

TOOLS T 5	<h1 style="margin: 0;">Identification of natural enemies</h1>
	<h2 style="margin: 0;">Theoretical</h2>

Date (11/08/2010)

<p>WHAT IS...</p>	<p>Pests are species (in this sheet we are focusing on arthropod species) feeding on plants (herbivore species), while natural enemies (beneficial organisms) are species destroying these pests in agricultural fields.</p> <p>Natural enemies can be divided into two groups: predators and parasitoids. Predators (ladybirds, for example) are organisms that feed on the pest, while parasitoids (<i>Trichogramma</i> wasps, for example) are organisms that lives on or in the pest. Natural enemies are species which can hold the population of the pests under a threshold level. Due to this fact, support and conservation of natural enemies is a key point in Integrated Pest Management and, moreover, is part of Integrated Farming.</p> <p>Farmers should understand the role and lifecycle of natural enemies as a part of an IPM strategy. Moreover, farmers have to take into consideration biodiversity (pests, natural enemies) and number and role of different natural enemies while making decisions on further management options in the field. Decision making has to be made based on a sound understanding of the agro-ecosystem and based on the current situation in the field.</p>
<p>WHY</p>	<p>Natural enemies destroy pests and therefore decrease the damage caused by these pests. Most people can recognise only a few natural enemies. However, more than 1,000 species have been identified in agricultural fields and only a small percentage are pests. During the decision making process, farmers have to take into account the population level of natural enemies, and the impact of a given management option (insecticide application, for example) on the population level of natural enemies and pests. If insecticide application is unavoidable, insecticides have to be chosen after consideration of their impact on natural enemies and beneficial organisms (bees, for example).</p> <p>To be able to make a decision based on the current situation in the field farmers have to have the capacity to identify natural enemies and pests. Moreover, they must understand the relationship between these species and to take this into consideration during the decision making process.</p> <p>Learning to recognise and manage these natural enemies is a major focus of IPM training as it avoids their destruction through unnecessary applications of herbicides, insecticides and fungicides and allows them to work for the benefit of farmers.</p>
<p>HOW</p>	<p>Ideally, learning to identify natural enemies can be achieved through field visits, but in-hall training can also provide a good base for further learning. Meetings should include before and after discussions on natural enemies, since this is one key area for sound understanding and success. The methods listed below are ways of successfully teaching the identification of natural enemies to farmers.</p> <p><u>1. In-hall meetings</u></p> <p>A. Working with insect preparations</p> <p>▶ Identification of insects, using a guide for identification</p>

	<ul style="list-style-type: none"> ▶ Grouping of insects (beneficial organisms versus pests; Coleoptera versus Lepidoptera) using a guide for identification ▶ Microscope work with insects (to observe general differences in the morphology of pests and natural enemies) <p>B. Set up an insect zoo</p> <ul style="list-style-type: none"> ▶ Farmers can collect pests and beneficial organisms in the field. Putting these insects into jars or an insectarium, allows farmers to follow the behaviour of natural enemies and can help define the role of the species. <p><u>2. Field visits</u></p> <ul style="list-style-type: none"> ▶ Agro-ecosystem analyses by visual observation ▶ Collecting insects using different traps (pitfall traps, yellow sticky traps, etc) ▶ Net sweeping ▶ Collected insects can be observed, grouped and identified during in-hall meetings, or could be identified in the field by using guides and cards for identification of insect species.
<p>SOURCES</p>	<ul style="list-style-type: none"> ▶ You can search material on the ENDURE Information Centre. Use the keywords: measure / training materials / identification of beneficials. ▶ http://www.ipmnet.org/Pocket_guide_of_Natural_Enemies.pdf ▶ http://www.inhs.illinois.edu/chf/outreach/eduresources/good/quysframes.htm