Advocating for progressive integrated pest management to improve environmental, social and economic conditions through the application of scientific principles.

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This material has been prepared by IPM Voice (http://www.ipmvoice.org/). For further information contact Tom Green 608-232-1410 ipmworks@ipminstitute.org or Jim Cubie 843-991-1059 jimcubie@gmail.com.

IPM Voice

Advocating for progressive integrated pest management to improve environmental, social and economic conditions through the application of scientific principles.

IPM Defined – IPM a Public Good

The term ‘‘integrated pest management’’ means a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks (Section 1201(16) Food Security Act of 1985).

IPM Systems are a “Public Good”
IPM systems cannot be patented. Once they are developed they are available to all potential users. Thus IPM systems, as a “public good,” must be developed with public funding. Despite this fact, basic IPM program funding has been cut by over 30% since 2000. During this same period, the overall USDA external research budget has increased by 16%.

IPM Increases Profitability
From apples to potatoes to soybeans in every region of the country, IPM has increased farmer income by increasing the efficiency and effectiveness of pest management. IPM is especially critical to the high value specialty crops industry.

IPM Protects Against Invasive Pests
In 2004, Asian soybean rust first threatened soybean production. IPM professionals responded and developed a monitoring and alert system that has protected the soybean crops and saved soybean farmers over $1 billion.

IPM Preserves Pest Control Options
Pests eventually become resistant to the effects of virtually any pesticide. IPM systems reduce the speed and frequency of resistance development by weeds, insects and diseases.

IPM Preserves Confidence in the Safety of the U.S. Food System
IPM meets consumer demands for minimum pesticide use and residues. IPM works where organic does not because of weather-related disease pressure and limited organic control options. IPM in agriculture allows access to an increased cheap, reliable and safe food supply grown within the US.

IPM Saves Federal Tax Dollars
By protecting agriculture against pest and disease outbreaks, IPM reduces yield losses that would otherwise increase the costs of the crop insurance program. The Asian soybean rust system was supported by USDA RMA because it not only reduces risks to growers; it also reduces potential for crop insurance claims due to damage from this disease.

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IPM in Maine: An Overview

Integrated Pest Management (IPM)

Maine citizens consistently face a wide array of pests that threaten crops, homes, and health. Appropriate management techniques allow most of us to successfully grow our crops and live safely. Yet the safe and effective management of pests is constantly evolving and becoming more challenging. The 7,200 farms in Maine generate agricultural crop farm gate sales valued at over $450 million, and employ over 65,000 people. Without reliable and sustainable pest management strategies, these industries face severe crop losses resulting in significant reductions in profits and threats to their long-term viability.

IPM Implementation: Fruits and Vegetables

Potatoes

Potatoes are the top agricultural commodity in the State of Maine with a $120 million farm gate value and an estimated $500 million economic impact through 6,000 direct and indirect jobs. The Maine Potato Integrated Pest Management (IPM) system provides up-to-date potato insect and disease scouting and forecasting reports to potato growers and industry professionals throughout Maine during the potato growing season. Reports are normally posted twice per week, but more frequently if conditions should warrant. The program saved the potato industry an average of $15,000,000 per year from 2005 through 2009 for an average return on the annual $450,000 investment of 33 to 1.

Sweet Corn

Sweet corn is the most popular vegetable crop grown in Maine with approximately 3,000 acres valued at $3.2 million; however, it needs high inputs of pesticides and fertilizer to produce a marketable crop. As a result, it is often a low profit commodity with a high environmental risk. The University of Maine sweet corn IPM program was initiated to address the concerns of both farmers and consumers regarding pesticide use on this crop. The program introduces pest monitoring techniques and economic action thresholds for major sweet corn pests statewide. Applied research is an important part of this program, cooperating with growers to evaluate plant pest resistance, low risk pesticide efficacy and biological controls to reduce pest populations.

Apples

The Maine apple industry generates an average of $14 million in annual direct sales, and millions more through other economic activity. Through workshops, newsletters, orchard scouting, online weather-based pest forecasts, and direct consultation, the University of Maine Apple IPM Program has helped growers minimize pesticide use with emphasis on materials and methods with low risk to humans and the environment. Grower surveys show pesticide use reduction of 29% with savings of $141 per acre in pesticide costs, not counting reduced labor and other application costs. Growers also report reducing crop damage by 35%. With approximately 2,900 acres of apple orchard in Maine, this represents annual savings of over $400,000 plus an increased useable yield valued at an additional $100,000 per year.

Small Fruits

Small fruits such as the "Maine Wild Blueberry" or lowbush blueberry, strawberries, and raspberries are important sectors of Maine's agricultural industry. Lowbush blueberry is harvested from approximately 60,000 acres and has a value of $75 million. Strawberries are an important retail crop for small farms in Maine with approximately 525 acres valued at $2 million. An IPM trapping system was devised years ago for detection and management of the blueberry fruit fly, also known as the blueberry maggot. This IPM component reduced insecticide spraying for this pest by 70% to two or fewer sprays per season. Unfortunately, the emerging invasive pest spotted wing drosophila (SWD) has developed large populations in Maine in 2012. This new pest may necessitate late season small fruits to be sprayed twice per week, thus forcing the IPM programs to innovate new ways to minimize sprays. The major portion of Maine's strawberry crop ripens in late June to mid-July and through our IPM scouting and trapping program, we have found that these strawberries are missing the ravages of the SWD. Fortunately, we do not grow many acres of day neutral strawberries which are very late ripening.

In 1990, farmers in Maine began to grow cranberries, and, although a small industry, the University of Maine Cooperative Extension has been there every step of the way, providing sought-after IPM education and assistance. As a result of the university's cranberry IPM program, growers have mastered pest identification and management by equipping themselves with the newest techniques including pesticides that are killing long-time pests with novel chemistries that are extremely pest-specific, environmentally friendly, and increasingly more and more effective. Teaching growers about all of the new chemistries, with new modes of action, is an integral part of Maine's cranberry IPM program, and grower acceptance of these new products coupled with pest management education has culminated in an overall increase in yields of an estimated 20 to 30 percent statewide, which is an average increase of $1,000 to $1,500 of additional cranberries per acre. Grower adoption of a new insecticide in 2010, managed the industry's number one insect pest, and helped achieve a record-setting crop that year of nearly 3 million pounds, one-third more than was previously being harvested.

IPM Implementation in Other Agricultural Commodities

IPM is commonly thought to relate only to fruit and vegetable crops. In fact, IPM systems benefit multiple agricultural commodities, including Maine's dairy, forest products, and greenhouse/nursery industries. The dairy industry is Maine's second largest agricultural sector with annual revenues of $133 million. University of Maine Cooperative Extension offers an IPM program which utilizes biological controls to address a wide variety of barn pests on Maine dairy farms.

With 89% of our land base covered by forests, Maine is one of the most forested states in the country. The forest products industry has a long history in the state of Maine and contributes $6.47 billion to our state's economy. The Maine Forest Service operates an active IPM based forest health, trapping and monitoring program in order to protect this vast resource from a host of pest threats found in neighboring states, including the invasive emerald ash borer, Asian longhorned beetle, and hemlock woolly adelgid which has already arrived in Maine. Forest IPM success stories include the use of Bt to control the spruce budworm and Dimilin, an insect growth regulator for control of the brown tail moth. The greenhouse/nursery/backyard garden industry is worth close to $100,000,000 in the State of Maine. Multiple pest problems can be of significance to these commodities, either at the retail business or at the residence. University of Maine Cooperative Extension has developed a Home and Garden IPM program in order to introduce and familiarize Maine residents with the principles and practices of Integrated Pest Management. The Home and Garden IPM Program provides a flexible system for managing pests that is adaptable to any environment in Maine.

Beyond Agriculture

In addition to agricultural and commercial settings, IPM is important in other locations such as schools, homes, and businesses. Mosquito- and tick-borne human diseases such as West Nile virus (WNV), Eastern Equine Encephalitis (EEE), and Lyme disease have emerged as major public health concerns. School and household pests, especially bedbugs, are also on the rise. Because of these changing pest dynamics, educational IPM programming concerning IPM is a vital component in enhancing Maine's environmental and economic sustainability.

In order to minimize children's exposure to pesticides, all Maine schools are required to have IPM plans. This mandate requires Maine school districts to monitor every school building and grounds for pests before any pesticide spray can be used. The **"**IPM in Schools" program helps schools manage pests through regular pest monitoring, effective communication, good facilities management practices, and the use of low-risk pest control.

Due to the increasing numbers of reported Lyme disease cases and the growing concerns related to West Nile Virus and EEE, IPM programs for both ticks and mosquitoes are being developed for areas of the state where mosquito borne diseases and Lyme disease are the most prevalent.

Regional IPM Efforts

In this time of tough budgets on both the Federal and State budget, it is essential that all programs work in the most efficient manner possible. That is why in New England IPM programs generally are developed and implemented on a regional basis. One example of our many cooperative guides is the **New England Vegetable Management Guide.** This is a comprehensive guide for commercial vegetable growers with information on current production and pest management techniques for vegetable crops. It is a collaborative effort of extension programs at Maine, New Hampshire, Vermont, Connecticut, Rhode Island, and Massachusetts. Typically these efforts may be funded by the Northeast Region IPM Center.

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University of Maine Cooperative Extension

Budget: The Major Issue -- "no free lunch"

Components of the IPM Budget

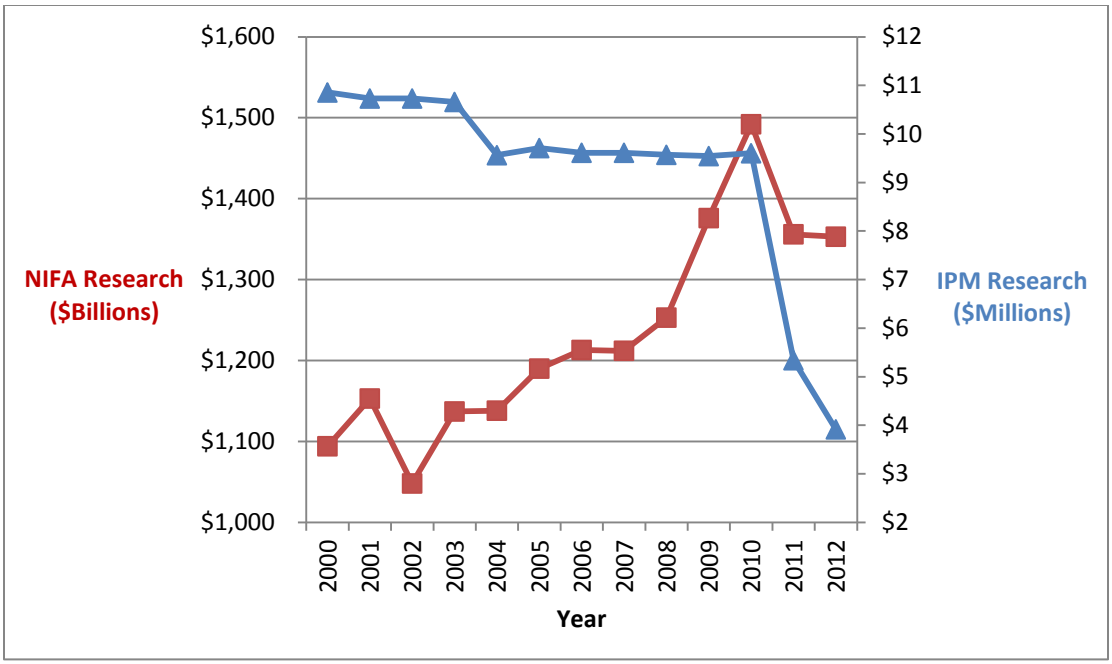
(1)IPM Research (EIDSS, RIPM, PMA etc.)
(2) IPM Centers
(3) Extension IPM

FY	IPM total	
2000	$26.355	
2001	$26.197	-0.6%
2002	$26.197	-0.6%
2003	$26.025	-1.3%
2004	$23.311	-11.5%
2005	$23.953	-9.1%
2006	$23.752	-9.9%
2007	$23.752	-9.9%
2008	$23.612	-10.4%
2009	$23.585	-10.5%
2010	$23.792	-9.7%
2011	$18.422	-30.1%
2012	$17.835	-32.3%

(not constant $'s)

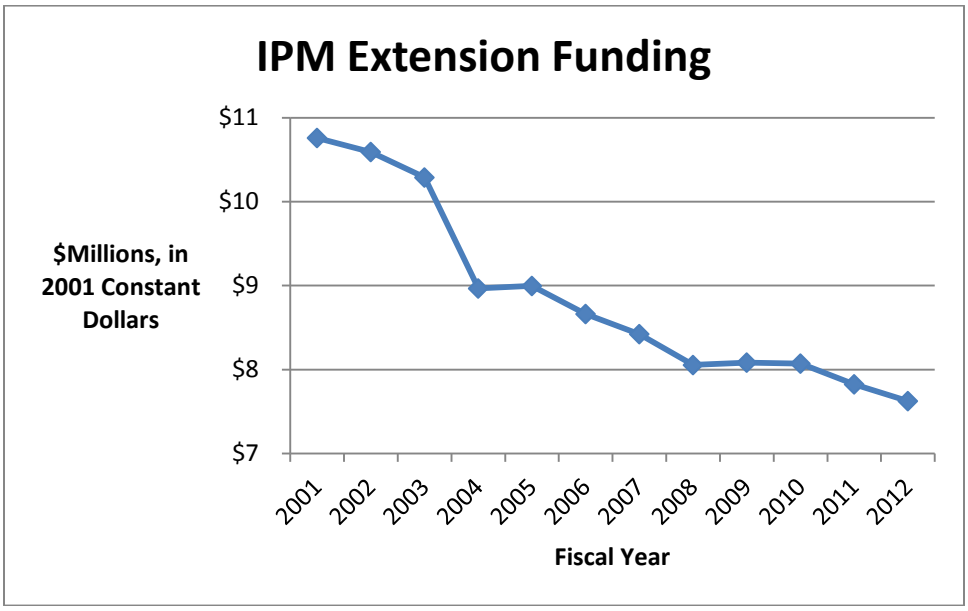
The availability of funds is not the issue. During the same period the NIFA budget has gone up by 16%.

(1) IPM Research 64% cut



(2) Centers $4.5 -- $4. No request.

(3) IPM Extension Funding



KEEPING A STEP AHEAD

In 2004 USDA sponsored the development of an "IPM Roadmap." It was developed by the Federal, State, Land grants, crop protection organizations, and IPM practitioners. Its initial recommendation was that we must keep "a step ahead." It warned that "Pest management systems are subject to constant change, and must respond to a variety of pressures."

It noted that pests becoming resistant pest management tools, public health and environmental laws require that certain pesticides need to be phased out, consumers demand the safest possible food. It concluded, **"**Current and evolving conditions clearly signal the need for the increased development and adoption of IPM practices."

Instead, the IPM budget has been dramatically reduced over the intervening eight years.

What Works and What Does Not

The contrasting response to three major pests threatening U.S. agriculture demonstrates that when sufficient funds are available IPM systems work, and where the funds are not available, growers suffer. These are: the Asian Soybean Rust, the Spotted Winged Drosophila, and the Brown Marmorated Stink Bug.

Asian Soybean Rust

In 2004, Asian Soybean Rust (ASR) first threatened soybean production. The Risk Management Agency (RMA), not NIFA, provided about $10 million to develop a system to protect against ASR. The four Regional IPM Centers brought together over 100 experts from universities, producer associations, state departments of agriculture and federal agencies. The group developed an ipmPIPE -- a crop protection strategy. Soybean farmers, co-ops and dealers have accessed the Soybean ipmPIPE website thousands of times for real-time pest information. The Soybean Rust protection effort now operates as an independent working group. Based on a study by the USDA's Economic Research Service, USDA-NIFA's own budget states that "a conservative estimate of $1 billion" has been saved by growers since 2005. (2013, 17-100)

Brown Marmorated Stink Bug

The BMSB first appeared in 2001. In 2010 the first widespread outbreak occurred. Apple and peach growers are now losing as much as three-quarters of their crops. The growers have reacted by doubling their chemical sprays, causing a major increase in their operating costs. The top USDA expert has noted that "the sustainability of this type of program financially and ecologically is not feasible and growers will certainly need to implement a sensitive and reliable monitoring program for future seasons." *Psyche*, Volume 2012, Article ID 535062,

After the fact, a Specialty Crop Research Initiative (SCRI) grant was award to study the pests so that system can be developed. The first kick-off meeting was held in 2011. (The USDA does not support the SCRI program.)

Thus instead of developing an integrated pest management system in advance to protect the crops, as RMA did when it funded Asian Soybean Rust program, because of inadequate budgets USDA-NIFA has been force to react after the fact – with huge costs to the growers and the environment.

Spotted Winged Drosophila

The Spotted Winged Drosophila (SWD) was first detected in the west in 2008. A grant has been made to Oregon State to develop an IPM system. According to eastern researchers there are not enough funds to conduct a parallel project in the East where conditions are very different than on the west coast. IPM systems often have to be tailored to the local agricultural environment. A SCRI grant submitted this year with North Carolina State as the lead was not funded by NIFA. The only control option at present is insecticide application. There are no biological alternatives, for example. According to a recent journal article "little is known about potential biological and chemical controls for SWD." http://pmtp.wsu.edu/downloads/SWD-v13n3_2.pdf Existing fruit fly IPM strategies are not successful because the SWD has a much longer threat period because it can complete multiple generations in a single growing year. At the same time, the chemical azinphos-methyl (AZM) that has been used to control fruit flies is being phased out because of health and environmental risks. Export markets, such as China and Japan, will not accept produce that exceeds their Maximum Residue Limits (MRL's), which are often lower than the US level. While short-term research is being conducted to develop replacement pesticides, a long term solution will require an IPM system which is not dependent on chemicals that are being phased out for health and environmental reasons. A basic research budget of $3.9 million is simply completely inadequate to address the host of pest problems faced by growers and farmers.

What Maine Faces: the Michigan Experience

SWD in Michigan alone this year has cost over $20 million in damaged small fruit and growers have sprayed up to 6 additional insecticides to try to control them and it is still not working. The insecticides being used are the harder ones and not ones you would like to see in an IPM program. Many growers of fall raspberries have determined they cannot control SWD and have plowed down the crop and will plant pumpkins or vegetables next year.

Examples of IPM at Work for Growers and Farmers Nationwide

Northeast

In a survey of 682 NEWA* users reported that they save, on average, **$19,500** a year in spray costs and prevent, on average, $264,000 a year in crop loss as a direct result of using NEWA pest forecast models

*NEWA stands for "Network for Environment and Weather Applications" and is a weather-station-based forecasting system for the Northeast established by New York State IPM program and the Northeast IPM Center.

Florida

The University of Florida IPM program developed a system of using the UV-reflective mulch on tomato fields in 2000. This system reduced the incidence of tomato spotted wilt virus by as much as 45 percent, boosting farm income by about **$1,000** per acre.

Curcurbits. (Cucumber, Pumpkin, Squash,etc.) Estimates from Cucurbit PIPE participants suggest that during 2009, an epidemic year for downy mildew, cucurbit producers used PIPE data to target fungicide applications and protect crop yields, saving **$24 million dollars** in fungicides not applied."

Georgia

Peach growers in GA save **$6-10** million dollars per year in reduced losses to brown rot disease by using real-time fungicide resistance management programs.

Alabama

Surveys indicated IPM adoption saves an average of **$5,680** per **vegetable** farm.

Kentucky - It is estimated that **wheat growers** gained a net savings of **$25.00/A** by following UK recommendations for controlling a modest infestation of just three Italian ryegrass plants. Without following the UK recommendations for managing ryegrass, it is estimated the economic loss to growers, in yield loss alone, would exceed **$41.00/A.**

Tennessee Cotton growers estimated an average $27 per acre value of IPM .

Virginia The Virginia **Potato** Disease Advisory helped growers protect 6,000 acres of Irish potatoes from diseases while eliminating five fungicide applications, constituting a savings of $300,000 in unnecessary inputs. – about $**50 acre.**

Consolidation

In the 2013 Budget USDA proposed to consolidate several programs into a new Crop Protection Program. These included the IPM competitive grants program, the Regional IPM Centers, the IR-4 Program, and the Methyl Bromide Phase out program into a new program called "Crop Protection Program."

This consolidation has been opposed by the participants in the IR-4 program. The IR-4 program develops pesticides for minor crops. Because of their small size, the pesticide industry does not find in profitable to develop pesticides to meet their needs.

The consolidation was not accepted in the 2013 appropriations bill, even though the House Appropriations Committee has been moving in this direction for several years.

IPM Voice, as does the general IPM Community, supports the consolidation of the IPM programs. It takes no position on IR-4 matters. It opposes the consolidation of the IPM Extension programs unless the losses in program funds caused by the assessment of "indirect costs." "Indirect costs" are the funds that the university deducts from competitive grant awards to cover overhead. They do not apply to the extension budget.

Consolidation vs. 2012		
Overall Reduction	-0.692	
Extension indirect	-2.9754	assuming 30%
Methyl Bromide	-0.998	assume 50%
Program Level Losses	-4.6654	

Can be as much as $6 million if all of the Methyl Bromide funds come out of IPM, as the budget seems to indicate.

2012 Farm Bill and IPM – Authorization of the IPM Centers

There is one provision in the Senate version of the Farm Bill related to IPM. It is the authorization of the IPM Regional Centers. It was offered by Senator Leahy and cleared by Chairwoman Stabenow and Ranking Member Roberts. It is section 7308. It authorizes the establishment of four regional IPM centers and includes a description of their role and functions. The centers presently exist. The purpose of this legislation is to establish it as policy

that IPM should be developed and delivered on a regional basis. The legislation does not "lock-in" the existing centers. USDA-NIFA requires them to compete annually.

There is no equivalent provision in the House Committee Bill. House staff indicated that they wanted to "leave it up to the Appropriations Committee."

Background: Four regional IPM centers were established by administrative action. The existing centers are located at Cornell, Michigan State-University of Illinois, U-Cal Davis, and North Carolina State. An independent review team found that the four regional IPM Centers have shown an "impressive use of limited resources" to maximize output of projects. In 2006 the review team advised USDA to use IPM Centers as a "model for future programs." IPM Centers serve as a hub where groups such as farmers, regulators, scientists, consumers, government agencies, pest control companies, and environmental organizations can share information and work together toward common goals. The Centers also complement and strengthen state IPM programs by promoting communication among programs and encouraging states to collaborate and build on each others' successes. The IPM Centers:

- organize responses to regional and national pest problems
- create information networks that promote good pest management decisions
- manage funds to ensure the greatest possible benefit from public support of IPM
- communicate successes so that the benefits of IPM are fully understood and valued.

The IPM Centers coordinate the ipmPIPE systems which have proven to be so successful for farmers. The Northeast Center is located at Cornell University. A list of the Maine projects funded, and the regional projects in which Maine participates, follows.

Fact Sheet -- Closing Key Pest Control Centers Puts American Crops at Risk

Congress Built Defenses

Invasive crop pests cost agriculture $**14.5 billion dollars annually.** Congress has built a cadre of pest management experts to defend US agriculture. In 1998, Congress created four Regional IPM Centers. At the critical early stages of an invasion, the Centers bring together USDA, state and farm organization pest experts to develop a common strategy

The $300 Million Soybean Rust Success Story

In 2004, Asian Soybean Rust (ASR) first threatened soybean production. The four Regional IPM Centers brought together over 100 experts from universities, producer associations, state departments of agriculture and federal agencies. The group developed ipmPIPE -- a strategic protection plan. Soybean farmers, co-ops and dealers have accessed the Soybean ipmPIPE website thousands of times for real-time pest information. The Soybean Rust protection effort now operates as an independent working group.

According to the USDA's Economic Research Service, savings attributable to the use of *ipm*PIPE during the 2005 season alone were as high as $299 million and $1billion overall.

Protecting Agriculture by Amassing Science-Based Information

The regional IPM centers now lead in the development of Pest Management Strategic Plans (PMSPs). The EPA relies on PSMPs as it develops pesticide use standards required by the Food Quality Protection Act (FQPA). PMSPs are developed by growers, university scientists, commodity organizations, crop consultants and other stakeholders. Without the PMSPs, the EPA may rely on poor data. For example, in March the EPA had nearly finalized the Re-registration Eligibility Document (RED) for permethrin. The Western Regional IPM Center appointed a comment coordinator who found that the reduced rates would have removed permethrin as a viable tool to manage certain Hawaiian pests.

The Western Regional IPM Center also convened a working group which found that the seven member states were individually being asked for FQPA related data. The Western IPM Center funded a PNW Comment Coordinator so that the seven states no longer have to individually search out data to answer duplicate requests from USDA and EPA, saving valuable time and money.

Independent Review Calls Centers "impressive" and "model" for Future Programs

An independent review team found that the four regional IPM Centers have shown an *impressive use of limited resources to maximize output* of projects. In 2006, the review team advised USDA to use IPM Centers as a model for future programs. Croplife, which represents agricultural chemical producers, refers readers to the regional IPM centers for IPM information.

IPM Investment Pays Dividends Beyond Agriculture

Lessons learned from agricultural IPM are being applied to develop IPM plans for school cafeterias and public housing projects, reducing cost and maximizing utility of money invested.

USDA has not requested funding for the Centers for several years.

See: http://www.ipmcenters.org/ This fact sheet prepared by IPM Voice. http://www.ipmvoice.org/

Steps to Take to Support IPM

1. Make (submit for the record) a statement in support of IPM for Maine and national leaders.
2. In preparation for the hearing, submit questions to USDA-NIFA about IPM.
3. Make statement at Hearing in support of IPM.
4. Ask question about IPM.
5. Request a level of funding or policy change in Appropriations Committee request letter.
6. Organize a letter with other signatures to the Appropriations Committee in support of IPM.
7. Organize a letter signed by several Senators calling on NIFA to commit more resources for Spotted Winged or BMSB research and extension.
8. Send a letter to the Farm Bill conferees or Stabenow and Roberts in support of the IPM Centers authorization.