



## Module Description

LLP ERASMUS INTENSIVE PROGRAMME

**Ecological production systems for environmental and human health (EPSSEN)**

**Module title:** Control of pests and diseases on organic plant production

**Name of university teacher:** Associate professor Eve Veromann

**Objectives of the module:** To give students an understanding of the principles of plant protection in organic farming, by using a system wide approach

**Module content:**

1. Preventive methods
  - 1.1. Conservation and enhancement of biodiversity in the agro ecosystem  
Functional agrobiodiversity, predators, parasitoids, antagonists
  - 1.2. Control of pests and diseases with cultural methods  
Choice of cultures, certified seeds, local varieties, optimal growth conditions, crop rotation, tillage methods, mulching, intercropping, trap-cropping
  - 1.3. Monitoring of pests and diseases
2. Direct control
  - 2.1. Physical-mechanical  
Direct removing, temperature
  - 2.2. Biological  
Natural enemies, antagonists, *Bacillus thuringiensis*, pheromones
  - 2.3. Chemical

**Learning outcomes and competences:**

Students equipped with knowledge and skills appropriate for plant protection in organic farming

**Recommended reading and useful links:**

<http://www.orgprints.org/>

<http://www.fibl.org/en.html>

[http://ec.europa.eu/agriculture/organic/splash\\_en](http://ec.europa.eu/agriculture/organic/splash_en)

<http://www.woof.org/>

<http://oneplan.org/Crop%5COrganicPestCtrl.asp>

<http://www.extension.org/pages/18904/pest-management-in-organic-farming-systems:-the-nop-standard>

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2. Endersby N.M., Morgan W.C. (1991) Alternatives to synthetic chemical insecticides for use in crucifer crops // Biol. Agricult. and Horticult., 8, 33–52.
3. Grundy, Dr Andrea (2006) [Using weeds to reduce pest insect numbers in organic vegetable crops - a desk study \(OF0329\)](#). Warwick HRI.
4. Hansen L.M., Lorentsen L. (2005) Intercropping of fabae beans (*Vicia fabae* L.) and spring barley (*Hordeum vulgare* L.) to reduce the incidence of the black bean aphid / Organic farming for a new millennium. NJF-seminar 369. NJF Report, 1, 193–196.
5. Hokkanen H. (1999) Biological and agrotechnical control of the rape blossom beetle *Meligethes aeneus* (Col., Nitid.) // Acta Entomologica Fennica 53, 25–29.
6. Kromp B. (1999) Carabid beetles in sustainable agriculture: a review on pest control efficacy, cultivation impacts and enhancement // Agric. Ecosyst. Environ., 74, 187–228.
7. Kühne S., Jahn M. (2002) Regulations on the use of plant protection and plant strengthening products in organic farming in Germany / Proc. 14<sup>th</sup> IFOAM Organic World Congress, 21-24 August, Victoria, Canada, 45 p.
8. Lucius, Tamm (2009) [Strategies to improve quality and safety and reduce cost of production in organic and low-input crop production systems.](#)
9. Navi S.S., Bandyopadhyay R., (2002) Biological control of fungal plant pathogens In. Waller, J.M., Lenne, J.M., Waller, S.J. (Eds.) Plant pathologist's pocketbook, P. 354-365.
10. Paulsen, H M; Schochow, M; Ulber, B; Kuhne, S and Rahmann, G (2006) [Mixed cropping systems for control of weeds and pests in organic oilseed crops.](#) In: Atkinson, C; Ball, B; Davies, D H K; Rees, R; Russell, G; Stockdale, E A; Watson, C A; Walker, R and Younie, D (Eds.) *Aspects of Applied Biology 79, What will organic farming deliver? COR 2006*, Association of Applied Biologists, pp. 215-219.
11. Perfecto, Ivette (2010) [The impact of agro-biodiversity and eco-system services in development or A new vision for a just, sustainable and productive agriculture.](#) Lecture at: Agro-biodiversity and Ecosystem services, Washington DC, USA, 16th Dec. 2010.
12. Pfiffner, L; Luka, H; Schlatter, C; Juen, A. and Traugott, M. (2009) [Impact of wildflower strips on biological control of cabbage lepidopterans.](#) *Agriculture, Ecosystems and Environment*, 129 (1-3), 310-314.
13. Theunissen J. (1994) Effects of intercropping on pest populations in vegetable crops // IOBC/WPRS Bulletin, 17,8, 153–158.
14. Theunissen J (1997) Application of intercropping in organic agriculture. *Entomological Research in Organic Agriculture* 12, 251–259.

### **Teaching methods:**

Lecture

