 58% of their income due to SWD. Growers that are successfully controlling SWD are doing so with insecticide programs developed using research plantings, where new pest management approaches can be tested before they are deployed on commercial farms.

To remain competitive, blueberry growers must have management programs that protect them from the threat of pests, while also ensuring that they provide the high quality products demanded by consumers and the food industry. While the threat of SWD deserves major attention, others invasive diseases and insect pests, such as Blueberry Shock Virus (BIShV) and Spotted Lantern Fly, *Lycorma delicatula* (White), are also serious threats to Michigan blueberry industry. The Spotted Lantern Fly is a new pest from Asia that is expanding its range in Pennsylvania and is considered a high risk for entering Michigan. This insect is reaching very high densities in Pennsylvania, is contaminating many fruit crops, and has the potential for severe injury to the plants on which it feeds. If and when it reaches Michigan, there will need to be extensive research on how to protect blueberries.

The Michigan State University (MSU) Trevor Nichols Research Center (TNRC) near Fennville in Allegan County is dedicated to delivering integrated pest management (IPM) strategies for Michigan's fruit industry, and it serves as an information hub for pest management decision-makers. The TNRC has approximately seventy-five planted acres of fruit crops, including apples, cherries, peaches, pears, caneberries, grapes and **five acres of blueberries**. Since the fruit crops from the TNRC are not harvested and sold, researchers are provided a unique venue for research and extension education. New pest management tools and strategies can be tested against invasive pests without concern for crop losses or using experimental compounds. The TNRC is strategically positioned to host a diversified suite of research and extension efforts to provide real-world solutions for blueberry IPM. Themes of the research capacity at TNRC include 1) Pesticide performance trials against native and invasive pests, 2) IR-4 field residue trials to support registration of new biopesticides and reduced-risk pesticides, 3) Monitoring networks for early detection of invasive species (like Spotted Lantern Fly), 4) Pollinator protection research, 5) Insecticide resistance management, and 6) Residue decline trials to address Maximum Residue Limits (MRLs) of target export markets.

The newly formed Michigan Blueberry Commission (MBC) has set priorities for their recently collected grower-contributed funds, which includes research targeting SWD and other invasive and native pests of blueberries. Unfortunately, the current blueberry acreage at the TNRC is far outpaced by the demand for research, and with the looming new threats this planting cannot meet the needs of MSU scientists.

We propose to **double the blueberry research capacity** at the TNRC by establishing a new five acre state-of-the-art blueberry planting, with modern cultivars, fabric-covered mounded rows, overhead irrigation and chemigation-enabled trickle irrigation systems. This planting will host the MBC research priorities and enable MSU scientists to deliver time sensitive solutions to the many pest management challenges the blueberry industry faces. In turn, this will help fuel the expansion and sustainability of land-based industries and support infrastructure that benefits rural communities of Allegan county and beyond.

Project Goal and Outcomes.

The primary goal of establishing a new five acre state-of-the-art blueberry planting at the TNRC is to double the station's blueberry research capacity, which will directly lead to expanded research and extension capacity relevant to Allegan county blueberry growers.

A. What are the specific outcomes you will achieve due to the project?

Specific outcomes from research conducted on the new blueberry planting include:

- 1) Pesticide performance trials will lead to new recommendations in the Michigan Fruit Management Guide (MSUE-E154), including options for controlling new and invasive pests. Testing for new solutions for control of the Spotted Wing Drosophila will be a priority.
- 2) IR-4 field residue trials will provide essential Good Laboratory Practice-certified data to support new EPA registrations of reduced-risk pesticides and biopesticides for blueberries.
- 3) Pollinator research will result in development of MSU's recommendation of "Best Management Practices for Bees in Blueberries".
- 4) Monitoring of invasive pests, like the Spotted Lantern Fly, will give blueberry growers early warning and guidance on how to adjust crop protection programs, thus reducing the risk of infestations at harvest that may trigger loss of sales and profits.
- 5) Pesticide resistance research (especially for SWD) will provide early detection of products to avoid and guidance on what programs will be optimal and sustainable, thus preventing spread and catastrophic losses.
- 6) MRL study results will provide blueberry growers with residue profiles to identify risks for using certain pesticides when targeting key export markets. These data will help growers adjust spray timings to reduce the risk of exceeding export MRLs, thereby facilitating greater exports.

B. How will those outcomes be measured?

These outcomes are measurable in terms of a) new extension recommendations in E154 and other MSU outreach venues, b) new EPA product registrations available to blueberry growers, c) Early detection and guidance from MSUE on topics of invasive pests, pesticide resistance, pollinator safety, and MRLs. We will be able to make a direct connection from each of the outcomes listed above to this new research planting.

C. How will the project build capacity in rural communities?

The outcomes of this project will contribute to the capacity of small and large blueberry growers in Allegan county to maintain profitability and sustainability through greater knowledge of how to address the many challenges of competing successfully in our national and global food system.

D. How will the project become financially viable? Who is providing the match?

MBC has agreed to sponsor the 30% matching funds for this project. This project is financially viable, because the blueberry planting will host future research projects that will include funding for maintenance (pruning, fertilizer, irrigation, etc.) of the research planting.

E. Will the project be sustainable after the grant period?

This project is highly sustainable beyond the granting period, because the blueberry planting will host decades of research funded by a wide range of grant resources, including MBC, Project GREEN, USDA NIFA, agrochemical companies and more.

F. *What is the near-term and long-term impact of the project?*

The near-term impact of the project is to double the station's blueberry research capacity, which will directly lead to expanded research and extension activities relevant to Allegan county blueberry growers. The mid and long-term impacts predominantly include the delivery of highly relevant research-based information that will expand the knowledge and strategic decision-making of blueberry growers. This will support their efforts to navigate their competitiveness in national and global blueberry markets.

G. *How will the project provide a regional benefit?*

Allegan County and the south-west Michigan region is the epicenter of Michigan's blueberry production. Rural communities in this region depend on profitable specialty crop production, especially blueberries, for a healthy and viable rural economy. This infrastructure investment will contribute to this goal. Additionally, the TNRC site is a central hub for information delivery to growers from across west Michigan due to its central location. The conference room at this location provides a meeting point for MSU Extension and MBC events, and the expanded research planting will provide a valuable demonstration site for showing growers the results of our research.

H. *Will the project lead to job creation and private investment?*

Yes. Healthy and expanding blueberry production in Allegan County will result in jobs directly and indirectly related to blueberry production. These will be in blueberry production as well as crop protection and processing. In addition, jobs will be supported as a result of contractual work and project materials being sourced from businesses in south-west Michigan.

I. *Will the project leverage additional federal, state or local funding?*

This project will allow MSU scientists to leverage additional funding from a wide range of grant resources, including MBC, Industry, Project GREEN, USDA NIFA and more.

J. Please list stakeholders/supporters of the project.

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Lorrie Merker, MBG Marketing, lmerker@blueberries.com

PROJECT TIMELINE AND WORK PLAN

Describe all activities that will be performed to accomplish the objectives of the project. All projects must be completed within the 24 month grant period. Projected starting date for grant project May 2018.

GRANT WORK PLAN	
Tasks	Completed by (date)
Land leveling and shaping, incorporate soil amendments	07/01/2018

Bed mounding and fabric installation	07/30/2019
Irrigation and pump station installation	07/30/2019
Plant blueberry bushes	10/01/2019
Plant row middles with grass	10/01/2019

BUDGET NARRATIVE

Please use the table below and provide a brief description of how funds will be used for each funding category. (This is a cost reimbursement grant program).

Item	Requested Funds	Matching Funds – (30% cash match required)	Project Totals
Infrastructure Development (Add lines if necessary)			
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
Total Infrastructure	\$	\$	\$
Equipment, Materials and Supplies			
Blueberry plants (2376 @ \$4.50 ea)	\$	\$ 10,700	\$
Irrigation equipment + pump station	\$ 2,800	\$ 19,200	\$ 22,000
Fertilizer	\$ 800	\$	\$ 800
Sulfur	\$ 700	\$	\$ 700
Total Materials/Equipment/Supplies	\$ 4,300	\$ 29,900	\$ 34,200
Contractual			
Remington Exc. (land leveling and shaping, bed mounding, irrigation/pump and fabric Installation)	\$ 85,700	\$	\$ 85,700
	\$	\$	\$
	\$	\$	\$
Total Contractual	\$ 85,700	\$	\$ 85,700
Salaries/Fringes			
Technician (10% 12 mo., 53% fringe)	\$ 6,600	\$	\$ 6,600
Temporary labor (250 hr., \$10/hr. + fringes)	\$ 2,700	\$	\$ 2,700
Total Salaries/Fringes	\$ 9,300	\$	\$ 9,300
Other (Please list activities)			
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$
Total Other	\$	\$	\$
Total Project Cost	\$ 99,300	\$ 29,900	\$ 129,200

MDARD RDF blueberry project - Budget Narrative

Personnel: Total personnel budget (including fringes) is \$9,300

Research Assistant (10% for 12 months). Field preparation, installations and planting blueberries.

\$ 6,600 (\$4,300 + \$2,300 (53% fringe rate))

Prebaccalaureate Student labor = 250 hours at \$10/hr. To assist field preparation, installations and planting blueberries.

\$ 2,700 (\$2,500 + \$200 fringes)

Other Direct Costs:

Equipment: Irrigation equipment and pump station: \$22,000

Materials and Supplies:

Blueberry plants (2376 Plants @ \$4.50): \$10,700

Fertilizer: \$800

Sulfur: \$700

Contractual Services: Remington Excavating to conduct land leveling and shaping, bed mounding, irrigation/pump and fabric installation): \$85,700

Total Budget: \$129,200