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New Hampshire
Department of Agriculture, Markets & Food

Lorraine S. Merrill, Commissioner

March 16, 2015

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 grant funds and enter into a Cooperative Project Agreement, in the amount of $47,353, 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, 2016. 100% Other Funds - Integrated Pest Management Fund.

Funding is available in account, Integrated Pest Management, as follows:
02-18-18-183010-21820000 INTEGRATED PEST MANAGEMENT

OBJECT CLASS	ACCOUNT	FY 2015	Total
075-500590	Integrated Pest Mgmt	$47,353	$47,353

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, "*2015 IPM Program Vegetables 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 **4/1/16**. 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: **2015 IPM Program Vegetables 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. Rousseau
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 Rd. Rm 116
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 County
329 Mast Road, Room 101
Goffstown, NH 03045
Phone: 603 641-6060

Campus Authorized Official KJ
Date 3/10/15

F. Total State funds in the amount of **$47,353** 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: 3/10/15

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

Name: Lorraine Merrill
Title: Commissioner
Signature and Date: 3-16-15

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

Name: ~~Rosemary Wiant~~ Brian Buonamano
Title: Assistant Attorney General
Signature and Date: 3/30/15

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

Name:
Title:
Signature and Date:

Campus Authorized Official KS
Date 3/10/15

EXHIBIT A

A. Project Title: 2015 IPM Program for Vegetables in New Hampshire

B. Project Period: Upon Governor and Council Approval through April 1, 2016

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 2015 through October 2015
Insect/Crop: Corn Earworms/sweet corn
Fall Armyworm/sweet corn
European Corn Borer/sweet corn
Squash Vine Borer/vine crops (June 2015 through September 2015)
Insect and Disease/greenhouse and high tunnel vegetables

Boom Sparyer Calibration: April 2015 through September 2015

Final Report: May 1, 2016

F. Budget and Invoicing Instructions: Campus will submit an invoice on regular Campus invoice form for $47,353 at the time of Governor and Council approval. 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	$21,320	0	$21,320
2. Employee Fringe Benefits	3,182	0	3,182
3. Travel	10,080	0	10,080
4. Supplies and Services	3,000	0	3,000
5. Equipment	0	0	0
6. Facilities & Admin. Costs	9,771	0	9,771
Subtotals		0	$47,353
Total Project Costs			$47,353

G. Other

A representative of the Department of Agriculture, Markets & Foods reserves the right to attend

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seminars and audit any work performed by the grant recipient.

Attachment A: Project Proposal - "2015 IPM Program for Vegetables in New Hampshire"

I. Itemized Budget

Funding can only be used for items detailed in your budget. Requests for the purchase of non-consumable equipment that may serve a broader purpose than the IPM project will be rejected. Itemized budget must be specific.

Expense Account
Salaries and Wages: $21,320
Employee Fringe Benefits: $3,182
Travel: $10,080
Supplies and Services: $3,000
Subtotal: $37,582
Facilities and Admin Costs: $9,771
Total $ 47,353

Professional Time:

George Hamilton, Univeristy of New Hampshire Cooperative Extenstion (UNH CE) - Extension Field Specialist, is the primary person conducting the project and will be managing the finances of the grant. All recommendations that are given to the farmers will be approved through the primary person conducting the project and may be delivered through the IPM scouts hired for the project. The primary person conducting the project will make follow-up farm visits when problems occur with the IPM scouting during the growing season.

Benefits Rate(s):

The Employee Benefit Rates are based on UNH's most current Rate Agreement with the U.S. Department of Health and Human Services, as required under OMB Circular A-21. A copy of the Rate Agreement is provided annually to the NH Department of Administrative Services. The full Employee Benefits rate applies to salaries and wages, except for hourly and college work study wages, graduate student salaries, and faculty summer salaries. The partial rate applies to non-student hourly wages, FICA-eligible graduate student pay, faculty summer salaries, and other exceptions to faculty and staff contract pay. The post-doctoral research rate applies to all postdoctoral staff.

Additional Labor:

IPM Scouts for Insect Monitoring and Scouting

Two IPM Scouts will be hired for insect monitoring and scouting from April through November for various vegetable insect pests. 60 days for one IPM scout and 55 days for the second IPM scout. The IPM scouts, with participating growers, will set-up traps, check the traps, monitor the crop weekly, and collect and record data throughout the growing season. The scouts will collect the traps at the end of the season, clean and inventory the good traps and dispose of the traps that are no longer usable. The scouts will collect the end of season farmer/grower surveys.

IPM Scout for Sprayer Calibration

Five days for an IPM Scout hired for the sprayer calibration portion of the project. IPM Scout will help in conducting sprayer calibrations with a specialist from April through September, 2015.

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Mileage:

Over the previous seven years, the IPM scouts averaged approximately 100 miles per day conducting weekly farm visits for checking traps and monitoring crops. The total mileage is based on the 120 days additional labor (IPM scouts); 20 days for George Hamilton, UNH CE Extension Field Specialist; 20 days travel for Dr. Alan Eaton, UNH CE Extension Specialist; and 20 days of travel for Heather Bryant, UNH CE Extension Field Specialist.

Supplies:

Funds will be used for purchasing traps, trap supplies (i.e. poles, clips, strings, stakes, etc.), insect pheromone lures or attractants, and paper, ink, ink cartridges, and printing for forms used by the IPM scouts.

Indirect costs:

Facilities and Administrative Costs Rate: The Facilities and Administrative Cost Rate is based on UNH's most current Rate Agreement with the U.S. Department of Heatlh and Human Services, as required under OMB Circular A-21, unless capped by the State of New Hampshire regulation, RFP or Federal Sponsor. A copy of the Rate Agreement is provided to the NH Department of Administrative Services when rates change.

II. Project Description

Select insect pests (European corn borer, corn earworm, and fall armyworm of sweet corn and squash vine borer on vine crops) will be monitored and trapped on a weekly basis throughout the summer of 2015 on twenty-five farms in NH. On-farm sprayer calibrations will be conducted to ensure proper application of pesticides.

III. Project Objectives

IPM COMPONENT:

Sweet corn

- Monitor pherome traps for European corn borer (ECB), corn earworm (CE) and fall armyworm (FAW) to determine need, frequency and timing of insecticide application.

- Reduce damage caused to sweet corn by the ECB, CE, and FAW thorugh application of properly timed insecticide applications.

Vine crops

- Determine when squash vine borer is active on vegetable farms.

- Work with vegetable and giant pumpkin growers to monitor squash vine borer using Heliothis traps with the Pacific Biocontrol squash vine borer lure to determine need, frequency and timing of insecticide applications.

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- Reduce damage caused to cucurbit crops by the squash vine borer through application of properly timed insecticide applications.

Greenhouse/High Tunnel Vegetable Growing

- Monitor and scout for insect and disease pest problems in greenhouse or high tunnel structures and determine if control options are needed on weekly intervals. Based on discussions with growers, anticipated pest problems could include thrips, spider mites, aphids, powdery mildew, leaf mold, and botrytis.

SPRAYER CALIBRATION COMPONENT

Sprayer Calibration

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

IV. Economic and Environmental Impact

IPM COMPONENT:

Depending on the pattern and severity of CEW and FAW populations in 2013, sweet corn IPM may save growers $50,000 to $150,000 statewide. In a year with low CEW and FAW populations, the majority of savings will likely be in reduced spraying. If pest populations are high, savings will be derived from reduced culling (throwing away infested corn). We anticipate there could be positive impacts from sweet corn IPM on chrysanthemum and pepper crops, as European corn borer feeds on these crops as well. In order to avoid fatiguing our clientele with questionaires, we have not measured the program's impact on chrysanthemum and pepper crops but know of growers whose crops avoided significant injury because of IPM notifications.

In past years, participating growers reported that the vine crop IPM work saved $5,000 in 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 Curcurbita pepo or Cucurbita maxima.

In addition to monetary savings, reduced insecticide applications to crops protects populations of beneficial insects, including predators, parasitoids, and pollinators. Reduced spraying also reduces farm worker exposure to pesticides, in particular those involved with pesticide mixing and loading. Reduced spraying also reduces the opportunity for drift and the risk of environmental contamination. Finally, while out on farms weekly, our scouts provide valuable early warning information on other pests. The past two years, the IPM scouts were the first individuals to notice Northern Corn Leaf Blight in NH and consequently, warnings were broadcast to the agricultural community.

SPRAYER CALIBRATION COMPONENT:

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.

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Legal liability costs have been rising recently, justifying added attention to properly calibrated and operated spraying equipment.

Reasons for calibrating:

- Pesticides applied at the correct rate are effective against crop pests. Crops grown with registered pesticides applied correctly and at the recommended rate are safe for consumption. By properly calibrating sprayers, environmental contamination by pesticides is reduced. The calibration test indicates actual 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 accurately 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?

There are two components with this grant application, therefore, the two goals areas where accomplishments are needed to be defined are "IPM" and "Sprayer Calibration."

IPM COMPONENT:

- Two IPM scouts will be hired through use of the NHDAM&F - IPM Grant funds to conduct on-farm monitoring and scouting.

- IPM scouts will work with twenty-five vegetable growers to monitor insect pests and determine frequency and timing of insectide applications.

Sweet Corn

- o ECB monitoring requires two Heliothis 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 May through October.

- o CC monitoring requires a Heliothis trap with Hercon pheromone luretapes, which need to be changed every two weeks from July through October.

- o FAW monitoring requires a bucket or canister trap with Scentry FAW - four component pheromone lures, which need to be changed every four to six weeks from July through October.

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- o Western Bean Cut Worm monitoring requires a bucket or canister trap with Trece pheromone lures, which need to be changed every four to six weeks from May through October.

Vine Crops

- o SVB uses the Heliothis trap with the Pacific Biocontrol SVB pheromone lures, which need to be changed every four to five weeks from June through September.

Greenhouse/High Tunnel Vegetables

- o Greenhouses and high tunnels will be monitored with sticky traps and scouting for insect and disease pests weekly in order to determine if control options are warranted.

- Traps will be monitored throughout the 2015 growing season. Some insects travel on wind currents into the state, so growers do not know of their existence until crop damage occurs. At times, vegetable growers apply pesticides to crops just in case. Many times these applications are unnecessary.

- Dr. Alan Eaton, the UNH CE IPM Coordinator and Extension Entomologist, will determine the need for special news releases, including the Weekly Market Bulletin, on serious insect outbreaks.

- At the end of the season, participating growers will complete a survey about the project.

SPRAYER CALIBRATION COMPONENT:

- One scout will be hired with NHDAM&F – IPM Grant funds to help conduct sprayer calibrations.

- Participating growers who complete sprayer calibration with assistance from a UNH CE specialist and IPM scout would be eligible to receive one private recertification credit if they have a NH private restricted use license. Each farm participant will be given fact sheets describing sprayer calibration. If needed, adjustments will be made to the sprayer until it is properly calibrated. The calibration information will be recorded for the participants to keep in their records.

Sampling Methods

IPM COMPONENT:

- On-farm monitoring for insect pests will be conducted during the 2015 growing season on a minimum of twenty-five operations in New Hampshire.

- Weekly trap counts will be reported to participating growers. Growers will be encouraged to learn to trap insects on their own.

- Pheromone lures or baits used in the trap will be changed according to manufacturer recommendations.

- 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.

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SPRAYER CALIBRATION COMPONENT:

- Does not apply

VII. How will your data be evaluated?

IPM COMPONENT:

- At the end of the season, participating growers will complete a program evaluation survey which will be reviewed by the UNH CE IPM Coordinator and/or other UNH CE personnel. The number of sprays during the year, trap counts, and growers' measure of sweet corn ears damaged by insects will be evaluated.

- Based on the monitoring counts collected during the season, UNH CE specialists will decide if additional educational programming for vegetable growers is necessary.

SPRAYER CALIBRATION COMPONENT:

- Does not apply

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.

IPM COMPONENT:

- 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.

- Updates on insect pest populations will be presented at twilight meetings throughout the growing season.

- Pending agreement with participating growers, trap catches will be posted on UNHCE's website.

- If there are any major insect outbreaks, alerts will go to various media sources, including the Weekly Market Bulletin.

- A presentation on the results of this project will be developed and presented to vegetable growers at a variety of educational workshops and conferences.

SPRAYER CALIBRATION COMPONENT:

- Communication with growers during recent on-farm sprayer calibrations made it clear there is a need for revision of fact sheets on sprayer calibration. A presentation on sprayer calibration will be developed as well.

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

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- All outreach materials (presentations, fact sheets, and alerts sent to media) will be made available by request.
- UNH CE specialists will give presentations on this topic to groups who request it.

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EXHIBIT B

This Project Agreement is funded under a Grant/Contract/Cooperative Agreement to State from the Federal sponsor specified in Project Agreement article F. All applicable requirements, regulations, provisions, terms and conditions of this Federal Grant/Contract/Cooperative Agreement are hereby adopted in full force and effect to the relationship between State and Campus, except that wherever such requirements, regulations, provisions and terms and conditions differ for INSTITUTIONS OF HIGHER EDUCATION, the appropriate requirements should be substituted (e.g., OMB Circulars A-21 and A-110, rather than OMB Circulars A-87 and A-102). References to Contractor or Recipient in the Federal language will be taken to mean Campus; references to the Government or Federal Awarding Agency will be taken to mean Government/Federal Awarding Agency or State or both, as appropriate.

Special Federal provisions are listed here: ☐ None or .

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