

Plant health care in organic farming systems

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Organic Farming Systems: A Holistic System Approach

What Does this Mean for the Sustainable Use of Pesticides?

- **The system approach for the use of inputs**

The **dependency** of „off farm inputs“ should be reduced as much as possible:

The aim is a **highly resilient** farming system

The Strategy for Plant Health Care in Organic Farming



Resilient System

**Functional
biodiversity**

**Agricultural
measures**

Inputs
e.g. plant protection products
Tillage
Input of energy



- Farming systems aim always to **reduce their dependency** of off farm inputs
- The intelligent **combination** of measures is **responsible for the efficacy of the strategy**

Biodiversity - an Essential Part of the Strategy for Plant Protection in Organic Farming



Enhancement of predators



Enhancement of functional diversity of soil microorganisms



Genetic diversity of varieties



Crop rotation and crop mixtures

Organic Farmers are pioneers in the development and the implementation in practice of measures for the enhancement of functional biodiversity.

Agricultural Measures to Reduce the Infestation Pressure of Pests and Diseases



- Crop rotation
- Green manure
- Use of less susceptible varieties adapted to the location
- Perennial crops: Removal of infested parts of the plant
- Intelligent soil management

Organic Farmers are pioneers in the development and the implementation in practice of agricultural measures to reduce the infestation pressure of pests and diseases.

Mechanical Measures for Weed Control



Tillage is not only weed control but also nitrogen mobilisation and water management



Organic Farmers are pioneers in the development and the implementation in practice of tillage systems for weed control.

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- **The system approach for the use of inputs**
The dependency of „off farm inputs“ should be reduced as much as possible:
The aim is a **highly resilient** farming system
- **The system approach for the precautionary risk management**
Use only substances already occurring in the natural system



Risk Evaluation of PPP for Organic Farming Systems

Our understanding of the complex interrelations in agroecosystems, the wider environment and human health can never be exhaustive

→ The first precautionary approach is a system approach

Organic farming rejects the **unpredictable risks** coming from the release into the environment

- of artificially designed molecules (e.g. “synthetic” pesticides)
- of artificially designed organisms (from genetic engineering)

Inputs are limited to substances that are already naturally occurring in the system:

“Natural or naturally derived substances” such as

- Simple mineral substances (Kaolin, Ferric phosphate, Quartz sand, sulphur, copper)
- Substances of plant origin (botanicals)
- Substances of animal origin (whey, pheromones)
- Microorganisms

→ The second precautionary approach follows the registration criteria

Predictable risks must be evaluated taking in consideration the existing natural background exposition.

Products for Plant Protection Based on Naturally Occurring Substances

- Improved traditional uses (Kaolin, Neem, Calcium hydroxide)
- New solutions (Codling moth Granulovirus, Pheromones ...)

There are still gaps in the strategy and new gaps are to be expected (climate change, new pests and diseases ...)

Needed for more resilience of the system:

- Further improvement of the traditional uses
 - New substances suitable for organic farming and specific enough to reduce infestations **without compromising the resilience of the system**
- Specific research and development in and for organic farming systems

Organic Farmers are pioneers in the development and the implementation in practice of such substances.

Registration of organic PPP in Reg. (EC) 1107/2009: Structural Challenge

Process designed for	Challenge for natural substances
Newly designed molecules. The Intellectual Property is „owned“ by one or more companies. Return of investment for investors in registration is expected.	The possibility for the protection of Intellectual Property is limited. Return of investment for investors in registration is not so much expected .
Usually high market potential – return of investment is expected	For selective substances the market potential is low, return of investment in the process that is still technically difficult is often not expected

→ No investment → No registration → Substance not available



First step: Art. 23 of Reg. 1107/2009: **Basic substances**

Users can apply for the registration of substances available at the market for other purposes

A special registration process adapted to natural substances must be developed and implemented

Registration of organic PPP in Reg. (EC) 1107/2009: Technical and Scientific Challenge

Process designed for	Challenge for natural substances
„Synthetic“ single molecules	Complex substances as plant extracts (botanicals) Living organisms as microorganisms
Molecules new in the environment	Existing natural background. The proposed use should be compared to the already existing exposition due to natural background and often also other uses.
Mainly one mode of action	Often the substances are „multiple actors“ , effects of direct plant protection, biostimulant, fertilizer etc combined
High efficacy	Efficacy often not 90 % but valuable parts of combination strategies!

First positive steps: Guidance Documents for different categories of natural substances
= small corrections of the process

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