

New Hampshire

Department of Agriculture,
Markets & Food

May 12 2013 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 \$48,539, 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

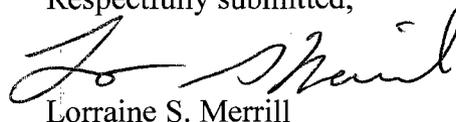
OBJECT

<u>CLASS</u>	<u>ACCOUNT</u>	<u>FY 2013</u>	<u>FY2014</u>	<u>Total</u>
075-500590	Integrated Pest Mgmt	\$33,521	\$15,018	\$48,539

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 IPM for Vegetable Growers/Farmers 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 pests common to sweet corn and vine crops. It also includes a pesticide sprayer calibration component, important to ensure proper use of spray equipment. 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 IPM for Vegetable Growers/Farmers 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 \$48,539 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.

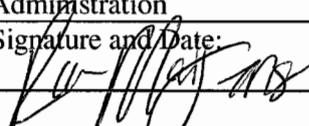
IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Department of Agriculture, Markets & Food** have executed this Project Agreement.

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

Name: Karen M. Jensen

Title: Manager, Sponsored Programs

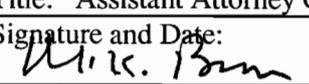
Administration

Signature and Date:  4/22/13

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

Name: ~~Rosemary Wiant~~ Michael K. Brown

Title: Assistant Attorney General

Signature and Date:  4/15/13

**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: _____

EXHIBIT A

- A. Project Title:** 2013 IPM for Vegetable Growers/Farmers 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
- E. Deliverables Schedule:** A detailed description with schedule for each project is on file with the Department of Agriculture, Markets & Food

Major Project Components:

On Farm Monitoring: April 2013 through October 2013

Insect/Crop: Corn Earworms/sweet corn
Fall Armyworm/sweet corn
European Corn Borer/sweet corn
Squash Vine Borer/vine crops

Boom Sparyer Calibration: April 2013 through September 2013

Final Report: April 1, 2014

- F. Budget and Invoicing Instructions:** Campus will submit invoices on regular Campus invoice forms. Initial invoice for \$32,521 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	\$21,530	0	\$21,530
2. Employee Fringe Benefits	4,223	0	4,223
3. Travel	7,770	0	7,770
4. Supplies and Services	3,000	0	3,000
5. Technical Support	2,000	0	2,000
6. Facilities & Admin. Costs	10,016	0	10,016
Subtotals		0	\$48,539
In Kind Contribution		0	0
Total Project Costs			\$48,539

- 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 IPM for Vegetable Growers/Farmers in New Hampshire"

II. Project Description

Develop an IPM program by monitoring and trapping insect pests of vegetables on a weekly basis throughout the summer of 2013 on twenty five farms. Sweet corn insects to be monitored include European corn borer (ECB), corn earworm (CEW) and fall armyworm (FAW). In addition, squash vine borer will be monitored on curcurbit crops and sprayer calibrations will be conducted on New Hampshire farms to insure proper application of pesticides.

III. Project Objectives

1. IPM

Sweet corn

- Monitor European corn borer, corn earworm and fall armyworm pheromone traps to determine need, frequency and timing of insecticide application.
- Reduce damage caused to sweet corn by the European corn borer, corn earworm and fall armyworm by application of properly timed insecticide applications.

Vine crops

- Determine when squash vine borer is active on vegetable farms and giant pumpkin patches in New Hampshire.
- Work with vegetable and giant pumpkin growers on monitoring squash vine borer using Heliothis traps with the Pacific Biocontrol Squash Vine Borer Lure to determine need, frequency and timing of insecticide applications.
- Reduce damage caused to cucurbit crops by the squash vine borer through application of properly timed insecticide applications.

2. SPRAYER CALIBRATION

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

IV. Economic and Environmental Impact

1. IPM

Depending on the infestation pattern and severity of fall armyworm (FAW) and corn earworm (CEW) populations in 2013, sweet corn insect pest monitoring may save New Hampshire growers a total of \$50,000 to \$150,000 statewide. In a year with low and corn earworm and fall armyworm populations, the major dollar savings will likely be in reduced pesticide sprays. If pest populations are high, savings will be greater through reduced culling (throwing away ears that are infested). We anticipate there could be positive impacts from our sweet corn work, on chrysanthemum and pepper

growers as well. To avoid fatiguing our clientele with questionnaires, we have not measured this impact with a formal survey. Impact is observed and determined by discussion on farm visits and follow-up phone calls.

In past years, participating growers reported that the vine crop IPM work saved \$5,000 by reducing the number of pesticide applications. Neither we nor our clientele have been able to measure reduction in crop losses from the squash vine borer work, but it likely occurs, especially on bush-type crops of *Curcubita pepo*. Data collected in 2013 will be used to determine the impact of IPM work with squash vine borer.

In addition to dollar savings, reduced insecticide application can help protect populations of beneficial insects including predators, parasitoids, and pollinators. Fewer spray applications also reduces farm worker exposure to pesticides, in particular those involved with spraying or pesticide mixing and loading. Reducing spraying reduces the opportunity for drift and the risk of environmental contamination. These reduced inputs can lead to higher profits, keeping farms in business, meeting the rising demand for fresh, local food.

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 against the target pest and safe for the environment. The calibration test tells us 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 has many disadvantages. Using more than the desired amount of chemical is wasteful, may violate label rates, and may pollute the environment. Too low of 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 sprayer equipment 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?

The proposed project has two goals:

1. IPM

- Two IPM scouts will be hired to conduct on-farm monitoring and scouting.
- Twenty-five New Hampshire farms will participate in weekly insect monitoring, checking traps to determine need, and learning frequency and timing for insecticide applications.

Sweet Corn

- o European Corn Borer is captured with two Heliiothis traps with Scentry E-strain or 'New York' type pheromone lures and the Scentry Z- strain or 'Iowa' type pheromone lures, which are changed every four to six weeks from April/May through October.
- o Corn Earworm is captured with the Heliiothis trap with Hercon pheromone lures. The lures are changed every two weeks from July through October.
- o Fall Armyworm is captured with a bucket or canister trap with Scentry FAW - four component pheromone lures. The lures are changed every four to six weeks from May through October.

Vine Crops

- o Squash Vine Borer is captured by the Heliiothis trap with the Pacific Biocontrol SVB pheromone lures. The lures are changed every four to six weeks from June through September.
- We will use the IPM section of the UNH CE web site to record insect trap counts and recommendations of need, frequency and timing for insecticide control applications for NH growers.
- George Hamilton and Alan Eaton will determine the necessity to alert growers 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 in the program will complete a survey to evaluate the impact of IMP on crop yield and profits.

2. SPRAYER CALIBRATION

- One scout will be hired through use of the NHDAM&F – IPM Grant funds to help conduct sprayer calibrations.
- The participating growers/farmers that complete sprayer calibration with the UNH Cooperative Extension staff would be eligible to receive one private recertification credit if they participate in the calibration and have a NH private restricted use license. Each farm participant will be given information fact sheets describing sprayer calibration methods. If needed, adjustments will be made to the sprayer until it is properly calibrated and calibration steps 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 on twenty five NH farms.
- Weekly trap counts will be reported to the growers/farmers, with the hope that growers/farmers will participate in the monitoring.
- Any pheromone lures or baits used in the trap will be changed according manufacturer recommendations.
- Working with the growers/farmers, some traps will be moved according to crop conditions and maturity.
- Depending on how the traps are used in the field, material breakdown of the traps during growing season and storage of the traps; traps may have a life of two or more years and will need to be replaced.

2. SPRAYER CALIBRATION

- Does not apply

VII. How will your data be evaluated?

1. IPM

- At the end of the season, growers/farmers in the program will complete a program evaluation survey to be reviewed by the UNH CE IPM Coordinator and/or other UNH CE personnel. The number of sprays per sweet corn field applied will be compared to trap counts and grower's concept of the amount of sweet corn ears damaged due to insect damage will be evaluated.
- Based on the monitoring counts collected during the season, UNH CE can decide if additional educational programming needs to be developed for vegetable growers/farmers in the state.

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 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. The grower will be provided with information on need, frequency and timing for insecticide applications.
- UNH CE's website will provide insect trap counts for use by growers.
- Updates on insect pest situations will be presented at 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 with the results of this project will be developed and presented to vegetable growers/farmers upon request.

2. SPRAYER CALIBRATION

- From the information gathered during the on-farm calibration, sprayer calibration fact sheets will be revised. A presentation about sprayer calibration will be developed. It will include the results of farm calibrations and 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) is available for New Hampshire growers to view insect trap counts numbers and recommendations for insecticide control applications and help those growers/farmers to determine control strategies for their farms.

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STATE OF NH
DEPT OF JUSTICE