



COLLECTION AND MANAGEMENT OF DATA IN THE GEOGRAPHIC INFORMATION SYSTEM OF EMILIA-ROMAGNA REGION, ITALY

EFSA/EPPO Joint Workshop
“Data collection and information sharing in plant health”
3 April 2014 - EFSA premises, Parma, Italy



Initial situation - Events

- 1994 - occurrence of *Erwinia amylovora* in Emilia-Romagna.
- 1995 - occurrence of PPV - M strain in Emilia-Romagna.

Needs and actions

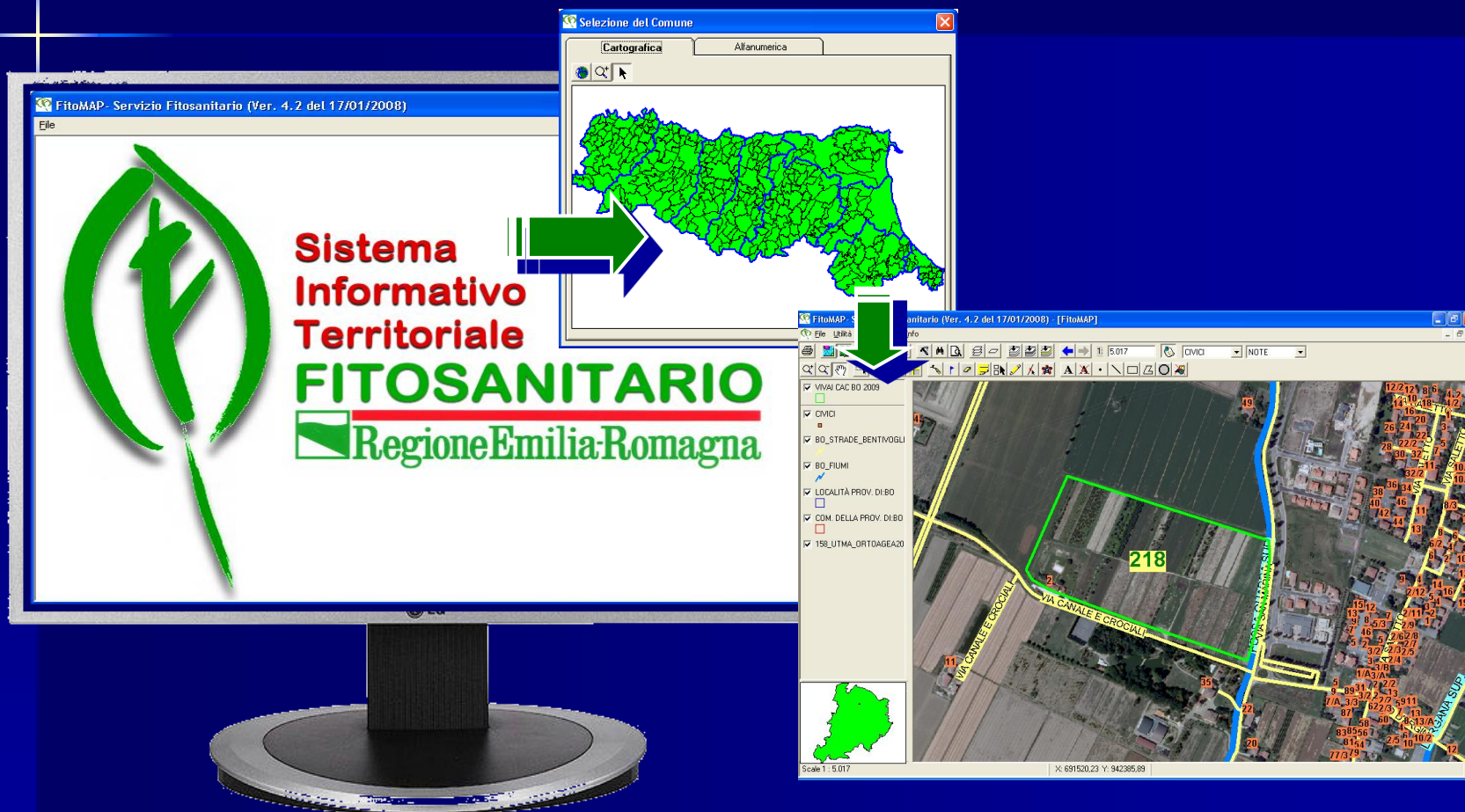
- **Monitoring of the territory.**
- **Co-ordination and management of phytosanitary inspectors work.**
- **Co-ordination of consultants work.**
- **Collecting information from producers.**
- **Managing information daily got from every source.**
- **Planning and targeting the activities.**

Needs and actions

“support to decisions”

- **Analysis of data related to the spread in the time and on the territory of plant pests (pest risk cartography).**
- **Supporting tools production for territory monitoring.**
- **Planning of inspection activities.**
- **Documentation of official acts (orders).**
- **Definition of Pest Free Areas (PFAs).**
- **Extension activity – information availability.**
- **Publication of specific maps on WEB.**

FitoGIS: FitoMAP (software for pc)

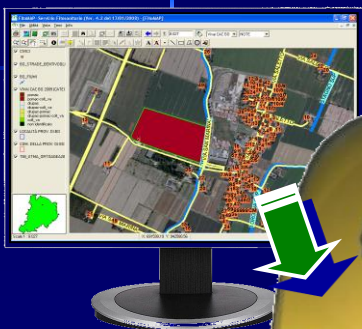


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FitoGIS: GPS and FitoPAD (software for palmtop computer)



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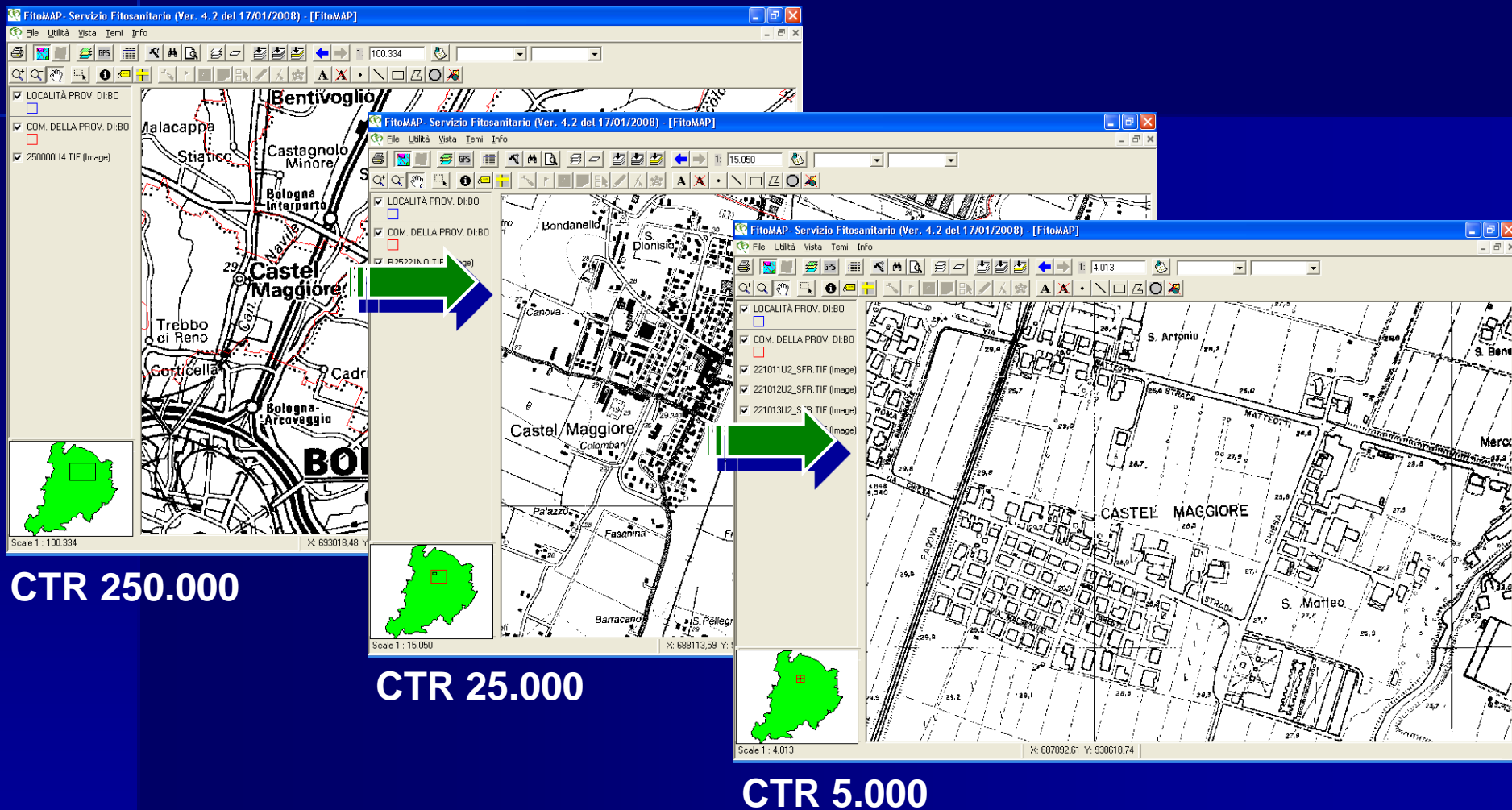
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FitoGIS: supporting tools (raster maps)

- **Technical regional map (CTR)**
1:250.000, 1:25.000, 1:5.000
- **Color aerial photographs (AGEA)**
- **Infrared aerial photographs (AGEA)**
- **Landast TM satellite multispectral pictures**
- **Quickbird panchromatic + multispectral satellite pictures**

FitoGIS: CTR maps



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FitoGIS: AGEA orthophotos and infrared pictures



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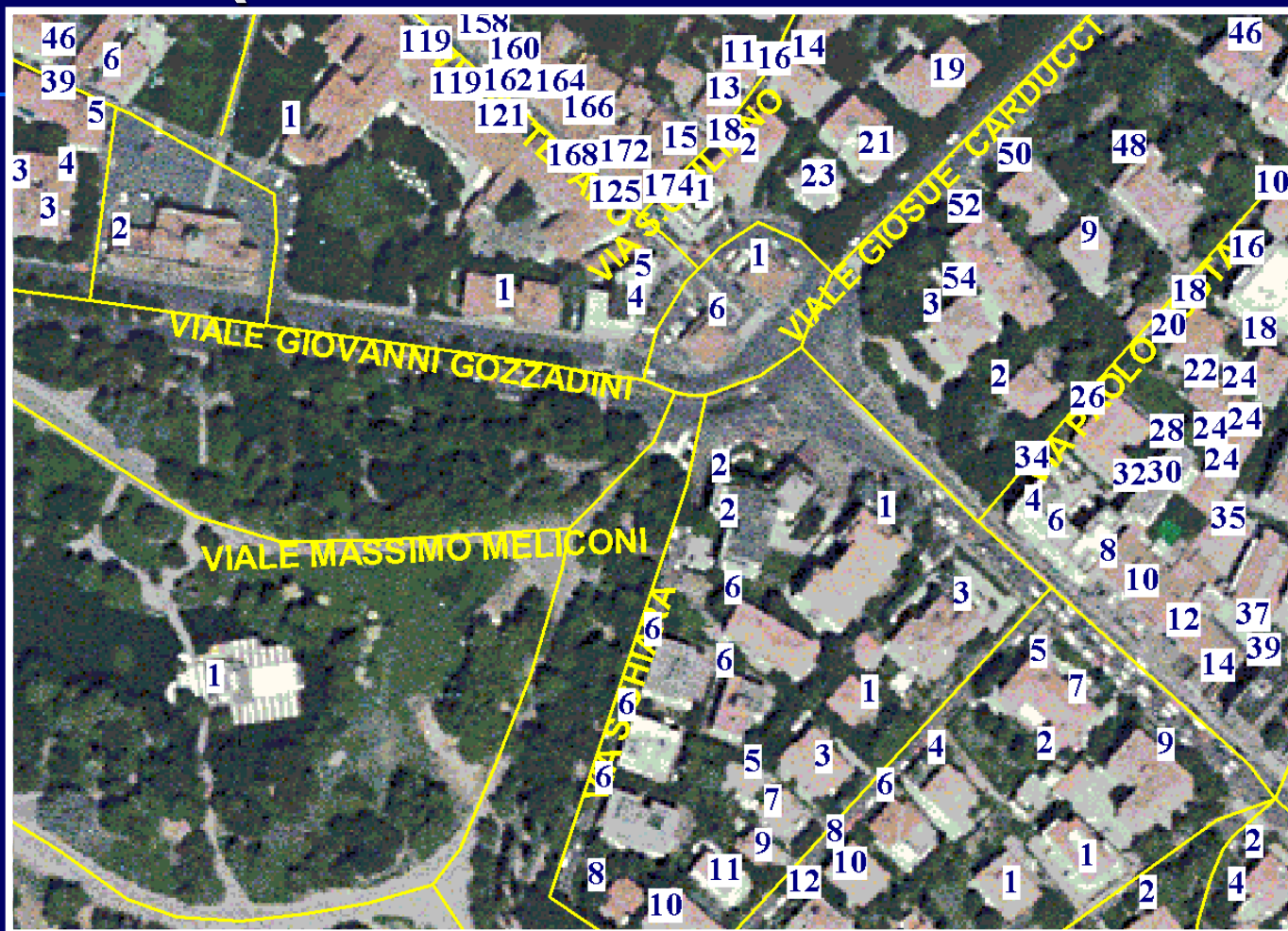
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FitoGIS: supporting information tools (vector)

- Land use maps
- Vegetation maps
- Soil maps
- Geological maps
- Grapevine cadastre
- Administrative borders
- Towns
- Streets and civic numbers
- Rivers, Canals, Lakes
- Contour lines
- Spot heights
- Cadastre (Sigmater)

FitoGIS: supporting information tools (streets and civic numbers)



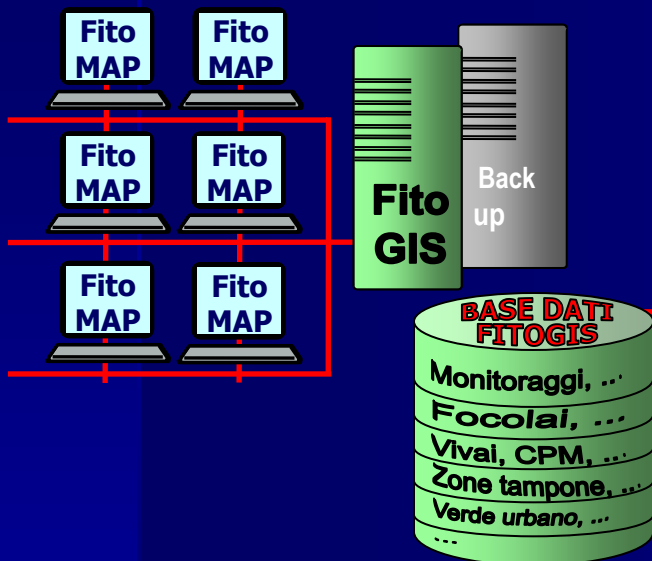
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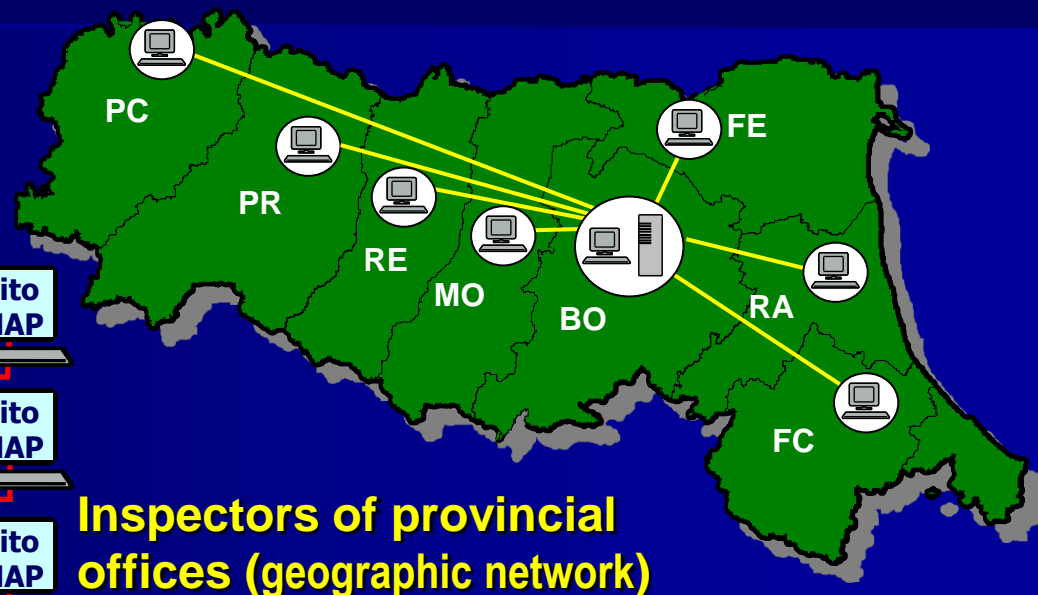
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FitoGIS: structure and integration in the RER GIS (standardisation and data elaboration)

**Inspectors in Bologna
(local - geographic network)**



Server and SFR database



**Inspectors of provincial
offices (geographic network)**

30 internal SFR users

15 external SFR users

some other institutional users

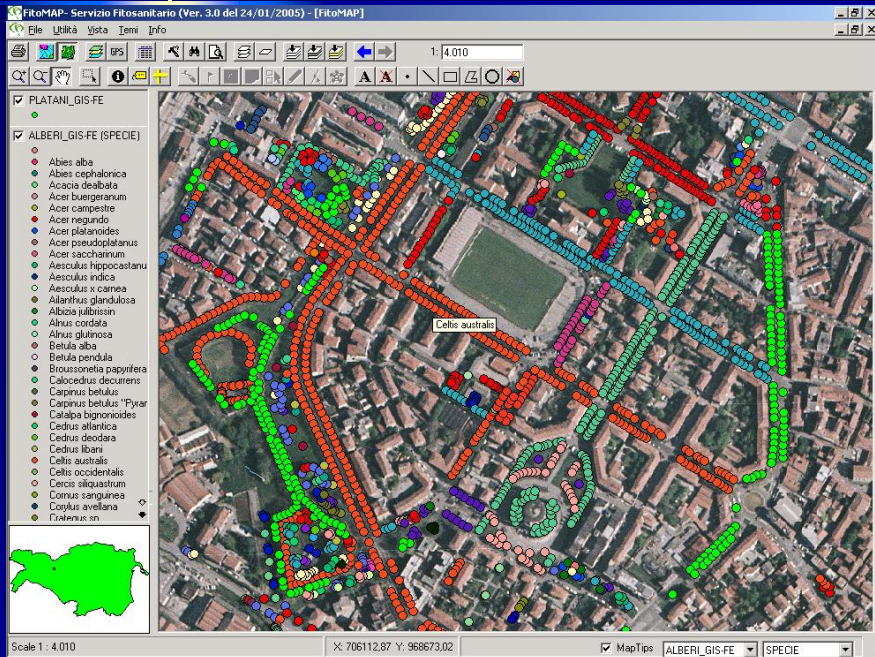
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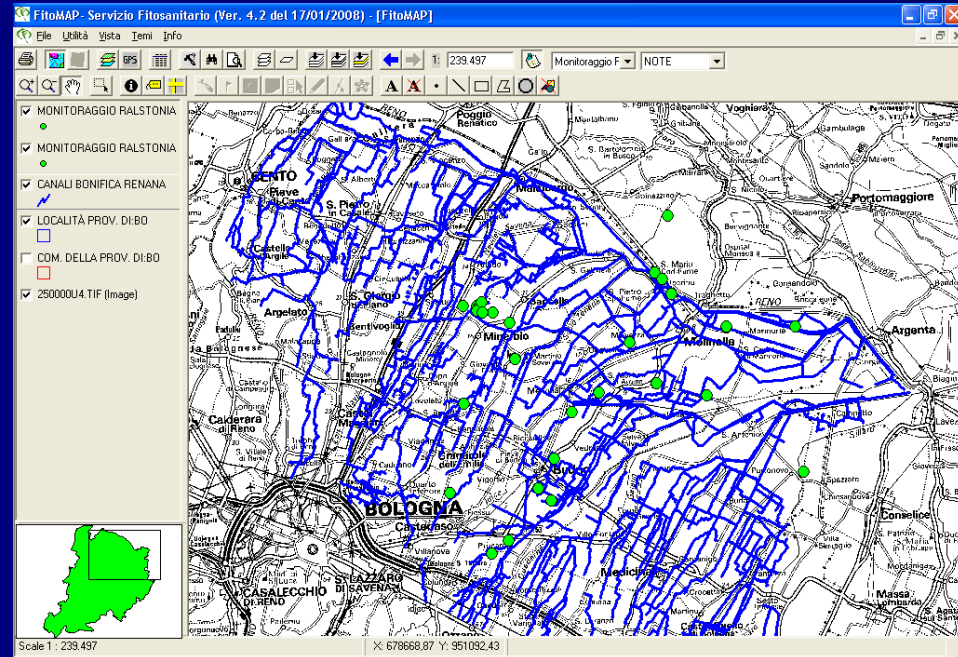
FitoGIS: data integration with other bodies

Comune di Ferrara



Urban green management

Bonifica Renana



Inspection of surface waters potential pathway for *Ralstonia solanacearum*

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FitoGIS: phytosanitary layers

Quarantine pests monitoring

Some out from more 30 monitoring in FitoGIS:

- since 1994 - *Erwinia amylovora* (pomefruits)
- since 1994 - Sharka (PPV) (stonefruits)
- since 1995 - *Ralstonia solanacearum* (potato)
- since 1999 - Flavescence dorée (grapevine)
- since 2001 - *Bursaphelenchus xylophilus*
(conifers)
- since 2001 - *Globodera* spp. (potato)
- since 2002 - *Diabrotica virgifera virgifera* (corn)
- since 2003 - *Heterodera glycines* (soy bean)

FitoGIS: phytosanitary layers

Quarantine pests monitoring

Some out from more 30 monitoring in FitoGIS:

- Since 2007 - *Dryocosmus kuriphilus* (chestnut)
- Since 2008 - Palm pests
- Since 2009 - *Pseudomonas syringae* pv. *actinidiae* (kiwifruit)
- Since 2011 - *Drosophila suzukii* (fruits)

Fireblight: more than **13000 points mapped** from 1994 to 2013

Sharka (PPV): more than **3000 areas mapped** from 1994 to 2013

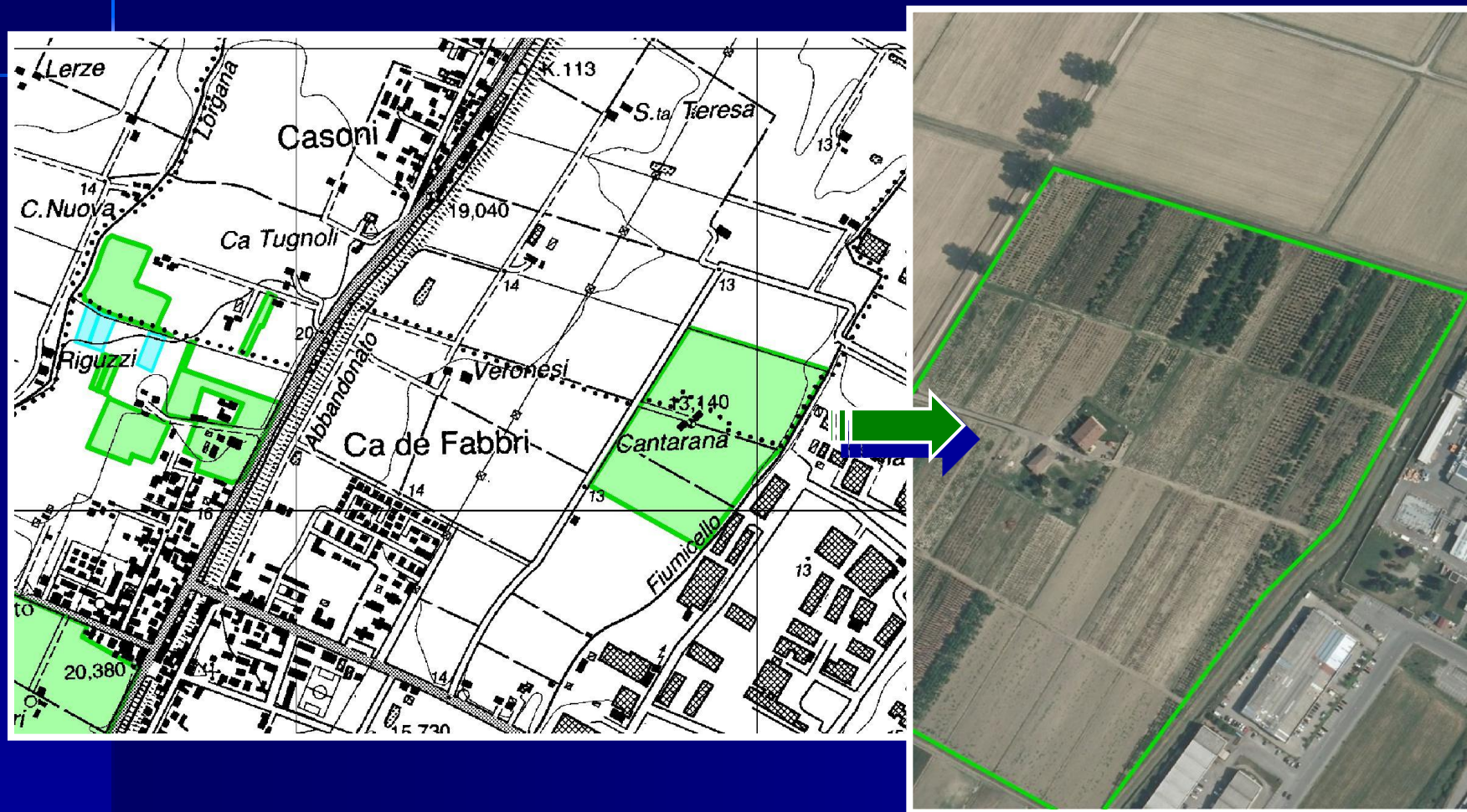
FitoGIS: phytosanitary layers

Areas under phytosanitary risk

- Nurseries
- Experimental fields
- Farms
- Seed companies
- Public green
- Waters
- Bee-hives movement

FitoGIS: phytosanitary layers

Areas under phytosanitary risk (nurseries)

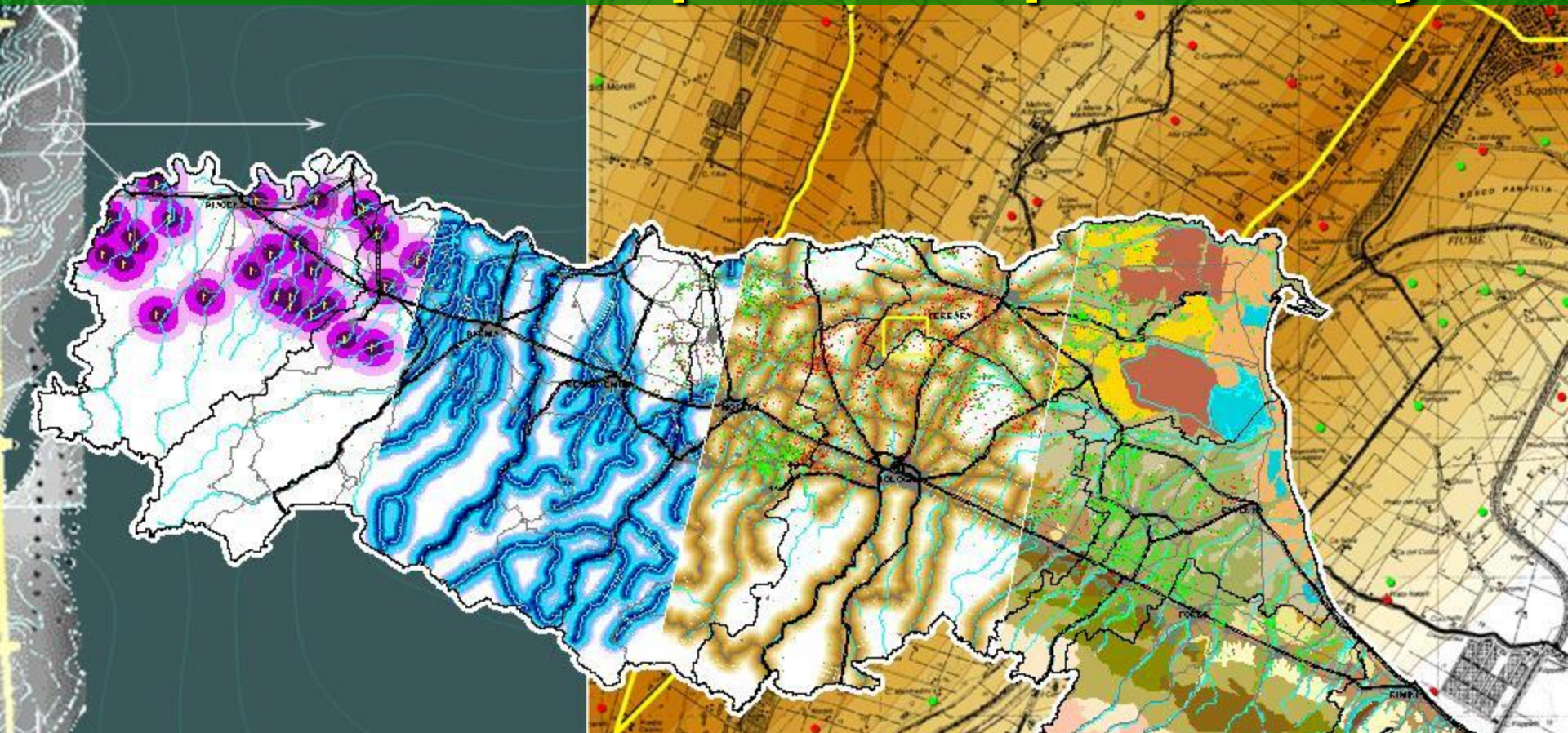


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Geo-referenced spatio-temporal analysis



Study to find possible relationships between the distribution of fire blight cases and monitoring points and different territorial features such as roads, rivers, pedology and weather stations in some years.

FitoGIS: uses

Buffer-zones monitoring for *Erwinia amylovora* (from 2001)

COM. DELLA PROV. DI BO

☐ ZONE TAMPONE

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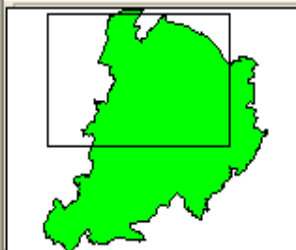
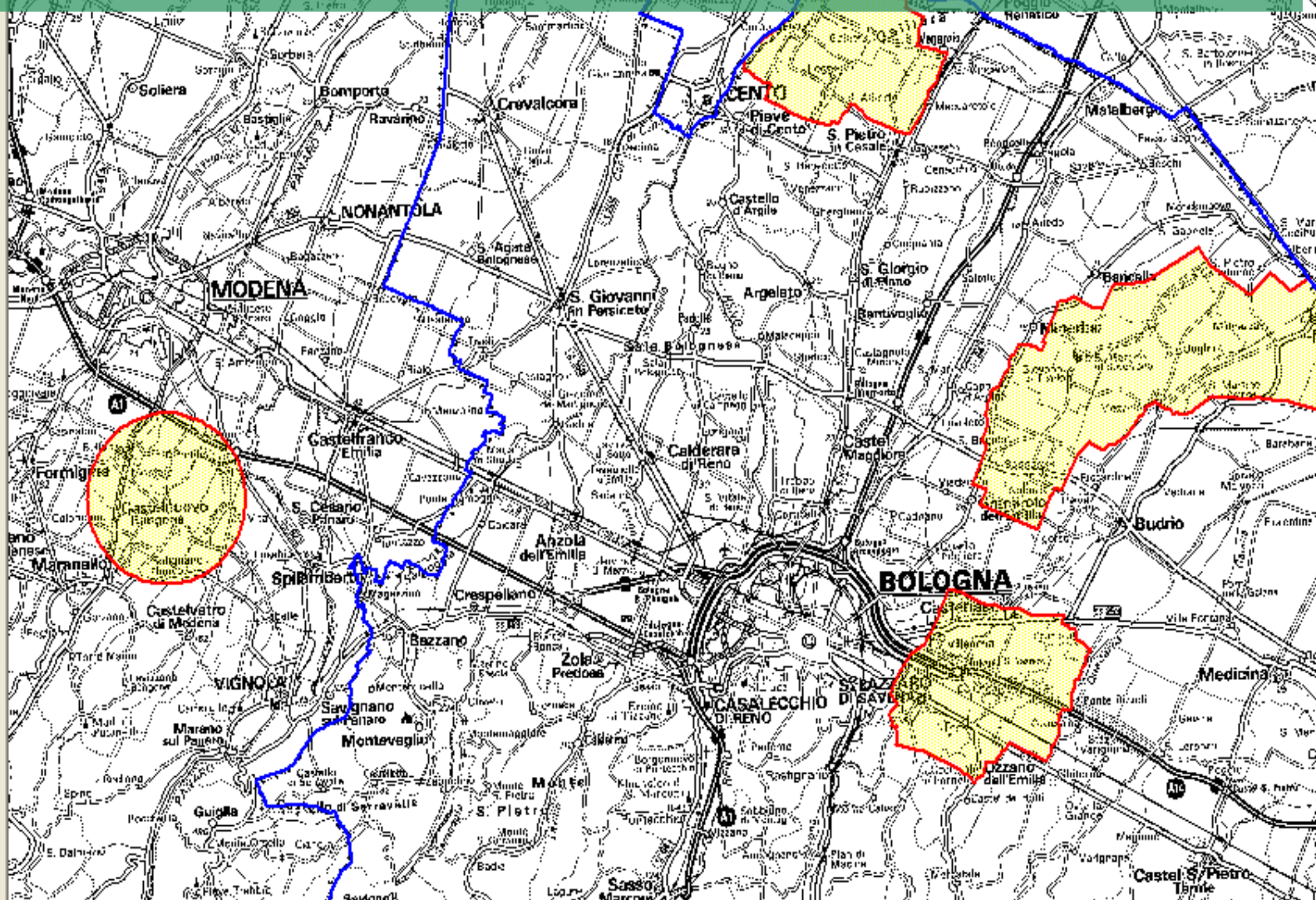
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Scale 1: 296,050

X: 661168.96 Y: 947735.07

FitoGIS: uses

Buffer-zones monitoring for *Erwinia amylovora* (from 2001)

Step 1

MONITORAGGIO ERWINIA

- ☒ VIVAI (CATEGORIA)
 - pomac
 - pomac-colt_va
 - drupac
 - drupac-colt_va
 - drupac-pomac
 - drupac-pomac-colt_va
 - colt_va
 - non identificato

☐ ZT 500 METRI

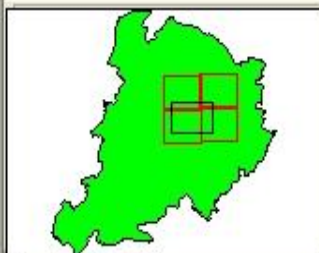
☐ ZONE TAMPONE

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☒ R25221NO.TIF (Image)

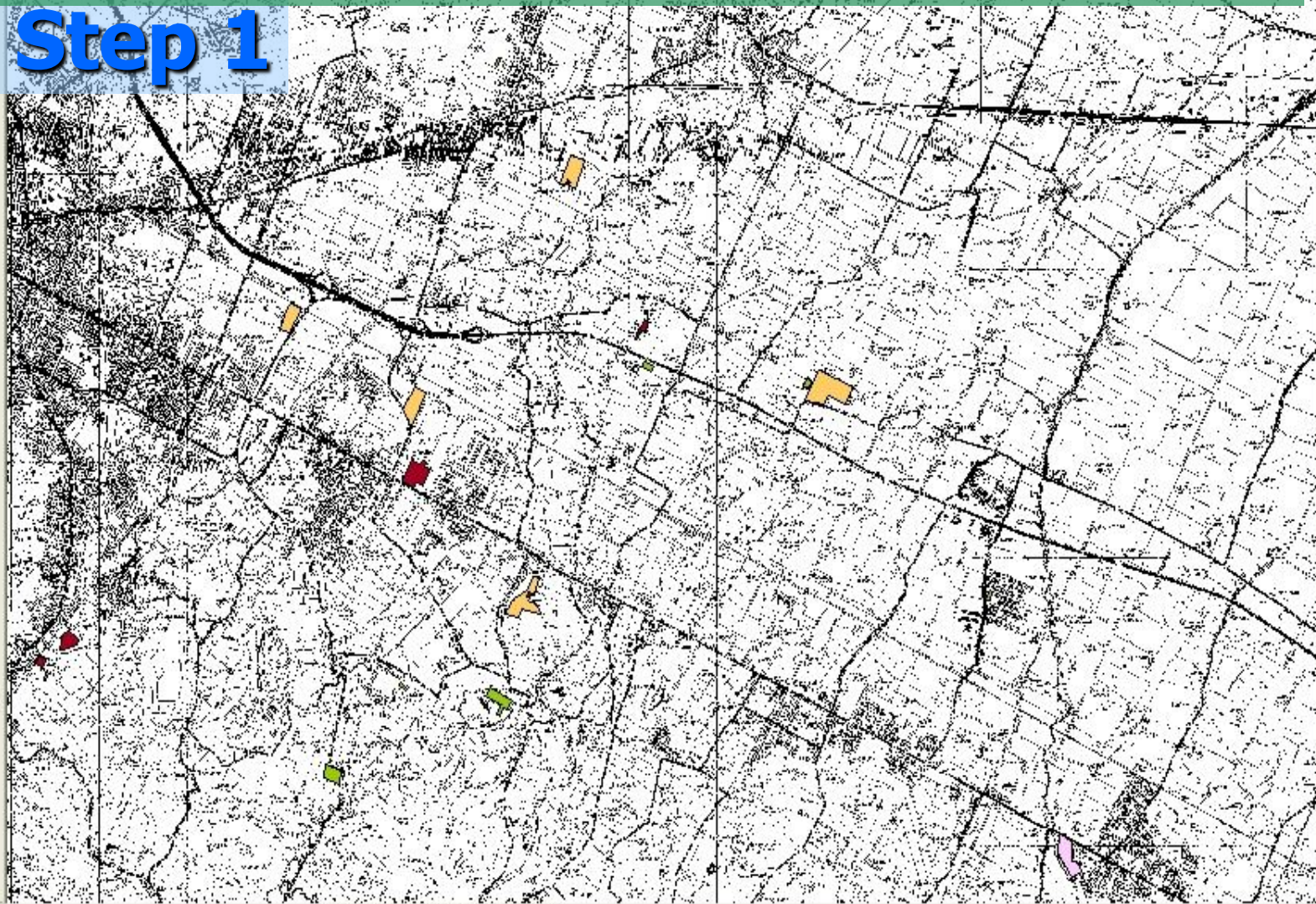
☒ R25221SE.TIF (Image)

☒ R25221SO.TIF (Image)



Scale 1 : 66.828

X: 688044,4 Y: 927645,72



FitoGIS: uses

Buffer-zones monitoring for *Erwinia amylovora* (from 2001)

MONITORAGGIO ERWINIA

- ☒ VIVAI (CATEGORIA)
- pomac
 - pomac-colt_va
 - drupac
 - drupac-colt_va
 - drupac-pomac
 - drupac-pomac-colt_va
 - colt_va
 - non identificato

☒ ZT 500 METRI

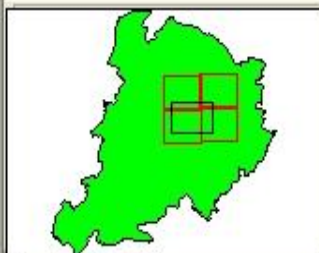
☐ ZONE TAMPONE

☒ R25221NE.TIF (Image)

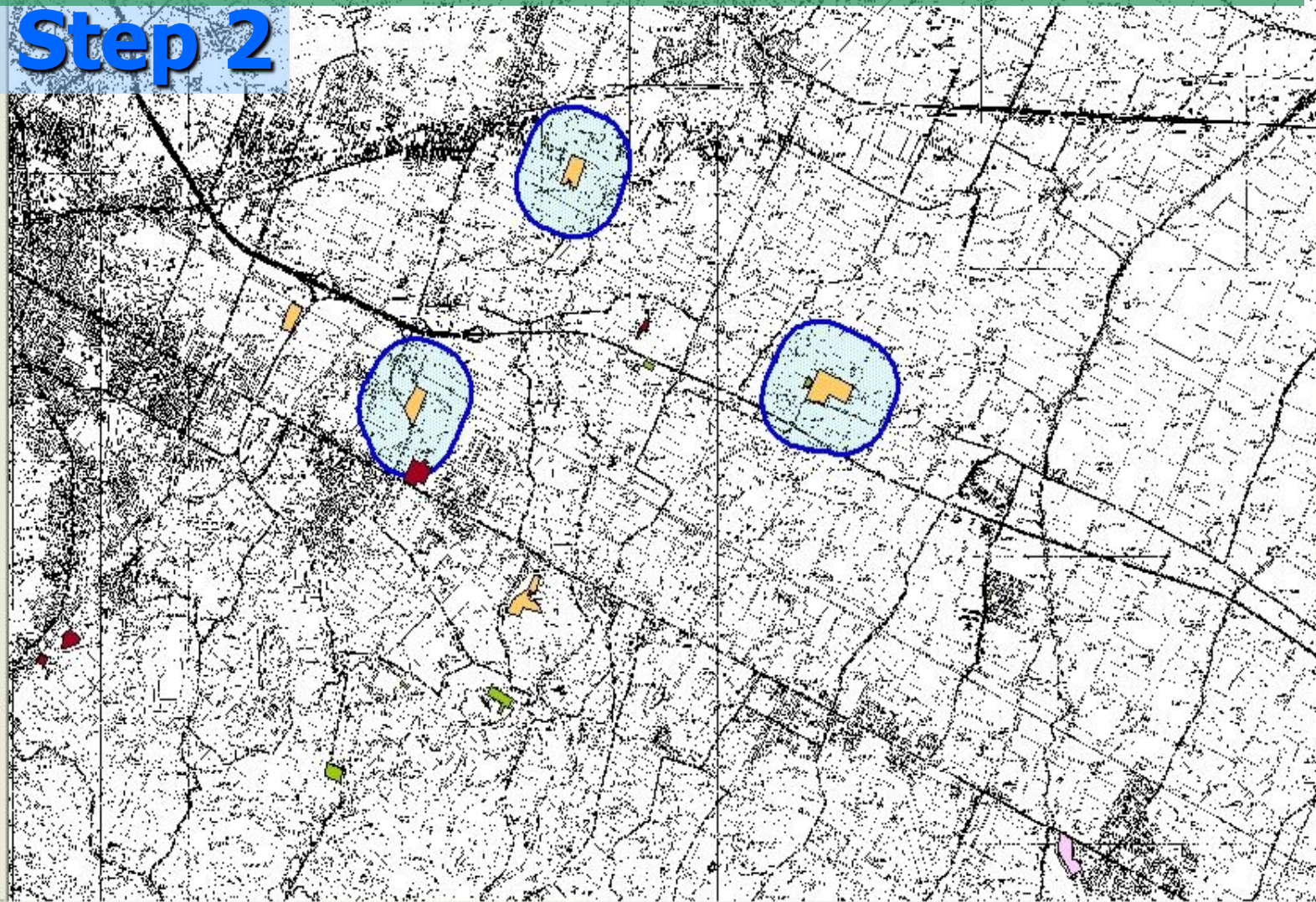
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☒ R25221SE.TIF (Image)

☒ R25221SO.TIF (Image)



Step 2



Scale 1 : 66.828

X: 691303,12 Y: 927218,34

FitoGIS: uses

Buffer-zones monitoring for *Erwinia amylovora* (from 2001)

Step 3

MONITORAGGIO ERWINIA

- ☒ VIVAI (CATEGORIA)
 - pomac
 - pomac-colt_va
 - drupac
 - drupac-colt_va
 - drupac-pomac
 - drupac-pomac-colt_va
 - colt_va
 - non identificato

☒ ZT 500 METRI



☒ ZONE TAMPONE

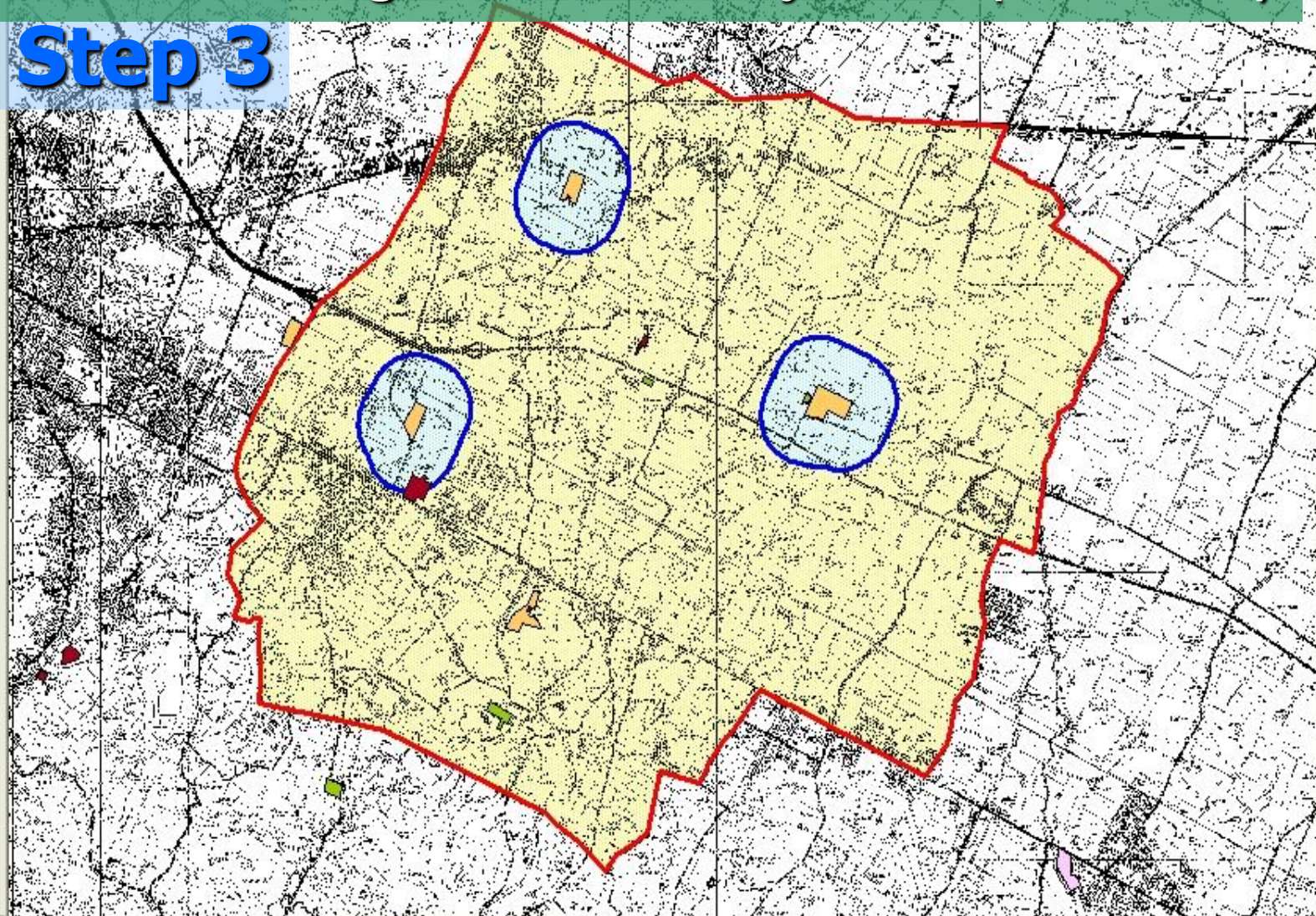
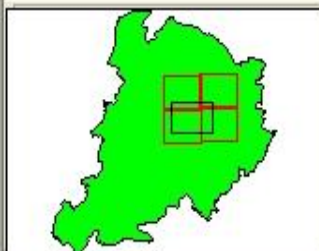


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☒ R25221SE.TIF (Image)

☒ R25221SO.TIF (Image)



Scale 1 : 66.828

X: 689504,6 Y: 929586,7

FitoGIS: uses

Buffer-zones monitoring for *Erwinia amylovora* (from 2001)

Step 4

☒ MONITORAGGIO ERWINIA

☒ VIVAI (CATEGORIA)

- pomac
- pomac-colt_va
- drupac
- drupac-colt_va
- drupac-pomac
- drupac-pomac-colt_va
- colt_va
- non identificato

☒ ZT 500 METRI



☒ ZONE TAMPONE

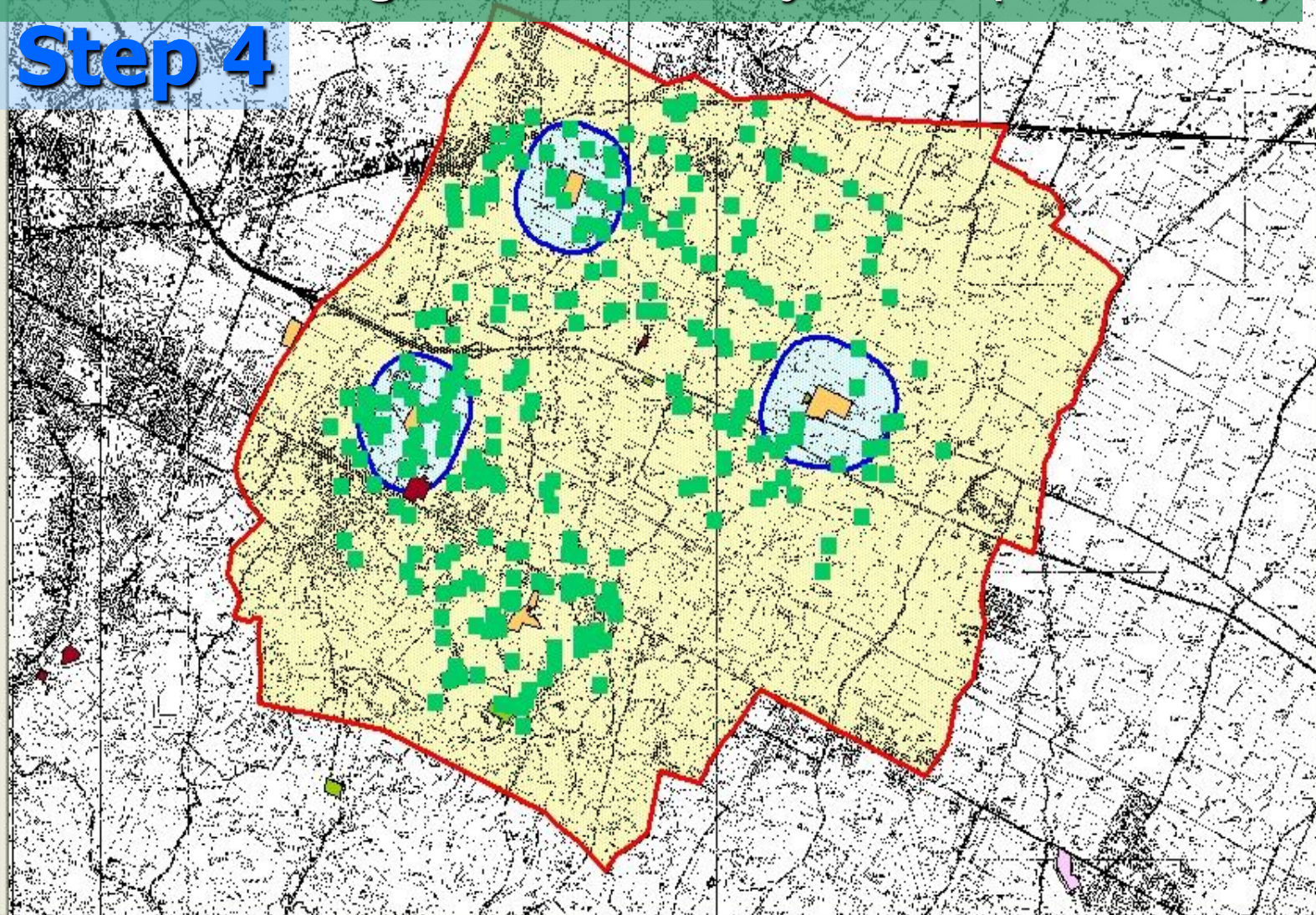
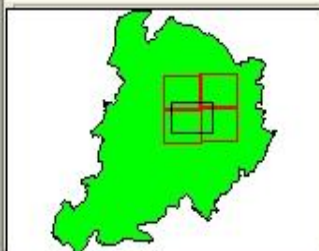


☒ R25221NE.TIF (Image)

☒ R25221NO.TIF (Image)

☒ R25221SE.TIF (Image)

☒ R25221SO.TIF (Image)



FitoGIS: uses

Buffer-zones monitoring for *Erwinia amylovora* (from 2001)

Step 5

☒ MONITORAGGIO ERWINIA

☒ VIVAI (CATEGORIA)

- pomac
- pomac-colt_va
- drupac
- drupac-colt_va
- drupac-pomac
- drupac-pomac-colt_va
- colt_va
- non identificato

☒ ZT 500 METRI



☒ ZONE TAMPONE

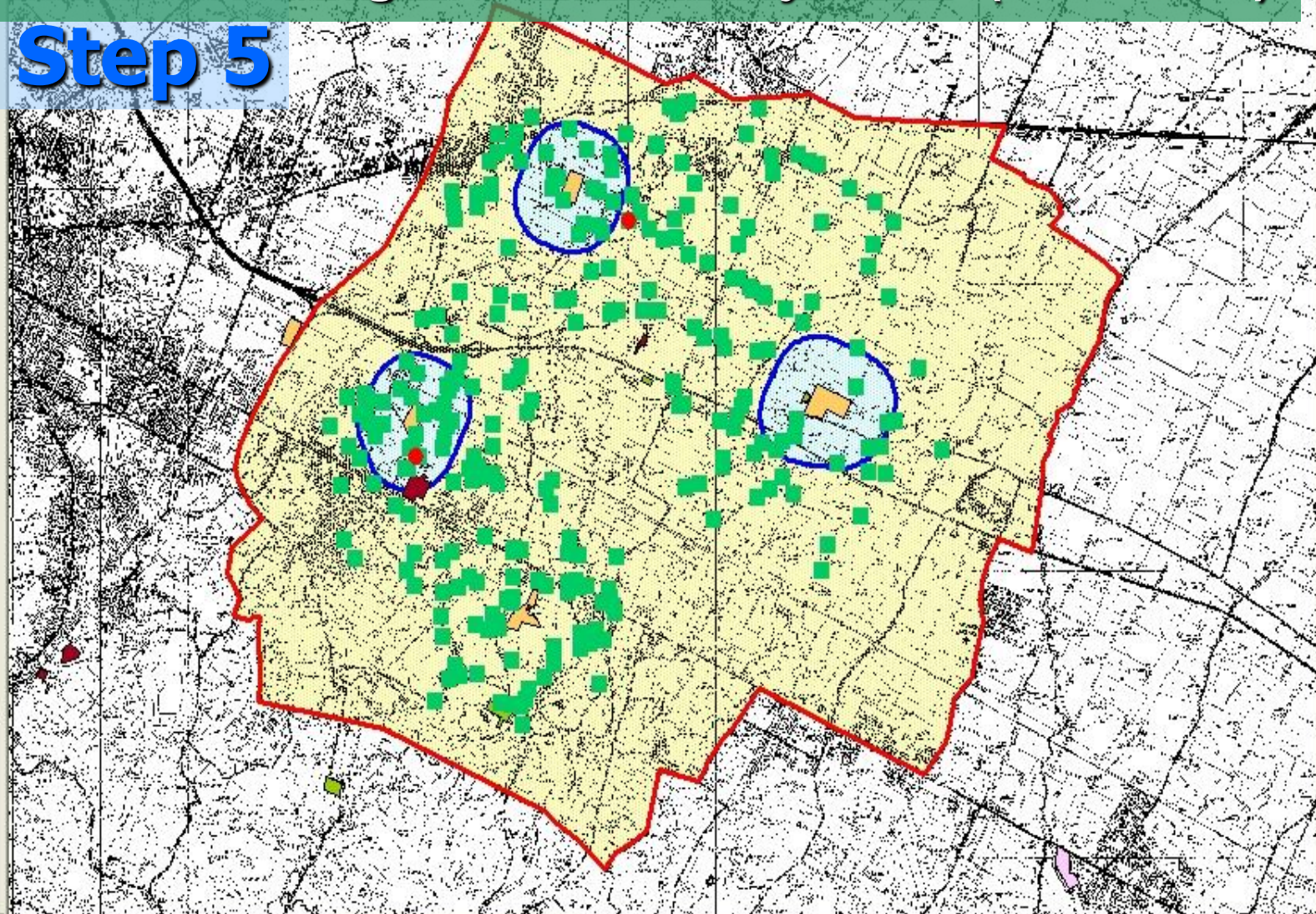
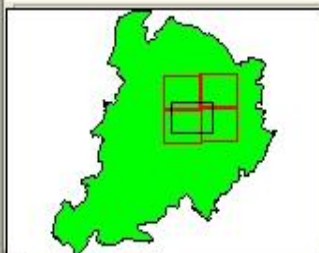


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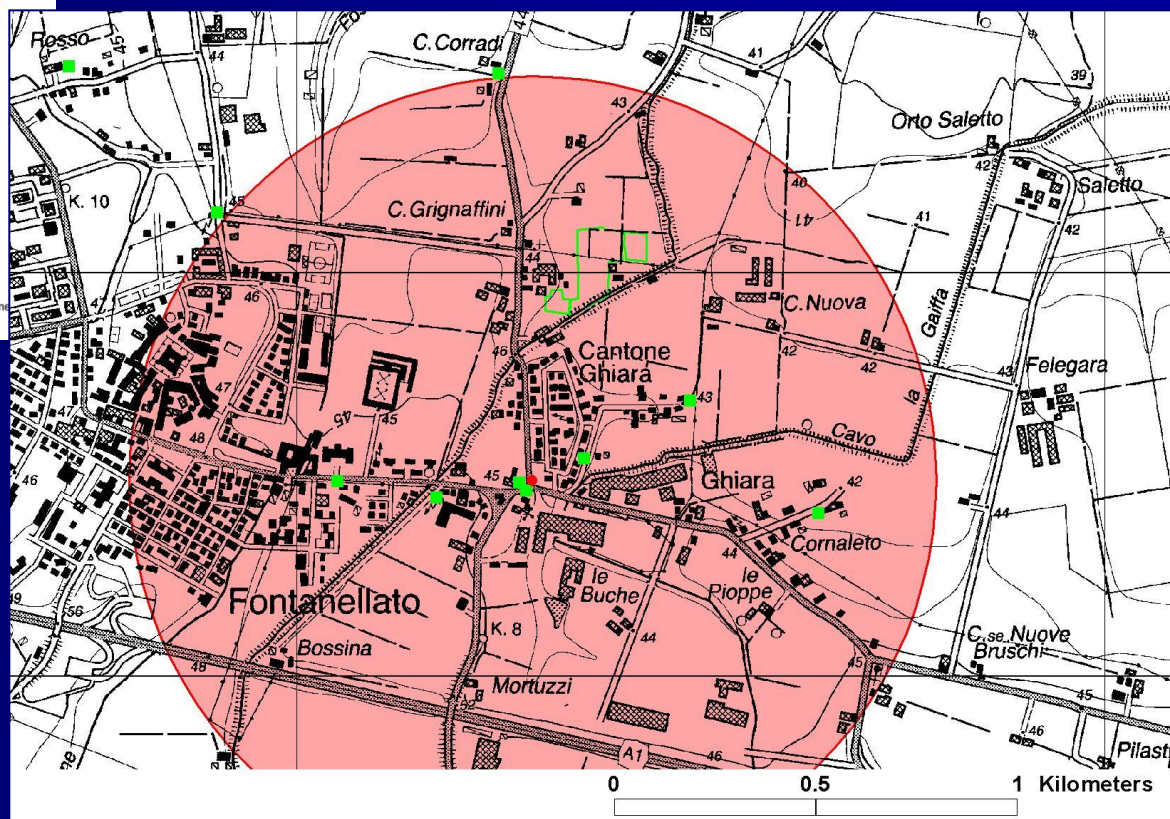
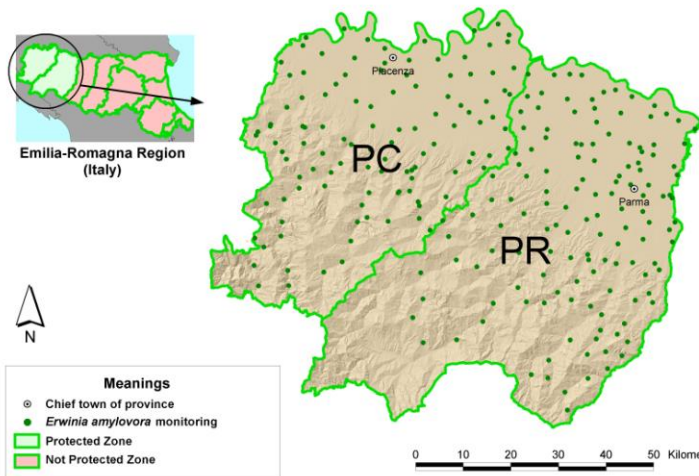
☒ R25221SE.TIF (Image)

☒ R25221SO.TIF (Image)



FitoGIS: uses Protected Zones for *Erwinia amylovora*

Protected Zone (Parma and Piacenza provinces)

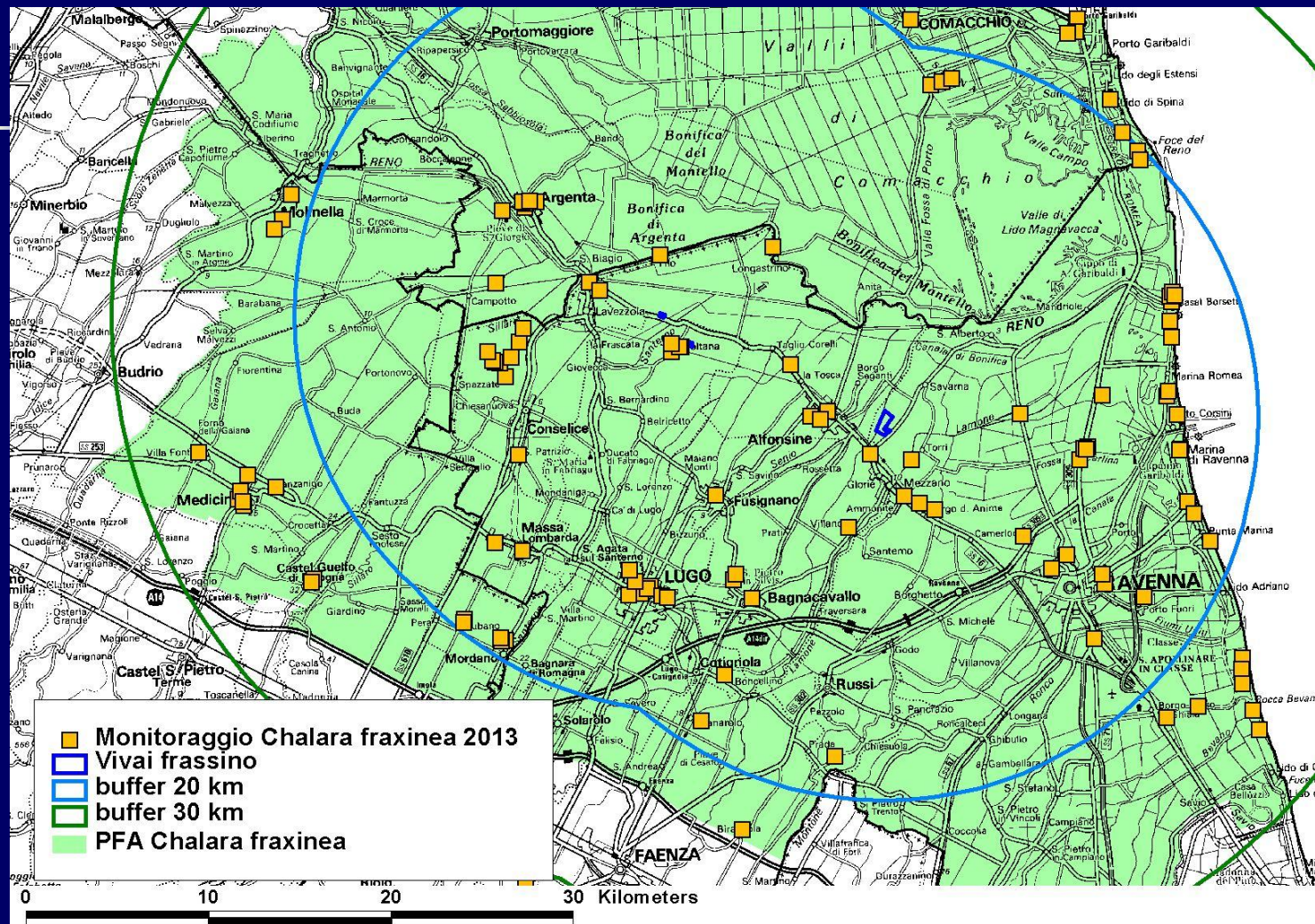


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FitoGIS: uses Management of PFA (*Chalara fraxinea*)



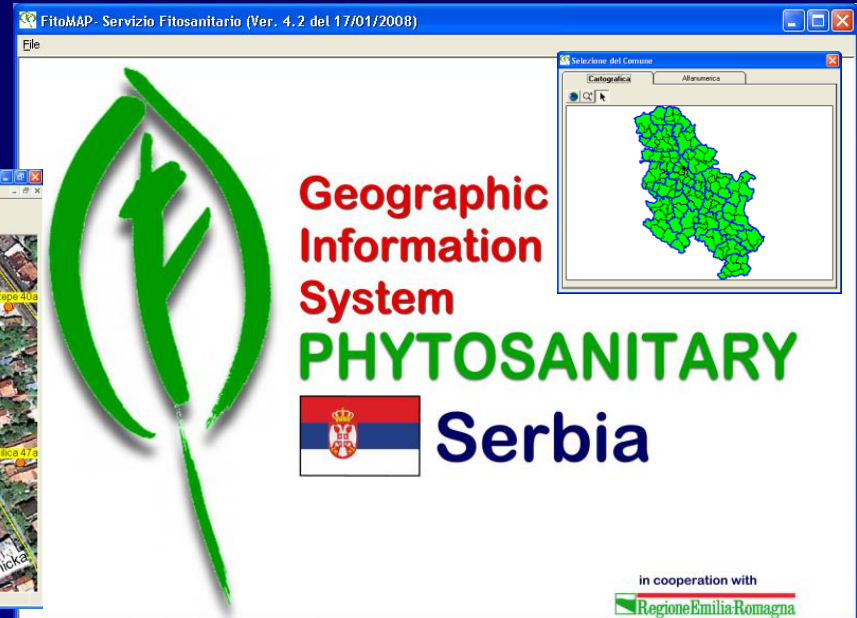
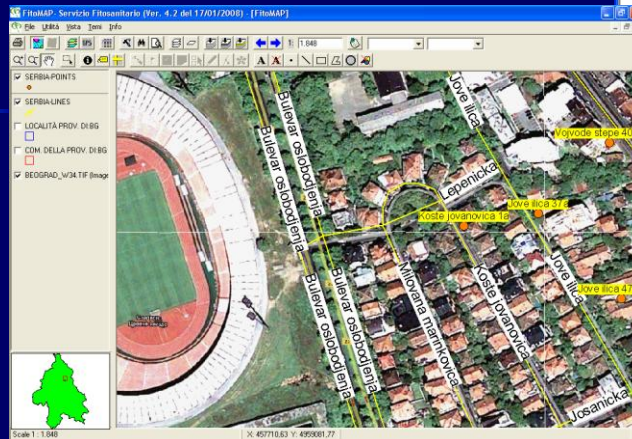
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FitoGIS: collaborations with:

Serbia



Veneto Region (S.F.R)



Piemonte Region (S.F.R.)



Marche Region (S.F.R.)



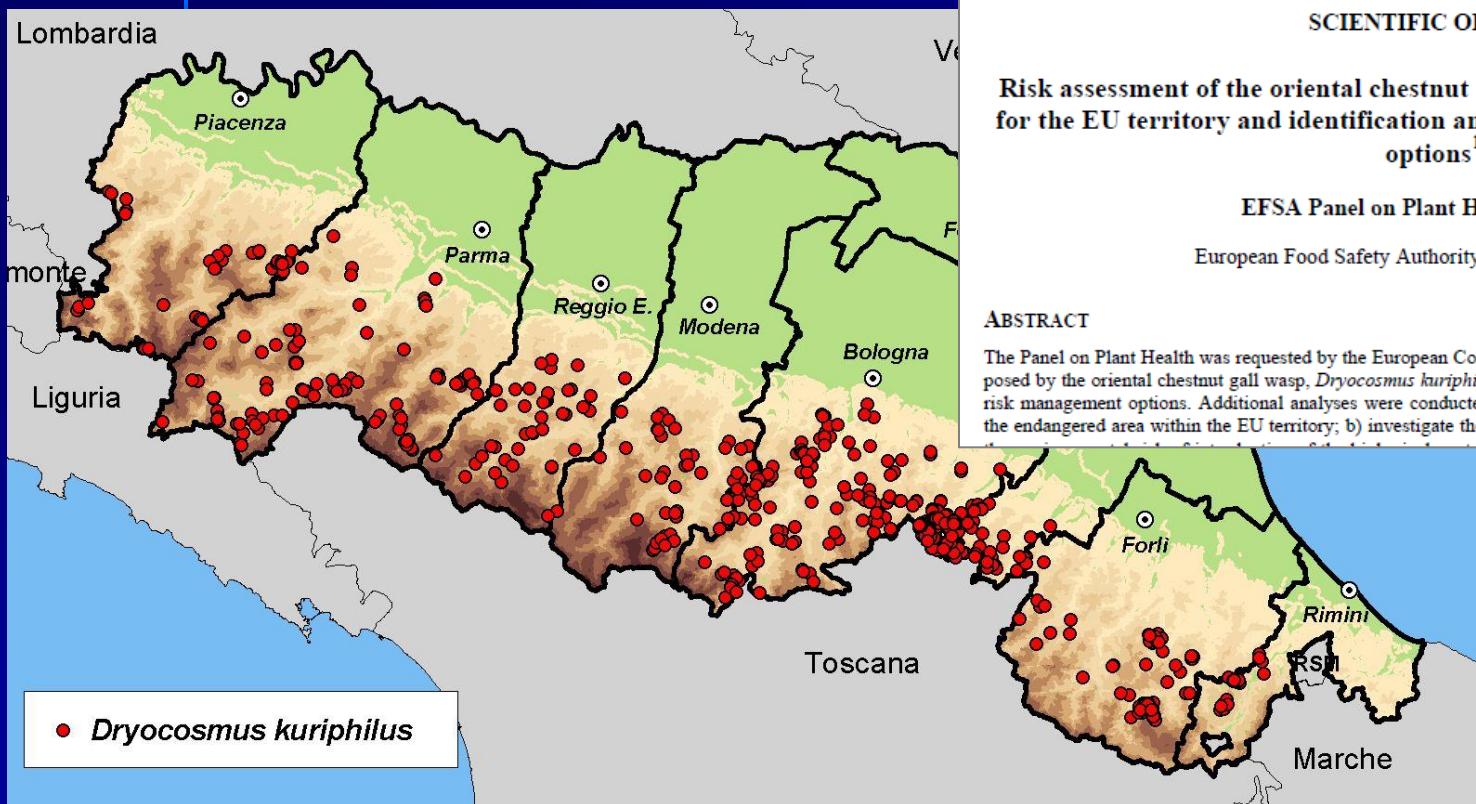
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FitoGIS: scientific collaboration for risk management

Dryocosmus kuriphilus



European Food Safety Authority

EFSA Journal 2010; 8(6):1619

SCIENTIFIC OPINION

Risk assessment of the oriental chestnut gall wasp, *Dryocosmus kuriphilus* for the EU territory and identification and evaluation of risk management options¹

EFSA Panel on Plant Health (PLH)^{2,3}

European Food Safety Authority (EFSA), Parma, Italy

ABSTRACT

The Panel on Plant Health was requested by the European Commission to deliver a scientific opinion on the risk posed by the oriental chestnut gall wasp, *Dryocosmus kuriphilus* to the EU territory and to identify and evaluate risk management options. Additional analyses were conducted by the Panel to a) determine the distribution of the endangered area within the EU territory; b) investigate the pattern and rate of pest diffusion and c) consider

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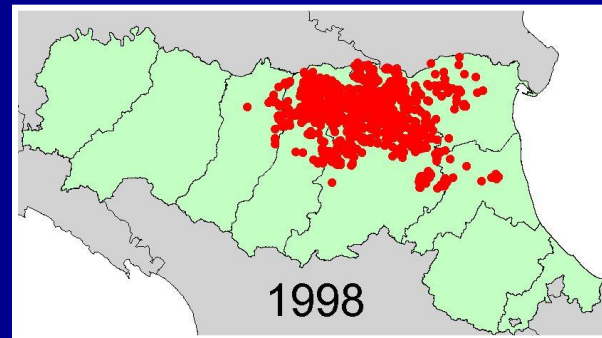
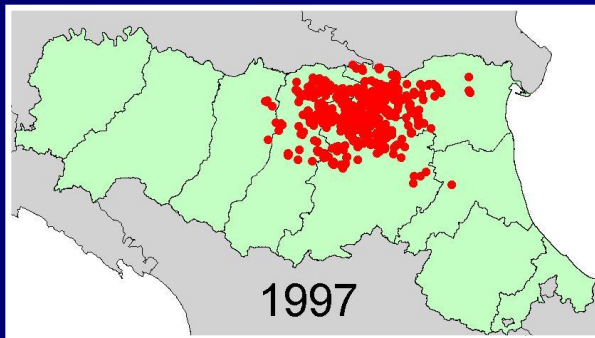
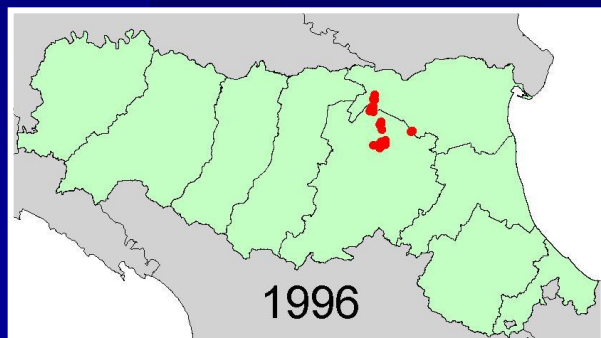
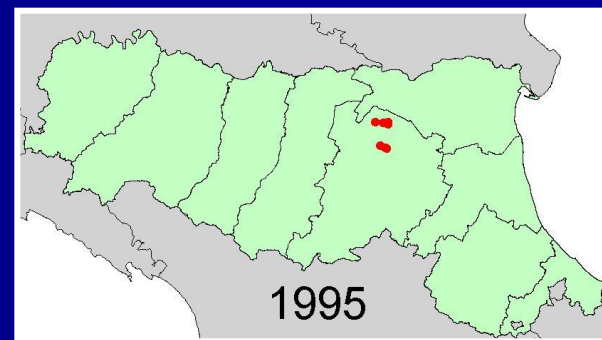
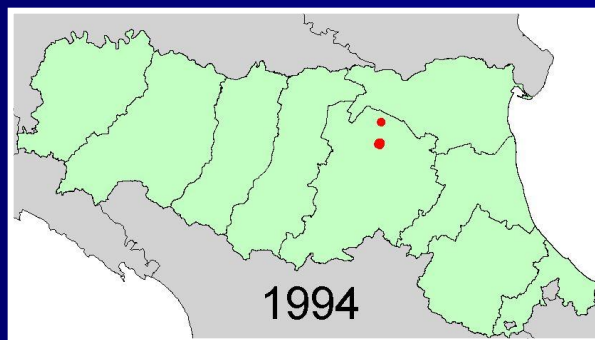
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FitoGIS: scientific collaboration for risk management

Australia - providing co-ordinates of fireblight foci in different years

Year	N° foci
1994	5
1995	6
1996	21
1997	317
1998	506



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FitoGIS: specific mapping on WEB

<http://agricoltura.regione.emilia-romagna.it/fitosanitario/doc/cartografia>

The screenshot displays the FitoGIS web application interface. The main window shows a map of Emilia-Romagna, Italy, with various plant health zones highlighted in different colors. The map is titled "Cartografia Fitosanitaria" and includes a scale bar and coordinate information. The sidebar on the left contains a legend with the following items:

- ☒ Cartografia Fitosanitaria
 - ☒ Sharka (P.P.V.)
 - ☒ Zone di insediamento
 - ☒ Zone tampone
 - ☒ PSA (Pseudomonas syringae actini)
 - ☒ Zone di contenimento
 - ☒ Zone di sicurezza
 - ☒ Zone fitosanitarie tutelate
 - ☒ Erwinia amylovora
 - ☒ Zone tampone - nuove
 - ☒ Zone tampone - confermate
 - ☒ Zone protette
 - ☒ Flavescenza dorata
 - ☒ Zone di insediamento

The interface also includes a header with the "E-R Agricoltura" logo and a sidebar with a "Vai alla cartografia fitosanitaria" link. The bottom of the interface shows the "Web GIS Design Semenda s.r.l." logo and the "Intranet locale" status.

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FitoGIS: next developments

- **Further integration with databases of Emilia-Romagna Region** (Farm registry, Producers Official Register, import-export certification, analyses laboratory, cadastre, ...)
- **Further integration with extra-regional databases** (municipalities, Land Reclamation Bodies, producers associations, ...)

Thank you for your patience