

1-week ENDURE course in IPM

Southern European (SE) and Central Eastern European (CEE) suggestions

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8.00-8.45	What is IPM?	Weed biology	Chemical control	Biological and microbial control of pests	Socioeconomic and environmental considerations of IPM
8.45-9.30	Indirect Plant Protection Methods	Monitoring and forecasting		SE:Semiochemical-based control of pests/ CEE: Non-chemical control methods and tools (resistant varieties, cultural practices)	IPM for a specific crop
9.45-10.30	Arthropod pest biology	Decision support systems and spatial distribution of pests			
10.30-11.15	Pathogen biology			Lunch	Lunch
11.30-12.15	Lunch	Lunch	Lunch	Lunch	Lunch
12.15-13.00	Arthropod pest identification	Weed identification	Application techniques	Identification of natural enemies and pathogen antagonists	Biological control in practice
13.00-13.45					
14.00-14.45	Pathogen identification	Decision support systems and spatial distribution of pests	Pest monitoring techniques	IPM-card game + intro to checklists	
14.45-15.30					

: Theoretical session

: Practical session/Group work

: Visits

Suggested content of the course

Monday:

Theme	Subjects to be covered
What is IPM?	<ul style="list-style-type: none"> • Concept of IPM • Focus on the strategy to apply pest control methods • Focus the introduction on the 8 principles in the EU framework directive on sustainable use of pesticides
Indirect Plant Protection Methods	<ul style="list-style-type: none"> • Present the different indirect plant protection methods: legal methods (quarantine), agronomic techniques (including crop rotation and ecological infrastructures), and plant resistance • Present the use of crop rotations to minimize the problems (and pesticide use) in the field. • Emphasize the importance of plant resistant to pathogens
Arthropod Pest biology	<ul style="list-style-type: none"> • Characteristics of arthropod pests in agriculture
Pathogen biology	<ul style="list-style-type: none"> • Characteristics of plant pathogens in agriculture
Arthropod Pest identification:	<ul style="list-style-type: none"> • If possible use well prepared individuals, as this much better shows the differences, alternatively use pictures
Pathogen identification:	<ul style="list-style-type: none"> • If possible use plants with symptoms, as this much better shows the differences, alternatively use pictures

Tuesday:

Theme	Subjects to be covered
Weed biology	<ul style="list-style-type: none"> • Information about weed biology focusing on the important differences between species, making them problematic
Monitoring and forecasting	<ul style="list-style-type: none"> • Present the background and potentials of performing monitoring and forecasting • Give examples of available methods and damage thresholds • Show how to do it in practice
Decision support systems and spatial distribution of pests	<ul style="list-style-type: none"> • Introduce the DSS concept, why is it a relevant method to reduce the pesticide input? • Give example of experimental results + results from “real life” • Give an overview of relevant available DSS (e.g. in Denmark Crop Protection Online should be presented) • Introduce the importance of spatial distribution of pests
Weed identification:	<ul style="list-style-type: none"> • If possible use live plants, as this much better shows the differences, alternatively use pictures
Decision support systems and spatial distribution of pests	<ul style="list-style-type: none"> • Let the participants experience/explore the available DSS-tools by themselves. • Give the participants relevant cases to solve using the DSS-tools • If possible, let the participants walk through a field and make a weed map. Alternatively use pictures

Wednesday:

Theme	Subjects to be covered
Chemical control	<ul style="list-style-type: none"> Principles of chemical control Pesticides available for pest control and their mode of action Pest resistance to pesticides Application techniques
Spraying technique:	<ul style="list-style-type: none"> Demonstration of various sprayer types Demonstration of various nozzle types. Perform sprayer calibration in a group Fill and clean a sprayer while focusing on minimization of risk of operator exposure and point source pollution
Pest monitoring techniques	<ul style="list-style-type: none"> Prepare field practical classes to practice the different pest (arthropod pests, pathogens and weeds) monitoring techniques

Thursday:

Theme	Subjects to be covered
Biological and microbial pest control	<ul style="list-style-type: none"> Principles of biological control Natural enemies and antagonists biology Principles of microbial control Examples
Semiochemical-based control of pests (SE) Non-chemical control methods and tools (resistant varieties, cultural practices) (CEE)	<p>SE:</p> <ul style="list-style-type: none"> Principles of semiochemical-based pest control Pheromones and other attractants Techniques: mating disruption, mass trapping, attract and kill, attract and sterilize Examples <p>CEE:</p> <ul style="list-style-type: none"> Resistant varieties Cultural practices Mechanical controls Examples
Identification of natural enemies and pathogen antagonists	<ul style="list-style-type: none"> If possible use well prepared individuals, as this much better shows the differences, alternatively use pictures
IPM card-game + intro to checklists:	<ul style="list-style-type: none"> Play the IPM card-game with the participants to conclude the work of the week and get a last discussion on the subject Distribute the checklists among the participants.

Friday:

Theme	Subjects to be covered
Socioeconomic and environmental considerations of IPM	<ul style="list-style-type: none">• Explain the Socioeconomic and environmental considerations of IPM
IPM farm management:	<ul style="list-style-type: none">• This is where the participants/teachers take the lessons learned during the week and put them into a whole farming system.• Select one the most important crop / farming system in the area• Present the most advanced IPM program for this crop
IPM in practice:	<ul style="list-style-type: none">• Make arrangement with a farmer using IPM based in biological / semiochemical control

