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New Hampshire  
Department of Agriculture,  
Markets & Food

Lorraine S. Merrill, Commissioner

May 31, 2013

Her Excellency, Governor Margaret Wood Hassan  
and the Honorable Council  
State House  
Concord, New Hampshire 03301

Dear Governor Hassan and Honorable Council:

**REQUESTED ACTION**

Authorize the New Hampshire Department of Agriculture, Markets and Food, Division of Pesticide Control to enter into a Cooperative Project Agreement, in the amount of \$43,915, with the University of New Hampshire Office of Sponsored Research, vendor #177867, for the advancement of agricultural research and to assist in the promotion of Integrated Pest Management practices in New Hampshire, for the period from Governor and Council approval through April 1, 2014. 100% Other Funds - Integrated Pest Management Fund.

Funding is available in account, Integrated Pest Management, as follows with the authority to adjust encumbrances in each of the State fiscal years through the Budget Office if needed and justified, pending FY 14 budget approval.

Funding is available in account, Integrated Pest Management, as follows:

**02-18-18-183010-21820000 INTEGRATED PEST MANAGEMENT**

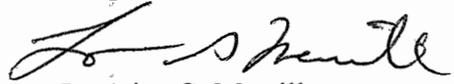
OBJECT

CLASS	ACCOUNT	FY 2013	FY2014	Total
075-500590	Integrated Pest Mgmt	\$29,423	\$14,492	\$43,915

**EXPLANATION**

The New Hampshire Department of Agriculture, Markets and Food (NHDAMF), Division of Pesticide Control in fulfilling its responsibilities under the Integrated Pest Management (IPM) Program, RSA 430:50; to promote the principles of IPM and assist New Hampshire citizens to advance the practice of such principles, has reviewed the project, "2013 Integrated Pest Management Plan for Spotted Wing *Drosophila* in New Hampshire", and finds it exemplifies good practices associated with Integrated Pest Management. The research and educational aspects associated with this project and the efforts of the University of New Hampshire Cooperative Extension identify and establish the presence and treatment methods for an insect pest that is of economic significance relative to berries and certain fruit to control. The experience and results of this project serve the benefit of all citizens of New Hampshire. The attachment includes a summary of the project and the dollar amount associated with each component.

Respectfully submitted,



Lorraine S. Merrill  
Commissioner

**COOPERATIVE PROJECT AGREEMENT**

between the

STATE OF NEW HAMPSHIRE, **Department of Agriculture, Markets & Food**

and the

**University of New Hampshire** of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

- A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Department of Agriculture, Markets & Food**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.
- B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **4/1/14**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.
- C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **2013 Integrated Pest Management Plan for Spotted Wing Drosophila in New Hampshire**

- D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

**State Project Administrator**

Name: David J. Rouseau  
 Address: State House Annex  
25 Capitol Street  
P.O. Box 2042  
Concord, NH 03301  
 Phone: 603 271-3640

**Campus Project Administrator**

Name: Dianne Hall  
 Address: University of New Hampshire  
Sponsored Programs Administration  
51 College Road  
Durham, NH 03824  
 Phone: 603 862-1942

- E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

**State Project Director**

Name: David J. Rousseau  
 Address: State House Annex  
25 Capitol Street  
P.O. Box 2042  
Concord, NH 03301  
 Phone: 603 271-3640

**Campus Project Director**

Name: George Hamilton  
 Address: UNH Cooperative Extension  
Hillsborough Country  
329 Mast Road, Room 101  
Goffstown, NH 03045  
 Phone: 603 641- 6060

F. Total State funds in the amount of \$43,915 have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

Campus will cost-share \_\_\_\_\_ % of total costs during the term of this Project Agreement.

Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. \_\_\_\_\_ from \_\_\_\_\_ under CFDA# \_\_\_\_\_. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

Article(s) \_\_\_\_\_ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H.  State has chosen **not to take** possession of equipment purchased under this Project Agreement.  
 State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

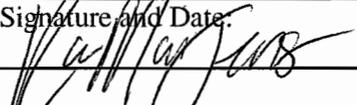
This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Department of Agriculture, Markets & Food** have executed this Project Agreement.

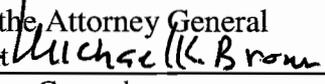
**By An Authorized Official of:  
University of New Hampshire**

Name: Karen M. Jensen

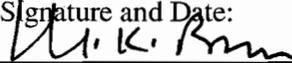
Title: Manager, Sponsored Programs Administration

Signature and Date:  4/22/13

**By An Authorized Official of: the New  
Hampshire Office of the Attorney General**

Name: Rosemary Wiant  (K. Brown)

Title: Assistant Attorney General

Signature and Date:  4/3/13

**By An Authorized Official of:  
Department of Agriculture, Markets &  
Food**

Name: Lorraine Merrill

Title: Commissioner

Signature and Date:  5-6-13

**By An Authorized Official of: the New  
Hampshire Governor & Executive Council**

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature and Date: \_\_\_\_\_

Campus Authorized Official   
Date 4/22/13

**EXHIBIT A**

- A. Project Title:** 2013 Integrated Pest Management Plan for Spotted Wing Drosophila in New Hampshire
- B. Project Period:** Upon Governor and Council Approval through April 2014
- C. Objectives:** The objectives of the University of New Hampshire are to assist the Department of Agriculture, Markets & Food in the promotion and advancement of Integrated Pest Management in New Hampshire
- D. Scope of Work:** A detailed scope of work is on file with the Department of Agriculture, Markets & Food and described in Item G ("Other") of EXHIBIT A of this agreement.
- E. Deliverables Schedule:** A detailed description with schedule is on file with the Department of Agriculture, Markets & Food

Major Project Components:

On Farm Monitoring: 2013 Growing Season

Insect/Crop: Spotted Wing Drosophila/small fruit and tree fruit

Sparyer Calibration: April 2013 through April 2014

Final Report: April 1, 2014

- F. Budget and Invoicing Instructions:** Campus will submit invoices on regular Campus invoice forms. Initial invoice for \$29,423 at the time of Governor and Council approval, balance of grant to be billed no sooner than one month following initial invoice. State will pay Campus within 30 days of receipt of the invoice. Any unused funds must be returned to the State after the project end date.

Budget Items	State Funding	Cost Sharing (if required)	Total
1. Salaries & Wages	\$18,970	0	\$18,970
2. Employee Fringe Benefits	3,995	0	3,995
3. Travel	6,660	0	6,660
4. Supplies and Services	3,000	0	3,000
5. Technical Support	2,228	0	2,228
6. Facilities & Admin. Costs	9,062	0	9,062
Subtotals		0	\$43,915
In Kind Contribution		0	0
Total Project Costs			\$43,915

## G. Other

A representative of the Department of Agriculture, Markets & Foods reserves the right to attend seminars and audit any work performed by the grant recipient.

Attachment A: Project Proposal - "2013 Integrated Pest Management for Spotted Wing Drosophila in New Hampshire"

## II. Project Description

Develop an IPM program by monitoring and trapping Spotted Wing Drosophila (SWD) on small and tree fruit farms/orchards weekly throughout the summer of 2013. In addition, sprayers will be calibrated on New Hampshire farms to insure proper application of pesticides.

## III. Project Objectives

### 1. IPM

Small fruits and tree fruits

- Monitor Spotted Wing Drosophila activity on a weekly basis throughout the growing season on small fruit and tree fruit farms.
- Data will yield information on seasonal activity and relative abundance of Spotted Wing Drosophila, needed to determine an IPM control strategy. If Spotted Wing Drosophila numbers exceed an economical threshold, Spotted Wing Drosophila becomes a threat to New Hampshire small fruit and fruit tree crops.

### 2. SPRAYER CALIBRATION

- Conduct sprayer calibration on farms in New Hampshire to ensure proper application of pesticides.

## IV. Economic and Environmental Impact

### 1. IPM

Spotted Wing Drosophila is new to New Hampshire, arriving for the first time in 2011. We have not fully analyzed Spotted Wing Drosophila survey responses from growers/farmers/orchardists conducted in October of 2012, however initial results show losses were greatest in the later-maturing fruit varieties. With average blueberry production at 6,000 pounds per acre and value at \$2.00 per pound, we anticipate that the 2012 Spotted Wing Drosophila losses in highbush blueberries may have exceeded \$500,000 on NH's 260 acres in highbush blueberry production. Forty six (46%) of blueberry growers who responded to our survey reported losses of over 50%. Raspberry losses seem to have been a similar percentage of the total crop with 41% of responding raspberry growers losing over 50% of their crop to Spotted Wing Drosophila. The value of the raspberry crop per pound is much higher, but acreage is much smaller, compared to blueberries. Raspberry losses to Spotted Wing Drosophila may have been \$250,000. Growers also reported losses in grapes, peaches, plums and fall strawberries, but we cannot easily quantify those reports.

We aim to reduce the Spotted Wing Drosophila losses, but do not yet know what impacts we can expect from monitoring. Reducing the chances of significant Spotted Wing Drosophila infestation in fruit helps prevent customer panic. We saw this in August 1994, when a front page article in a major New

Hampshire newspaper reported maggots in the New Hampshire blueberry crop. The reporter apparently did not know that the vast majority of growers did not have a maggot problem. (In fact, only one grower was known to have a serious infestation). The publicity spread to other media, and customer demand for blueberries went down sharply that year. Several farms reported significantly decreased sales of blueberry that year.

In addition to dollar savings, reduced insecticide spraying can help protect populations of beneficial insects including predators, parasitoids, and pollinators. Fewer sprays also reduce farm worker exposure to pesticides, in particular those involved with spraying or pesticide mixing & loading. Reduced spraying also reduces the opportunity for drift and the risk of environmental contamination. It can help keep farms in business, growing locally produced food, to meet the rising demand for fresh, local products.

## 2. SPRAYER CALIBRATION

Advances in agricultural chemicals have made precise application of pesticides much more important, not only because of the cost of the chemicals but also because of the danger of off-target spray drift. The economic impact of spray drift comes not only from the loss of chemicals that should have been applied to the crop, but also from the potential damage the chemicals may cause to adjacent crops, the contamination of surface and ground water supplies, and health risks to animals and people. Legal liability costs have been rising recently, justifying added attention to properly calibrated and operated spraying equipment.

Reasons for calibrating:

- Chemicals should be applied at the proper rate to be effective and safe without causing pollution. The calibration test indicates the application rate with selected nozzles, pressure, sprayer design, and travel speed.
- The operator must know the application rate (from the chemical label) to determine the proper amount of chemical(s) to add to the sprayer tank. Once the actual application rate is known, it is easy to determine the acreage that a tankful or part of a tank will cover. Then, the proper amount of chemical to add to the tank can be determined.
- Applying a chemical at the wrong rate is disadvantageous. Using more than the desired amount of chemical is wasteful, may violate label rates, and may pollute the environment. Too low an application rate probably will not be effective, and money will have been wasted on the material and its application.
- Actual application rates in the field may vary from nozzle catalog values, because of pressure gauge error, wheel slip, speedometer error, and friction loss in the plumbing. A catalog is satisfactory for selecting the correct nozzles, but the sprayer must be checked under actual operating conditions to adjust the pressure for the exact application rate required.

## V. How will your goals be accomplished?

### 1. IPM

- Two IPM scouts will be hired through use of the NHDAM&F – IPM Grant funds to conduct on-farm monitoring and scouting.
- Working with up to twenty growers/farmers/orchardists in New Hampshire to monitor Spotted Wing Drosophila, on a weekly basis, checking traps to determine need, frequency and timing for insecticide control applications for insects.
- o Spotted Wing Drosophila uses cup traps rather than baiting and trapping. A protocol is under development and will be determined prior to the growing season.

- o Based on experience of Spotted Wing Drosophila trapping and monitoring in 2012, Spotted Wing Drosophila trapping requires more time and effort to check the traps than the other insects we have scouted for in the past.
- We will check traps throughout the 2013 growing season. Since Spotted Wing Drosophila is new to New Hampshire, growers/farmers/orchardists do not have any idea when the insects arrive until some damage is done, or the growers/farmers/orchardists apply unnecessary sprays assuming the insect is present.
- We will use the UNH CE web site to record insect/trap.
- We will work with Dr. Alan Eaton to determine the necessity for special news releases about insect outbreaks.
- If there are major insect outbreaks, we will consider disseminating alerts through additional means, including Weekly Market Bulletin
- At the end of the season, growers/farmers/orchardists in the program will complete a survey to evaluate the project.

## 2. SPRAYER CALIBRATION

- One IPM scout will be hired through use of the NHDAM&F – IPM Grant funds to help conduct sprayer calibrations.
- Participating growers/farmers/orchardists who complete sprayer calibration with UNH Cooperative Extension specialists or IPM scout will be eligible to receive one private recertification credit if they a NH private restricted use license. Each farm participant will be given fact sheets describing the sprayer calibration. The calibration information will be recorded for the farmers to keep in their records.

## VI. Sampling Methods :

### 1. IPM

- On-farm monitoring for insect pests will be conducted during the 2013 growing season with twenty growers/farmers/orchardists in New Hampshire.
- Weekly trap counts will be made to the growers/farmers/orchardists. It is our hope that growers/farmers/orchardists will /participate in the monitoring.
- The baits used in the trap will be changed according protocol recommendations.
- Working with the growers/farmers/orchardists, some traps will be moved according to crop conditions and maturity.

### 2. SPRAYER CALIBRATION

- Does not apply

VII. How will your data be evaluated?

1. IPM

- At the end of the season, participating growers/farmers/orchardists will complete a program evaluation survey to be reviewed by the UNH CE IPM Coordinator.
- Based on the trap counts collected during the season, UNH CE can decide if additional educational programming needs to be developed for fruit growers/farmers/orchardists.

2. SPRAYER CALIBRATION

- At the end of the season, growers in the program will complete a program evaluation survey to be reviewed by the UNH CE IPM Coordinator.
- The sprayer calibration results will be compared to the 1995 and 2008 sprayer calibrations results and "Calibration of Boom Sprayer Equipment" study made by University of Nebraska.

VIII. Explain how the results of your project will be shared/publicized.

All published literature (papers, presentations, publications, advertisements, etc.) must contain a statement attributing funding to the New Hampshire Department of Agriculture, Markets and Food IPM Grant Program. Publications must be submitted with the final report.

1. IPM

- A weekly visit to each grower will be made to monitor trap counts where the grower will be provided the information on need, frequency and timing for insecticide control applications.
- Updates on insect pest situations will be given at scheduled grower twilight meetings throughout the growing season.
- If there are any major insect outbreaks, we will consider disseminating alerts through additional means, including Weekly Market Bulletin.
- A presentation on the results of this project will be developed and presented to fruit growers/farmers/orchardists upon request.

2. SPRAYER CALIBRATION

- From the information gathered during the on-farm calibration, sprayer calibration fact sheets will be revised. A presentation will be developed on sprayer calibration. It will be presented to different grower groups.

IX. Detail how other groups may adopt some of the information you learn or develop:

The UNH CE website ([extension.unh.edu](http://extension.unh.edu)) is available for New Hampshire growers to view recommendations for insecticide control applications and help those growers/farmers/orchardists to determine control strategies for their farms.