

# **2011 BIOPESTICIDE AND ORGANIC SUPPORT RESEARCH PROGRAM GUIDELINES AND GRANT PROPOSAL APPLICATION FORMS**

**(Proposals due October 18, 2010)**



Pest Management Solutions for Specialty Crops and Minor Uses

Each year we try to improve the grant announcement to clarify what we are looking for and provide additional guidance about the process to prospective applicants. If you have any questions or suggestions for improvement please contact Michael Braverman [Braverman@aesop.rutgers.edu](mailto:Braverman@aesop.rutgers.edu) .

Please note

Encouragement of proposals to address high priority needs.  
(*see page 11*).

Common questions and answers about the program.  
(*see page 12*).

Treatment lists and preferred experimental designs for Biopesticide studies. (*see page 14*).

Grant contact information form. (*see page 22 or 35*).

Listing of last years approved projects. (*see page 42*).

# **Biopesticide Research Program**

## **Background**

The IR-4 Project is funded by the USDA agencies NIFA and ARS and receives support from the directors of state agricultural experiment stations. IR-4 is an applied research program whose mission is to assist specialty crop producers obtain safe and effective pest control products. The program was initiated in 1963 and historically has focused on registration and reregistration of pest management tools for use on specialty crops or for minor uses on major crops.

IR-4 broadened its scope in 1982 to include research leading to registration of a wide range of biopesticides including microbials, nonviable microbials, biochemicals, genetically altered microbials, and transgenic plants. The program is committed to developing alternative pest control products on specialty food crops and ornamentals by working cooperatively with public and private sector individuals and organizations. IR-4 interacts with the USDA, EPA, and product registrants to determine the requirements for registration of proposed uses. The program has the resources to develop research protocols, assist with Experimental Use Permits, coordinate and fund field and greenhouse research, assist in the development of Tier I toxicology and non-target organism waivers, and prepare data packages for submission to the EPA.

The EPA under FIFRA regulates all materials that claim to have pesticidal properties. In the biopesticide area, these include microbials such as fungi, bacteria, and viruses, low toxicity biochemicals, pheromones, insect and plant growth regulators, genetically modified microbials, and pesticidal plants. In general, the number and type of studies required to register these products are different from the studies required to register conventional products. To be considered under EPA's biological criteria, biochemicals must have a unique mode of action and be either naturally occurring or a synthetic analog. IR-4 will consider biochemicals that

meet the EPA definition as well as other low exposure, naturally occurring biochemicals which have pest control activity, provided they are considered safe and do not have significant toxicity to man, mammals, fish or birds.

Biologicals such as arthropod (insect) parasites and predators or predacious nematodes are not regulated under FIFRA and do not fall under the IR-4 program.

## **IR-4 Assistance for Biopesticide Projects**

The primary objective of the IR-4 Biopesticide Research Program is to further the development and registration of biopesticides for use in pest management systems for specialty crops or for minor uses on major crops. Areas of IR-4 assistance include:

1. Develop an approved research protocol.
2. Fund small and large scale field efficacy trials.
3. Fund magnitude of residue trials, if needed.
4. Assist in obtaining Experimental Use Permits from the EPA.
5. Prepare and submit petitions to the EPA to support clearances.
6. Develop efficacy data to expand currently registered products to include additional crops and uses.
7. Prepare registration documents for submission to the EPA.

# **IR-4 Biopesticide Grant Program**

## **General guidelines and submission of biopesticide grant request forms:**

The general guidelines that will be used to initially review a proposed biopesticide grant request are shown in Appendix I. A proposal for financial assistance from our grants program must include biopesticide grant proposal forms(see Appendix II). Incomplete or late forms will not be considered. Blank forms are also available from the IR-4 website [www.ir4.rutgers.edu/](http://www.ir4.rutgers.edu/) listed under the biopesticide tab as *Call For Proposals*.

## **Submission of research proposals:**

Proposals are invited for Early Stage as well as Advanced Stage biopesticides. Potential registrants are strongly encouraged to cooperate with public institutions in proposal submission; however proposals submitted solely from a company will not be considered. Early Stage biopesticides are biopesticides for which EPA subpart M Tier I data requirements are not completed or satisfied by appropriate waivers (Ask registrant ). Most Advance Stage Proposals involve products that are already registered with the EPA and involve label expansion such as adding a new crop or new pest to the label. Research on existing labeled uses are funded under the Demonstration Stage Program. Grant requesters are encouraged to interact with their IR-4 Regional Field Coordinator (see page 10) and the potential registrant prior to developing and submitting a proposal. All completed proposals should be submitted to the Manager of the IR-4 Biopesticide and Organic Support Program at IR-4 Headquarters. Proposals will then be reviewed for merit by IR-4 internal and external reviewers based on the criteria shown in Appendix III (Early Stage Proposals) or Appendix IV (Advanced Stage Proposals). Late or incomplete proposals will not be considered.

## **Selection of projects for funding:**

Comments from the internal and the external reviewers will be summarized and a recommendation for funding will be made by the IR-4 Biopesticide Research Grant Review Committee to the IR-4 Project Management Committee (PMC). The PMC will authorize all funding decisions(see Appendix V for general proposal review scheme). If a Section 18 or Experimental Use Permit is needed to conduct the research, the permit must be in place in time to conduct the research.

## **Notification of Project Funding:**

The IR-4 Biopesticide and Organic Support Program Manager will notify the requestor of the funding decision by the IR-4 PMC, probably by February –March of the funding year.

## **Progress reports:**

Annual progress reports are required if the research is not completed within one year or if you are requesting additional funding. Otherwise, a final report is required. All reports should be sent to the Regional Field Coordinator and the IR-4 Biopesticide and Organic Support Program Manager. Reports should follow a standard scientific format of an abstract, introduction, materials and methods, a statistical analysis of the data in tabular or graphic format, and discussion-conclusions. Reporting requirements are attached to the end of the grant announcements.

## **Continuation Grants/Renewal Grants:**

IR-4 will commit research funds for only one year at a time. In order to receive funding beyond the first year, the grantee must submit a new grant request for continuation of funding, a progress report on research conducted under the existing grant, justification for continued funding, and a plan of work to be carried out under the continued grant. For projects in which data are not generated until after the due date for next years grant, it is suggested to submit the data as soon as possible for consideration by the

committee. Projects which do not generate data within the grant cycle will be at a competitive disadvantage for an additional years funding. If positive efficacy data are generated later in the year, the proposal can be resubmitted for a subsequent funding cycle. Early Stage Proposals are funded on an annual basis for a maximum of 2 years and Advanced Stage Proposals are funded for a maximum of 3 years.

Decisions regarding continued support and the actual funding levels are made by the IR-4 Biopesticide Research Grant Review Committee and PMC after consideration of such factors as grantee's progress, availability of funds and likelihood of grower adoption.

## Appendix I

### General Guidelines

- The biopesticide must be subject to registration under the Federal Insecticide, Fungicide, and Rodenticide Act as Amended. Biopesticides include microbials, nonviable microbials, biochemical pesticides including pheromones, attractants, insect growth regulators, plant growth regulators, and other compounds such as natural products, but do not include naturally occurring parasites or predators. **For a list of active ingredients considered to be biopesticides by EPA**, see <http://www.epa.gov/oppbppd1/biopesticides/ingredients/index.htm> a searchable label list by crop and pest is also available at the IR-4 website [www.ir4.rutgers.edu/Biopesticides/LabelDatabase/index.cfm](http://www.ir4.rutgers.edu/Biopesticides/LabelDatabase/index.cfm)
- IR-4 will support the development of data for the registration of a biopesticide where the need is in the public interest, there is reasonable potential for commercial production and the use involves a specialty crop or a minor use on a major crop. There should be clear registrant and grower support. This program includes ornamental as well as food crops.
- In efficacy studies, an integrated approach looking at the role of biopesticides as resistance management tools in rotation with conventional chemical products is strongly encouraged. The experimental design should enable the evaluation of the individual products in addition to rotational treatments.
- Preliminary data should be available supporting efficacy against target pest(s).
- A production method must be feasible and there should be potential for a commercially formulated product.
- Practical application technology should exist.
- The use pattern should be compatible with other agricultural practices.
- The host range and pathogenicity should be known.
- There should be adequate safety data to protect the researcher.

## Appendix II

An electronic copy of the Biopesticide Grant Proposal Form is available at the following site:  
(See Call For Proposals.)

[www.ir4.rutgers.edu/](http://www.ir4.rutgers.edu/) listed under Call For Proposals.

# Appendix III

## Criteria for Evaluation of Early Stage Biopesticide Proposals\*

The following criteria were established to assist reviewers in selecting biopesticide projects for funding that: (1) have a high probability of being registered in a reasonable period of time, and (2) will be useful in meeting pest control needs involving specialty crops (uses), including minor uses on major crops. **Criteria #6 Efficacy is worth 20 points while other criteria are worth 10 points each.**

### Criteria

1. Adequacy of investigators and facilities.
2. Experimental design, work plan and preliminary research.
3. Evaluation of budget.
4. Time to completion and probability of attaining objectives in the proposed time frame.
5. Relevance of the proposal toward the development of data for registration or label expansion of the biopesticide.
6. Evidence of Efficacy.
7. Probability of biopesticide being used by growers (factors such as effectiveness and economics of use rates should be considered).
8. Adverse environmental risks including crop safety, safety to beneficials, safety to ecosystems, and stability.
9. Other control measures currently available to control target pest.
10. Probability of biopesticide being registered, time to registration, and if label expansion, time to market.
11. Availability of a potential registrant. Likelihood of developing a formulated commercial product.

\*Early Stage biopesticides are biopesticides for which EPA subpart M Tier I data requirements are not completed or satisfied by appropriate waivers. (Ask registrant).

# Appendix IV

## Criteria for Evaluation of Advanced Stage Biopesticide Proposals

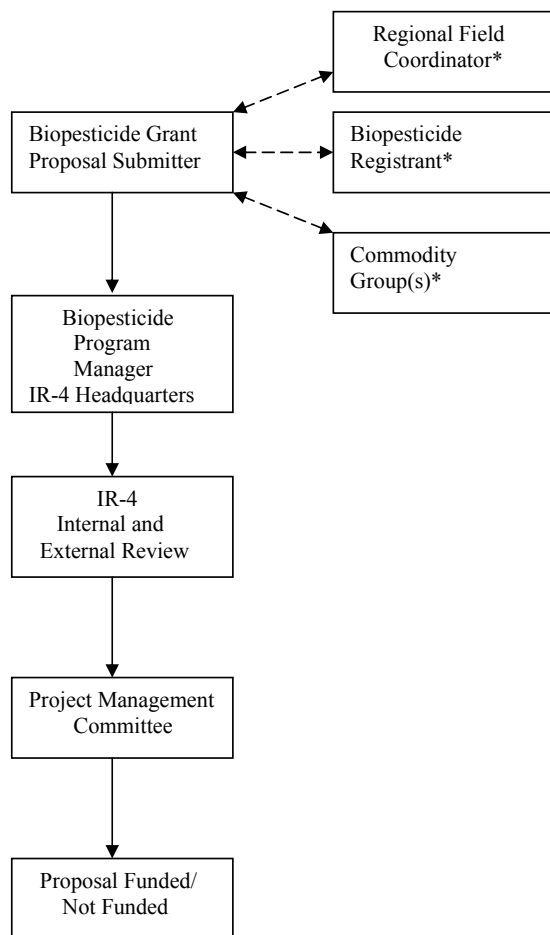
The following criteria were established to assist reviewers in selecting biopesticide projects for funding that: (1) are either in a more advanced stage of development (as opposed to exploratory or early stage of development) or involve expansion of the label, (2) have a high probability of being registered/marketed in a reasonable period of time, and (3) will be useful in meeting pest control needs involving specialty crops, including minor uses on major crops. **Criteria #6 Efficacy is worth 20 points while other criteria are worth 10 points each.**

### Criteria

1. Adequacy of investigators and facilities.
2. Experimental design, work plan and preliminary research.
3. Does experimental design allow to determine performance relative to conventional control practices and how the biopesticide might fit into IPM programs.
4. Evaluation of budget.
5. Relevance of the proposal toward the development of data for registration or label expansion of the biopesticide
6. Evidence of Efficacy. Positive supporting data provided
7. Probability of biopesticide being used by growers (factors such as effectiveness and economics of use rates should be considered).
8. Other control measures currently available to control target pest.
9. Probability of biopesticide use being registered, time to registration, and if label expansion, time to market. Interest by registrant.

# Appendix V

## General Scheme for Review of Biopesticide Proposals



**\*It is strongly recommended to contact your Regional Field Coordinator (refer to list on page 10) and submit your proposal well in advance of the due date. It is also recommended to contact the biopesticide company registrant (for technical support, co-funding) and/ or commodity group for funding, technical support or letters of support) prior to submitting proposals.**

## REGIONAL FIELD COORDINATORS

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States: CA, AZ, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY  
and Guam (All Pacific Island territories)

# 2011 Priorities

In an effort to promote the integration the industry needs, IR-4 is encouraging proposals involving the following areas. The program is not restricted to these priorities and has often funded proposals on crop/pest combinations not specifically mentioned here.

- Wireworms in potato and soil dwelling pests of root crops
- Spotted Wing Drosophila (*Drosophila suzukii*)
- Southern blight- *Sclerotium rolfsii* on tomato
- Fly management in mushroom houses.
- Greenhouse grown vegetables - Biopesticides with zero day PHI
- All thrips (especially chilli thrips *Scirothrips dorsalis*) management with bioinsecticides
- *Phytophthora capsici* and *Phytophthora infestans* control with biofungicides
- Citrus canker, greening and *Septoria citri*, Asian citrus psyllid.
- Potato tuber moth management
- Integrated biopesticide systems for replacement of azinphos-methyl.
- Weed management in organically grown crops.
- Management of varroa mite, colony collapse disorder and tracheal mite in honeybees.
- Postharvest pest management to solve export residue concerns.
- Black Rot in Eastern grapes that are grown organically.
- Ascochyta complex fungal diseases, Sclerotinia or white mold in peas, lentils, and chickpeas.
- Downy mildew control on cucurbits, basil and other crops with biofungicides
- Whitefly (Q-biotype and others) management with bioinsecticides **Note : It is the researchers responsibility to document that pests are present in your area and that the research is compliant with APHIS regulations.**
- Plant bugs- Lygus, Stink bug, etc. with bioinsecticides
- Downy mildew, bacterial diseases and armored scale in ornamentals
- Late blight in potato.
- Biopesticides to deter birds from consuming blueberries, cherries and other food crops.
- Developing short PHI products for the control of multi-colored Asian lady beetles (MALB), especially vineyards.

## 2011 Priorities(Continued.)

- *Primarily in Demonstration Grant Stage*

Utilization of biopesticides under high profile environmental concerns

(Childhood dietary concerns, urban-farm interface, farm-natural area interface, etc.).

Resistance management.

### **Cooperative Projects with Canadian Researchers that are of interest to IR-4, EPA, AAFC and PMRA**

Cooperative Projects Proposals with Canadian Researchers that are of mutual interest to IR-4, EPA, AAFC and PMRA are encouraged. Applicants are asked to consult Agriculture and Agri-Food Canada's grower selected biopesticides priorities (<http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1276640149633&lang=eng#a4>) to identify key pest issues of mutual concern. Projects which demonstrate the integration of biopesticide solutions with reduced risk or conventional solutions in an Integrated Pest Management approach, and which include a grower outreach element will be favored. It is assumed that researchers submitting proposals are willing to share their proposals with Canadian research counterparts.

### **Common Questions and Answers:**

1. Q: What if some of the products I want to evaluate are Early Stage and some are Advanced Stage products or some are Advanced Stage and some are Demonstration Stage.

1. A: First of all, carefully read the descriptions of the stages and ask your Regional Coordinator or the IR-4 Biopesticide and Organic Support Program Manager to help interpret the stage of the product. In general, it is better to keep your proposal qualified for a single stage. If you are looking at an Early Stage biopesticide, it should probably be compared to currently registered products, so explain the purpose of your treatments (designate them as standards). You can divide the treatments and submit similar proposals under different Stages. Mixtures of non-registered products in a Demonstration Stage is the most problematic.

2. Q: How do I know if the product I want to include in my proposal is considered to be a biopesticide.

2. A: In general we follow the EPA interpretation. If the product is an Advanced or Demonstration Stage product, then the active ingredient should be found at the following website:

[www.epa.gov/pesticides/biopesticides/product\\_lists/bppd-prods-12-16-05.pdf](http://www.epa.gov/pesticides/biopesticides/product_lists/bppd-prods-12-16-05.pdf) or on the IR-4 website [www.ir4.rutgers.edu/Biopesticides/LabelDatabase/index.cfm](http://www.ir4.rutgers.edu/Biopesticides/LabelDatabase/index.cfm)

If the product is an Early Stage product, contact the registrant , potential registrant or the IR-4 Biopesticide and Organic Support Program.

3. Q: I heard that IR-4 conducts research under Good Laboratory Practices (GLP). I'm not set up for GLP studies. Does IR-4 require that efficacy studies be conducted under GLP?

3. A: No. IR-4 expects researchers to conduct efficacy studies with same good scientific standards and quality they would normally practice, but not under GLP.

4. Q: What if I don't have any preliminary efficacy data on the products I want to research?

4. A: Ideally you will already have generated some preliminary efficacy data. You can ask the registrant if they have preliminary data or you may find some in the public literature. It may also be present in one of the annual reports at our website. The data should involve the same or similar crops and pests to those in the proposal. You can also bridge data from the most similar source available. This is considered the most important criteria in the evaluation.

5. Q: If a crop is not on one brand of a label containing the same active ingredient as found on another label, can I utilize the narrower label and claim I am looking at label expansion?

5. A: No. If there is another product already filling that need, then the grower would not have a new tool, it would just be another copy of the same tool. If there are similar products that may be misinterpreted, clearly justify the differences. Fully labeled uses should be part of a Demonstration Stage proposal

6. Q: Does IR-4 fund research on genetically modified organisms for biocontrol?

6. A: There is no specific exclusion of genetically modified organisms, but the degree of commercial development is a consideration, as in all proposals.

7. Q: Does IR-4 fund projects on green manures, compost teas or cultural practices?

7. A: These types of products are not subject to registration as biopesticides by the EPA, therefore they are outside the scope of this grant program; however these can be blanket treatments as part of an overall system. We recognize that multiple approaches may be needed to obtain effective pest management and strongly encourage the development of an effective system. Proposals using these treatments as part of a system with biopesticides are encouraged, but proposals only containing products that are not biopesticides are not acceptable.

8. Q: Does IR-4 fund efficacy research involving predatory or parasitic insects or entomopathogenic nematodes?

8. A: Since these are not subject to registration with the EPA, they are not considered biopesticides. We would welcome the inclusion of these approaches as part of a system which has a majority focus on biopesticides, but not predators or parasites alone.

9. Q: Does IR-4 fund research on plant growth regulators

9. A: Yes, as long as they are biopesticide based PGR's

10. Q: Does IR-4 accept proposals outside of the high priority area?

10. A: Yes. We encourage research in these high priority areas but a well constructed proposal outside the high priority area will be funded before a lesser quality proposal on a high priority need.

11. Q: Are there any tips for increasing the likelihood of submitting a successful proposal

11. A: Yes. Discuss the products you are considering with the IR-4 Biopesticide and Organic Support Program Manager to be sure you are working with products that are actually considered biopesticides. Carefully check that you have addressed the appendices and submit the proposal well ahead of the due date and we might be able to catch something you missed.

## **Treatment lists and preferred design of biopesticide studies.**

We encourage individuality and originality of research and proposal design. There are certainly many other possibilities than the designs proposed here. Most of these also assume there is a pest management system that requires multiple applications. This is just a guide to encourage consideration of how the products can fit into a pest control system.

Just like conventional products, pest type, pest size, population, application timing and other factors can influence pest control activity of biopesticides. IR-4 has seen research where the biopesticide products were superior to conventional products and ones where they had no activity. Often biopesticide products are not capable of season long control when used alone. It is important to know both the activity of the products alone as well as in combinations so that the contribution of each product can be determined. The integration of biopesticides and conventional products through rotations, combinations, and threshold analysis are the core of our IPM philosophy and facilitates resistance management, worker safety, consumer interest and grower flexibility.

For products in which only very preliminary efficacy data are available such as in Early Stage proposals, it is recommended that products be evaluated at multiples of 1, 2 and 4 times the anticipated labeled rate to increase the likelihood of developing positive efficacy data. We recognize that there are some products that do not lend themselves to traditional treatment combinations. There are also many pest problems where there are no registered products for comparison. If this is the case discuss the reasons with your Regional/ ARS Coordinators or the IR-4 Biopesticide and Organic Support Program Manager.

### **A. Alternating design**

Some type of alternation between biopesticides and conventional products can be useful in managing pesticide resistance. This type of study is especially useful in a site where resistance to the conventional product exists

1. Biopesticide Product #1 (BP1) season long
2. Biopesticide Product #2 (BP2) season long
3. Biopesticide Product #3 (BP3) season long
4. Biopesticide Product #4 (BP4) season long
5. Conventional Standard (CS) season long
6. CS alternated with BP1
7. CS alternated with BP2
8. CS alternated with BP3
9. CS alternated with BP4
10. Control

### **B. Threshold design**

In some cases economic thresholds for pest populations may be known, but the same threshold level may not be appropriate for biopesticides. If the biopesticide is slower acting or is not capable of controlling larger pests, using the biopesticide early season until it reaches a certain threshold may be

a way to delay the need for a conventional product. This assumes that a threshold for conventional products is already known.

1. BP until 25% of threshold followed by conventional pesticide until back below 25%
2. BP until 50% of threshold followed by conventional pesticide until back below 50%
3. BP until 75% of threshold followed by conventional pesticide until back below 75%
4. BP until 100% of threshold followed by conventional pesticide until back below 100%
5. BP alone season long,
6. Conventional pesticide alone season long
7. Control

### **C. Residue reduction- or short Preharvest Interval design.**

When crops need to be harvested, pesticide application of conventional products may be limited by the allowable period between pesticide application and harvest (Preharvest interval). There may be a need for a biopesticide which has no limitation on application to harvest period. This is especially true in cases where there are multiple harvests which preclude application of conventional products. Pests that blemish maturing fruit or affect post harvest storage may need to be controlled.

1. Conventional season long (as long as legally possible according to pre harvest interval).
2. Conventional season long plus an additional application of BP#1 just before harvest (or additional applications in multiple harvest crops).
3. Conventional season long plus an additional application of BP#2 just before harvest (or additional applications in multiple harvest crops).
4. Conventional season long plus an additional application of BP#3 just before harvest (or additional applications in multiple harvest crops).
5. Conventional season long plus an additional application of BP#4 just before harvest. (or additional applications in multiple harvest crops).
6. Control

### **D. Short re-entry time design.**

Manual operations in the field may be dictated by restricted entry intervals in which protective clothing may be needed that can hinder the efficiency and safety of workers. Operations such as moving irrigation pipe, thinning, pruning, staking, etc may need to be performed, but workers can not easily enter fields due to reentry restrictions. The concept here is to utilize conventional products for part of the season when these critical operations are not needed and use biopesticides whose reentry interval does not inhibit workers from performing those operations.

1. Conventional until critical reentry period
2. Conventional until critical reentry period plus BP#1 just before reentry followed by conventional rest of season
3. Conventional until critical reentry period plus BP#2 just before reentry followed by conventional rest of season
4. Conventional until critical reentry period plus BP#3 just before reentry followed by conventional rest of season

5. Conventional until critical reentry period plus BP#4 just before reentry followed by conventional rest of season

### **E. Activity combinations**

Pheromones are useful in disrupting mating, can be attractants or otherwise interfere with normal insect activity. Plant defense elicitors can trigger the plant to prepare it for protecting against invasions by plant pathogens and products can also be part of an overall system with other biopesticides that have more focused activity on the pest.

1. Pheromone or plant defense elicitor (SAR Product)alone
  2. Pheromone or plant defense elicitor in combination with biopesticide #1
  3. Pheromone or plant defense elicitor in combination with biopesticide #2
  4. Pheromone or plant defense elicitor in combination with biopesticide #3
  5. Pheromone or plant defense elicitor in combination with biopesticide #4
  6. Pheromone or plant defense elicitor in combination with conventional
  7. Biopesticide #1 alone.
  8. Biopesticide #2 alone.
  9. Biopesticide #3 alone.
  10. Biopesticide #4 alone.
  11. Conventional alone.
  12. Control
- 

Types of designs we do **not** prefer

### **A. We do not accept biopesticide add on projects:**

This type of treatment list is not acceptable because the proposal guidelines require a majority focus on biopesticides. We encourage having a commercial standard for comparison but a majority of the study must involve biopesticides. This design has no integration of the biopesticides and conventional products therefore it is overlooking a potentially successful treatment regime.

1. Conventional Product #1
2. Conventional Product #2
3. Conventional Product #3
4. Biopesticide #1
5. Biopesticide #2
6. Control

### **B. We do not prefer head to head comparisons:**

This study only looks at one product and does not integrate the biopesticide and conventional treatments.

1. Biopesticide Rate 1
2. Biopesticide Rate 2
3. Biopesticide Rate 3
4. Conventional
5. Control

**C. We do not prefer combinations without clear contribution:**

While we encourage comparisons of combinations (especially if they can be used to reduce rates of conventional products), there should be a way to know what the biopesticide and conventional products are contributing to the overall control. It may be that the conventional or biopesticide alone may have achieved as good a level of control as the combination.

1. Biopesticide #1 tank mixed with Conventional #1
2. Biopesticide #1 tank mixed with Conventional #2
3. Biopesticide #2 tank mixed with Conventional #2
4. Biopesticide #2 tank mixed with Conventional #2
5. Control

**D. We do not prefer studies that leave out existing options.**

Some pest problems such as powdery mildew have a relatively large number of biopesticides on the market labeled for their control. Therefore, when designing studies for new products, established biopesticide products should also be compared to the new product just as they would be compared to a conventional product. Therefore, the following treatment list is too shallow. Note: powdery mildew is just mentioned as an example here. There may be other pest problems such as Bts for lepidopterous larvae or oils for mites which there are numerous existing options. If there is already evidence that the established biopesticide does not work on the particular disease/crop combination, then that should be documented as to explain why the treatment was not included. This is also important in that we tend to favor research in which there are no, or limited options.

1. New powdery mildew biopesticide
2. Conventional
3. Conventional alternated with biopesticide
4. Control

# IMPORTANT NOTE:

## Selection of grant Stage

There are 2 sets of application forms.

The first set pertains to **Early** Stage and **Advanced** Stage Projects. The second set pertains to EPA/IR-4 **Demonstration** Projects. Many parts are similar so it is important to decide how the biopesticides you are testing relate to one of these 3 categories.

**Early Stage:** Biopesticide is not registered and has not completed needed toxicology studies. See **pages 19-31**.

**Advanced Stage:** Biopesticide is registered or has completed toxicology studies. Research must entail adding a new pest or new crop to a labeled product. See **pages 19-31**.

**Demonstration Stage:** Biopesticide is registered and labeled for use. Facilitate grower adoption through extension type on farm demonstration program. Refer to the second set of application forms. See **pages 32-41**.

**BIOPESTICIDE**

**EARLY AND ADVANCED STAGE**

**GRANT**

**PROPOSAL**

**FORMS**

**2011**  
(Proposals due October 18, 2010)

In addition to these forms, please include institutional approval; however do not delay submitting proposals awaiting institutional approval. Institutional approval is required before a grant can be awarded. Proposals are due October 18th, 2010. In addition to the forms, the electronic version may be used to directly answer the questions concerning the grant Stage, introduction and 12 sections of the experimental plan. **Please answer each question individually rather than developing a narrative of the entire proposal.** Other than the introduction, there are no maximum page requirements for the experimental plan.

Most successful grants have generally ranged from \$5,000 to \$25,000 depending on the number of crops and treatments involved. For a list of projects funded for the 2010 growing season please see 43.

Mail completed proposal to:

Dr. Michael Braverman, Biopesticide and Organic Support Program Manager  
IR-4 Project, Rutgers University  
500 College Road East, Suite 201W  
Princeton, New Jersey 08540  
Tel: (732) 932-9575 ext 4610  
Fax: (609) 514-2612

Electronic copies should be e-mailed to: [braverman@aesop.rutgers.edu](mailto:braverman@aesop.rutgers.edu)

**NOTE:** All of these forms are required to apply for a biopesticide grant. Electronic submissions should be made as a single PDF file. When creating a PDF be sure that the scanned copy is clear. Avoid the use of colors to highlight points because color pages do not scan and do not copy well. IR-4 is not responsible for assembling individual files into a proposal.

### **Eligibility:**

This grant is available to all U. S. public and private colleges and universities, USDA agencies, commodity groups, non-government organizations and contract research organizations. Preference is given to proposals from USDA and land grant institutions. Basic producers or registrants of biopesticides will not be funded, however collaboration with registrants is strongly encouraged. For projects in which data are not generated until after the due date for next years grant, it is suggested to submit the data as soon as possible for consideration by the committee. Projects which do not generate data within the grant cycle will be at a competitive disadvantage for an additional years funding. If positive efficacy data are generated later in the year, the proposal can be resubmitted for a subsequent funding cycle. If a proposal has received funding previously, note that Early Stage Proposals can be funded for a maximum of 2 years and Advanced Stage Proposals can be funded for a maximum of 3 years. Early Stage Proposals that become Advanced Stage Proposals through registration can receive up to an additional 3 years funding. In all cases, IR-4 only approves funding on a yearly basis and does not commit to multiple years of funding to an individual proposal.

## IR-4 BIOPESTICIDE GRANTS COVER PAGE

**2011**

Proposal Number(For IR-4 Use):	Principal Investigator:
Proposal Title:	
Institution:	
Total dollars Requested (Year 1 only)	

Enter each biopesticide /crop/ pest combination

No.	Biopesticide and/or Conventional Product TRADE Name	Active Ingredient	Crop	Pest (Weeds, Diseases, Insects)
1				
2				
3				
4				
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26				

~~8/17/2010~~

Deleted: 8/12/2010

### Biopesticide Grants Contact Information Form

<i>Proposal Title:</i>	<i>Address</i>			Phone Number & Fax Number	E-mail Address
Name	Street	City/State	Zip+4		
<b>Project Director (Principal Investigator):</b>					
<b>Administrative Contact:</b>					
<b>Financial Grant Officer:</b>					
<b>Authorized Grant Official:</b>					
<b>Individual Responsible for Invoicing:</b>					

NOTE: THIS IS FOR INFORMATIONAL PURPOSES ONLY. THIS IS NOT MEANT TO BE SIGNED. DO NOT DELAY SUBMITTING YOUR PROPOSAL BY ATTEMPTING TO GET THIS SIGNED. THIS IS NOT MEANT AS A REPLACEMENT FOR ANY INSTITUTIONAL APPROVAL PAGES.

**I. Grant Stage** What is the grant Stage to which you are applying? Early or Advanced (Check appropriate line)

Early – Biopesticide not yet registered and has not completed the Tier I toxicology data requirements.

Advanced – the biopesticide is registered or at least has completed the Tier I toxicology data requirements.

If you are applying for any Advanced Stage Proposal, and the product is not currently registered with EPA, provide a list of the toxicology work that has been completed.

**II. Introduction** (*Limit 1 page*) include the objective, description of the pest problem and justification.

**III. Experimental Plan** (Please limit to 10 pages)

1. Provide a numerical list of all treatments including the products(Trade names and active ingredients, rate (units), application timing, etc. A **majority** of the treatments must be **biopesticides** ( see [www.epa.gov/pesticides/biopesticides/ingredients/index.htm](http://www.epa.gov/pesticides/biopesticides/ingredients/index.htm) ).

2. What crops or sites will this study be conducted on?

3. What experimental design will be utilized? (Such as Randomized Complete Block. Will there be a complete factorial arrangement of treatments? Also include plot size, statistical tests, etc. Please see section **Treatment lists and design of biopesticide studies on page 14** ). Note: EPA requires an Experimental Use Permit if the total treated area is above 10 acres. It may also require destruction of a food crop if there is no existing tolerance. Please document the existence of an EUP if applicable.

4. How many locations (field or greenhouse)? How many replications?

5. Describe how this proposal is designed to provide information on how it fits into an integrated pest management program. (Note: We favor proposals that determine the utility of biopesticides as early season treatments or in rotation with conventional products, rather than only a direct comparison of conventional products versus biopesticides. Please see section: **Treatment lists and design of biopesticide studies on page 14**. Keep in mind that the data need to be sufficient to determine the value of the biopesticide product to the pest control program.

6. Data collection – (Describe what data will be collected such as crop yields, crop quality, etc. If visual efficacy evaluations will be collected, describe the rating scale used and the evaluation timings).

7. Describe the pests to be controlled, the degree to which they are a problem in your state or region and the frequency that they occur (season long problem, every year, every few years).

8. Will the crop be inoculated with the target pest or otherwise be brought into the test system to ensure that it will be available for evaluation? If not, describe the frequency of occurrence.

9. What is the proposed start date and completion date? Also describe this in chronological order in the context of the experimental plan.

10. Describe the test facilities where these studies will be conducted.

11 Budget: Provide an itemized budget, with categories such as labor, supplies, travel, etc. Provide a grand total. **Note: Overhead costs are not permitted.** Funding is only awarded on a per year basis, so if this is a multiple year proposal, divide the budget for each year. Also include a list of support from the registrant and/or other sources. Provide information on other sources of monetary support and in-kind contributions from growers (land, plant material, etc).

12. Describe why this product is needed and why growers are likely to use this product. (Also list alternative conventional and alternative biopesticide treatments)

**Note: See appendix for attachment of additional information.**

#### **Appendix 1**

**PCR Forms.** Please fill out the attached Project Clearance Request Form for each biopesticide/crop combination involved in your proposal. (Not needed for Demonstration Stage Proposals).

#### **Appendix 2**

**Labels** – Supply the label or the proposed label of the biopesticide(s) to be evaluated. (**Note:** Labels of conventional products are not needed.).

#### **Appendix 3**

**Supporting preliminary data** (Attach tables, graphs of the current data that coincide with the proposed use. Please include complete efficacy reports and do not only list literature citations. If appropriate, attach the full copy of actual literature. **Summarize the significance of the efficacy data.** In order to compare your proposed list of treatments to the data make sure the products are identified in the same way or if the names of the products are different, provide a key to all the names so that they can be compared directly. Do not assume the reviewers know which code names or active ingredients match with a given trade name. Avoid color graphs or any low quality graphics that do not copy well in black and white copies. **Note: Proposals without supporting data are less likely to be funded.**

#### **Appendix 4**

Attach resume for Principal Investigator and Co-PI's. Please limit the size of resumes to **3 pages**. Please do not submit an exhaustive list of publications. Only those showing experience with the crop and pest in the proposal and any experience with biopesticides.

#### **Appendix 5**

If you were funded last year, submit a progress or final report. This must be submitted regardless of whether or not the current proposal is related to the previous one.

#### **Appendix 6**

**Registrant support.** Please submit your proposal to the registrant and request the registrant or potential registrant fill out the registrant questionnaire form and submit this to IR-4. Letters of support from the registrant as well as grower or commodity groups are encouraged.

Appendix 1—Registrant Questionnaire

Please fill out the first page of this form for each crop/biopesticide combination and send to the registrant.

Registrant please return to IR-4 Project Headquarters, Michael Braverman, Biopesticide and Organic Support Program Manager, 500 College Road East; Suite 201 W; Princeton, NJ 08540-6635, Tel: (732) 932-9575 ext. 4610, Fax: (609) 514-2612, [braverman@aesop.rutgers.edu](mailto:braverman@aesop.rutgers.edu)

Principal Investigator: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_

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

Registrant name and address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Product Name: \_\_\_\_\_ Active Ingredient: \_\_\_\_\_

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

**The following section is to be completed by the Biopesticide Registrant. The PCR form is to be completed by the researcher for Early and Advanced Stage Proposals (Due Nov. 12)**

1) Is this product EPA registered through BPPD? Yes \_\_\_\_\_ No \_\_\_\_\_

Is this use covered by your current label? Yes \_\_\_\_\_ No \_\_\_\_\_

If this product is not yet registered with EPA, describe where you are at in collecting the toxicology data or Stage of the registration process. If this project was previously funded, describe how the registration status has changed since last year.

Is label and toxicology work currently limiting product only to non-food uses?

- 2) Assuming the efficacy data are favorable, what is the likelihood that this use will be added to your label?
- 3) Considering the use rate(s), what is considered to be the farm-level cost for the treatment in \$/acre?
- 4) How would you rank the importance of the proposed use compared to other potential uses?
- 5) If you are only considered a potential registrant (do not currently own rights to the product), rank your degree of interest in this product.
- 6) Were you involved or consulted in the development of the treatments or proposal?
- 7) What financial support are you planning on providing, if any?

\_\_\_\_\_  
Name of Registrant representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

**Other comments – Please attach a letter of support for this project by October 18, 2010**

FOR OFFICE USE ONLY

Date: \_\_\_\_\_

Cat: \_\_\_\_\_ PR#: \_\_\_\_\_

**IR-4 Minor Use Biopesticide (\*Required Fields)  
Project Clearance Request (PCR) Form**

1. **\*Requestor:** \_\_\_\_\_ Affiliation: \_\_\_\_\_  
\*Address: \_\_\_\_\_  
\*City: \_\_\_\_\_ \*State/Territory: \_\_\_\_\_ \*Zip: \_\_\_\_\_  
\*Telephone: (\_\_\_\_) \_\_\_\_\_ FAX: (\_\_\_\_) \_\_\_\_\_  
\*E-mail address: \_\_\_\_\_
2. **\*Pest Control Product (Active Ingredient {a.i.}):** \_\_\_\_\_  
\*Trade Name/Formulation: \_\_\_\_\_  
Registrant (manufacturer): \_\_\_\_\_  
Method of Production (Fermentation, in vivo, extraction from plants): \_\_\_\_\_
3. **\*Commodity (one crop or crop group per form):** \_\_\_\_\_  
\*Use Site (e.g., field, greenhouse, post-harvest): \_\_\_\_\_  
Parts Consumed: \_\_\_\_\_ Animal Feed By-Products: Yes \_\_\_ No \_\_\_  
Planting Season: \_\_\_\_\_ Harvest Season: \_\_\_\_\_  
State/Territory Acreage: \_\_\_\_\_ % National: \_\_\_\_\_ Average Field Size: \_\_\_\_\_
4. **Insect/Disease/Weed:** \_\_\_\_\_  
Damage caused by pest: \_\_\_\_\_
5. **\*Why is this use needed?:** \_\_\_\_\_
6. **\*Proposed Label Instructions**  
\*Rate per Application (lbs a.i. per acre or 1000 linear ft): \_\_\_\_\_  
Type of sprayers that may be used (e.g., fixed wing, ground boom sprayer, chemigation, air blast, ULV, granular spreader): \_\_\_\_\_  
Range of Spray Volume (if applicable): \_\_\_\_\_  
Maximum Acreage Treated per Day: \_\_\_\_\_  
\*Crop Stage during Application(s): \_\_\_\_\_  
\*Maximum no. of applications: \_\_\_\_\_ Minimum interval betw. applications: \_\_\_\_\_  
Maximum lbs active ingredient per acre per year/season: \_\_\_\_\_ \*PHI: \_\_\_\_\_
7. **\*Availability of Supporting Data<sup>1</sup>:** \*Phytotoxicity(P) \_\_\_ \*Efficacy(E) \_\_\_ \*Yield(Y) \_\_\_  
<sup>1</sup>Supporting data may be required before a residue study will be initiated.
8. Brief Summary of proposed study and fund request: \_\_\_\_\_  
\_\_\_\_\_
9. **\*Submitted By (print name):** \_\_\_\_\_  
\*Signature: \_\_\_\_\_ \*Date: \_\_\_\_\_

**Send this completed form to:**

IR-4 Project Headquarters, 500 College Road East; Suite 201 W; Princeton, NJ 08540-6635;  
Telephone (732)932-9575 ext 4610 (Michael Braverman) FAX (609) 514-2612  
or e-mail: [braverman@aesop.rutgers.edu](mailto:braverman@aesop.rutgers.edu)

## Final Report

Recipients are also required to submit **two (2) copies** of a Final Report consisting of:

A one page Executive Summary describing the project and its accomplishments that could be used in a press release.

A standard scientific format of abstract, introduction, materials and methods, statistically analyzed data in tables or graphs and a results and discussion section;

An electronic version of the Executive Summary and Final Report on a 3.5@ diskette or CD in MS Word or Corel WordPerfect for Windows format;

The Final Report is due 30 days following the completion of the projection or end of the project period whichever comes first. **Any materials published whether print, video, etc. must include language that funding was provided in whole (or part) by the IR-4 Project.**

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### Deadline:

Proposals must be received at the IR-4 Project Headquarters offices, 500 College Road East; Suite 201 W; Princeton, NJ 08540-6635, on or before 5:00 p.m. Eastern Time, October 18, 2010. The review and selection timing is dependent upon when funds are made available to the IR-4 Project.

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### Address:

Submit one original copy of the proposal and the electronic version to Dr. Michael Braverman, 500 College Road East; Suite 201 W; Princeton, NJ 08540-6635; Tel: 732-932-9575, ext. 4610; Fax: 609-514-2512; e-mail: [Braverman@aesop.rutgers.edu](mailto:Braverman@aesop.rutgers.edu).

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### Budget:

Provide an itemized budget, with categories such as labor, supplies, travel, etc. Provide a grand total.

**Note: Overhead costs are not permitted.** Funding is only awarded on a per year basis so if this is a multiple year proposal, divide the budget for each year. Also include a list of support from the registrant or other sources. Provide information on other sources of monetary support and in-kind contributions from growers (land, plant material, etc).

**BIOPESTICIDE PROJECT BUDGET**

**Project Period: From:**

**To:**

		<u>Funds Requested</u>	<u>Matching Funds</u>
		Totals (\$)	
<b>A. Senior/Key Person</b>		\$	\$
<b>B. Other Personnel</b>		\$	\$
Total Number, Other Personnel	<input type="text"/>		
<b>C. Fringe Benefits</b>		\$	\$
<b>Total Salary, Wages and Fringe Benefits</b>		\$	\$
<b>D. Equipment</b>		<b>NOT ALLOWED</b>	\$
<b>E. Travel</b>		\$	\$
1. Domestic	\$		\$
2. Foreign	<b>NOT ALLOWED</b>		\$
<b>F. Participant Support Costs</b>		\$	\$
1. Travel	\$		\$
2. Other	\$		\$
<b>G. All Other Direct Costs</b>			
1. Materials and Supplies	\$		\$
2. Publication Costs	\$		\$
3. Consultant Services	\$		\$
4. Computer Services	\$		\$
5. Subawards/Consortium/Contractual Costs	\$		\$
6. Equipment or Facility Rental/User Fees	\$		\$
7. Alterations and Renovations	<b>NOT ALLOWED</b>		\$
8. Other 1	\$		\$
9. Other 2	\$		\$
10. Other 3	\$		\$
<b>Total Direct Costs</b>		\$	\$

**\*\*Each budget item requires documentation\*\***

**\*\*IMPORTANT\*\***

On a separate sheet provide the following information:

Project title, PI name and one paragraph statement of work

Identify each budget item individually - provide cost and a written description and/or purpose for the cost.

For rentals and fees: identify type of rental or fee and provide rental rate & purpose for the cost

Any contractual work will require a separate budget and statement of work including rate and purpose

The Other category **MAY NOT** include construction or indirect overhead. These costs are not permitted, under any circumstances, under this grant. <sup>1</sup>Indicate in a footnote if the matching funds are monetary or in kind and their source  
Please enter all values to the nearest hundred dollars.



Pest Management Solutions for Specialty Crops and Minor Uses

**BIOPESTICIDE**  
**DEMONSTRATION**  
**GRANT**  
**PROPOSAL**  
**FORMS**  
**2011**

**(Proposals due October 18, 2010)**

# IR-4/EPA Biopesticide Demonstration Grants

## Project Grants 2011: Request for Proposals

The Biopesticide Demonstration Grants are administered by Interregional Research Project Number 4, under a cooperative agreement with the U.S. Environmental Protection Agency's Biopesticides and Pollution Prevention Division of the Office of Pesticide Programs. **The goal is to enhance the adoption of biopesticides in agricultural and non-agricultural settings in the U.S.**

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This call is open to:

Organizations involved in work that can enhance the adoption of registered biopesticides in agricultural and non-agricultural settings. Teams comprised of organizations representing the biopesticide industry, grower and land grant university communities are invited to submit proposals. Biopesticide and conventional pesticide companies are urged to cooperate in developing proposals to demonstrate biologically-intensive Integrated Pest Management (IPM) systems.

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Focus of Projects:

Projects should focus on the field demonstration of the effective use of biopesticides within biologically-intensive Integrated Pest Management (IPM) systems. Such systems may include novel combinations of biopesticides to enhance product performance, as well as those which integrate biological approaches into existing agricultural production systems using conventional products, as a means to reduce potential risks associated with agrichemical use. Capital improvement projects and projects that focus solely on research are not permitted under this award.

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Funding Limit:

These grants will fund up to \$25,000 of project costs. **Indirect overhead costs are not permitted.** \$200,000 is expected to be available, dependant on BPPD funding transfer to IR-4 and IR-4's FY 2011 budget. **Successful applicants will be notified when funding will be available.** The biopesticides utilized in this demonstration project must already be approved for use by the Biopesticide and Pollution Prevention Division of EPA. See the list at:  
<http://www.epa.gov/pesticides/biopesticides/ingredients/index.htm>.

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# IR-4/EPA BIOPESTICIDE DEMONSTRATION GRANTS COVER PAGE

**2011**

Proposal Number(For IR-4 Use):	Principal Investigator:
Proposal Title:	
Institution:	
Total dollars Requested (Year 1 only)	

Enter each biopesticide /crop/ pest combination

No.	Biopesticide and/or Conventional Product TRADE Name	Active Ingredient	Crop	Pest (Weeds, Diseases, Insects)
1				
2				
3				
4				
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~~8/17/2010~~

Deleted: 8/12/2010

## Biopesticide Grants Contact Information Form

*Proposal Title:* \_\_\_\_\_

Name	Address			Phone Number & Fax Number	E-mail Address
	Street	City/State	Zip+4		
<b>Project Director (Principal Investigator):</b>					
<b>Administrative Contact:</b>					
<b>Financial Grant Officer:</b>					
<b>Authorized Grant Official:</b>					
<b>Individual Responsible for Invoicing:</b>					

NOTE: THIS IS FOR INFORMATIONAL PURPOSES ONLY. THIS IS NOT MEANT TO BE SIGNED. DO NOT DELAY SUBMITTING YOUR PROPOSAL BY ATTEMPTING TO GET THIS SIGNED. THIS IS NOT MEANT AS A REPLACEMENT FOR ANY INSTITUTIONAL APPROVAL PAGES.

. Application Process:

Proposals must include the following sections: (**Note: Answer the following point by point rather than as a narrative.**)

1. Principal Investigator and Project Officer (if different) and principal members of the project team if more than one organization is participating. Include name, address, phone, fax and e-mail address (must be on first/title page)
2. Explain how each member of the team contributes to the project.
3. Executive Summary (not to exceed 1 page);
4. Rationale/Need for project / Project objectives;
5. Likelihood of broader adoption by grower community. Describe how you will measure the impact of this project on grower adoption.
6. Description of anticipated risk reduction.
7. Criteria used to measure risk reduction.
8. Provide a numerical list of all treatments including the products, rate (units), application timing, etc.
9. What crops or sites will this study be conducted on?
10. What experimental design will be utilized? (Such as Randomized Complete Block. Will there be a complete factorial arrangement of treatments? Also include plot size, statistical tests, number of replications etc.).
11. How many locations (field or greenhouse)?

12. Describe how this proposal is designed to provide information on how it fits into an integrated pest management program. (Note: We favor proposals that determine the utility of biopesticides as early season treatments, in rotation with conventional products, or in combination with other biopesticides rather than only a direct comparison of conventionals versus biopesticides). Keep in mind that the data need to be sufficient to determine the value of the biopesticide product to the pest control program.
  
13. Data collection (Describe what data will be collected such as crop yields, crop quality, pest control efficacy, etc. If visual efficacy evaluations will be collected, describe the rating scale used and the evaluation timings).
  
14. Describe the pests to be controlled, the degree to which they are a problem in your state or region and the frequency that they occur (season long problem, every year, every few years).
  
15. Will the crop be inoculated with the target pest or otherwise be brought into the test system to ensure that it will be available for evaluation? If not, describe the frequency of occurrence.
  
16. What is the proposed start date and completion date? Also describe this in chronological order in the context of the experimental plan.
  
17. Describe the test facilities where these studies will be conducted (growers field, university research station).
  
18. Describe why this product is needed and why growers are likely to use this product. (Also list alternative conventional and biopesticide treatments)
  
19. Describe the extension/outreach component of your demonstration project (talks, publications, etc.).

20. **Labels** - Supply the labels or the proposed labels of the biopesticides to be evaluated. **Note:** This program only funds proposals involving biopesticides that are already labeled for the use being demonstrated in this project.
  
21. **Supporting preliminary data** (Attach tables, graphs of the current data that coincide with the proposed use. Do not only list literature citations. If appropriate, attach actual literature.) Summarize the significance of the efficacy data. In order to compare your proposed list of treatments to the data make sure the products are identified in the same way or if the names of the products are different, provide a key to all the names so that they can be compared directly. Avoid color graphs or any low quality graphics that do not copy well in black and white copies.
  
22. Attach resume for Principal Investigator and Co-PI's(Please limit to 3 pages per investigator).
  
23. Completed budget form (attached to RFP). Also provide an itemized budget, with categories such as labor, supplies, travel, etc. Provide a grand total. **Note: Overhead costs are not permitted.** Funding is only awarded on a per year basis so if this is a multiple year proposal, divide the budget for each year. Also include a list of support from the registrant and/or other sources. Provide information on other sources of monetary support and in-kind contributions from growers (land, plant material, etc).

The following criteria must also be met:

An original copy of the proposal must be submitted; and  
an electronic version of the proposal must be submitted on a 3.5@ diskette or CD in  
MS Word for Windows or Corel WordPerfect for Windows format;

Any proposal deviating from this format and not including the specified sections will not be considered for funding.

## CRITERIA FOR EVALUATION OF BIOPESTICIDE DEMONSTRATION PROJECT PROPOSALS

The following criteria were established to assist the reviewers in selecting biopesticide demonstration projects for funding for products that are fully labeled and will be useful in meeting pest control needs involving specialty crops (uses), including minor uses on major crops. All criteria are worth 10 points each.

1. Adequacy of investigators, facilities, work plan and background research.
2. Evidence of efficacy. Positive supporting data provided.
3. Does experimental design allow the determination of performance relative to conventional control practices and how the biopesticide might fit into IPM programs?
4. Evaluation of budget.
5. Risk reduction impact (OP replacement, MeBr replacement, children's dietary crop, etc.)
6. Potential impact of the project, site in a major region for that crop, degree of grower/commodity group involvement in the study and extension component- outreach program.).
7. Other biopesticide control measures currently available to control target pest. (Lower rating if other biopesticide options exist, higher rating if few options exist)
8. Monetary support from registrant and/or and participation by grower/commodity partner.
9. Probability of biopesticide being used by growers-factors such as effectiveness, organic status and economics of use rates should be considered.
10. Probability of project completion based on timetable presented.
11. Method of assessing grower adoption.
12. Probability of impact on extension, pest control advisors, agrichemical distributors and other key influencers.

### **Requirements:**

Project must be completed within 12 months of the starting date.

All awards are subject to an audit by the EPA and IR-4.

## Final Report

Recipients are also required to submit **two (2) copies** (one to IR-4 and one to EPA) of a Final Report consisting of:

A one page Executive Summary describing the project and its accomplishments that could be used in a press release; Special emphasis should be given to the adoption of biopesticides, measurable risk reduction outcomes of the project;

A standard scientific format of abstract, introduction, materials and methods, statistically analyzed data in tables or graphs and a results and discussion section.

A news release (in standard release format) describing your project and its accomplishments;

A list of media outlets (local newspapers, radio and television stations, industry publications, commodity journals, etc.) that may be interested in receiving the news release on the project; and

An electronic version of the Executive Summary, Final report, news release, and list of media outlets on a 3.5" diskette or CD in MS Word or Corel WordPerfect for Windows format.

The Final Report is due 30 days following the completion of the projection or end of the project period whichever comes first. **Any materials published whether print, video, etc. must include language that funding was provided in whole (or part) by the IR-4 Project under a cooperative agreement with the U.S. Environmental Protection Agency.**

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### Deadline:

Proposals must be received at the IR-4 Project offices, on or before 5:00 p.m. Eastern Time, October 18, 2010. The review and selection timing is dependent upon when funds are made available to the IR-4 Project. Applicants will be notified by e-mail of review and selection timing once finalized.

---

### Address:

Submit one original copy of the proposal and the electronic version to  
Dr. Michael Braverman,  
Biopesticide and Organic Support Program Manager  
500 College Road East, Suite 201W  
Princeton, New Jersey 08540  
Tel: (732) 932-9575 ext 4610  
Fax: (609) 514-2612

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### Budget:

Provide an itemized budget, with categories such as labor, supplies, travel, etc. Provide a grand total. **Note: Overhead costs are not permitted.** Funding is only awarded on a per year basis so if this is a multiple year proposal, divide the budget for each year. Also include a list of support from the registrant or other sources. provide information on other sources of monetary support and in-kind contributions from growers (land, plant material, etc).

BIOPESTICIDE PROJECT BUDGET

**Project Period: From:**

**To:**

**Funds Requested**

**Matching Funds**

Totals (\$)

<b>A. Senior/Key Person</b>		\$	\$
<b>B. Other Personnel</b>		\$	\$
Total Number, Other Personnel			
<b>C. Fringe Benefits</b>		\$	\$
<b>Total Salary, Wages and Fringe Benefits</b>		\$	\$
<b>D. Equipment</b>		NOT ALLOWED	\$
<b>E. Travel</b>		\$	\$
1. Domestic	\$		\$
2. Foreign	NOT ALLOWED		\$
<b>F. Participant Support Costs</b>		\$	\$
1. Travel	\$		\$
2. Other	\$		\$
<b>G. All Other Direct Costs</b>			
1. Materials and Supplies	\$		\$
2. Publication Costs	\$		\$
3. Consultant Services	\$		\$
4. Computer Services	\$		\$
5. Subawards/Consortium/Contractual Costs	\$		\$
6. Equipment or Facility Rental/User Fees	\$		\$
7. Alterations and Renovations	NOT ALLOWED		\$
8. Other 1	\$		\$
9. Other 2	\$		\$
10. Other 3	\$		\$
<b>Total Direct Costs</b>		\$	\$

**\*\*Each budget item requires documentation\*\***

**\*\*IMPORTANT\*\***

On a separate sheet provide the following information:

Project title, PI name and one paragraph statement of work

Identify each budget item individually - provide cost and a written description and/or purpose for the cost.

For rentals and fees: identify type of rental or fee and provide rental rate & purpose for the cost

Any contractual work will require a separate budget and statement of work including rate and purpose

The Other category **MAY NOT** include construction or indirect overhead. These costs are not permitted, under any circumstances, under this grant. <sup>1</sup>Indicate in a footnote if the matching funds are monetary or in kind and their source  
Please enter all values to the nearest hundred dollars.

## 2010 GRANT AWARDS

### Grant Stage—Early

- Evaluation of Biopesticides for managing Yellowmargined Leaf Beetle, *Microtheca ochroloma* in Organic Vegetable Production.  
Henry Y. Fadamiro Auburn University
- Evaluation of the efficacy of soil-set for managing bacterial wilt on tomato  
Pingsheng Ji University of Georgia
- Evaluation of *Isaria fumosorosea* against the Asian citrus psyllid, *Diaphorina citri*.  
Steven Arthurs University of Florida
- Determine the efficacy of biological fungicides for control of pythium stem & root rot in poinsettia  
Maria Tomaso-Peterson Mississippi State University
- Management of carob moth on dates using pheromone mimic  
Thomas M. Perring University of California, Riverside

### Grant Stage—Advanced

- *Metarhizium anisopliae* Strain F52, an entomopathogenic insecticide against thrips on onions.  
Tong-Xian Liu Texas A&M University
- Evaluation of SPLAT-MAT with Spinosad and Methyl Eugenol or Cue-Lure for Suppression/Eradication of Oriental and Melon Fruit Flies (Diptera: Tephritidae)  
Roger I. Vargas USDA-ARS
- The potential of entomopathogenic fungi for control of potato psyllid (*Bactericera cockerelli*), compatibility with fungicides used in potato, and their effect on natural enemies.  
Lawrence A. Lacey USDA-ARS

- Evaluation of CX-9090 for management of powdery mildew on cantaloupe.  
Michael Matheron University of Arizona
- Evaluation of Prophyt for management of Pythium diseases of vegetable transplants.  
Steven C. Bost Univ. of Tennessee
- Integration of biofungicides and conventional fungicides for management of Peach Brown Rot.  
Norman Lalancette Rutgers University
- Efficacy of biofungicide products at the advanced stage of development for Downy Mildew of Basil.  
Margaret Tuttle McGrath Cornell University
- Evaluation of biopesticides for control of bacterial wilt on tomato  
Pingsheng Ji University of Georgia
- Postharvest control of Muscadine grape fungal pathogens  
Dan MacLean University of Georgia
- Integration of mycopesticides in management strategies for chilli thrips, *Scirtothrips dorsalis* in Florida  
Steven Arthurs University of Florida
- Field Evaluation of *Metarhizium anisopliae* F52 for Grasshopper control in Natural Habitats (Rangeland).  
Stefan Jaronski USDA-ARS
- Development of a management strategy to control Chilli Thrips on "Jalapeno" pepper using botanical & biological pesticides.  
Dakshina R. Seal University of Florida

- Efficacy of biofungicide products at the advanced state of development for Downy Mildew of Basil.

Andy Wyenandt Rutgers University

- Efficacy of Biofungicide products at the advanced stage of development for downy mildew in organically-produced cucumber.

Margaret Tuttle McGrath Cornell University

- Evaluating biopesticides for disease control in blueberries.

Annemiek Schilder Michigan State University

- Evaluating biopesticides for management of black root rot in established strawberry plantings.

Annemiek Schilder Michigan State University

- Managing *Phytophthora capsici* on Pepper and summer squash with combinations of Tenet (Bioten) & conventional fungicides.

Kenneth W. Seebold University of Kentucky

- Lab efficacy and field residues of anthraquinone as a starling repellent for blueberry production.

John Wise Michigan State University

- Use of GA3 to increase yield of the "Hass" Avocado: Demonstration of a Dose Response.

Carol J. Lovatt University of California

- Evaluation & efficacy of biopesticides against *Candidatus liberibacter solanacearum*, causal agent of zebra chip of potato.

Ronald French Texas A&M University

## Grant Stage—Demonstration

- Using biopesticides in Strawberries & GH Vegetables for Insect Pest Control  
Gerald Brust University of Maryland
- Evaluation of a fungal biopesticide using a new and novel application method in commercial tart cherry & apple production.  
Mark E. Whalon Michigan State University
- Evaluation of biopesticides for control of powdery mildew on strawberry.  
Natalia A. Peres University of Florida
- Efficacy of biofungicide products at the demonstration stage of development for downy mildew in organically-produced cucumber  
Margaret Tuttle McGrath Cornell University
- Demonstration of efficacy of Contans in soybeans and dry beans.  
William Kirk Michigan State University
- Efficacy of biofungicide products at the demonstration stage of development for Downy Mildew of Basil.  
Margaret Tuttle McGrath Cornell Univ
- Biopesticide Products Effective for Powdery Mildew in Pumpkin Evaluated in Integrated Programs on Other Cucurbit Crop Types.  
Margaret Tuttle McGrath Cornell Univ
- Management of Root Knot Nematodes in Tomatoes using MelCon WG and a potential Synergist as Alternatives to Methyl Bromide  
Galen Franz Glades Crop Care, Inc.

- Improving the efficacy of Bio-Save for control of Rhizopus soft rot of sweetpotato.

Barbara Shew    NC State University

- The efficacy of SoilGard and Contans within a management system for sclerotinia drop of lettuce

Michael E. Matheron    Univ of Arizona

- Evaluation of Alternative nematicides for the control of Root-Knot Nematodes of Carrots.

Joe Nunez    Univ. of CA Cooperative Extension