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# How To Teach These Modules

By Mary M. Woodsen

## Overview

<b>Concept</b>	<b>Activity</b>	<b>Handouts</b>
You'll teach more effectively if you understand the conditions and techniques that promote adult learning.	#1: How Can You Be an Effective Teacher?	A. <i>Learning Pyramid</i>
<ul style="list-style-type: none"> <li>◆ These modules are designed to stand alone, but they work better if</li> <li>◆ they are presented as a series throughout the growing season;</li> <li>◆ you understand how they are organized;</li> <li>◆ you familiarize yourself with their content;</li> <li>◆ you have participants evaluate each module at the end of each session;</li> <li>◆ you have participants evaluate how things went after the growing season, to promote yet better planning and learning next year—and justify your time and expenditures.</li> </ul>	#2: How Are These Modules Organized?	B. <i>What's in This Series from Introduction to Integrated Pest Management</i>
We'll all teach and learn more effectively if you let us know what works, what doesn't: send your comments, suggestions, and tips on resources to: <a href="http://www.nysaes.cornell.edu/ipmnet/ne.ipm.region">www.nysaes.cornell.edu/ipmnet/ne.ipm.region</a>		<i>Module Feedback</i>
<b>Resources</b> Russell Robinson, <i>An Introduction to Helping Adults Learn and Change</i> . (1979) D. Seaman and R. Fellenz, <i>Effective Strategies for Teaching Adults</i>	<b>Related Topics</b> Module #1: Introduction to IPM	

***This module may be used by a trainer with a group of Extension agents, or as a self-taught exercise.***

- ◆ If you are leading the session, use each question as a springboard for discussion. Use a flipchart or transparency where indicated to list comments while brainstorming.
- ◆ If you're doing this solo, read through each question. Give yourself time to answer each one before you cop to reading the answer.

***Your objective? To create a discussion-based, hands-on learning experience that***

- ◆ works
- ◆ has participants coming back for more

***and to be comfortable doing it.***

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# How to Teach These Modules

## ACTIVITY # 1: How Can You Be an Effective Teacher?

<b>Setting</b>	<b>Time Required</b>	<b>Materials</b>	<b>Handouts</b>
A Cooperative Extension seminar room or your own office. 1-5 people self-taught or group	30 minutes	Pad of paper & pencils; flip chart or transparencies	A. Learning Pyramid

<b>Q:</b>	<b>Pose a series of questions:</b>	<b>A:</b>
First things first. Am you going to have to do a lot of work to prepare for these modules?	You'll need to	<ul style="list-style-type: none"> <li>◆ familiarize yourself with each unit before you teach it;</li> <li>◆ get hold of a projector;</li> <li>◆ OR substitute simple flip charts (with easel);</li> <li>◆ make photocopies of the handouts ahead of time;</li> <li>◆ obtain necessary materials;</li> <li>◆ check "Resources" and "Related Topics" in each module's Overview and to see if there are resources you need (or want), and to find out what other modules may provide important background material.</li> </ul>
Now for the conceptual stuff. What are your objectives in teaching? <i>Make a list on a transparency or flip chart.</i>	<ul style="list-style-type: none"> <li>◆ You'd like for participants to</li> <li>◆ recall and identify what you taught them;</li> <li>◆ be able to explain and interpret your information;</li> <li>◆ use that information to solve their problems;</li> <li>◆ translate and embed IPM concepts into as many farming practices and decisions as they can;</li> <li>◆ get to know each other and learn from one another;</li> <li>◆ have more profitable, environmentally sustainable operations;</li> <li>◆ be able to teach or influence someone else—the list goes on.</li> </ul>	
How can you best reach your objectives and be an effective teacher?	Start by brushing up on some philosophy... One of history's great teachers—Socrates—taught simply by asking questions and discussing all aspects of his students' opinions and experiences. It still works!	

<b>Q:</b>	<b>Continue your series of questions:</b>	<b>A:</b>
Why are discussions important?		For starters, they're more interesting than lectures. And they allow people to ask questions of each other. If participants don't understand something, they can clarify it right then... if they have to wait till later, they are likely to forget. Plus, discussions make people feel like have something important to offer.
What is the value of "hand's on" learning?		Both questions and discussions come more naturally when people are actually doing something. Busy people—who works harder than the farmer?—feel that their time is better spent if they've actively learned something that feels real.
<b><i>Even though you may not cover as much material using discussions and hands-on activities, your net learning quotient is higher. After all, nobody has taken a nap!</i></b>		
The style of these modules seems pretty informal—why?		The more your teaching seems like having a conversation, the more successful you will be.  And don't hesitate to frame issues in a graphic, humorous way—describing a raindrop as seeming like a 2-ton boulder to a skinny little leafhopper isn't anthropomorphic. It's using imagery that makes people a lot more likely to remember the concepts you taught them.
What's different about adult learners? <i>Make another list.</i>		<ul style="list-style-type: none"> <li>◆ Adults have lots of experience to draw on and discuss with others.</li> <li>◆ Adults want to learn about what matters to them.</li> <li>◆ Adults want to learn things they can use right away.</li> <li>◆ Adults vote with their feet. If they think they won't learn useful things, they won't show up. If they discover new ideas and techniques—if they feel they've <i>participated</i>—they'll be back for more.</li> </ul>
Why all these questions?		Questions make people think—and discuss things. And they help remind you to keep it conversational and keep people involved.  Indeed, many questions in these modules are pretty rhetorical. Participants simply may not know the answers. But they may know pieces of the answers, and if you fish and give hints, they may put it all together without your telling them. Why is this a good thing? Because everyone's brain cells are more active this way.
<p><i>Hand out copies of the Learning Pyramid, and discuss why you</i></p> <p><b><i>Don t lecture! Ask questions! Don t show them have them JUST DO IT.</i></b></p>		

<b>Q:</b>	<b><i>More questions, more answers</i></b>	<b>A:</b>
What sort of setting puts people at ease?	Aim for a comfortable setting.	<ul style="list-style-type: none"> <li>◆ A participant's home is best for most indoor sessions.</li> <li>◆ A participant's field is best for outdoor sessions.</li> <li>◆ Food is a great icebreaker, makes people comfortable, even can loosen their tongues! <i>Especially at the first meeting.</i> Try for a potluck or ice cream social once during the series. If you teach random modules, try to bring a box of cookies; maybe even a thermos of coffee (hot or iced) to share.</li> </ul>
But what if people are uncomfortable about speaking up?	Well, at first they probably will be. Start by giving people at least 5 seconds (count 'em) to respond. Then start fishing for those answers, like we mentioned earlier. Soon enough people will get accustomed to the informal, discussion-oriented method we're preaching here... and will come to prefer it.	<i>If you have to give the answer (as, often enough, you will) do so in the same conversational vein.</i>
Isn't it easy to get distracted with all this question-asking?	It is important to direct the conversation. Tactfully steer it back to the basics if the group gets distracted. If one person tends to dominate things, ask other group members by name what their experience has been.	<i>You are the timekeeper.</i>
Be yourself...	People love anecdotes and personal experience stories... so tell about your experiences—but encourage others to tell theirs too.	Be careful with humor! It's better to point out your own foibles and mishaps than anyone else's.

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Module #1



# How to Teach These Modules

## ACTIVITY #2: How Are These Modules Organized?

<b>Setting</b>	<b>Time Required</b>	<b>Materials</b>	<b>Handouts</b>
A Cooperative Extension seminar room or your own office. 1-5 people self-taught or group	30 minutes	Pad of paper & pencils; flip chart or transparencies (optional)	B. What's in This Series from Introduction to Integrated Pest Management Module Feedback

<b>Q:</b>	<b>Pose a series of questions:</b>	<b>A:</b>
What topics do these modules cover?	The modules focus primarily on IPM for field crops. See Module #1, <i>Introduction to IPM</i> , for a complete list.	
These IPM teaching modules work well as a series presented over the course of a growing year. Why?	<p>You may wish to make a list on a transparency or flip chart.</p> <ul style="list-style-type: none"> <li>◆ Farmers will understand IPM and ICM better if they take part in a number of related classes. Concepts learned in one session are reinforced in another.</li> <li>◆ Participants will get to know each other. They can learn from each other's situations and experiences.</li> <li>◆ You can encourage people to stay in touch and keep learning from each other's successes—it will serve them well over years to come.</li> </ul>	
What's the best way to organize the series?	<p>You have several options. You can group them</p> <p>Chronologically:</p> <ul style="list-style-type: none"> <li>◆ Group "basic concepts" modules (these take place indoors) together in a pre-season mini-series.</li> <li>◆ Follow the growing year for modules on specific issues (alfalfa weevil in June, potato leafhopper in July, etc.</li> </ul> <p>By topic:</p> <ul style="list-style-type: none"> <li>◆ Group all forage and alfalfa, all insect pest, or all corn-related topics together in a mini-series.</li> </ul>	
Are there any ironclad rules about which module should start the series?	Well, you really should start with the <i>Introduction to IPM</i> .	

<b>Q:</b>	<b>Yet more questions and answers:</b>	<b>A:</b>
But I don't have time to set up an entire series!	<p>No problem, you don't have to. These modules are designed to work equally well on a one-shot basis. You can even pull an activity from a module, and do only that one.</p> <p>Or you can set up a "mini-series"—two to four modules that apply best to your clientele.</p>	
These modules don't cover my specialty. How can I use them?	<p><i>Introduction to IPM, Principles of Scientific Sampling, What Is a Threshold, and Economic Implications of IPM</i> apply across the board. They give you a sound foundation to work from in bringing IPM to growers everywhere.</p>	
How is each module organized?	<p>Modules are divided into two main sections: the <i>Overview</i> and one or more <i>Activity</i> sections.</p>	
How many people should I have in each class?	<p>3 – 10 participants works well.</p>	
<p><i>The Module Overview is your guide to the activity sections. It</i></p> <ul style="list-style-type: none"> <li>◆ <i>describes the concepts behind each module;</i></li> <li>◆ <i>lists the activities associated with the concepts;</i></li> <li>◆ <i>lists all the materials and handouts used in all of the activities;</i></li> <li>◆ <i>lists any resources or related topics;</i></li> <li>◆ <i>summarizes your tasks or objectives in other words, what people will learn as you proceed through the module.</i></li> </ul>		
<p><i>The Activity Section with each activity laid out as a separate unit go into the classroom with you. The first part of each activity section describes the</i></p> <ul style="list-style-type: none"> <li>◆ <i>preferred setting;</i></li> <li>◆ <i>time needed for the activity;</i></li> <li>◆ <i>materials, handouts, and resources for that activity.</i></li> </ul> <p><i>After this point, activity sections vary in design. Formats include</i></p> <ul style="list-style-type: none"> <li>◆ <i>flowcharts / graphics / charts / diagrams / lists.</i></li> </ul> <p><i>Some activity sections are surprise! almost completely hands-on. Others, by necessity, are more discussion oriented. Ideally all sessions would take place on site, in a barn or field. But some require a classroom setting though when possible, even these should take place in someone's home.</i></p>		
Great. So how do I set this up?	<p>The "teasers" from the <i>Series Overview</i> can be used in Cooperative Extension flyers, posters, and bulletins to describe course content.</p> <p>You could hold "Introduction to IPM" first, then get people to sign up for a series and set the schedule based on people's busyness levels. Aim for a central location where possible.</p> <p>Or just organize everything ahead of time and get people to sign up for at least "X" number (you decide) of workshops.</p> <p>For most modules, you'll need a cooperating host farmer. Set this up right at the start! Best to work with people who are likely to have the situation the module addresses—people who are innovators, and who aren't shy about having others observe what's worked and what hasn't in their farming practices.</p>	

<b>Q:</b>	<b><i>Last but not least:</i></b>	<b>A:</b>
How do I evaluate the series?		<p>It depends on what you're after. If you want to find out how well given module worked</p> <ul style="list-style-type: none"> <li>◆ use the <i>Module Feedback</i> forms that come with each module and have participants complete it on the spot.</li> </ul> <p>If you need to justify expenses or want to do an even better job next year</p> <ul style="list-style-type: none"> <li>◆ refer to the <i>Module Feedback</i> forms from each module to show participant interest and learning in each instance;</li> <li>◆ have participants fill out the <i>Series Feedback</i> form that comes with this module. Depending on the group, you can ask people to fill out their own, or frame the questions as a discussion, with you as the note taker;</li> <li>◆ use the pretest from Module #1 as a post-test. Compare scores to those on the originals to show what participants have learned over the series;</li> <li>◆ for your record keeping, file those Farm Questionnaires from Module #1, <i>Introduction to IPM</i>.</li> </ul> <p>If you'd like to help us improve these modules</p> <ul style="list-style-type: none"> <li>◆ send us your electronic feedback form. We look forward to receiving your suggestions.</li> </ul>

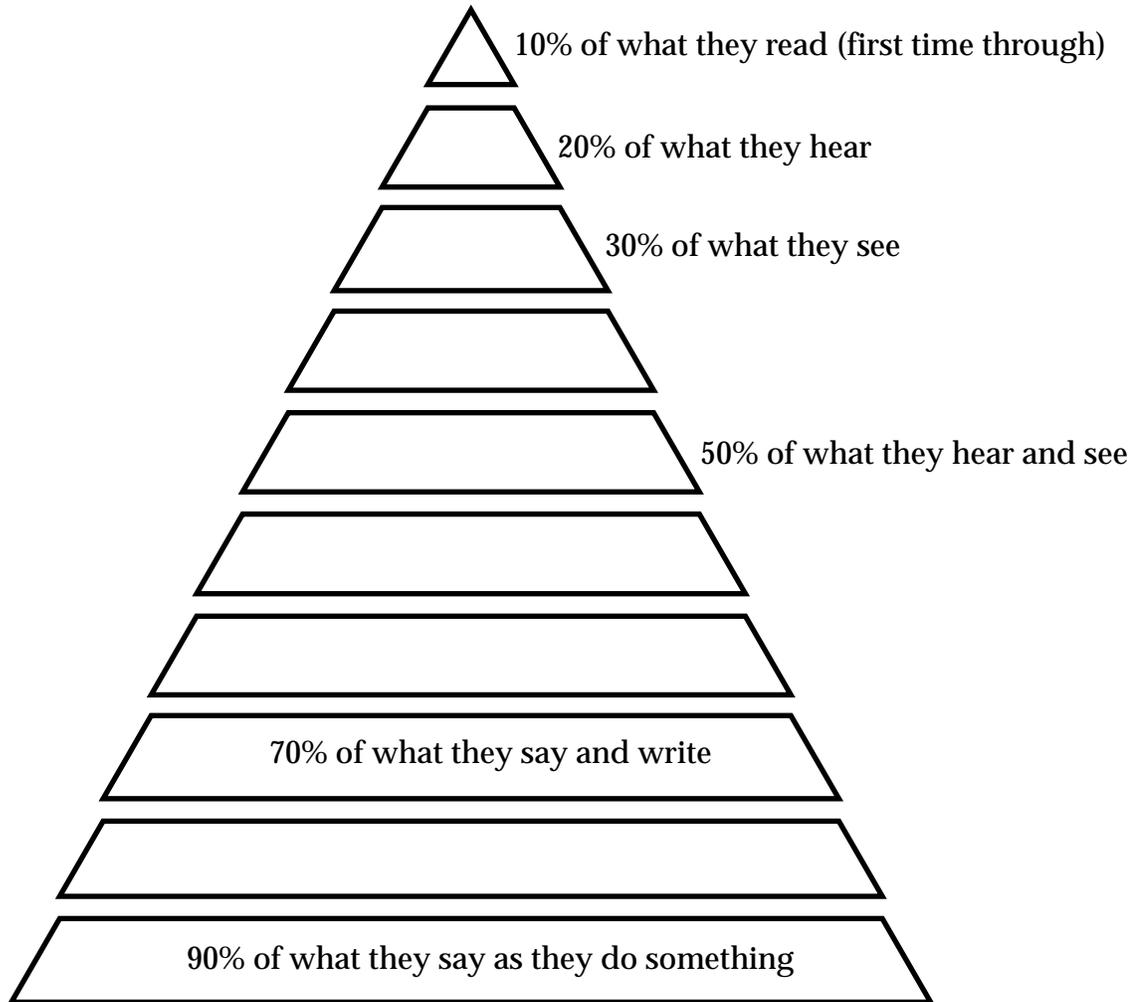
Please fill out the evaluation form on the next page and send it to us via post—or complete and send the electronic version (see website).

This is the form you'll be using for each of the modules. You may adapt it as desired for each module.

**A. Learning Pyramid**

Handout for Activity 1

**Most People Remember . . .**



Adapted from "Dales Learning Cone of Experience," Wiman and Mierhenry, *Educational Media*, Charles Merrill, 1969.

## B. What's in This Series

### Handout for Activity 2

#### *Module 1. How To Teach These Modules*

Learn the most effective ways to reach adult learners.

#### *Module 2. Introduction to IPM*

It helps to know the terminology—and the issues—before you attend a series of workshops on IPM. IPM isn't only about the farmer's pest triangle: bugs, weeds, and diseases. Any technique that promotes profit in the context of understanding environmental principles is fair game for IPM.

#### *Module 3. Principles of Scientific Sampling*

Treating for pests only if you have enough to cause damage is a core tenet of IPM. But how do we know when pest populations are too high? Unbiased scientific sampling provides you with accurate estimates.

#### *Module 4. What is a Threshold?*

Once again, treating for pests only if you've got enough of them to cause damage is a central tenet of IPM. But how much damage is too much? Thresholds define the point at which pests will cause a loss greater than the cost of controlling them.

#### *Module 5. Economic Implications of IPM*

Sampling and thresholds—how do they work together? And doesn't IPM "cost" something, too? What could this really mean for your ledger sheet? This module explores the economics of IPM.

#### *Module 6. IPM for Alfalfa Weevil*

Biological controls have worked well for alfalfa weevil—but farmers still need to know how to recognize the weevil so they can catch and treat it early, in certain years and in fields where it may cause a problem.

#### *Module 7. IPM for Corn Rootworm*

The western and the northern corn rootworms can seriously damage your crops damage before visible signs appear. Not only that—but you can't treat for rootworm till the following year. These factors make IPM a natural for corn rootworm control.

#### *Module 8. IPM for Potato Leafhopper in Alfalfa*

Potato leafhoppers usually won't bother your first stand of alfalfa. But it's the most damaging pest of second and third cuttings throughout much of the Northeast. And because vigor is lost before visible signs appear, sampling for early detection is crucial. Once symptoms appear, you can prevent further damage—but you can't recover what you've already lost.

#### *Module 9. Weed Identification in Corn: and other row crops*

Do you know for sure which annual weeds you have—and which cause the most yield loss in your fields? Can you treat weeds effectively if you're not sure what they all are? This session teaches you the easy way to talk the talk and walk the walk—to use the botanist's tools to identify any weed that comes your way.

#### *Module 10. Weed Management in Row Crops: application to corn production*

Not all weeds reduce yields equally, and not all fields are equally liable to revenue loss from weeds. Learn how to determine if weeds pose an economic threat, and examine the various ways to control them.

#### *Module 11. Manure as a Resource*

Restrictive legislation concerning manure management is here to stay. How can you best use manure to improve the fertility of your fields, while keeping it out of the watersheds? Learn about nutrient cycling and how to calculate the amount of available nitrogen—then use manure to replace expensive fertilizers.

#### *Module 12. Optimum Corn Seeding Rates and Hybrid Maturity Selection (2 Sessions)*

Understanding "yield potential" can help you reap the benefits of densely-planted stands, for silage and grain corn both. And learning how different hybrids respond to "Growing Degree Days" can help you choose a mix of varieties that helps you hedge your bets for high overall yields, season after season.

#### *Module 13. Boom Sprayer Calibration*

Is your equipment is working for you or against you? Environmental stewardship— and good economics, too—can be as basic as being sure that you're spreading chemicals where they should be, at the rate that's required.

#### *Module 14. IPM for Managing Barn Flies*

he cumulative effect of barn flies, along with other livestock pests, can reduce milk production and feed conversion efficiency--and the flies quickly become resistant to insecticides. Discover how a combination of cultural, biological, and chemical practices can keep fly populations to a minimum.

#### *Module 15. Designing In-field Demonstrations*

You can design demonstrations on your own fields that tell you how well your cropping practices work with different pest management techniques, new hybrids, etc. Find out how to achieve statistical validity without too much work.

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# Module Feedback

## How To Teach These Modules

Modify this standard evaluation form to fit the module.

**Tell us a little about yourself:**

<p><i>I m a</i></p> <ul style="list-style-type: none"> <li>◆ Farmer _____</li> <li>◆ Crop advisor _____</li> <li>◆ Industry rep _____</li> <li>◆ Extension educator _____</li> <li>◆ Other _____</li> </ul>	<p><i>My commodity area is:</i></p> <ul style="list-style-type: none"> <li>◆ Dairy and field crops _____</li> <li>◆ Vegetables _____</li> <li>◆ Fruits and berries _____</li> <li>◆ Greenhouse and nursery stock _____</li> <li>◆ Other _____</li> </ul>
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**Let us know what you think:**

<p>What part of the workshop was most interesting for you?</p>
<p>What part of the workshop was most valuable to you?</p>
<p>What two new ideas would you like to try on your farm or in your business?</p>
<p>Do you feel you understand IPM—and how to use it—better now?</p>
<p>What other information should be included in this module?</p>
<p>What other topics would you like us to cover in future modules?</p>

**Teachers, please fill out an evaluation as well. Photocopy and send all informative evaluations to:**

NE-IPM Modules, NYS IPM Program, Box 28 Kennedy Hall, Cornell University, Ithaca NY 14853