Institute of Plant Protection National Research Institute (IPP-NRI)

The Institute of Plant Protection (IPP) was established in 1951

Status of National Research Institute (NRI) in 2008

The Institute of Plant Protection - National Research Institute aims:

- to conduct research providing the basis for plant protection
- to develop new strategies against pests control
- to promote environmentally friendly agriculture

Institute employees (scientist and staff)

The current number of employees is 280 people, including 20 persons at the

Congress Center, near 100 scientists and 100 engineers with advanced degrees

Scientific-research team: 13 proffessors, 19 with post-doctoral degree, and 50 with a doctor degree (PhD).

REGIONAL STATION AND BRANCH

- Regional Experimental Station Białystok
- Regional Experimental Station Rzeszów
- Regional Experimental Station Toruń
- **Branch Sośnicowice**

The Institute also has a **Field Experiment Station in Winna Góra (50 km from Poznań)** which performs field research.

The Institute consists of 8 scientific departments:

- Entomology and Agricultural Pests
- Mycology
- Virology and Bacteriology
- Biological Pest Control and Organic Farming
- Weed Science and Plant Protection Technique
- Pesticide Residue Research
- Agrophages' Forecasting Methods
- Department of Molecular Biology and Biotechnology

MAIN research areas in IPP-NRI

- Integrated Pest Management (IPM)
- Plant protection in conventional and organic farming
- Assessment of food safety and pesticide residues in agricultural products
- Quality of plant protection products
- Safety of agricultural environment and preservation of biodiversity
- Diagnostic tools for plant health- development of molecular biology methods
- Resistance to plant protection products
- Decission support systems
- Biological methods and non-chemical in crop protection
- Host-pathogen-environment interactions

DEPARTMENT OF ENTOMOLOGY AND AGRICULTURAL PESTS

- Studies on agricultural crop protection against harmful species of nematodes, snails, mites, insects, birds, rodents
- Biology and control of pests of main field crops (cereals, potato, sugar beet, oilseed rape, seed grass, legumes)
- Monitoring of changes in pest populations dealing with diversified changes in natural environment, especially climatic change
- Detection of new plant pest agents of field crops and monitoring of their spread
- Evaluation of biological efficiency of insecticides
- Influence of natural substances (attractants and antifeedants) on insects
- Studies on resistance of storage pest insects to insecticides used for their control
- Development and update of insect collection database covering several thousand of taxa

DEPARTMENT OF MYCOLOGY

- **Biology, ecology and harmfulness of microorganisms**
- **Identification and pathogenicity of fungi occurring on cereals including sensibility to fungicides**
- Strategy of cereal ear protection against fusariosis casual agents and mycotoxins in grain
- **Genetic diversity of some species of pathogenic fungi occurring on agricultural plants**

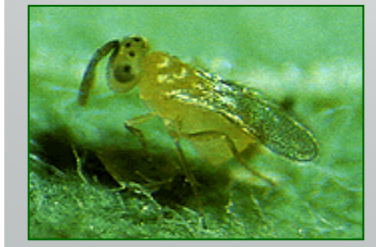
DEPARTMENT OF VIROLOGY AND BACTERIOLOGY

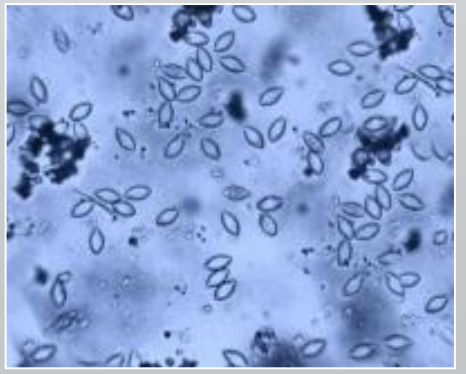
- Identification and characterization of new virus of agricultural and horticultural plants
- Elaboration of new diagnostic methods for quick, clear-cut identification of new virus (ELISA, Real-time PCR, IC/RT-PCR)
- Research in molecular evaluation and genetic diversity of virus population
- Examination of transmission on Tomato torrado virus by greenhouse whitefly
- Studies on virus seed-transmission
- Monitoring of bacterial diseases of greenhouse plants, maize and potato


STRATAGENE

DEPARTMENT OF BIOLOGICAL PEST CONTROL AND ORGANIC FARMING

- Pest risk assessment of urban trees and possibilities of biological control using nematodes to reduce pest populations
- Evaluation of usefulness of a wide range of biological products and applied methods in organic farming
- Use of entomopathogenic viruses, protozoa, fungi and nematodes against different pests
- Improvement of methods for pest control and diseases in organic farming
- Evaluation of influence of plant protection treatments on biodiversity

DEPARTMENT OF PESTICIDE RESIDUE RESEARCH

- Elaboration and implementation of methods for determination of pesticide residues in plant material, water and soil
- Analyses of pesticide residues within the official examination of agricultural products and feed, produced by conventional, integrated and ecological methods
- Risk assessment of human and animal health threat caused by pesticide residues
- Accomplishment of the national reference laboratory's tasks in the scope of pesticide residues
- Assessment of documentation of pesticide active compounds for the need of the European Food Safety Authority (EFSA)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DEPARTMENT OF WEED SCIENCE AND PLANT PROTECTION TECHNIQUES

- Development of programmes for weed control in agricultural crops (also minor crops)
- Optimization of chemical weed control of agriculture crops
- Development of weed control strategies for integrated and organic farming plant production systems
- Evaluation of the influence of adjuvants on efficacy and selectivity of herbicides
- Studies on biology and infestation of weeds as a consequence of climatic changes
- Studies on weed resistance to herbicides
- Combined use of herbicides with other plant protection products and fertilizers

DEPARTMENT OF AGROPHAGES' FORECASTING METHODS

- **Developing, modifying and up-dating methodologies for agrophages' monitoring considering short- and long-term forecasting**
- **Evaluation of crop phytosanitary conditions in Poland, based on countrywide monitoring economically important agrophages in collaboration with the Plant Health and Seed Inspection**
- Monitoring developmental stages of agrophages for regional warning systems to ensure effectiveness of plant protection treatments – **the Internet service of "Agrophages' monitoring system"**
- **Development of electronic versions for Decision Support System programmes in plant protection and their extension and implementation in agricultural practice**

DEPARTMENT OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY

- Analysis of interactions between plants, pathogens (viruses and bacteria) and pests
- Health and safety of pollinators:
  - studying the impact of biotic and abiotic stress on gene expression in pollinators,
  - characterisation of the pollinator microbiome (pathogens and symbionts).
- The role of symbiotic bacteria in plant – pest interactions.
- Testing plant reactions to abiotic (e.g. temperature) and biotic stress.
- Identification and research on plant growth-promoting bacteria.
- Development of molecular diagnostic methods for the detection, identification and differentiation of animal pests, including viruses, bacteria, nematodes, insects (based on PCR, real-time PCR, HRM and ddPCR) and identification of methods to combat and reduce their spread.

In addition IPP – NRI has specialized units:

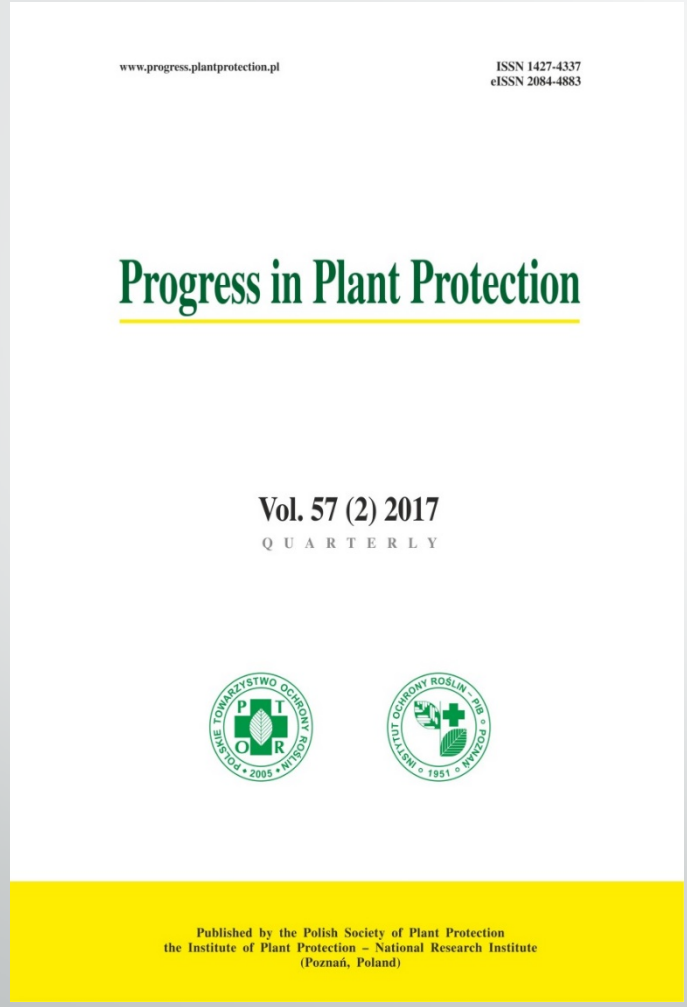
- Plant Disease Clinic and Bank of Pathogenes
- Research Centre of Quarantine, Invasive and Genetically Modified Organisms
- Research Centre for Registration of Agrochemicals
- Expert Centre of Evaluation of Agrochemical Reports
- Department of Knowledge Transfer and Dissemination
- Hotel and Congress Center

Commercial Services in Institute of Plant Protection – National Research Institute

The services delivered by the Institute include:

- testing the effectiveness of plant protection products
- testing the quality and originality of the plant protection products
- determination of plant protection product residues
- determination of mycotoxins in crops and food,
- identification of pests of crops and vegetables
- expertises of poisoning of bees with plant protection products
- obtaining data from drones - precision agriculture
- identification of the damages caused by plant protection products
- sales of isolates of plant pathogens (fungi and bacteria)
- taking pictures of biological and chemical material by means of transmission (TEM) and scanning (SEM) microscope,
- rental of modern greenhouse cabins, also for quarantine and genetically modified organisms.

PUBLICATIONS by IPP-NRI



Quarterly published


INSTYTUT OCHRONY ROŚLIN
ZALECENIA OCHRONY ROŚLIN
na lata 2006/2007
CZĘŚĆ IV
ROŚLINY OZDOBNE
ROŚLINY ZIELARSKIE
USZKADZANIE ODMIAN RZEPAKU OZIMEGO PRZEZ SZKODNIKI
RZEPAK RZEPAK RZEPAK RZEPAK
INTEGROWANA PRODUKCJA RZEPAKU
POZNAŃ 2006
ŚLIMAKI WYSTĘPUJĄCE W UPRAWACH ROŚLIN METODY ICH ZWALCZANIA
INSTYTUT OCHRONY ROŚLIN
www.ior.poznan.pl
ZALECENIA OCHRONY ROŚLIN EDYCJA 2006
Klucz do określania faz rozwojowych roślin jedno- i dwuliściennych w skali BBCH
Klucz do rozpoznawania szkodników magazynowych oraz ich stadiów larwalnych
Opracował prof. dr hab. Jan Nawrot
KRAJOWE CENTRUM DORADZTWA ROLNICZEGO W ZAKRESIE ROZWOJU ROLNICTWA I OBSZARÓW WIEJSKICH ODDZIAŁ W POZNANIU
DOBRA PRAKTYKA OCHRONY ROŚLIN
STRATEGIA CHEMICZNEGO ZWALCZANIA STONKI ZIEMNIACZANEJ (LEPTINOTARSA DECEMLINEATA SAY.) W POLSCE
POZNAŃ 2003
SZKODY ŁOWIECKIE – uwarunkowania i możliwości zapobiegania
POZNAŃ 2005
POLSKI INTERNETOWY SYSTEM WSPOMAGANIA DECYZJI W OCHRONIE ROŚLIN
ŁĄCZNE STOSOWANIE AGROCHEMIKALIÓW

RESEARCH CENTRE FOR QUARANTINE, INVASIVE AND GENETICALLY MODIFIED ORGANISMS

- **The Centre is modern, unique facility in Poland which meets the highest standards of phytosanitary requirements**.

- Investigations on the biology, ecology and environmental impact of quarantine restricted and invasive species o f nematodes, insects, fungi and slugs.
- Investigations using species and strains of bacteria and viruses to quarantine restrictions.
- Expertise on identifying quarantine restricted microorganisms.
- **Research and photography using the Scanning Electron Microscope and Transmission Electron Microscope.**

Thank you for your visit to the IPP- NRI