


<b>TOOLS</b>  <b>T 6</b>	<h1>Use of Biological Control</h1>
	<b>Theoretical</b>

Date (29/07/2010)

<b>WHAT IS...</b>	<p>In its broader sense, biological control refers to the use of all kinds of natural enemies to maintain pest populations (animals, plant pathogens and weeds) below the economic injury level. In this sense, natural enemies include predators, parasitoids and parasites. Predators (ladybirds, phytoseids) are species which need to feed on more than one individual member of its prey to complete their development; both immature and adults are predators. The immature stages of parasitoids (parasitic wasps, tachinids) need to feed on only one individual of their host species to reach the adult stage; adults are free-living individuals. Parasites establish a continuous relation their hosts that produce negative effects on them, including death. They are microorganisms such as virus, bacteria and fungi, and animals, such as nematodes.</p> <p>Biological control can be used in several ways: importing and establishing exotic natural enemies (inoculation), rearing and releasing natural enemies (seasonal inoculation and inundation) or preserving naturally occurring species (conservation and augmentation). A special case are entomopathogenic microbes which can be used as microbial insecticides.</p>
<b>WHY</b>	<p>Biological control is one of the most important key elements of IPM, as it has no adverse effects on human health or pollution, and it might have only slight negative effects on the environment. Advisers and farmers must be very familiar with both the principles and implementation of biological controls.</p>
<b>HOW</b>	<p><b>1. In classroom sessions:</b></p> <ul style="list-style-type: none"> <li>▶ Explain the concept of biological control, and of each natural enemy type.</li> <li>▶ Explain the biological control techniques, illustrating them with examples from you own area, and with well known classical examples.</li> </ul> <p><b>2. During field visits:</b></p> <ul style="list-style-type: none"> <li>▶ It is not easy to observe biological control 'in action', but if possible select a field where natural enemies (mobile predators, parasitized pests) can be seen.</li> <li>▶ Plan a release of natural enemies in a classroom session, and then conduct this in the field.</li> <li>▶ Return at a later date to check the results of the release.</li> </ul>
<b>SOURCES</b>	<ul style="list-style-type: none"> <li>▶ The UC Interactive Tutorial for Biological Control of Insects and Mites <a href="http://www.ipm.ucdavis.edu/IPMPROJECT/cdroms.html">http://www.ipm.ucdavis.edu/IPMPROJECT/cdroms.html</a></li> <li>▶ Driesche, R.G. van; Bellows Jr., T.S. 1996. Biological Control. Chapman and Hall.</li> <li>▶ On the <a href="#">ENDURE website</a>:</li> </ul>

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|  | <ul style="list-style-type: none"><li>▶ <a href="#">In depth: Biological controls</a></li><li>▶ <a href="#">Easing the way for biological controls</a></li><li>▶ On the <a href="#">ENDURE Information Centre</a>:<br/>Keywords: Measure &gt; non-chemical control &gt; biological control<br/>Keywords: measure &gt; training material &gt; identification of beneficials</li></ul> |
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