BENAKI
PHYTOPATHOLOGICAL
INSTITUTE

The sustainable use of pesticides.
The success story of LIFE + EcoPest project

Dr Kyriaki Machera,

Benaki Phytopathological Institute

k.machera@bpi.gr

BENAKI PHYTOPATHOLOGICAL INSTITUTE

The EU regulatory framework for plant protection products:

1	2	3
BEFORE approval and placing on the market	**DURING handling & field application**	**AFTER the use of PPPs**
Regulation 1107/2009, EP&C, *'concerning the placing of plant protection products on the market'*	**- Directive 128/2009, EP &C,** *establishing a framework for Community action to achieve the sustainable use of pesticides*.	**- Regulation 396/2005, EP&C,** *on maximum residue levels of pesticides in or on food and feed of plant and animal origin ,* and - **Directive 39/2013, EP&C,** *as regards priority substances in the field of water policy*

The framework Directive for the Sustainable Use of Pesticides

24.11.2009 EN Official Journal of the European Union L 309/71

DIRECTIVES

DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 21 October 2009

establishing a framework for Community action to achieve the sustainable use of pesticides

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and

other related Community legislation, in particular Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds ([5]), Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ([6]), Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy ([7]), Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin ([8]) and Regulation (EC) No 1107/2009 of the European Parliament and of the

http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0128&from=EN

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Main components and role of SUD:

Risk Assessors:

- Real risk
- Exposure models
- Professional users
- Mean values of use
- Good Agri Practices
- Focus on site specific aspects

SUD

- Training
- Information and awareness campaigns
- Equipment
- Requirements on sales of pesticides
- Protection of vulnerable areas
- Handling of wastes
- Risk Indicators
- IPM

Risk Managers:

- Perceived risk
- Real life activities
- General population
- Diversity of practices
- Human interference
- Complex interactions

The implementation of Dir 128/2009 & the NAP needs to be::

- **S imple**
  - pragmatic, clear instructions & feasible solutions
- **M easurable**
  - visible results, to be integrated in NAPs
- **A chievable**
  - cost effective, realistic risk reduction
- **R elevant**
  - to agriculture, addressing real risks
- **T imely**
  - coordinated with cropping cycles

«Adaptation and application of the principles for the sustainable use of pesticides (Directive 128/2009) in a vulnerable ecosystem»
www.EcoPest.gr

BENAKI PHYTOPATHOLOGICAL INSTITUTE

The LIFE EcoPest project:

EcoPest

Pilot Area: Kopais plain, Central Greece, 1200ha

Environmental problem:
- High water table
- Surface waters
- Carstic soils
- Intensive agriculture (arable)

High vulnerability of water bodies to pollution

Aims:
- **Minimization of pesticide use**
- **Minimization of area under unacceptable risk**
- **Improvement of Environment & Human safety**

B.P.I

AEIFORIKI S.A. **B.P.O.** **OASE** **DEMETER-L.R.I.** **DEMETER-I.A.M.C.**

BENAKI PHYTOPATHOLOGICAL INSTITUTE

The partnership:

EcoPest

Partners: Six associated beneficiaries

The Implementation team: More than 40 scientists

50 field agronomists

120 farmers

Experts from UK and France

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Training of spray operators, agronomists & farmers:

EcoPest

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Training material of LIFE+ EcoPest:

EcoPest

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Information & awareness campaigns:

Life EcoPest

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Maintenance, calibration, & certification of spraying equipment :

EcoPest

I. **Maintenance** and **calibration** of spraying machinery

II. Construction of mobile **prototype control unit**

III. Change from conventional to **low drift nozzles**

I. **Certified** - compliance to standard EN/ISO 13790

BENAKI PHYTOPATHOLOGICAL INSTITUTE

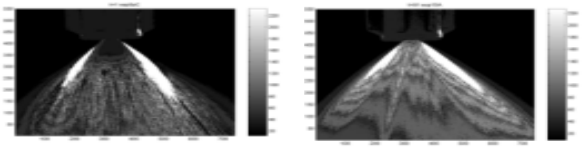
Spraying equipment calibration & maintenance & certification:

EcoPest

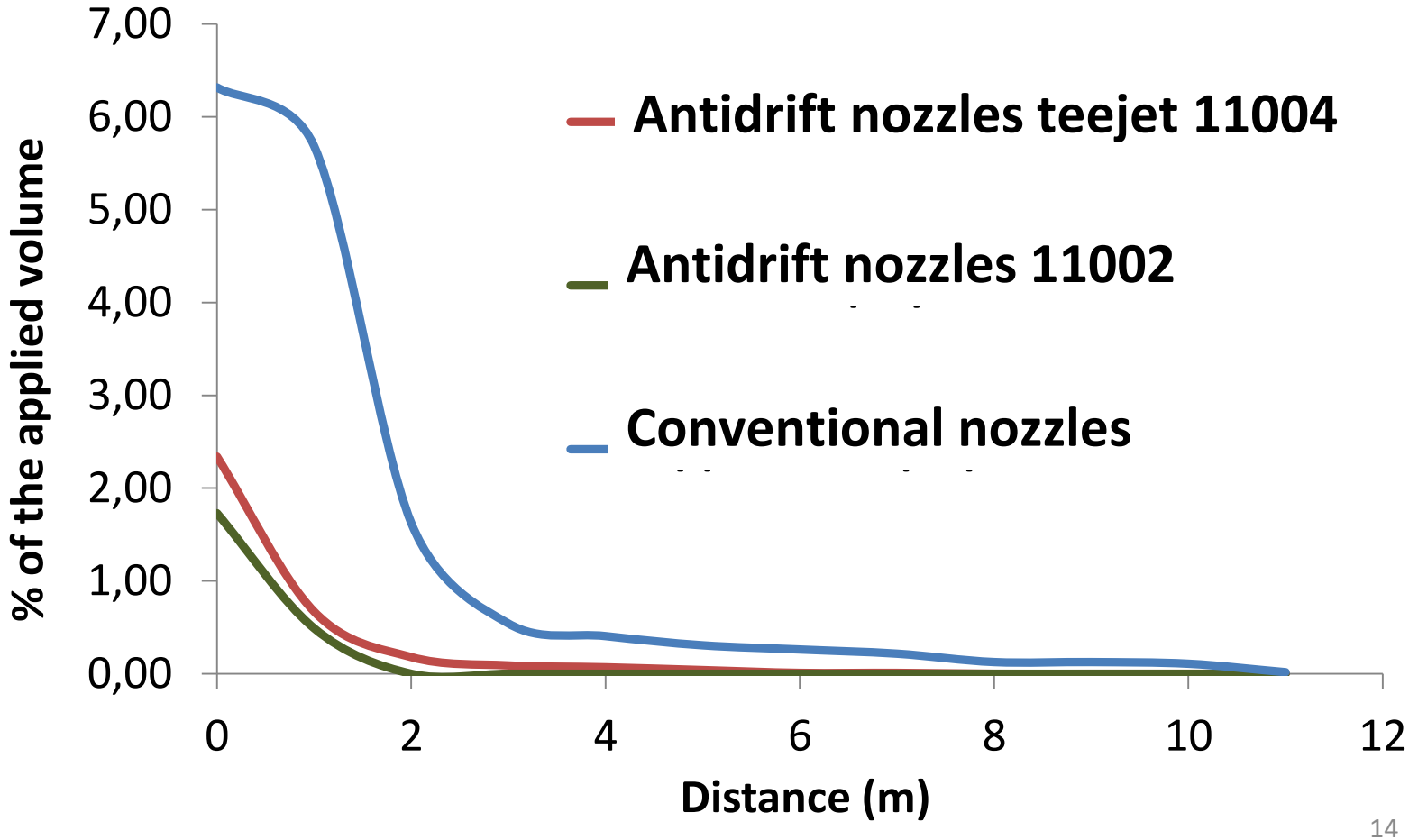








Spray drift measurements & drift management strategy:



BENAKI PHYTOPATHOLOGICAL INSTITUTE

Actions towards Integrated Pest Management & Low Crop Management:

EcoPest

Crop specific Low Input Protocols:

- Cotton
- Industrial tomato
- Corn

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Actions towards Integrated Pest Management & Low Crop Management:

Band applications : 60% herbicide reduction

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Solid & liquid pesticide waste management:

EcoPest

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Solid & liquid pesticide waste management:

Heliosec® SYNGENTA

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Environmental Monitoring:

EcoPest

Water:

- Pesticide & fertilizer residues
- Toxicity in aquatic organisms

Soil:

- Pesticide & fertilizer residues
- Toxicity in earthworms

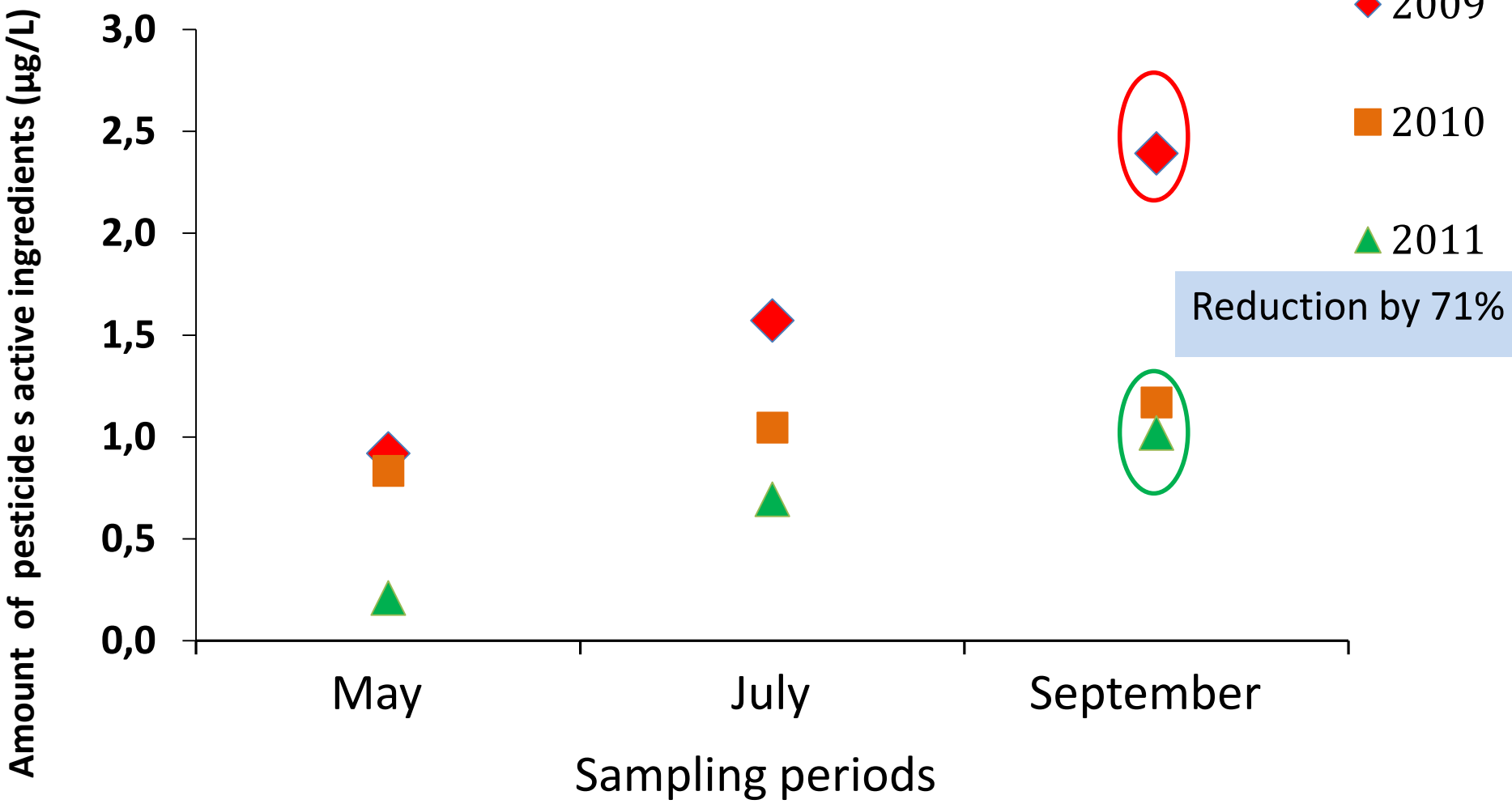
Exposure measurements:

- Spray drift
- Operator exposure levels

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Levels of pesticide pollution in well water:

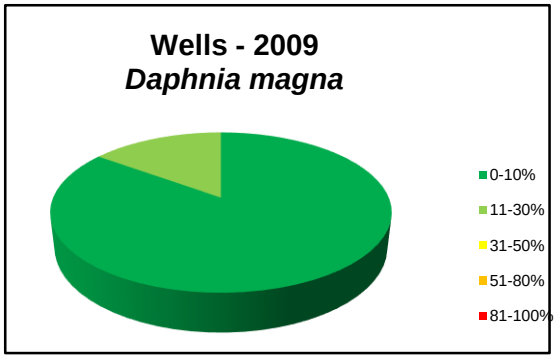
EcoPest

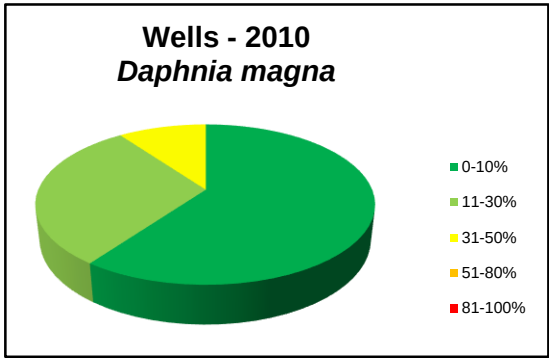


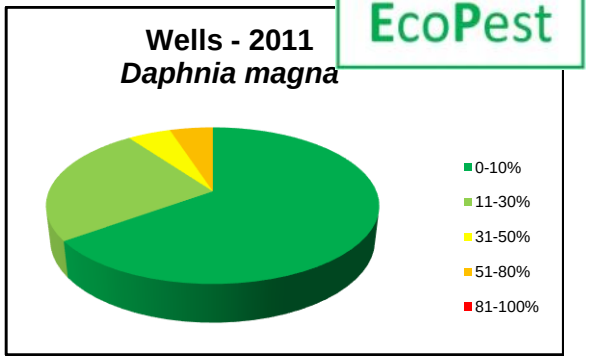
BENAKI PHYTOPATHOLOGICAL INSTITUTE

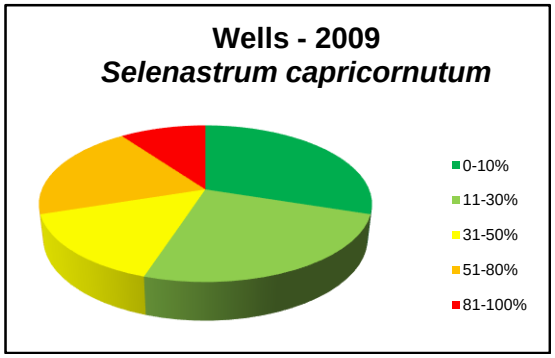
Results from bioassays – well water:

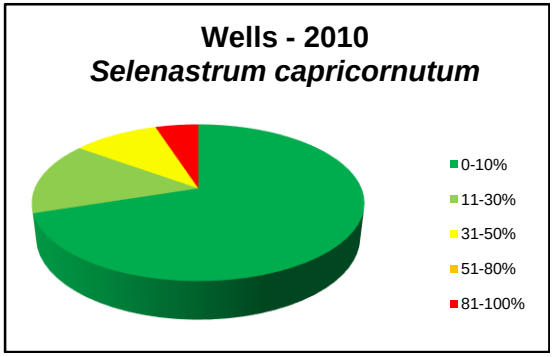
EcoPest

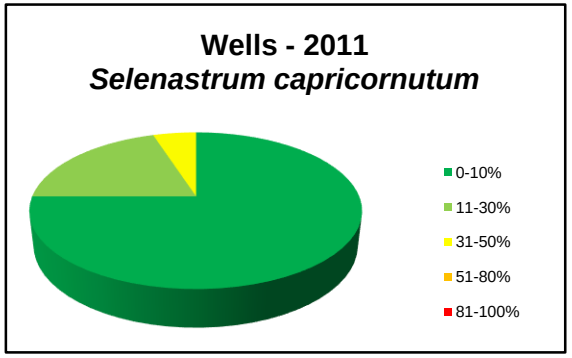


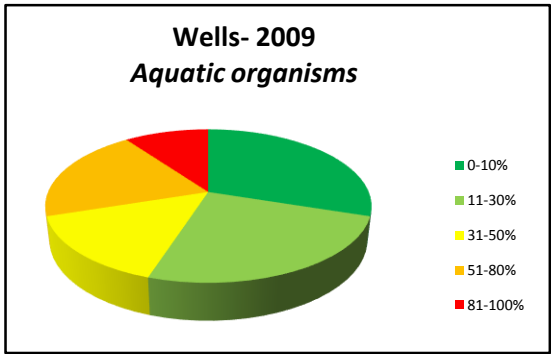


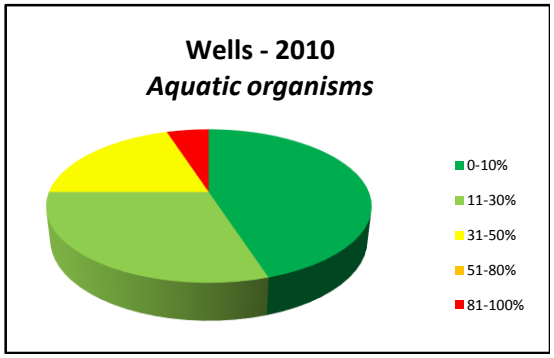


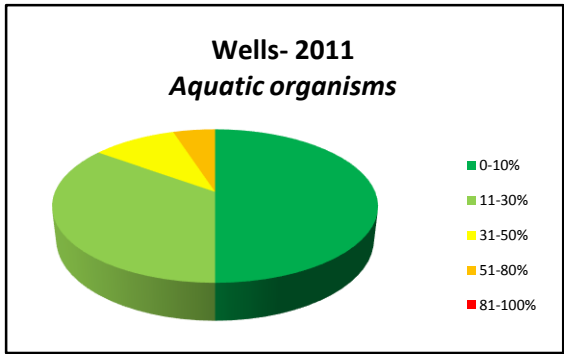








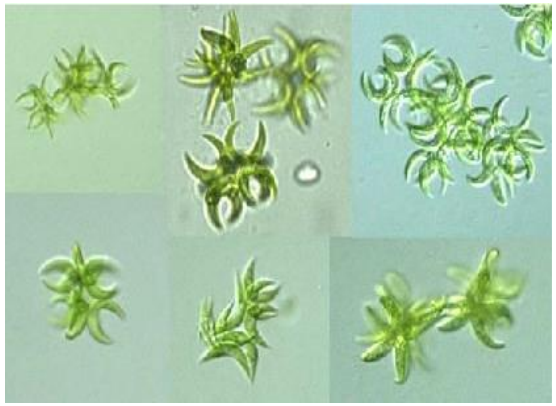




BENAKI PHYTOPATHOLOGICAL INSTITUTE

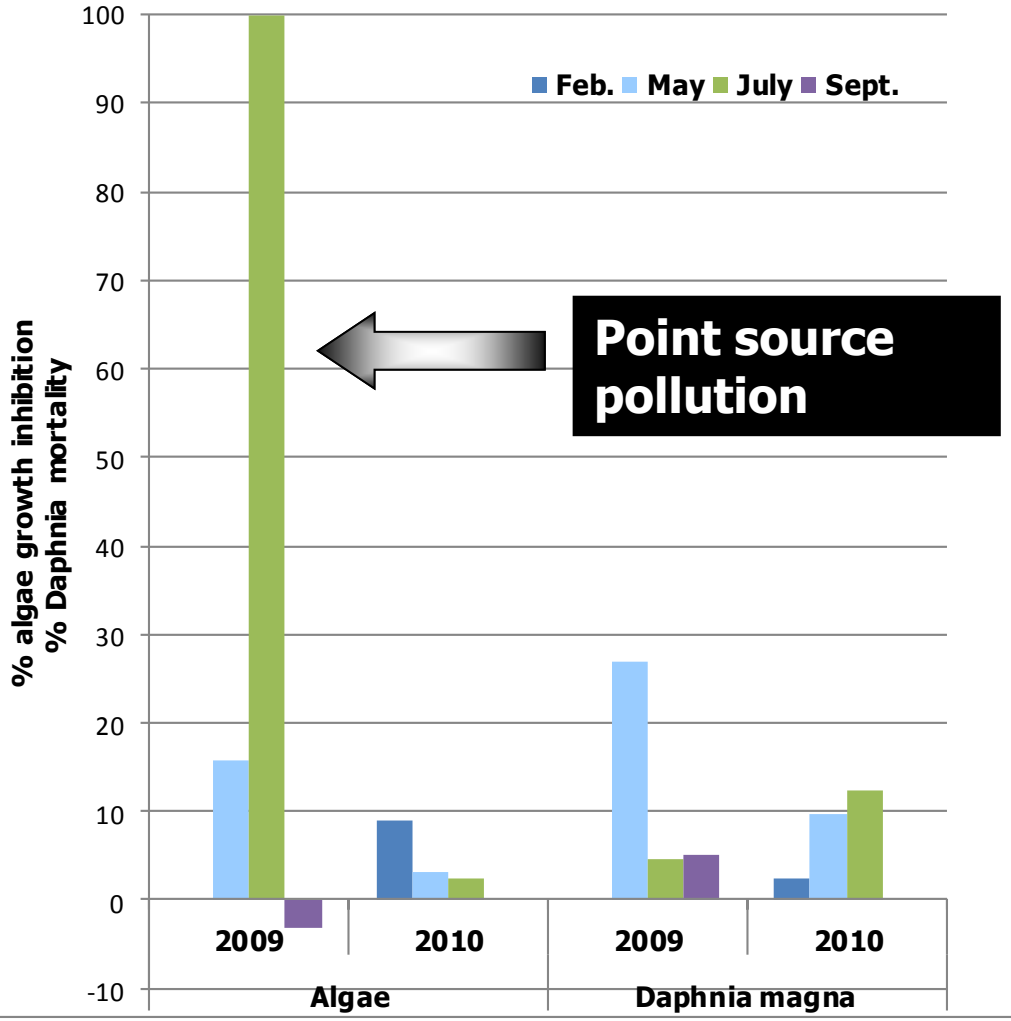
Results from bioassays – river water:

Daphnia magna



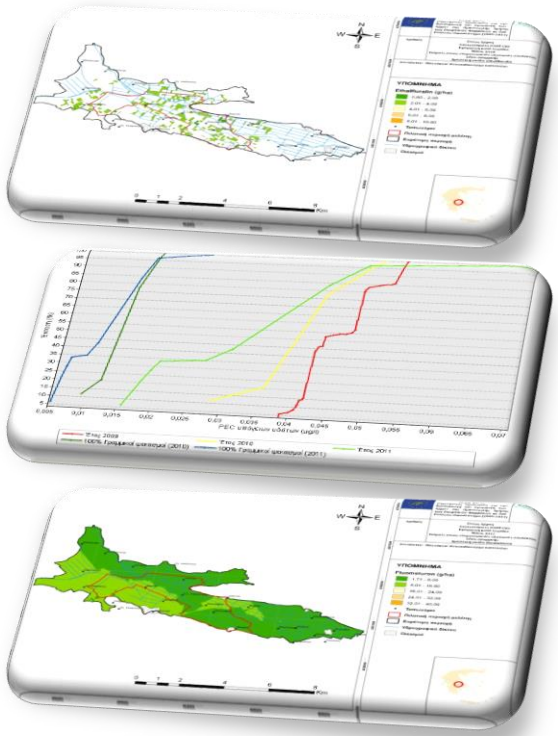
Green algae

EcoPest



FOOT-CRS data outputs

- Maps and spatial cumulative distribution functions (CDFs) of
  - pesticide losses from fields and
  - pesticide inputs into the surface water network.
- Temporal CDFs of Predicted Environmental Concentrations in surface water (PECsw) at the catchment outlet.

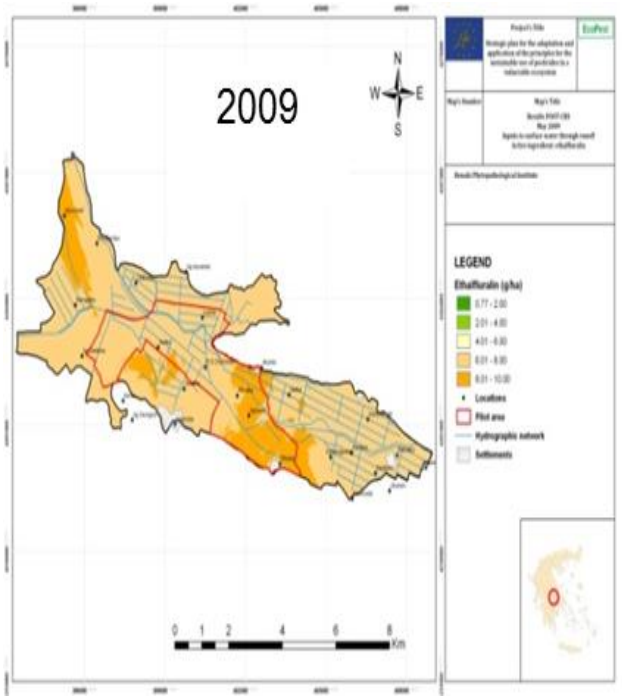


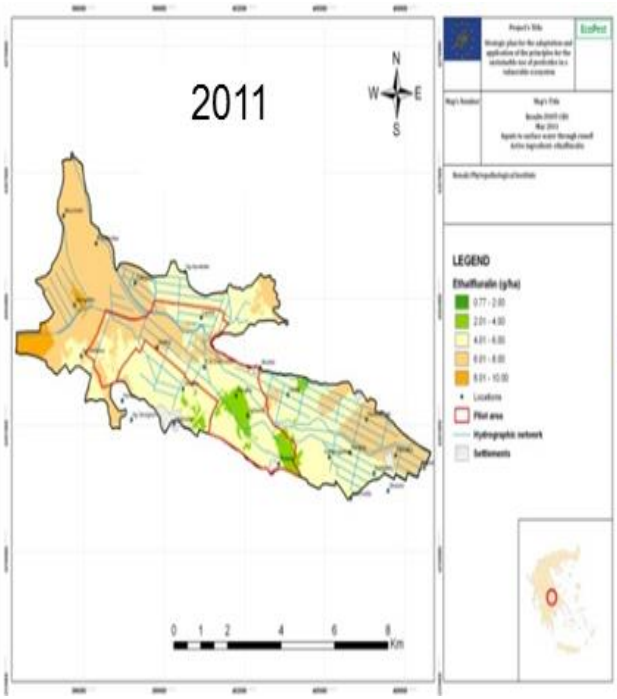
Application of FOOT-CRS software tool for the estimation of pollution risk at catchment scale level

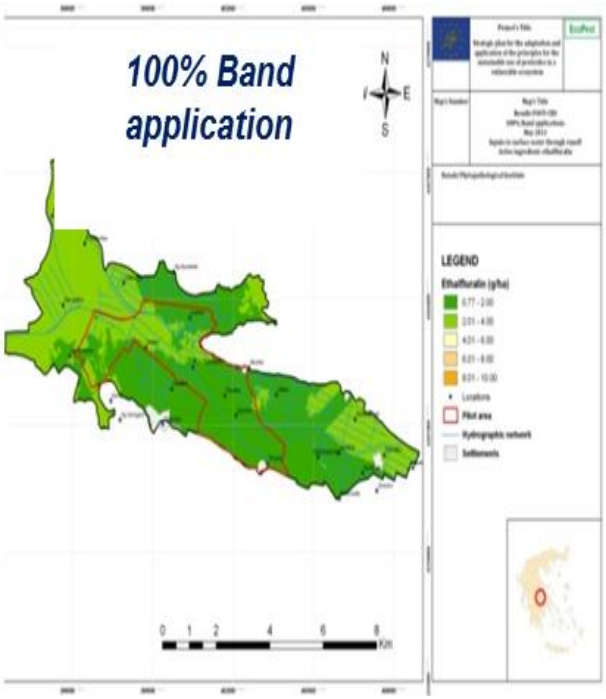
BENAKI PHYTOPATHOLOGICAL INSTITUTE

KEY RESULTS of LIFE+EcoPest:

EcoPest







BENAKI PHYTOPATHOLOGICAL INSTITUTE

The four pillars for the sustainable use of pesticides:

EcoPest

HUMAN

- THEORETICAL & PRACTICAL TRAINING
- HEALTH & ENVIRONMENTAL PROTECTION
- AWARENESS CAMPAIGNS

AGRICULTURE

- PEST & DISESASE MONITORING
- DEVELOPMENT OF Low Impute Protocols
- APPLICATION OF NEW TECHNOLOGIES
- SPRAYING EQUIPMENT CALIBRATION
- DRIFT REDUCTION STRATEGY

ENVIRONMENT

- MONITORING OF POLLUTANTS LEVELS IN WATER & SOIL
- ECOTOX TESTING
- SUBSTITUTION OF MOST HAZARDOUS PESTICIDES
- APPLICATION OF NOVELTOOLS FOR ENVIRONMENTAL RISK ASSESMENT
- ADAPTATION & USE OF SITE SPECIFIC INDICATORS

STAKEHOLDER

- INCOPRORATION OF DEVELOPED STRATEGIES IN NATIONAL ACTION PLAN
- TRAINING MATERIAL & WEB SITE
- BILATERAL KNOWELDGE EXCHANGE
- DISSEMINATION ACTIVITES
- PLATFORM FOR FUTURE AWARENESS RAISING

BENAKI PHYTOPATHOLOGICAL INSTITUTE

Indicators of successful implementation of the SUD

EcoPest

REDUCTION OF:

- Pesticide use by 30% (kg a.i./ha),
- Frequency Treatment Index (FTI) by 67%, 66%, 45% (3 crops)
- Concentration of pollutants (a.s.) by 70% in wells
- Toxicity (aquatic) of environmental samples
- Area under unacceptable risk for the major inputs
- Spray Drift

INCREASE OF :

- Number of farmers trained (63%)
- Number of farmers using appropriate PPE (100%)
- Environmental awareness in the pilot area
- Number of calibrated machinery (100%: EN 13790)
- Amount of empty containers handled
- Volume of liquid waste managed

- IMPROVEMENT OF WATER & SOIL QUALITY
- PROTECTION OF HUMAN HEALTH

The Award:

EcoPest

www.EcoPest.gr

BENAKI PHYTOPATHOLOGICAL INSTITUTE

EcoPest

Thank you for your attention!

We thank the European Commission and the LIFE Environment Programme for co-funding the EcoPest.