

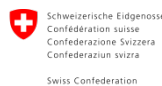


Presentation of ENDURE to Italian stakeholders

ENDURE tools

Silke Dachbrodt-Saaydeh
JKI, Germany

FOOD
QUALITY
AND
SAFETY



ENDURE TOOLS



FOOD QUALITY AND SAFETY

Research

The screenshot shows the 'ENDURE Virtual Lab' website. It features a header with the 'endure' logo and the tagline 'diversifying crop protection'. Below the header, there is a search bar and a navigation menu. The main content area is divided into several sections, including 'Welcome to the ENDURE Virtual Laboratory', 'Please leave a message in the Virtual Lab Guestbook', and a grid of links to various resources such as 'Laboratory analytical equipment', 'Reference collections of arthropods', 'Decision Support Systems', and 'Methods and Protocols'. There are also sections for 'EURO-wheat' and 'Survey on the use of disease thresholds'.

Extension and policy support


- ENDURE Information Centre
- ENDURE Networks of Experts



The screenshot shows the 'ENDURE Information Centre' website. It features a header with the 'endure' logo and the tagline 'diversifying crop protection'. Below the header, there is a search bar and a navigation menu. The main content area is divided into several sections, including 'Crop', 'Pest', 'Measure', and 'Region'. There is a list of reports with columns for 'Crop', 'Pest', 'Measure', 'Region', 'Title', and 'Language'. The reports include titles like 'Mechanical weed control in cereals and gr...', 'Herbicide-resistant black-grass: managing...', and 'Determine optimal time for spraying pests...'.

ENDURE tools for research



 **endure**[®]
diversifying crop protection

VIRTUAL LABORATORY

VL Home | Equipment | Collections | CE | Datasets | DSS | Sites | Knowledge | Labs | Methods | Platforms

You are here: [ENDURE](#) > [Virtual Lab V4](#) > [About the VL](#) > [Leave a message in the Guestbook](#) > [Resources Admin V4](#)

Experimental Field Sites [V4]

> [Field Sites](#) > [View Map](#) > [Browse sites](#) > [Sites admin \(private\)](#)



Dahnsdorf (BB)

**JKI Institute for Strategies and
Technology Assessment in Plant
Protection:** <http://www.jki.bund.de/>

Contact: bernd.hommel@jki.bund.de

Main Activities

Strategies to decrease the intensity of pesticide use: strategies in plant protection concerning appropriate dosages

Pedoclimatic Data

Sandy Loess. . The dominant soil type is loamy sand and the average soil characteristics are 579 g kg⁻¹ sand, 375 g kg⁻¹ silt, 46.0 g kg⁻¹ clay, 14.2 g kg⁻¹ organic matter, and a pH of 5.8.

Mean annual temperature: 8.5°C and mean annual rainfall: 526 mm with prolonged dry periods at the end of spring and early summer

Experiments in Progress

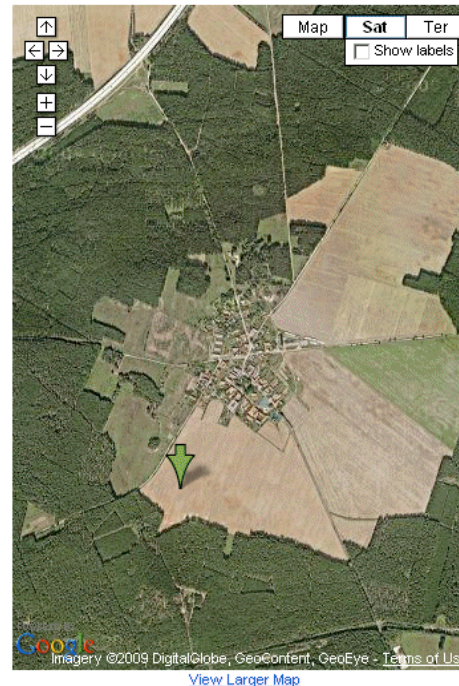
Long-term experiments to determine the minimum necessary PPP use

Crops Grown

Pea, Winter barley, Winter oilseed rape, Winter rye, Winter wheat

Weeds studied

Apera spica-venti, *Centaurea cyanus*, *Chenopodium album*,
Fagopyrum esculentum, *Matricaria*, *Viola arvensis*



- Drill down into the database
- Find species specific information (EPPO codes)
- Detailed information for sites
- Contact person, access to facilities, knowledge and expertise

Virtual Laboratory



FOOD QUALITY AND SAFETY



VIRTUAL LABORATORY



- VL Home
- Equipment
- Collections
- CE
- Datasets
- DSS
- Sites
- Knowledge
- Labs
- Methods
- Platforms



Experimental Sites

Sites for controlled and replicated field experiments



Laboratories

Laboratories for genomics, metabolomics and/or proteomics research



Research Platforms

Click to access Research Platforms

Research Platforms



ENDURE platforms



 **Virtual Laboratory**

<http://vl.endure-network.eu/v4/>

 **Platforms**

Weed Traits Database

EuResist

EuroWheat

WeedML and WTDB Working Group
Users and developers home page

Home Introduction
Introduction
We are an open research community dedicated to the scientific study of weeds through mathematical modeling and data-based analysis.

 **VIRTUAL LABORATORY**
diversifying crop protection

VL Home Equipment Collections CE Datasets DSS Sites Knowledge Labs Methods Platforms

You are here: ENDURE > Virtual Lab V4 > About the VL > Leave a message in the Guestbook > Resources Admin V4

EURResist: European Pesticide Resistance Platform

Home About EURResist News and Events Pest Species Resistance Action Committees Resistance Action Groups EPPO

EURO-wheat 
diversifying crop protection

Home Project information Pathogens Fungicides Decision support Public documents

24 April 2009

Welcome to EURO-wheat

EURO-wheat is an Internet based platform aiming at collating and displaying host - and pathogen characteristics, and pesticide efficacy on a European scale. Bringing together existing information from national programs and ensuring that these data are in a format, which can be readily understood trans-nationally, are expected to provide significant added value on a European scale. New disease - and resistance data will be published on the platform as soon as possible to support effective disease control, deployment of host resistances and breeding programs.

Present information available are:

- Virulences in the yellow rust population
- Effectiveness of fungicides ranked in different countries
- Fungicides international trade names
- Fungicide resistance as present in Europe
- Information on disease thresholds and DSSs used in Europe
- Cultural practices impact on disease development
- National documents on disease management
- Disease names in six different languages

EURO-wheat is funded by the ENDURE project and Aarhus University.

Contact

For further information, please contact:
Lise Nistrup Jørgensen, e-mail: LiseN.Jorgensen@agrsci.dk
Mogens S. Hovmøller, e-mail: Mogens.Hovmoller@agrsci.dk

Web site provided by Aarhus University, Faculty of Agricultural Sciences, Department of Agroecology and Environment.
Report technical problems to webmaster: [Poul Lassen](mailto:Poul.Lassen).
Optimized for screen size 1024x768

Comparison of Fungicide efficacy across countries

Find information on the efficacy of the most important compounds against cereal diseases across countries in Europe. [Read more ...](#)

In 2009, information will be provided on fungicide resistance cases in specific pathogens by country.

Yellow rust pathotypes in Europe

New data will be uploaded to the database each year and this will make it a powerful tool to survey ongoing population genetic changes and for analysing the mechanisms and rate of changes in EU metapopulation structures.

[Most important pathotypes in Europe 1993-2007 ...](#)

[Evolution of pathotypes over years and countries ...](#)

2nd Workshop



Participants at the 2nd EURO-wheat workshop at Julius Kühn Institute, Berlin, Germany, 11th-12th March 2009.

Survey on the use of disease thresholds

New guideline on monitoring of diseases in wheat and a survey on control thresholds used in different countries



[Read more ...](#)

EuroWheat platform



🌻 The EuroWheat platform

<http://www.eurowheat.org>

🌻 Informationen about
Fungal diseases
Resistance management
Control thresholds
Decision support systems

🌻 Target group
Scientists
Advisors

EURO-wheat

Home Project information Pathogens Fungicides Decision support Public documents

24 April 2009

Login

Login name:

Password:

Login

Forgot your password?

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Lise Nistrup Jørgensen, e-mail: LiseN.Jorgensen@agrsci.dk
Mogens S. Hovmøller, e-mail: Mogens.Hovmoller@agrsci.dk

Web site provided by Aarhus University, Faculty of Agricultural Sciences, Department of Agroecology and Environment.
Report technical problems to webmaster: [Poul.Lassen](mailto:Poul.Lassen@agrsci.dk).
Optimized for screen size 1024x768

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[Most important pathotypes in Europe 1993-2007...](#)

[Evolution of pathotypes over years and countries ...](#)

EuroWheat content



FOOD QUALITY AND SAFETY

Home Project information ▾ Pathogens ▾ Fungicides ▾ Cultivars ▾ Decision support ▾ Public documents Links Data collection ▾

Ranking of wheat cultivars for susceptibility to Fusarium

Select **1** to change information in the right hand info box

- 1** Most resistant cultivars
- 2** Medium susceptible cultivars
- 3** Most susceptible cultivars

Fusarium resistance - Components and ways of measuring the feature

Resistance of wheat to Fusarium head blight is a complex trait. Five resistance components have been characterized. Type I and Type II are the most common ways of measuring Fusarium resistance.

Type I: Resistance to initial infection. Assessed using spray inoculation of heads with *Fusarium* spores or spreading *Fusarium* infected debris (or grain) on the soil and evaluating of number of infected spikes.

Type II: Resistance to spread of *Fusarium* fungus within the spike. Assessed by point inoculation of a middle spikelet in the head and evaluating of extent of symptoms spread from inoculation point. Inoculation methods for type I are also widely applied.

Type III: Resistance to mycotoxins (deoxynivalenol, nivalenol) i.e. nonaccumulation or ability to degrade (or inactivate) mycotoxins. Evaluated by analysis of mycotoxin amount in grain using ELISA tests or chromatographic techniques.

Type IV: Resistance to kernel infection. Assessed by counting of proportion of kernels visibly damaged by *Fusarium* or analysis of ergosterol amount in grain or *Fusarium* DNA quantity in grain.

Type V: Tolerance to *Fusarium* i.e. tolerant cultivars has lower yield loss than intolerant at the same FHB severity level.

Different testing methods

The screening for susceptibility to *Fusarium* is done differently depending on the country

Country	Metode used for ranking
Denmark	A mixture of spores of <i>Fusarium culmorum</i> and <i>Fusarium graminearum</i> is applied 2-3 times during flowering with a density of 10-x 10 ⁶ spores pr ml. The degree of flowering is assessed for each variety at the time of inoculation.
Germany	For official ranking: Carrying out maize stubbles / residues of corn or silage maize in December with a density of 6-8 pieces per m ² ; For selection of entries: Spray inoculation of conidia with a mixture of <i>Fusarium culmorum</i> / <i>Fusarium graminearum</i> 3-4 times during flowering with a density of 100.000 conidia / ml
Poland	Mixture of <i>F. culmorum</i> isolates is applied 2-3 times during flowering by spraying of heads with a spore suspension of density 5 x 10 ⁵ pr ml.
France	Maize stubbles are spread out on the plots in December. Plots are daily watered by using sprinkler from 15 days before flowering up to 30 days after flowering.
UK	An equal mix of <i>F. culmorum</i> and <i>F. graminearum</i> spores at 2.5x10 ⁵ spore ml ⁻¹ are spray inoculated onto the ears. The varieties are sown in three beds (with 3 reps in each bed) and the date when each variety flowers is noted. The beds are inoculated at three time points; early, mid and late. Each bed receives one spray inoculation. Only varieties that are in flower when the bed is inoculated are included in the data analysis.

List of cultivars in selected countries

Most resistant cultivars

- Skalmjeje, Asano, Naturastar, Olivin, Skagen, Petrus (resistant standard cultivar)
- Panorama, Ketchum, Claire, Istabraq
- Apache, Graindor, Galibier, Hymack, Ephoros, Hysun
- Akkratos; Astardo, Aszita, Atlantis, Batis, Bussard, Butaro, Discus, Enorm, Esket, Hermann, Impression, Lahertis, Lucius, Magister, Meteor, Mythos, Naturastar, Pamier, Petrus, Skalmjeje, Sobi, Sokrates, Solitär, SW Maxi, Toras
- Anthus, Dorota, Finezja, Fregata, Hermann*, Legenda, Mewa, Muza, Nutka, Olivin, Petrus*, Skalmjeje*, Smuga, Solitär*, Turnia, TonačiaEnorm*

Sources:

Mesterhazy A. 1995. Types and components of resistance to Fusarium head blight of wheat. Plant Breeding 114: 377-386.

Mesterhazy A. Bartok T., Mirocha C.G., Komoroczy R. 1999. Nature of wheat resistance to Fusarium head blight and the role of deoxynivalenol for breeding. Plant Breeding 118: 97-110.

Miedaner T. 1997. Breeding wheat and rye for resistance to Fusarium diseases. Plant Breeding 116: 201-220.

Miller J.D., Young J.C., Sampson D.R. 1985. Deoxynivalenol and FHB resistance in spring cereals. Phytopath 71: 248-256.

Schroeder H.W., Christensen J.J. 1963. Factors affecting resistance of wheat to scab caused by Gibberella zeae. Phytopathology 53: 831-838.

- Fungicides efficacy, resistance, tradenames
- Yellow rust pathotypes, distribution across years and countries
- Fusarium risk and cultivar ranking

EuroWheat IPM element



EuroWheat

Home Project information Pathogens Fungicides Cultivars Decision support Public documents Links Data collection

Cultural Practices



Non-chemical control of wheat diseases

Select to change information in the right hand info box

- Eyespot
- Yellow rust
- Brown rust
- Powdery mildew
- Septoria leaf blotch
- Tan spot
- Fusarium species
- Take-all

Integrated pest management (IPM) are closely linked to adaptation of cultural methods. This practise is often regarded as a sustainable and more environmentally friendly method. Application of IPM can help to minimize the need for application of fungicides. IPM principles have been defined and promoted by several organisation like IOBC and FAO.

In relation to minimizing disease risk the following elements are known to be of major importance:

- Diversification of crop rotations.
- Use of resistant cultivars and/or variety mixture.
- Removal of debris.
- Reduced use of nitrogen.
- Optimal sowing conditions and timing.

Important links

HGCA:

[The Encyclopaedia of Cereal Diseases](#)

[Wheat Disease Encyclopaedia](#)

References

To find references indicated in the hard brackets, please select the Help Icon in upper right corner.

Cultural practices impact on disease development



Fusarium Head Blight (*Fusarium spp*)
[HGCA photos](#)

Resistance genes	Varieties with good resistance are known, and may help to reduce disease levels. Several non-specific genes are used and described e.g. Fhb1 from Chinese spring wheat. Different types of resistance are described: Resistance to initial infection (type I), resistance to pathogen (type II), ability to degrade mycotoxins (type III and IV), or resistance to grain infection (type V). Tall cultivars are often seen to be less susceptible (longer distance for inoculum to spread). Compact heads are known to increase the risk of attack. Open flowering increase the risk of infection. [1,7,8,22,32,36,41]
Previous crop	Maize as previous crop has been found to increase the risk of fusarium head blight. Wheat has also been found to potentially increase the risk in some regions. [14,36]
Sowing date	Not found to be of specific importance
Tillage	Ploughing decreases the risk by removing inoculum. Minimal tillage significantly increases the risk when wheat follows maize or wheat. [3,31]
Debris	Crop debris on the surface increases the risk of disease development. [3,27,36,39,42]
Nitrogen amounts	Literature describes the risk to increase following high N -levels. Practical importance unclear. [10,21,29]
Nitrogen strategy	No information available.
Crop density/Row spacing	No information available.
Landscape	No information available.
Soil type	No information available.
Weather	Wet and humid conditions during heading and flowering stimulate attack (GS 51-69). [36,42]
New text will come	

- Control thresholds used in different countries
- Cultural practices impact on disease development

ENDURE Tools for extension



- ✿ ENDURE Information Centre
<http://eic.endure-network.eu:8080/webui/search.xhtml>

- ✿ Target group
advisors,
extension service

	Title	Language			
<input type="checkbox"/>	harrowing	NL	Mechanical weed control in cereals and gr ...		
<input type="checkbox"/>	Wheat	Monocotyl ...	preventiv ... UK	Herbicide-resistant black-grass: managing ...	
<input type="checkbox"/>	Wheat	Weed Plants	weed control	NL	Blackgrass in winter wheat: control and r ...
<input type="checkbox"/>	Wheat	Weed Plants	pesticide ...	NL	Determine optimal time for spraying pesti ...

ENDURE Information Centre



- ✿ Extending expert knowledge, recommendations on IPM and non chemical alternatives in Europe
- ✿ Linking between crop protection advisors and researchers in Europe
- ✿ Research delivers content to extension and farmers
aiming to result in less input and less dependency on chemical inputs
- ✿ Sources: Endure and national sources

EIC Search



FOOD QUALITY AND SAFETY



ENDURE INFORMATION CENTRE

English | German | French | Spanish | Dutch | Danish | Polish

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CEREALS / PEAS ASSOCIATIONS IN ORGANIC AGRICULTURE

summarized by Philippe Delval

last update: 5/4/09

This leaflet shows the advantages of this association and gives all the technical information to cultivate it.

Cereals / Cereals (YCERE)
 Field pea / *Pisum sativum arvense* (PIBSA)
 Weed Plants / Weed Plants (TTTTT)
 Fungi / Fungi (IFUNGK)

[preventive measures / preventive measures](#)



[Interests of the associations](#)

There are several agronomical advantages:

- competition against weeds with fast cover of the soil and better soil resources use;
- less needs for nitrogen fertilization;
- better resistance to diseases: physical barrier, less density, stimulation of plant natural defence mechanisms;
- better resistance to lodging but with a low peas density;
- improvement of the soil structure with the large and varied roots biomass;
- yields are regulars every years.

Associations with triticale and peas gives rearing feeds with energy and proteins.

The associations are more for self-consumption.

When you want to sell the different species, prefer to cultivate only two crops into the association.

[The choice of species and varieties](#)

The choice depends on:

- precocity of the species and the varieties with the same period for maturity;
- soil type: prefer barley in calcareous and deep soils and rye in acid and superficial soils;
- diseases resistance;
- lodging resistance for cereals to give the role of stake;
- the capacity to cover the soil

Table 2 shows the better cereal varieties for the associations

Table 3 shows the density (in kg/ha) of different associations in varied areas in France:

French name	English translation
Triticale	Triticale
Avoine	Oat
Blé	Wheat
Orge	Barley
Seigle	Rye
Épeautre	Spelt
Pois fourrager	Grain peas

The sowing is between mid-September and mid-November depending on areas. In early sowings, you have to reduce the quantity of peas. With later sowing, the risk is to reduce the number of peas and to alter the maturity at the harvest.

You have to mix the seeds into the drilling machine and verify to get an homogeneous distribution.

The depth of sowing is 3 to 4 cm.

For organic sowing is 4 to 4 cm.

[Weed control](#)

Mechanical weed control is not necessary but sometimes you could make a stale seed bed preparation with a work of flex tine harrow before emergence of the crops.

[Harvest](#)

Harvest when the cereal is at right maturity

Yields are between 3 and 6 T/Ma

[Documents](#)

	Author	Year	Title
1	Various	2003	CEREALS / PEAS ASSOCIATIONS IN ORGANIC AGRICULTURE

Back

Wheat Fungi disease r ...

Using Cultivar Resistance to Reduce Fungi ...

Add to Bookmarks

Cereals Weed Plants preventive ...

CEREALS / PEAS ASSOCIATIONS IN ORGANIC AG ...

Add to Bookmarks

- Search crop-pest/disease-combination and region
- Results best available IPM practices across different regions in Europe



Scientific support to policies



- 🌿 **Facilitating exchange across EU**
- 🌿 **Creating a dialogue between policy makers and researchers**

European policy seminar

SUSTAINABLE AGRICULTURE AND PESTICIDES: What is at stake? What are the options?

"The Role of Governance and Actor Networks in Mainstreaming IPM"

PARIS

25 - 26 November 2008



ENDURE Website



Website <http://www.endure-network.eu/>

ENDURE NETWORK - Information for... - Mozilla Firefox

http://www.endure-network.eu/

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diversifying crop protection

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Information for... What is ENDURE? About crop protection ENDURE publications All the news

You are here : [Home](#) > [Information for...](#) > [Policy makers](#)

Information particularly relevant for: Policy makers

ENDURE has a team devoted to establishing the network as a source of scientific support within the policy making process regarding the implementation of IPM on a European scale. In these pages you will find useful material from research in both natural and social and human sciences relevant to IPM implementation:

ENDURE's position on European pesticide policy
The strict stand taken by the European Union on pesticide legislation calls for a parallel, sustained and equally determined action to promote the design and implementation of new solutions in order to develop Integrated Pest Management schemes that contribute to sustainable development while preserving the competitiveness of European agriculture. [Read article](#).

Report: Paris European policy seminar
More than 230 people including politicians, scientists and farmers attended the November 2008 Paris policy seminar sponsored by the French presidency of the European Union with scientific backing from ENDURE. [Read article](#).

National policy documents
A range of documents useful for those involved in the policy making process has now been added to the ENDURE website. The selection currently includes documents relating to National Action Plans and pesticide reduction plans, plus review papers. [Go to documents](#).

Information for...
Scientists
Advisers and extension services
Policy makers
Students
Partners outside Europe
Journalists
General public



Thank you for your attention.

Silke Dachbrodt-Saaydeh, JKI

