

IPM CURRICULUM FOR GARDENERS

LOW-RISK INTEGRATED PEST MANAGEMENT TRAINING

William and Jean Currie, International IPM Institute

INSTRUCTION UNITS IN THIS LESSON PLAN:

1. The IPM policy, what it does, what not to do, roles in policy implementation, how to activate pest management help, observation and reporting, expectations of Pest Management Technicians.
2. Personal, fiscal and community incentives; description of IPM process; description of other programs; opportunities and challenges.
3. Conditions that cause pests; making plants resistant to pests.
- 4-11. Natural enemies.
12. IPM for weeds and vertebrates.
13. IPM for insects and plant diseases.
14. Impact of landscape practices on structural pest problems.
Utilize IPM decision-making process to current problems:
15. Field assessment
16. Site-specific pest solutions.
17. Conclusion.

PERFORMANCE OBJECTIVES:

Unit #	Performance Objectives	Importance	Learning Difficulty
1	Know the IPM policy, understand roles in the policy, and know how to activate help to manage pests.	Very Important	Moderate
2	Convince stakeholders of benefits and incentives of IPM.	Very Important	Difficult
3-14	Provide stakeholders with technical information and resources to identify and evaluate pest problems.	Important	Moderate
15-17	Reinforce gained knowledge to effectively incorporate IPM into daily routine.	Very Important	Difficult

KEY:

IMPORTANCE:

Very important, important, not too important

PERFORMANCE OBJECTIVE:

Must know, be familiar, have knowledge, understand, perform, demonstrate, etc.

LEARNING DIFFICULTY:

Difficult, Moderate, Easy, Moderate to Very Difficult

GARDENER LESSON PLAN

PREPARATION DATE: April 21, 2008

PREPARED BY: William E. Currie

UNIT OF INSTRUCTION: Low-risk IPM Policy Implementation

TITLE OF LESSON: Policy, roles, pest management help, incentives and benefits of IPM.

INSTRUCTIONAL OBJECTIVE: Know the low-risk IPM policy, their role in implementation, and how to get pest management help. Convince stakeholders of benefits and incentives of IPM and encourage "buy-in."

TIME ALLOTTED FOR LESSON: 4 hours
METHOD OF INSTRUCTION: Lecture, PPT, guided discussion
INSTRUCTIONAL RESOURCES: Manual, PPT, slides, flip chart, handouts
A/V EQUIPMENT: PPT, slide projector, screen

GENERAL PRESENTATION PLAN: Introductions – our role – their charge. Why an IPM Policy? What it does, prohibited activities, their roles in implementation, how to get pest management help, expectations of Pest Management Technicians. Describe other IPM programs in school districts and municipalities. Give examples of IPM solutions in other schools; identify the challenges expressed by stakeholders and opportunities to overcome them.

INTRODUCTION: Names and roles of instructors, student introductions. Why are we here? Why an IPM policy? What's different? Implementation of the low-risk pest management policy.

EXPLANATION/APPLICATION/PRESENTATION:

1. The IPM policy, IPM defined, Precautionary Principle, approved list of products, notification, posting, emergency approval, training. General staff do not use pesticides (only licensed Pest Management Technicians). Staff roles, observation and reporting.
2. Warm up with a five (5) minute presentation designed to poke fun at our human efforts to manage pests, and to point out the habitat needs of pests.
3. Describe incentives:

Personal: Lower risk to self and students; better understanding of biological causes of pests and ability to solve problems; recognized by community as hero instead of goat.

Employment: Job easier if you can predict and prevent pest problems instead of reacting; better job security; greater advancement opportunities with training.

Community: Community recognition and appreciation for protecting their children.

District: IPM frequently reduces cost of materials, labor or liability. Results will be site specific, but since IPM is designed to solve problems, long-term result is often reduced time and cost.

4. Describe other programs:
Describe successes and challenges of other school districts, as well as municipalities with the goal of showing your district is not alone.
5. Description of the IPM process. Use examples of clover in a playing field to briefly demonstrate the IPM decision-making process.
6. Identify perceived challenges and barriers of stakeholders through guided discussions. Write barriers on flip chart and define what may be necessary to overcome the challenges. If time permits, identify opportunities and have stakeholders define paths to meet them.

7. Conditions that cause pests: Encourage students to think about the conditions that invite pests and that make plants prime to attack by pests. The “pathogen triangle” will be used as demonstration identifying the management options of environmental conditions; presence of pest and susceptibility of host as guidelines for information gathering and decision making.
8. Steps that may be taken to make plants resistant to pests will be discussed.
9. A brief PPT or slide show will be presented that demonstrates how similar sites may be managed in different ways that will invite or discourage pests, and to demonstrate how aesthetics of a site are subjective and only one criteria should be used in managing a site.

CONCLUSIONS/SUMMARY: Low-risk pest management requires dedication and may be tedious and time-consuming when performed correctly. A thorough understanding of why such procedures are so important frequently imparts a degree of significance to even the most mundane task. Stakeholders are leaders – the critical link to success. Adopting IPM will improve their jobs and advancement opportunities, and will increase community goodwill.

HOMEWORK ASSIGNMENT: List three (3) elements that would be part of the perfect pest management program.

GARDENER LESSON PLAN UNIT ONE

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Policy, Roles, How to Activate Pest Management Help
 UNIT OF INSTRUCTION: Unit 1: Lecture, PPT or Slides – 45 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Policy, history, implementation	Lecture	Easy
2	What's different, IPM definition, do's, precautionary principle, approved product list, notification, posting, emergency approval, training	Lecture	Moderate
3	Don'ts, only licensed PMTs apply pesticides, remove harborage (clutter), no ban, phase out pesticides over time	Lecture	Difficult
4	Roles, sanitation, no food, pest-proof food storage, eliminate clutter, observation and reporting, teach others	Lecture, Guided Discussion	Moderate
5	Reportable conditions, pest sighting, pest evidence, droppings, gnawings, webbing, fecal focal points, scattered trash, etc.	Lecture, Guided Discussion, Display	Difficult
6	Facilities Manager, point of contact, may examine situation, call to report, information directed to appropriate office	Lecture	Easy
7	Expectations, PMT responds, emergencies that day, rapid – others soon – thorough inspection and monitoring	Lecture, Demonstration (monitors – traps)	Easy
8	Low-risk pesticide application, follow-up, repair structural defects, prevent pest access	Lecture	Easy
9	Basics of IPM: exclusion, sanitation, habitat modification, inspection, monitoring, low-risk pesticides, records	Lecture	Moderate

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT TWO

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
SUBJECT MATTER: Incentives / Demonstration
UNIT OF INSTRUCTION: Unit 2: PPT, Lecture, Guided Discussion – 1.25 hours

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Introduction: Personal: Experience and role Introduction to IPM concepts in landscapes IPM is common sense, if you have information Understand habitat from a pest's view: air, water, food, shelter (light) – find the weak link.	Lecture, PPT or Slides	Easy
2	Benefits / Incentives of IPM Reduce risk, potential to save time and money, make community and employees proud.	Lecture, Guided Discussion	Easy`
3	Other districts: you are not alone. Problems and solutions.	Lecture, Guided Discussion	Easy
4	Examples of landscape IPM – clover in turf.	Lecture, Guided Discussion	Easy
5	Identify challenges. What are the challenges to this group? How to overcome challenges.	Lecture, Guided Discussion	Difficult
6	Homework: List the three (3) elements that make up a perfect pest management program.		

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT THREE

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Conditions that Cause Pests
 UNIT OF INSTRUCTION: Unit 3: Guided Discussion, Hands-on Demonstration – 2 hours

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Homework discussion: Survey students for components of ideal pest management program. How far off are we?	Guided Discussion	Easy
2	Conditions that cause pests: Environmental – temperature, humidity. Presence of pest – can we influence? Susceptibility of host – aphids to high nitrogen like teenagers to Burger King exhaust. Sunflower leaves after flowing – one plant hit in hedge.	PPT, Guided Discussion, Handouts	Easy
3	Making plants resistant to pests. Grouping plants by needs – hydro / solar / soil. Irrigation quality / quantity – water audit. Soil quality: content, compaction, drainage. Balancing nutrients: deficiencies / antagonisms – weeds as indicators.	Soil probe, pH paper, EC meter. Mason jar with soil sample. Soil analysis.	Moderate
4	Assessing aesthetics and cosmetic thresholds. A look at similar sites that are managed differently.	PPT or Slides	Easy
5	Homework: Identify two (2) areas where host plants consistently suffer. Examine the reasons why.		

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN

PREPARATION DATE:

PREPARED BY: William E. Currie

UNIT OF INSTRUCTION: Low-risk IPM Policy Implementation

TITLE OF LESSON: Natural Enemies for School Landscapes I

INSTRUCTIONAL OBJECTIVE: Gardeners will know how to implement the use of natural enemies in school landscapes.

TIME ALLOTTED FOR LESSON: 2 hours

METHOD OF INSTRUCTION: Lecture, PPT, guided discussion, demonstrations

INSTRUCTIONAL RESOURCES: Manual, PPT, slides, flip chart, handouts, microscope

A/V EQUIPMENT: PPT, slide projector, screen

GENERAL PLAN OF PRESENTATION: Provide technical and decision-making information to implement the use of natural enemies in school landscapes for pest management.

INTRODUCTION: Homework discussion. Why natural enemies? History of classical natural enemy use and augmentative releases – *Vidalia* beetle on cottony cushion scale and *Aphitus* on citrus red scale.

EXPLANATION/APPLICATION/PRESENTATION:

Pesticides are a key element in disrupting the natural balance between pests and their natural enemies. As active chemicals have an adverse effect on living organisms, especially natural enemies, this causes secondary pest outbreaks and resistance to develop in the target pest. Additionally, pesticides pose risks to other living organisms (including children and adults) and pollute our environment (organophosphates, carbamates, pyrethroids, insect growth regulators, etc.). Pyrethroids tend to create whitefly problems and insect growth regulators are having an adverse effect on the *Vidalia* beetle.

Conserve natural enemies by using non-disruptive practices. Timing of chemical fertilizer applications, pesticide use and watering practices can be scheduled to reduce or eliminate adverse effects on natural enemy populations.

Plant choices can encourage natural enemy populations by providing food sources (nectar, pollen) and harborage; i.e., vetch in pecans (not pecan aphid).

Know the behavior of natural enemies (*Geocoris* for pecan aphid) – PPT or slides.

Environment – micro-climate at introduction – humidity and temperature – morning and evening.

Presence of prey (pest) is important for the natural enemy – microscope.

Assessment – plant problems from insect pest feeding or impact creates symptoms.

Insect pest ID and relate to the appropriate natural enemy. Determine availability.

Soft-bodied pests, eggs, scales – match with natural enemy – timing important to match natural enemy to the stage of development of the pest; i.e. *Trichogramma* to host egg.

CONCLUSIONS/SUMMARY: Natural enemies will work to reduce pest insects to a low level if not adversely affected by pesticide use, improper timing of fertilizer application or other disruptions. Augmentative releases of natural enemies may be necessary. Conservation of natural enemies can be enhanced by selecting supportive plant material in the landscape.

HOMEWORK ASSIGNMENT: Carefully examine plant material this week for plant pests and natural enemies, and report what you have found. Collect some if you can.

GARDENER LESSON PLAN UNIT FOUR

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Introduction
 UNIT OF INSTRUCTION: Unit 4: Lecture, Guided Discussion, PPT – 20 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Homework discussion. Observation of conditions that make plants susceptible to pests.	Guided Discussion	Easy
2	Why natural enemies? Resistance and secondary pests. Safety. Long-term impact. Proactive tactic.	Lecture, Guided Discussion	Easy
3	History of <i>Vidalia</i> beetle and cottony cushion scale on citrus.	Lecture, PPT	Easy
4	History of <i>Aphitus</i> on citrus red scale.	Lecture, PPT	Easy

GARDENER LESSON PLAN UNIT FIVE

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Pesticide Affects Natural Enemy Balance
 UNIT OF INSTRUCTION: Unit 5: Lecture, Guided Discussion, PPT – 20 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Pesticides as active chemicals. Impact living organisms (organophosphates, carbamates, pyrethroids, insect growth regulators).	Lecture, Handouts	Easy
2	Natural enemy balance in nature: mites, fall webworm.	Lecture, PPT	Easy
3	Insect growth regulators on <i>Vidalia</i> beetle. Pyrethroids create whitefly problems.	Lecture, Guided Discussion	Easy

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT SIX

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Needs of Natural Enemies
 UNIT OF INSTRUCTION: Unit 6: Lecture, PPT, Demonstration – 20 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Conserve natural enemies by non-disruptive practices; i.e. fertilizers, timing. Pesticide use, watering practices.	Lecture, PPT, Demonstration	Easy to Moderate
2	Plant choices (encourage natural populations); food sources (nectar, pollen, harborage); alternate food sources (vetch and pecans – not pecan aphid).	Lecture, PPT, Demonstration	Moderate
3	Know behavior of natural enemies (Geocoris for pecan aphid).	Lecture, PPT, Demonstration	Difficult
4	Environment: micro-climate at introduction. Humidity and temperature – morning and evening.	Lecture, PPT, Demonstration	Easy
5	Presence of prey (pest).	Microscopes, video	Easy

GARDENER LESSON PLAN UNIT SEVEN

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Assessment to Determine Natural Enemy for the Pest
 UNIT OF INSTRUCTION: Unit 7: Lecture, PPT, Demonstration – 1 hour

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Assessment: plant problems from insect feeding or impact creates symptoms – example aphids.	Lecture, PPT, Hand Lenses	Moderate
2	Insect pest identification: relate to natural enemy – determine availability.	Lecture, PPT, Demonstration, Microscope, List of Resources	Moderate
3	Soft-bodied pests: eggs, scales. Match with natural enemy	Key of pests and natural enemies.	Moderate
4	Timing – stage of development of pest. Relate to natural enemy release – Trichogramma / host egg.	Lecture, PPT, Demonstration	Moderate
5	Homework assignment	Handout	Easy

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN

PREPARATION DATE:

PREPARED BY: William E. Currie

UNIT OF INSTRUCTION: Low-risk IPM Policy Implementation

TITLE OF LESSON: Natural Enemies for School Landscapes II

INSTRUCTIONAL OBJECTIVE: Gardeners will know how to implement the use of natural enemies in school landscapes.

TIME ALLOTTED FOR LESSON: 4 hours

METHOD OF INSTRUCTION: Lecture, guided discussion, PPT, demonstration

INSTRUCTIONAL RESOURCES: Manual, handouts, reference list, displays

A/V EQUIPMENT: Flip chart, PPT projector, flip chart, microscope

GENERAL PLAN OF PRESENTATION: Provide technical information and alternatives about specific pests indicated in previous class. Provide technical information and alternatives about impacts of landscape practices on other pest situations.

EXPLANATION/APPLICATION/PRESENTATION:

The biology, habitat needs and management options of weeds, vertebrates, insects and diseases will be discussed with the objective of demonstrating how to find information, what questions to ask, and how to evaluate management options.

Impacts of landscape practices on structural pest problems will be discussed, specifically addressing subterranean termites, rodents, birds, wood rot, mosquitoes and spiders.

CONCLUSIONS/SUMMARY: Most of the information needed to solve pest problems is in front of or nearby. A tremendous amount of resources are available, and more are coming every day. The leap is to apply this information into practice on your sites. This takes some courage and support from above.

GARDENER LESSON PLAN UNIT EIGHT

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Monitor – Benefit Analysis
 UNIT OF INSTRUCTION: Unit 8: Lecture, Guided Discussion, Demonstration – 30 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Discuss Homework	Guided Discussion	Easy
2	Monitoring: observations of presence or absence of pests and/or natural enemies.	Demonstration	Moderate
3	Determine ratio of natural enemies to pests in natural complex. Populations increase or decrease? New or established?	Lecture	Difficult
4	Plant value: location of plant, replacement costs, age.	Guided Discussion	Easy
5	No to low value = no action Moderate to high value = take action	Guided Discussion	Easy

GARDENER LESSON PLAN UNIT NINE

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Decision – No Action
 UNIT OF INSTRUCTION: Unit 9: Guided Discussion – 15-20 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Discussion to take no action Continue monitoring populations	Guided Discussion	Easy
2	Conserve and encourage natural enemies – no disruptions	Guided Discussion	Easy
3	Pesticides – fertilizers Other treatments that favor pest or discourage natural Enemies.	Guided Discussion	Easy

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT TEN

COURSE DESCRIPTION: Low-Risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Action Using Natural Enemies
 UNIT OF INSTRUCTION: Unit 10: Lecture, Guided Discussion, PPT, Demonstration – 50 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Identify appropriate natural enemy complex.	Lecture, PPT, Demonstration	Moderate
2	Determine reliable sources for pest-specific natural enemies.	Lecture, PPT, Demonstration	Moderate
3	Determine how many natural enemies are necessary – pest/natural enemy ratio and cost.	Lecture, PPT, Demonstration	Moderate
4	Supplier lead time? Order natural enemies for delivery date.	Lecture, PPT, Demonstration	Moderate
5	Prepare for shipment. Arrival – exactly when and where delivered (no shelf life)	Lecture, PPT, Demonstration	Moderate
6	Dispersal – planned to work schedule and stage of natural enemies.	Lecture, PPT, Demonstration	Moderate
7	Shipment inspection: inspect box for damage – on time – cool pack – QA program with supplier – what to expect.	Lecture, PPT, Demonstration	Moderate
8	Transport – protect living organisms – heat is a killer.	Lecture, PPT, Demonstration	Moderate
9	Releases (distribution) Labor - temperature Canopy - ants Record when, where and date	Lecture, PPT, Demonstration	Moderate

GARDENER LESSON PLAN UNIT ELEVEN

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: Natural Enemies – Determine Impact
 UNIT OF INSTRUCTION: Unit 11: Guided Discussion – 20 minutes

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Physical evidence of emergence (on cards).	Demonstration	Easy
2	Monitor pest population: increasing or declining – compare with previous monitoring.	Lecture, Demonstration, Handouts	Difficult
3	Monitor natural enemy populations. Continue monitoring or more natural enemy releases.	Lecture, Demonstration	Difficult

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN

PREPARATION DATE:

PREPARED BY: William E. Currie

UNIT OF INSTRUCTION: Low-risk IPM Policy Implementation

TITLE OF LESSON: IPM for weeds, vertebrates, insect and plant diseases, and the impact of landscape practices on structural pest problems.

INSTRUCTIONAL OBJECTIVE: Provide gardeners with technical information and resources to identify and evaluate current and potential pest problems.

TIME ALLOTTED FOR LESSON: 2 hours

METHOD OF INSTRUCTION: Lecture, guided discussion, PPT, demonstration

INSTRUCTIONAL RESOURCES: Manual, handouts, reference list, displays

A/V EQUIPMENT: Flip chart, PPT projector, flip chart, microscope

GENERAL PLAN OF PRESENTATION: Provide technical and decision-making information to implement the use of natural enemies in school landscapes for pest management.

INTRODUCTION: Homework review: What pests and/or natural enemies were observed? What plants were they found on? Was damage present? What type of natural enemy was present?

EXPLANATION/APPLICATION/PRESENTATION:

Monitoring: observing the presence or absence of pests and/or their natural enemies. How many of each? What damage is there?

Determine: ratio of natural enemies to pests in the natural complex. Are populations increasing or decreasing? Is it a new or established population?

What is the value of the plant? Where is it located? What are the replacement costs? Is the plant old or young?

Low value = no action (replacement?)

Moderate to high value = take action

If the decision is to take no action, then continue monitoring. Conserve and encourage natural enemies by eliminating disruptions.

If the decision is to take action, then identify appropriate natural enemy complex. Determine reliable sources for the pest-specific natural enemy. Determine how many natural enemies are needed; i.e. pest/natural enemy ratio and cost. Determine supplier lead time and order. Prepare for the shipment arrival – exactly when and where (no shelf life).

Dispersion of natural enemies must be planned around the work schedule and stage of natural enemy.

Shipment inspection: inspect carton for damage – on time – cool pack – QA program with supplier on what to expect.

Transport to site – protect the living organisms – heat can kill.

Releases (dispersion) – labor – temperature – canopy – ants, record when, where and date.

Physical evidence of emergence (on cards) – monitor pest population.

Increasing or decreasing? Compare with previous monitoring data. Monitor natural enemy population – release more natural enemies if necessary.

CONCLUSIONS/SUMMARY: Care in the selection, handling and release of natural enemies is essential in their use for managing pests. Augmentative use of natural enemies is a low-risk sustainable pest management approach.

HOMEWORK ASSIGNMENT: Be on the lookout for opportunities to use natural enemies to manage landscape pests.

GARDENER LESSON PLAN UNIT TWELVE

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: IPM for Weeds and Vertebrates
 UNIT OF INSTRUCTION: Unit 12: Lecture, Guided Discussion, Demonstration – 2 hours

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Homework discussion and review.	Guided Discussion	Moderate
2	Weeds – clover revisited. Identification: clover or medic – where to go What they tell us about the site – compaction, pH, nutrients, water Monitoring – transect, grid Thresholds – safety / economic / nuisance / aesthetic Control – habitat modification. What can we do to drive away or squeeze out weeds? Competition / exclusion / antagonism Mulch, weed mat, mowing, top seeding, soil conditions, competitive exclusion, etc. Control – physical (flame, steam, radiant heat, tilling, pre-plant cultivation, hoeing, weed whipping) Control – chemical. Policy and law restrictions, pros/cons, where appropriate, approved product list.	Guided Discussion, PPT, Handouts	Moderate
3	Vertebrates – ground squirrels Where to go – mounds, sighting, damage Habitat needs Monitoring – methods Thresholds – safety / economic / nuisance / aesthetic State parks = 20% impact on improvements Control – habitat modification. What can we do to drive away or squeeze out ground squirrels? Competition / exclusion / antagonism Control – physical Trapping – live, kill Control – chemical. Policy and law restrictions, pros/cons, where appropriate, materials list Monitoring to mitigate risk. Create steps to ground squirrel management program.	Guided Discussion, PPT, Handouts	Moderate
4	Homework Look for whitefly or disease activity on site Identify conditions of surrounding system (extent of pest, Different hosts, health of plant, use of plant).	Guided Discussion	Moderate

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT THIRTEEN

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: IPM for Insects and Diseases
 UNIT OF INSTRUCTION: Unit 13: Guided Discussion, PPT, Handouts – 1 hour

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Homework discussion – disease or whitefly activity.	Guided Discussion	Moderate
2	Insects – whitefly Identification – where to go Whitefly or mealybug? What they tell us about the host plant, site Monitoring – random, grid, season Thresholds – safety / economic / nuisance / aesthetic How many is too many? Control – habitat modification: light, air, plant health, impact of fertilizers Control – physical: pruning, barriers, water jet Control – chemical: policy and law restrictions, pros/cons, where appropriate, oils, pest defense against chemical controls Control – biological: Parasitoids – availability? Can we get a location as a release site?	Guided Discussion, PPT, Handouts	Moderate
3	Diseases – black sooty mold or mildew (determined by students) Identification – where to go What they tell us about the host plant and site Monitoring – what is the problem? Season. Thresholds – safety / economic / nuisance / aesthetic. How many is too many? What if no control? Control – habitat modification: light, air, plant health, impact of fertilizers Prune up skirts. Control – physical. Prune off pests, barriers, water jet Control – chemical: policy and law restrictions, pros/cons, where appropriate, soap, Cornell formula. Control – biological: Homoptera that are causing black sooty mold.	Guided Discussion, PPT, Handouts	Moderate

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT FOURTEEN

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: Impact of Landscape Practices on Structural Pest Problems
 UNIT OF INSTRUCTION: Unit 11: Guided Discussion, PPT, Handouts – 1 hour

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Impact of landscape on structural pests: Subterranean termites, rodents, birds, wood rot, mosquitoes, spiders.	Guided Discussion, PPT, Handouts	Moderate
2	Homework: Identify three (3) persistent pest problems for group solution.		

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN

PREPARATION DATE:

PREPARED BY: William E. Currie

UNIT OF INSTRUCTION: Low-risk IPM Policy Implementation

TITLE OF LESSON: Site Specific Exercises:
Field Assessment
Site Specific Pest Solutions
Conclusion

INSTRUCTIONAL OBJECTIVE: Reinforce gained knowledge to effectively incorporate IPM into daily routine.

TIME ALLOTTED FOR LESSON: 4 hours

METHOD OF INSTRUCTION: Lecture, guided discussion, PPT, demonstration

INSTRUCTIONAL RESOURCES: Manual, handouts, reference list, displays

A/V EQUIPMENT: Flip chart, PPT projector, flip chart, microscope

GENERAL PLAN OF PRESENTATION: Lead group through IPM decision-making process through a field assessment of current and potential pest problems; and by using site-specific pest cases as presented by the group.

EXPLANATION/APPLICATION/PRESENTATION:

Field assessment: Meet at an appropriate landscape site to reinforce the technical information presented previously in lecture. Identify current pest problems and landscape conditions that may contribute to pest problems in the future. Focus will be on foliage adjacent to buildings (rodents and spiders); nuisance bird habitat; trees in turf (mowing, watering and fertilizing problems); soil compaction and irrigation efficiency; and turf conditions.

Site specific pest solutions: Three site-specific pest problems as decided by the group will be addressed in detail, with the first observed while in the field during the previous exercise. This will give the students an opportunity to solve their own problems and develop guidelines for future management practices using the IPM decision-making process.

CONCLUSIONS/SUMMARY: Stress that the goal is to solve problems in order to reduce labor in the long run, and that the students have been practicing parts of IPM already. The next job is to take steps to make an effective and sustainable model program.

GARDENER LESSON PLAN UNIT FIFTEEN

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: Site Assessment
 UNIT OF INSTRUCTION: Unit 15: Guided Discussion – 1.25 hours

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Homework discussion Selection of persistent pest problems for group solution	Guided Discussion	Easy
2	Site assessment Evaluate site for current and likely pests of landscape and structures Foliage adjacent to buildings for rodents and spiders Nuisance bird habitat Trees in turf Soil compaction and irrigation Turf conditions		

GARDENER LESSON PLAN UNIT SIXTEEN A

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: Site
 UNIT OF INSTRUCTION: Unit 16A: Guided Discussion – 1.25 hours

CLASS TO BE HELD OUTDOORS AT PRE-SELECTED SITE

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Site specific pest solution #1 Apply IPM decision-making process to the selected situations, identifying information needed, resources, management options and preventive measures for future.	Guided Discussion, Reference List	Moderate

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
 METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion

GARDENER LESSON PLAN UNIT SIXTEEN B

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
 SUBJECT MATTER: Site Specific Pest Solutions #2 and #3
 UNIT OF INSTRUCTION: Unit 16B: Guided Discussion, Flip Chart, Reference Books – 1 hour

CLASS TO BE HELD OUTDOORS AT PRE-SELECTED SITE

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Site specific Pest Solution #2 Apply IPM decision-making process to the selected situations, identifying information needed, resources, management options and preventive measures for the future.	Guided Discussion, Flip Chart, Reference Books	Moderate
2	Site specific pest solution #3	Guided Discussion, Flip Chart, Reference Books	Moderate

GARDENER LESSON PLAN UNIT SEVENTEEN

COURSE DESCRIPTION: Low-risk Integrated Pest Management Implementation
SUBJECT MATTER: Conclusion
UNIT OF INSTRUCTION: Unit 17: Guided Discussion – 1 hour

INSTRUCTIONAL PROCEDURE:

No.	Instructional Sequence (Tasks)	Instruction Method (Performance)	Learning Difficulty
1	Training review, questions and answers Evaluations and Certificates	Guided Discussion, Handouts	Easy

INSTRUCTIONAL SEQUENCE: What comes first, chronological order
METHOD OF INSTRUCTION: Lecture, demonstration, performance, discussion