„11th European Fusarium Seminar – Fusarium – Mycotoxins, Taxonomy, Pathogenicity and Host Resistance"

IV. Multiannual program for 2008 – 2013 to support transfer of knowledge, innovation and technology to agri-sector.

Title: Improvement of arable crops for sustainable agroekosysytems, high quality of food,feed and plant production for none-food uses.

IHAR

„Gene Bank" - collection & preservation in viable state genetic resources (biodiversity) of plants and their pathogens for breeding and research purposes, cd..

- conservation, elaboration, release and use of biological diversity for research and plant breeding purposes.

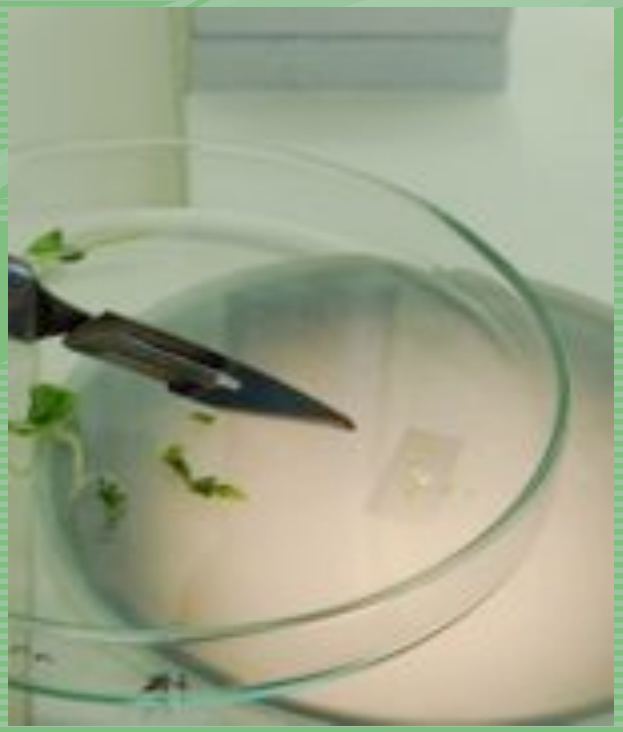
Collection of genetic material of cultivated species and their wild relatives during country expeditions.

Collection of grass species at IHAR Botanical Garden in Bydgoszcz

Restitution and regeneration of seed production of marginal grass species and their reintroduction into natural habitats to preserve biodiversity of green lands.

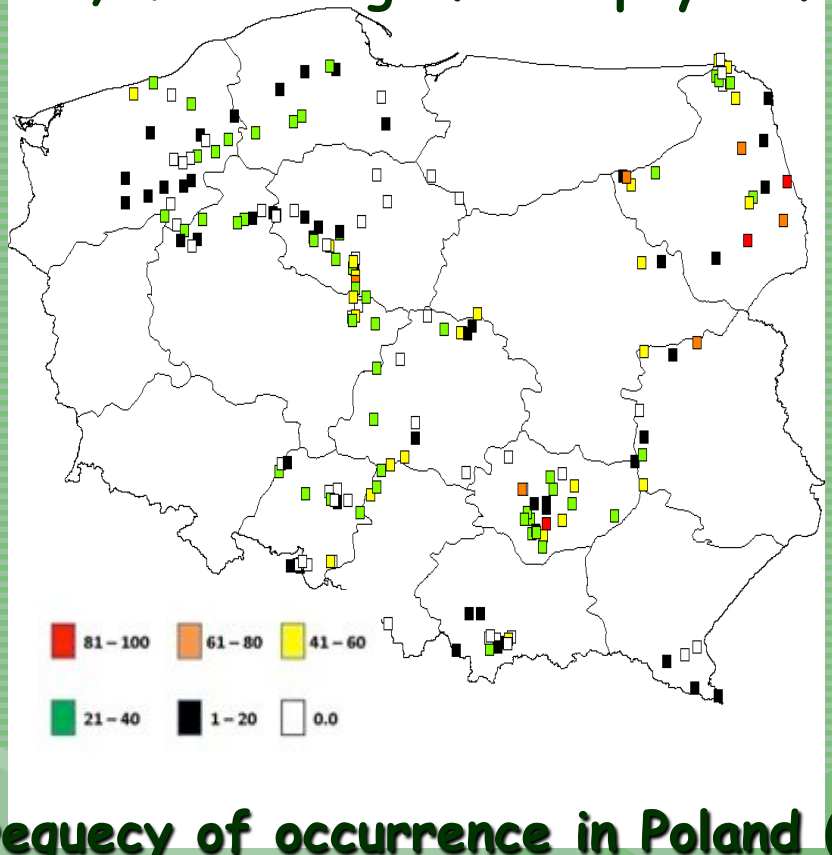
Zakład Traw, Roślin Motylkowatych i Energetycznych

Use of cryopreservation methodology for *in vitro* collection of plant genotypes and isolates of pathogens, e.g. *P.infestans*

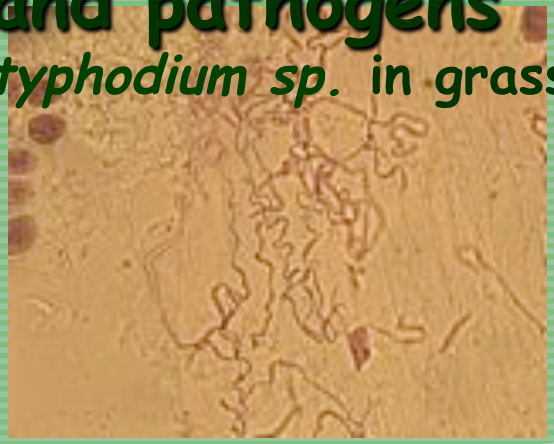


Monitoring of plant pests and pathogens

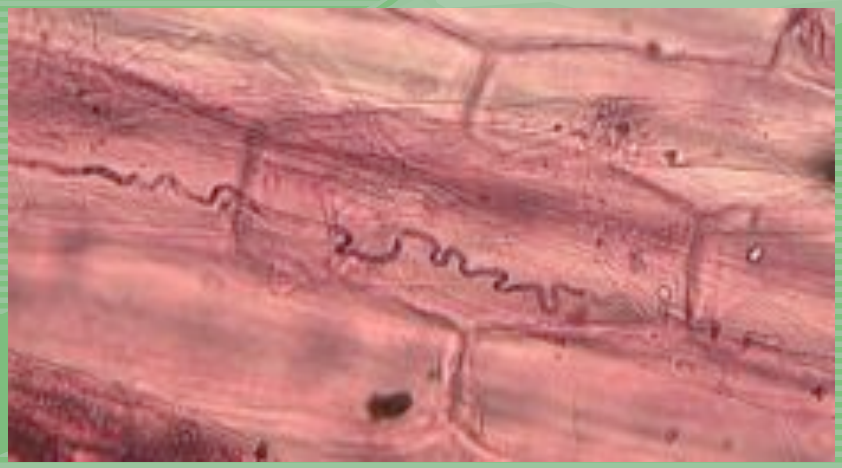
(here, monitoring of endophytic fungi *Neotyphodium sp.* in grasses)



Frequecy of occurrence in Poland (%)



Mycelium in seeds



Mycelium in plant tissue

Found often in plant and seed tissues. *Neotyphodium spp.* produce zootoxic alkaloids ergovaline and lolitrem B.

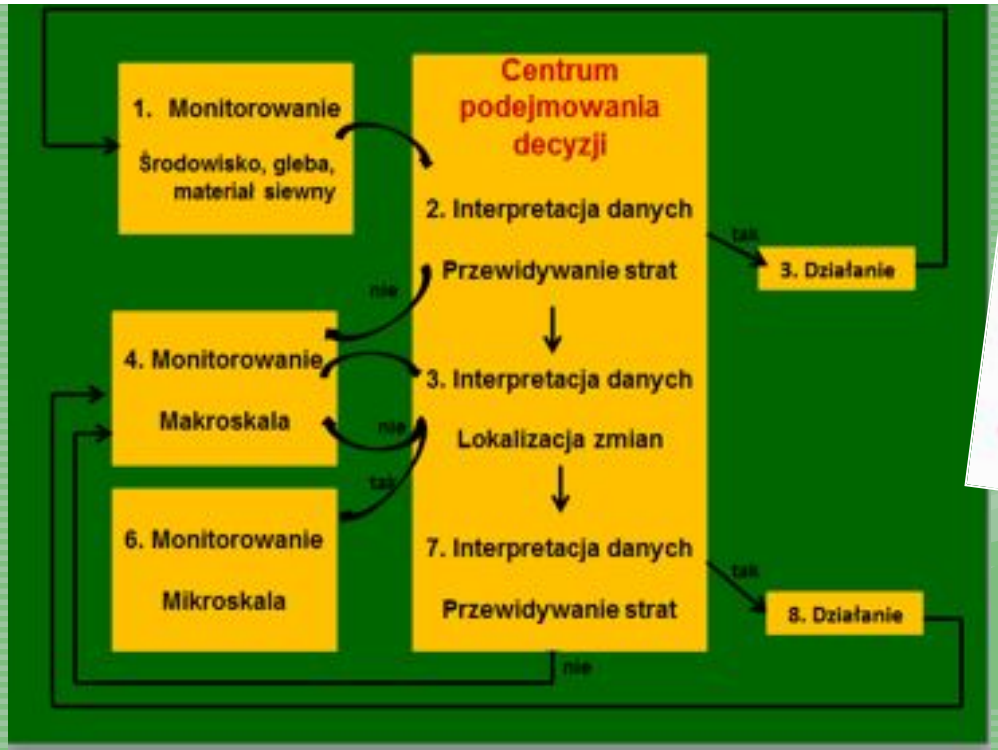
EUCARPIA Multisite Rust Evaluation Trail

European Research Area or Epidemiological Research Area

spores of rusts and mildews carrying resistance to pesticides blown eastward

Source: Elżbieta Czembor, IHAR-PIB Radzików

Model of Maize Integrated System



Source: Elżbieta Czembor, IHAR-PIB Radzików

International cooperation

5. Framework Programme of EU

1. CICSA, Crop Improvement Centre for Sustainable, kontrakt: QLK5-CT-2002-30377.
2. EUCABLIGHT „Potato Late Blight Network for Europe", kontrakt QLK5-CT-2002-00971,
3. GENE SILENCING, Improvement of transgene expression and gene silencing in transgenic plants, kontrakt: QLRT-2001-02790
4. DECOP "Development of a new continuous fully automatic potato sorter system"
5. FertOrgaNic „Improved organic fertilizer management for high nitrogen and water use efficiency and reduced pollution in crop systems"
6. PGR Forum, European Crop Wild Relative Assessment and Conservation Forum, kontrakt: QLK5-CT-2002.
7. GMP-Network, Geneticaly Modified Plants-Network, kontrakt: HPRP-CT-1999-00010.

6. Framework Programme of EU

1. SAFE FOODS „Promoting Food Safety through a Integrated Risk Analysis Approach for Foods"
2. SIGMEA „Sustainable Introduction of GMOs into European Agriculture"
3. Grain Legumes „New Strategies to Improve Grain Legumes for Food and Feed"
4. HEALTHGRAIN „Exploiting bioactivity of European cereal grains for improved nutrition and health benefits"
5. ResistVir „Co-ordination of research on genetic resistance to control plant pathogenic viruses and their vectors in European crops"
6. BIOEXPLOIT „Exploitation of natural plant biodiversity for the pesticide-free production of food"
7. ENDURE „European Network for the Durable Exploitation of crop protection strategies".
8. AGRI GEN RES „*Avena* genetic resources for quality in human consumption (AVEQ)". Zasoby genowe *Avena* dla jakości w żywieniu człowieka.

ENDURE „European Network for the Durable Exploitation of crop protection strategies”.

Europejska Sieć Naukowa korzystania ze strategii ochrony roślin.

ENDURE assembled consortium partners with internationally-recognised expertise and excellence in areas of agronomy, plant genomics and breeding, cultivar resistance, pesticide resistance, weed biology/ecology, biological control, epidemiology and population dynamics, information and communication technology, decision support systems, social sciences, advisors and extension services.

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DIAS (Denmark)
FAL (Switzerland)
IBMA (International)
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IHAR (Poland)
SSSUP (Italy)
SZIE (Hungary)
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ENDURE

European Network for the Durable Exploitation of crop protection strategies

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- SSSUP - IT
- SZIE - HU
- UdL - ES

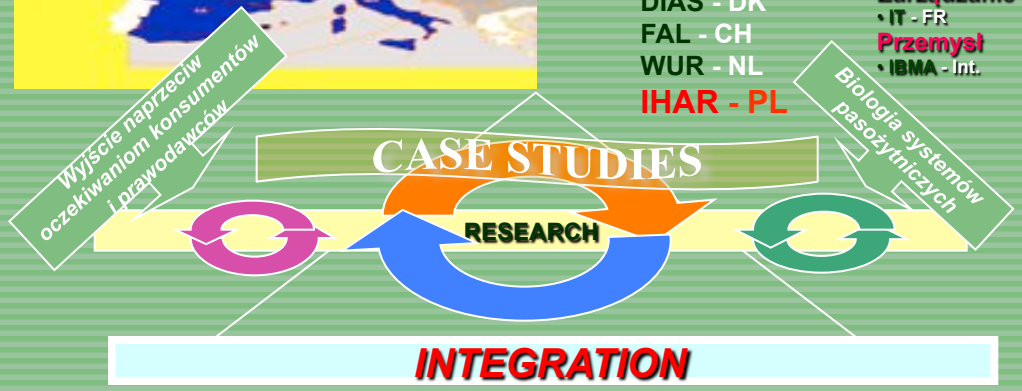
Rozszerzenie
- DIAS - DK
- ACTA - FR

Zarządzanie
- IT - FR

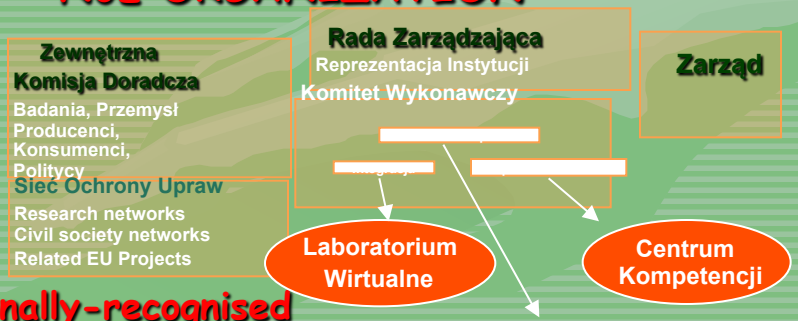
Przemysł
- IBMA - Int.

PARTICIPANTS IHAR

- Prof. dr hab. Edward Arseniuk
- Doc. dr hab. Jerzy H. Czembor
- Dr Elżbieta Kochańska-Czembor
- Dr Paweł Czembor
- Dr Denise Fu Dostatny
- Dr Renata Lebecka
- Dr Tomasz Góral



NoE ORGANIZATION



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Badania szczegółowe biologii systemów szkodników mające na celu redukcję i optymalizację zużycia chemicznych środków ochrony roślin






Examples of IHAR collaborative research done with ENDURE partners

From Science to field
Maize Case Study – Guide Number 3

Prevention of ear rots due to *Fusarium* spp. on maize and mycotoxin accumulation

Elzbieta Czembor, Plant Breeding and Acclimatization Institute, Radzikow, Poland; Jozef Adamczyk, Plant Breeding Smolice Ltd., Kobylin, Poland; Katalin Posta, Plant Protection Institute, Szent István University, Gödöllö, Hungary; Elisabeth Oldenburg, Julius Kühn Institute, Braunschweig, Germany; Stephanie Schürch, Agroscope ACW Changins-Wädenswil, Switzerland

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Food Quality and Safety
6TH FRAMEWORK PROGRAMME

Examples of IHAR collaborative research done with ENDURE partners

Below: Red ear rot infection starts at the tip of the ear, just after female flowering. © Elzbieta Czembor, IHAR, Poland. Right: Evidence of European corn borer activity and subsequent symptoms of pink ear rot. © Stephanie Schürch, Agroscope ACW Changins-Wädenswil, Switzerland.

Examples of IHAR collaborative research done with ENDURE partners

Despite fungicide treatments maize ears remain vulnerable to disease.

Above: Despite fungicide treatments maize ears remain vulnerable to disease. © Elzbieta Czembor, IHAR, Poland. Below: European corn borer larvae not only cause physical damage to stalks and ears, but promote infections by Fusarium spp. © Gabriela Brändle, Agroscope ART, Switzerland.

European corn borer larvae cause physical damage and Fusarium spp infections

Examples of IHAR collaborative research done with ENDURE partners

Summary

Growing cultivars with good resistance to major diseases in winter wheat is a major factor for reducing disease problems in the crop. The benefits of growing resistant cultivars are significant and are very important in reducing the dependence on fungicides in an integrated pest management (IPM) strategy. In a specific season the number of fungicide treatments can be reduced by one or two and doses applied can be reduced by between 25 and 50% depending on the severity and level of resistance in the cultivar.

Control of disease using resistant cultivars can provide savings in the range of €20/ha compared to the cost of controlling diseases in susceptible cultivars. Farmers also gain more flexibility with respect to timing and choice of dose if they choose the most resistant cultivars. Resistant cultivars will, however, not solve all problems, as the stability of resistance genes changes gradually over time.

There is major scope for better exploitation of genetic resistance, which should include a constant focus from breeders and scientists on search of new sources of resistance as well as annual testing of all major cultivars to provide updates on any changes in virulence.

For further information please contact:

Lise Nistrup Jørgensen, Department of Integrated Pest Management,
Faculty of Agricultural Sciences, Aarhus University, Forsøgsvej 1,
4200 Slagelse, Denmark. Tel: (+45) 8999 3652
E-mail: LiseN.Jorgensen@agrsci.dk

About ENDURE

ENDURE is the European Network for the Durable Exploitation of Crop Protection Strategies. ENDURE is a Network of Excellence (NoE) with two key objectives: restructuring European research and development on the use of plant protection products, and establishing ENDURE as a world leader in the development and implementation of sustainable pest control strategies through:

- Building a lasting crop protection research community
- Providing end-users with a broader range of short-term solutions
- Developing a holistic approach to sustainable pest management
- Taking stock of and informing plant protection policy changes.

Eighteen organisations in 10 European countries are committed to ENDURE for four years (2007-2010), with financial support from the European Commission's Sixth Framework Programme, priority 5: Food Quality and Security.

Website and ENDURE Information Centre

www.endure-network.eu

This publication was partially funded by EU grant (Project number: 031499), and is catalogued by the ENDURE Executive Committee as ENDURE Wheat Case Study – Guide Number 1, published in September, 2008.

From Science to Field
Wheat Case Study – Guide Number 1

Using Cultivar Resistance to Reduce Fungicide Input in Wheat

Lise Nistrup Jørgensen, Aarhus University, Denmark
Bill Clark, Rothamsted Research, UK
Manja Jahn, JKI, Germany
Daniela Antichi, SSSUP, Italy
Tomasz Góral, IHAR, Poland
Huub Schepers, Wageningen UR, The Netherlands
Philippe Lucas and Bernard Rolland, INRA, France
David Gouache, Arvalis, France
László Harnok, SZIE, Hungary

© Jean-Marie Boisseau, INRA

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Food Quality and Safety

Examples of IHAR collaborative research done with ENDURE partners

Summary

Fusarium ear blight (*Fusarium* spp.) is seen as an increasing problem in many parts of Europe. The disease is of major concern due to the production of mycotoxins by the fungi involved. It is a disease which is highly linked to crop rotation and tillage methods. The risk is particularly high in regions where maize is a widely grown crop in the rotation and reduced or minimum tillage is practised.

Genetic resistance is available with effective levels of control available in some cultivars. Applications of good agricultural practices can help significantly to keep the disease and mycotoxin levels low. In seasons with high rainfall levels during flowering combined with high risk situations (especially maize and minimal tillage) specific fungicide programmes need to be applied during flowering.

For further information please contact:

For further information, please contact:

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This publication was funded by EU grant (Project number: 031499), and is catalogued by the ENDURE Executive Committee as ENDURE Wheat Case Study - Guide Number 2, published in February 2009.

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From Science to Field
Wheat Case Study – Guide Number 2

Strategies to Control *Fusarium* Ear Blight and Mycotoxin Production in Wheat

Bill Clark, Rothamsted Research, UK
Lise Nistrup Jørgensen, Aarhus University, Denmark
Daniela Antichi, SSSUP, Italy
Tomasz Góral, IHAR, Poland
David Gouache, Arvalis, France
László Hornok, SZIE, Hungary
Marga Jahn, JKI, Germany
Philippe Lucas and **Bernard Rolland**, INRA, France;
Huub Schepers, Wageningen UR, The Netherlands

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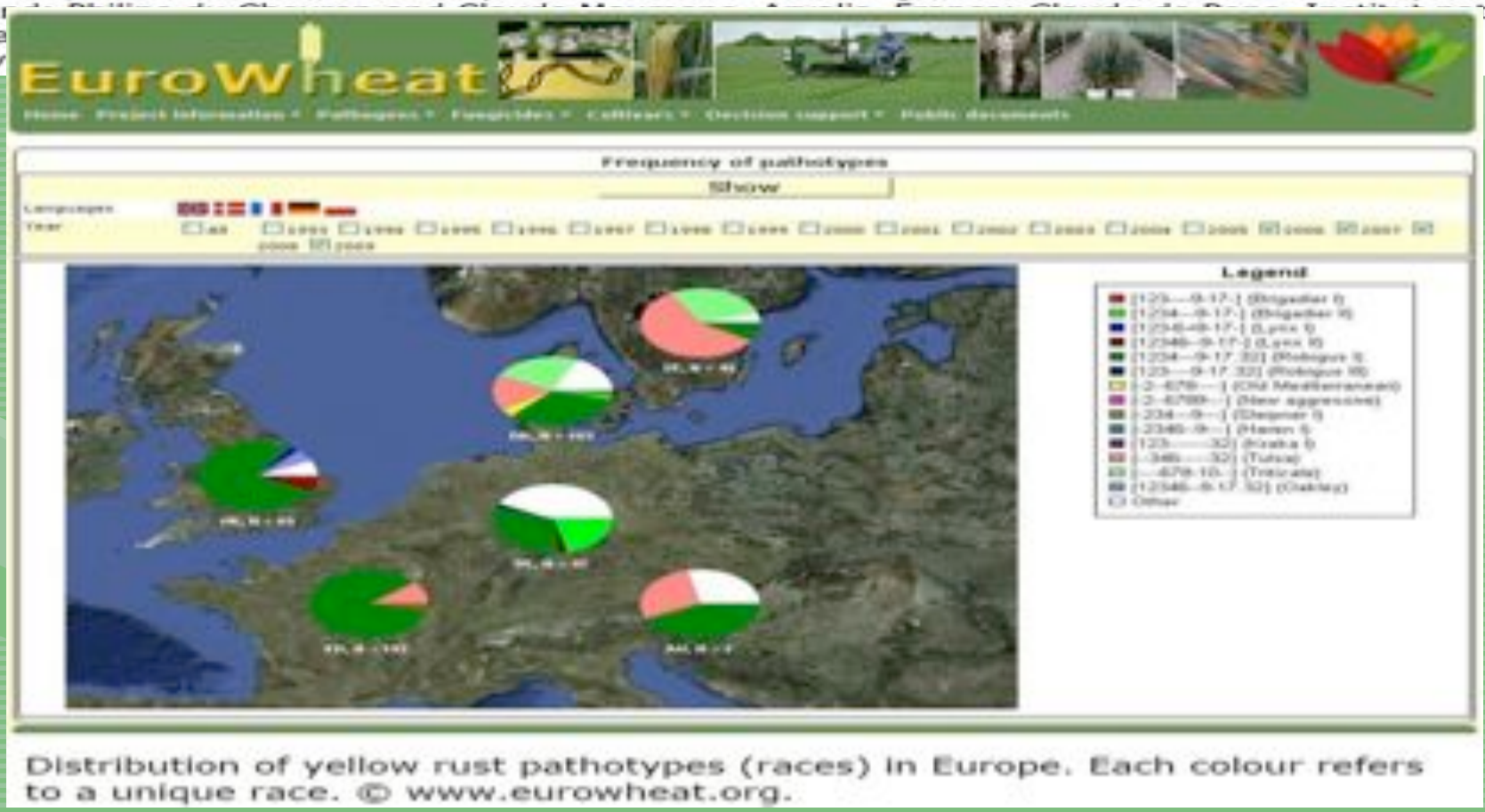
Examples of IHAR collaborative research gone with ENDURE partners

EuroWheat.org: a new research-based website supporting integrated disease management in wheat

Lise Nistrup Jørgensen, Mogens S. Hovmøller, Jens G. Hansen and Poul Lassen, Aarhus University, Denmark; Bill Clark, Rothamsted Research, UK; Rosemary Bayles, National Institute of Agricultural Botany (NIAB), UK; Bernd Rodemann, Margot Jahn and Kerstin Flath, Julius Kuehn Institute (JKI), Germany; Tomasz Goral and Jerzy Czembor, Plant Breeding and Acclimatization Institute (IHAR), Polan... de la... Serv...



Distribution of yellow rust pathotypes (races) in Europe. Each colour refers to a unique race. © www.eurowheat.org.

ENDURE ERG and SCAR:
Task 4: Strengthen pest monitoring systems (M1-M24)

-DRAFT-

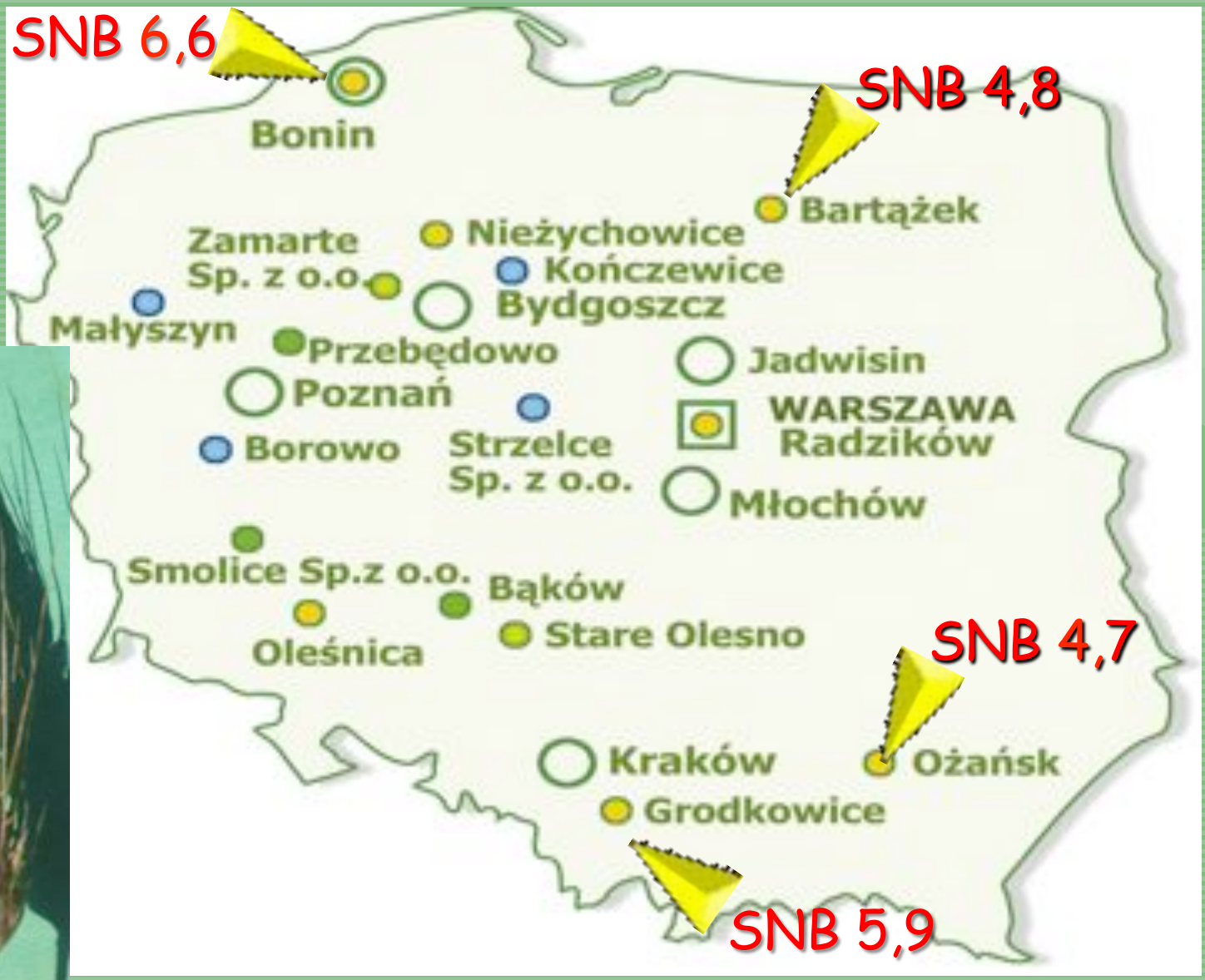
Proposal for a mapping out exercise on pest monitoring systems

Burkhard Golla, Silke Dachbrodt-Saaydeh,
JKI, Germany

IHAR-PIB is ready to participate in pest monitoring systems, especially in monitoring of distribution of pathotypes of plant pathogens.

Stagospora nodorum blotch monitoring:

average severity (1 – not infected, 9 – heavy infection) of on 10 cultivars of spring triticale nursery in:



Stagospora nodorum blotch monitoring:
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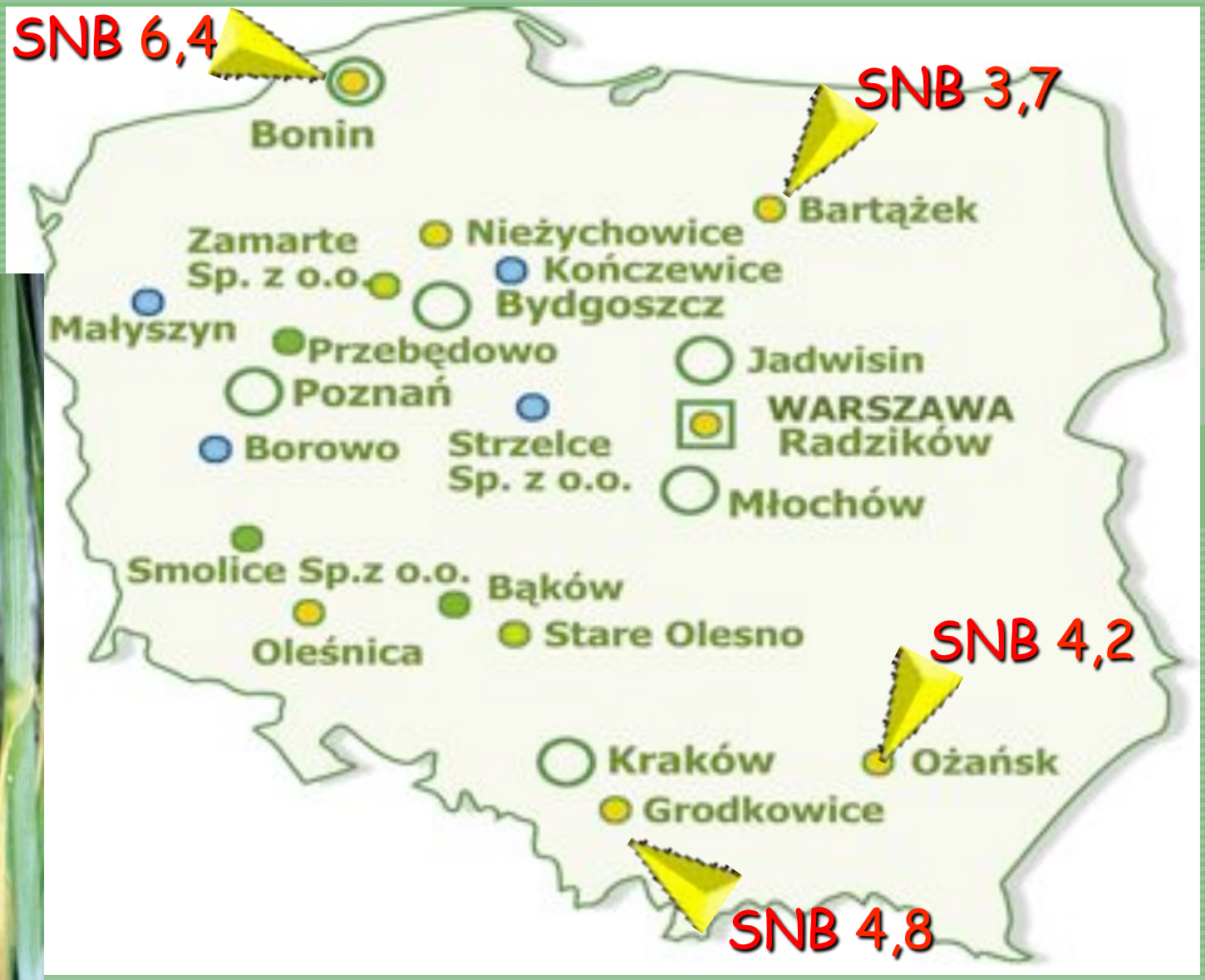

1st Circular

INTERNATIONAL CONFERENCE
ON:

BIOTECHNOLOGY AND PLANT BREEDING PERSPECTIVES TOWARDS FOOD SECURITY AND SUSTAINABILITY

SEPTEMBER 10-12, 2012

Organized by:

PLANT BREEDING AND ACCLIMATIZATION INSTITUTE

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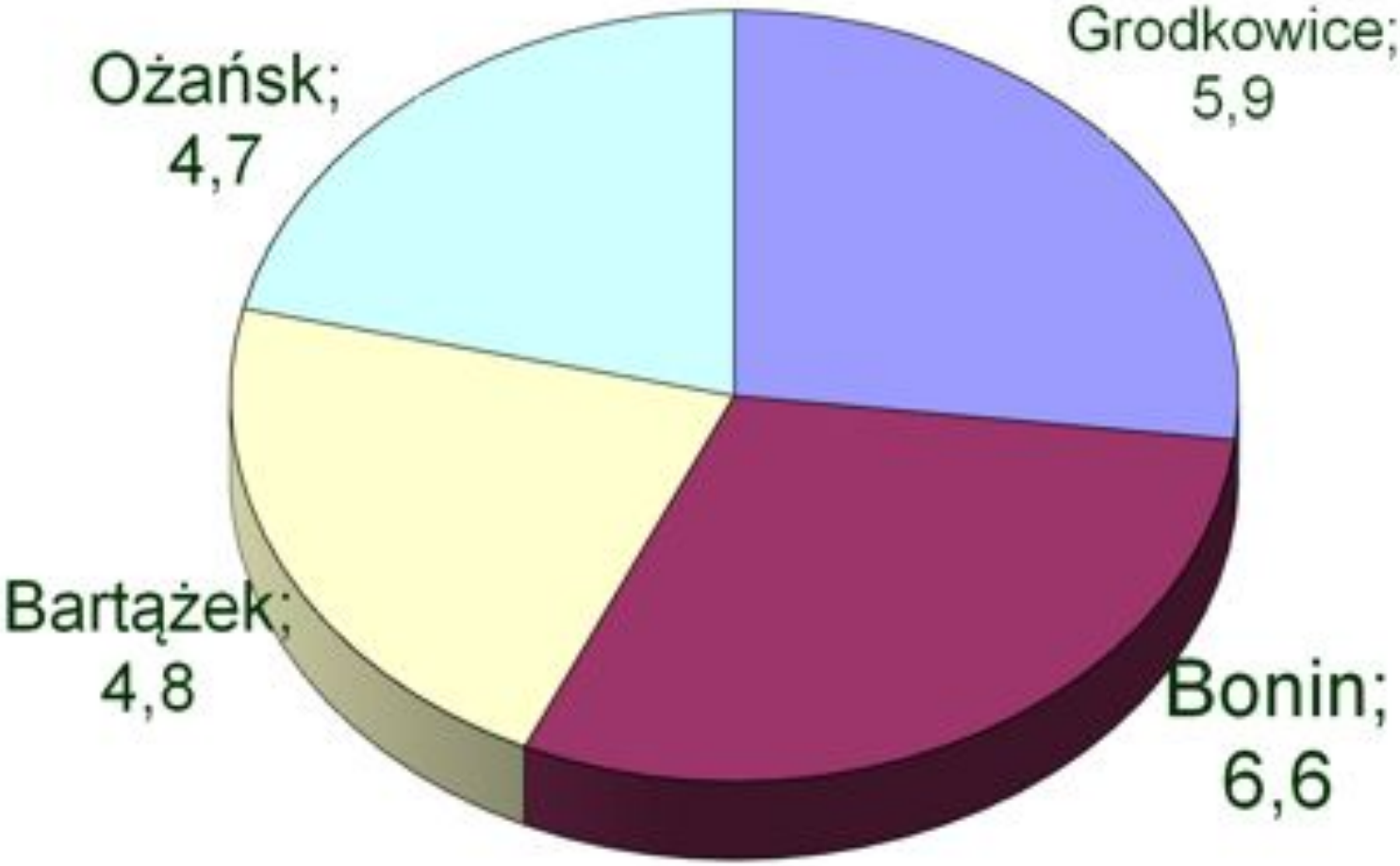
Thank you
for your attention

Average severity (9 – not infected, 1 – heavy infection) of *Stagospora nodorum* blotch on 10 cultivars of spring triticale in:



Average severity (9 – not infected, 1 – heavy infection) of *Stagospora nodorum* blotch on 10 cultivars of spring wheat in: