



Twinning projekt EU

”Dalje jačanje kapaciteta u fitosanitarnom sektoru iz oblasti sredstava za zaštitu bilja, zdravlja bilja, sjemena i sadnog materijala, uključujući fitosanitarne laboratorije i fitosanitarnu inspekciju”





EU Twinning Project
in Bosnia and Herzegovina



Assistance in the development
of a monitoring database related to
GIS technology FitoGIS

Podrška razvoju baze podataka
za monitoring vezane za
GIS tehnologiju FitoGIS

G. Benedettini, G.L. Mazzoli



EMILIA-ROMAGNA REGION
AGRICULTURE DEPARTMENT

PLANT PROTECTION SERVICE



FiloGIS

Phytosanitary informative territorial system in Emilia-Romagna

**Fitosanitarni
informativni teritorijalni sistem
Emilije-Romanje**

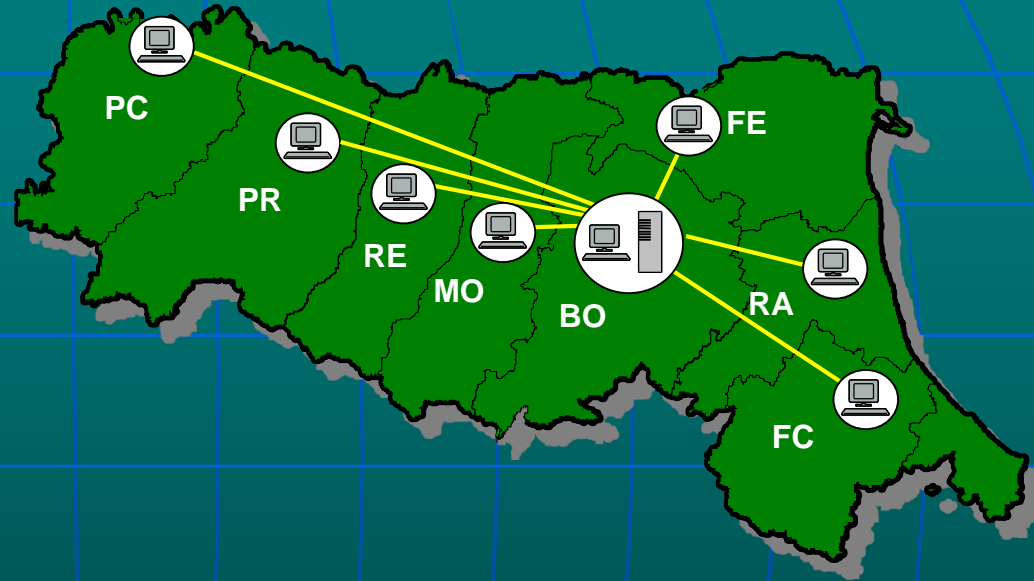
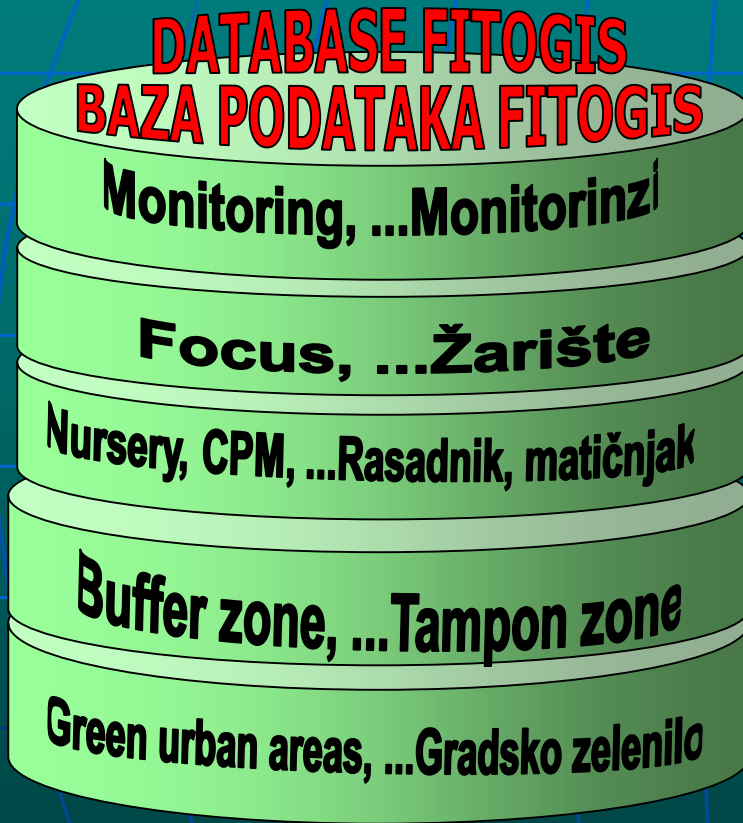
- 1994 Planning and test
1994 Projektovanje i test
- 1997 Performance
1997 Operativnost
- 1999 FitoMAP 1.0
1999 FitoMAP 1.0
- 2000 Use of GPS
2000 Primjena GPS-a
- 2006 FitoPAD 1.0
2006 FitoPAD 1.0
- 2009 FitoPAD 4.2 - FitoPAD 2.0
2009 FitoPAD 4.2 - FitoPAD 2.0

2015-2016 Planning and test FitoGIS Web
2015-2016 Projektovanje i test FitoGIS Web



Fitogis

Architecture and integration SIT Emilia-Romagna Arhitektura i integracija TIS Emilija-Romanja



Server and data base SFR
Server i baza podataka RFS

SFR internal user
internih korisnika iz RFS
SFR external user
spoljnih korisnika iz RFS
External institutional user
institucionalnih spoljnih korisnika



Employed technology (PC) Primijenjena tehnologija (PC)



- 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)*
- Since 2008 - Palm pests*
- Since 2009 - Pseudomonas syringae pv. actinidiae (kiwifruit)*
- Since 2011 - Drosophila suzukii (fruits)*
- Since 2015 - Clavibacter m michiganensis (tomato)*
- Since 2015 – Xylella fastidiosa (various cultures)*

Acidovorax citrulli (cucurbits)

Apple Proliferation (apple)

Gibberella circinnata (pine)

Chalara fraxinea (ash)

Dryocosmus kuriphilus (chestnut)

Halyomorpha (various cultures)

Pepino mosaic virus - PepMV (tomato)

Phytophthora ramorum (various cultures)

Seed crops pests

Stolbur (tomato)

New monitoring 2016

Novi monitoring 2016

Epitrix similaris (potato)

Rhagoletis fausta (cherries)

Rhagoletis pomonella (apple)

Tomato leaf curl New Delhi virus - ToLCNDV (solanaceous)

Monitoring Erwinia amylovora:

More than 13.000 spots since 1994 to 2015

preko 13.000 kontrolisanih tačaka od 1994. do 2009.

Monitoring Sharka - PPV:

More than 4.000 areas (5.600 ha) since 1994 to 2015

preko 4.000 kontrolisanih površina (5.600 ha) od 1994. do 2009.

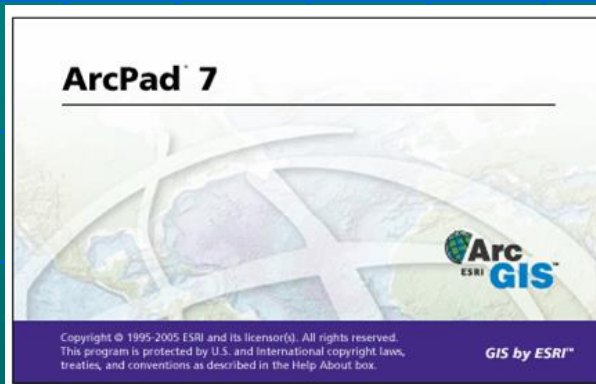
Monitoring Xylella fastidiosa:

More than 1600 areas in 2015 (first year)

preko 1600 kontrolisanih površina u 2015 (prva godina).

Instrumenti

Instrumenti

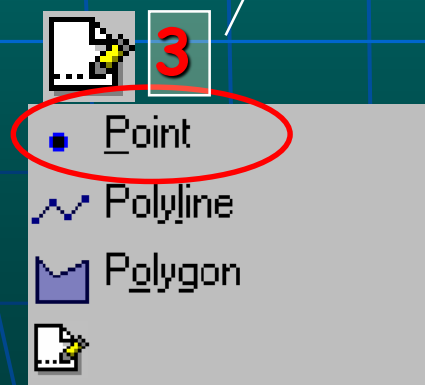
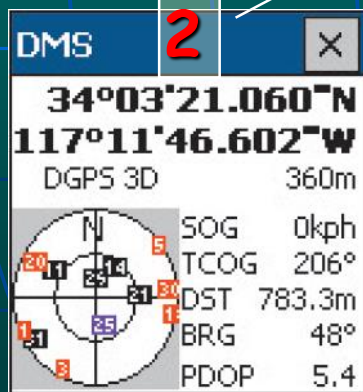
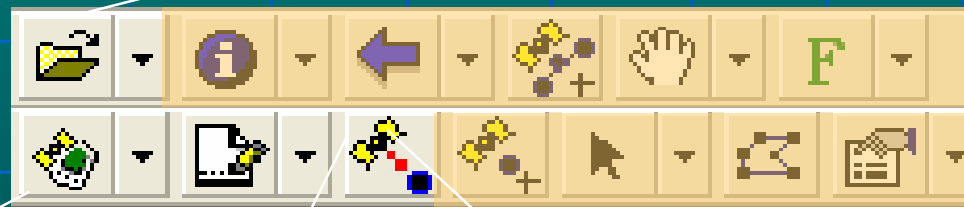
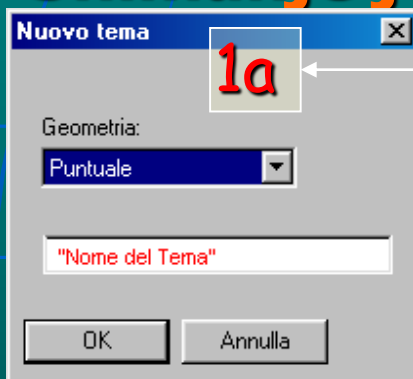
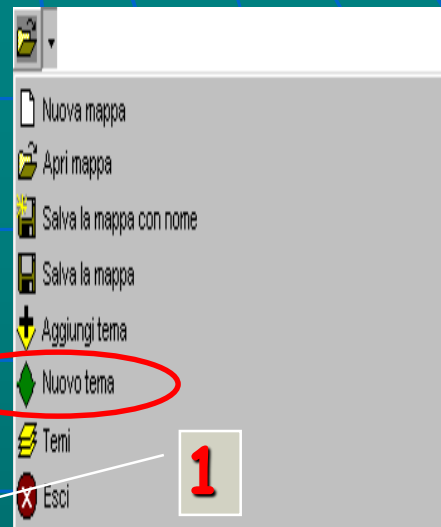


WAAS / EGNOS integrated
integriran



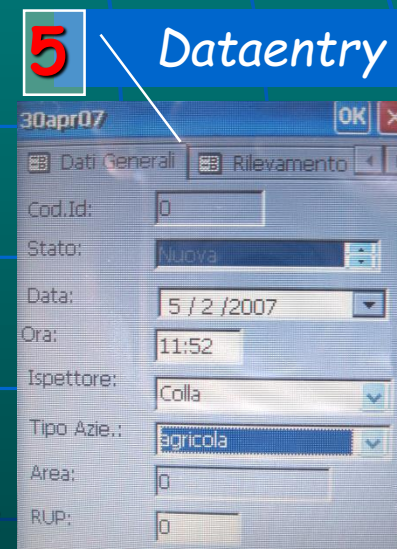
The detection of a point

Snimanje jedne tačke



GPS position of a site

Pozicija GPS na istaknutom mjestu



The detection of a polygon

Snimanje jednog poligona



5 Dataentry

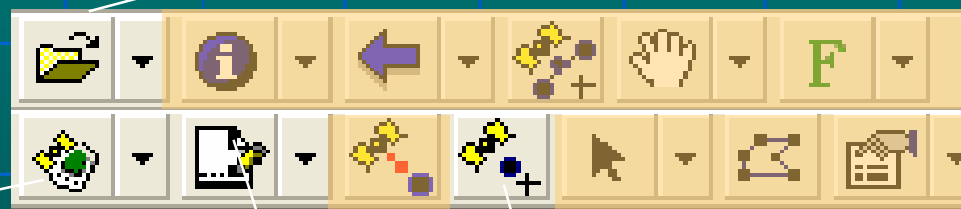
Nuovo tema 1a

Geometria:
Poligonale

"Nome del Tema"

OK Annulla

- Nuova mappa
- Apri mappa
- Salva la mappa con nome
- Salva la mappa
- Aggiungi tema
- Nuovo tema** 1
- Temi
- Esce

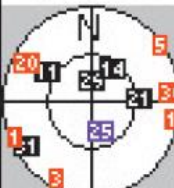


DMS 2

34°03'21.060°N
117°11'46.602°W

DGPS 3D 360m

SOG	0kph
TCOG	206°
DST	783.3m
BRG	48°
PDOP	5.4



3

- Point
- Polyline
- Polygon**



30Apr07

Dati Generali Rilevamento

Cod.Id: 0

Stato: Nuova

Data: 5 / 2 /2007

Ora: 11:52

Ispettore: Colla

Tipo Azie.: agricola

Area: 0

RUP: 0

GPS position of a site (vertex)
Pozicija GPS-a na najvišoj tački (vrhovi)



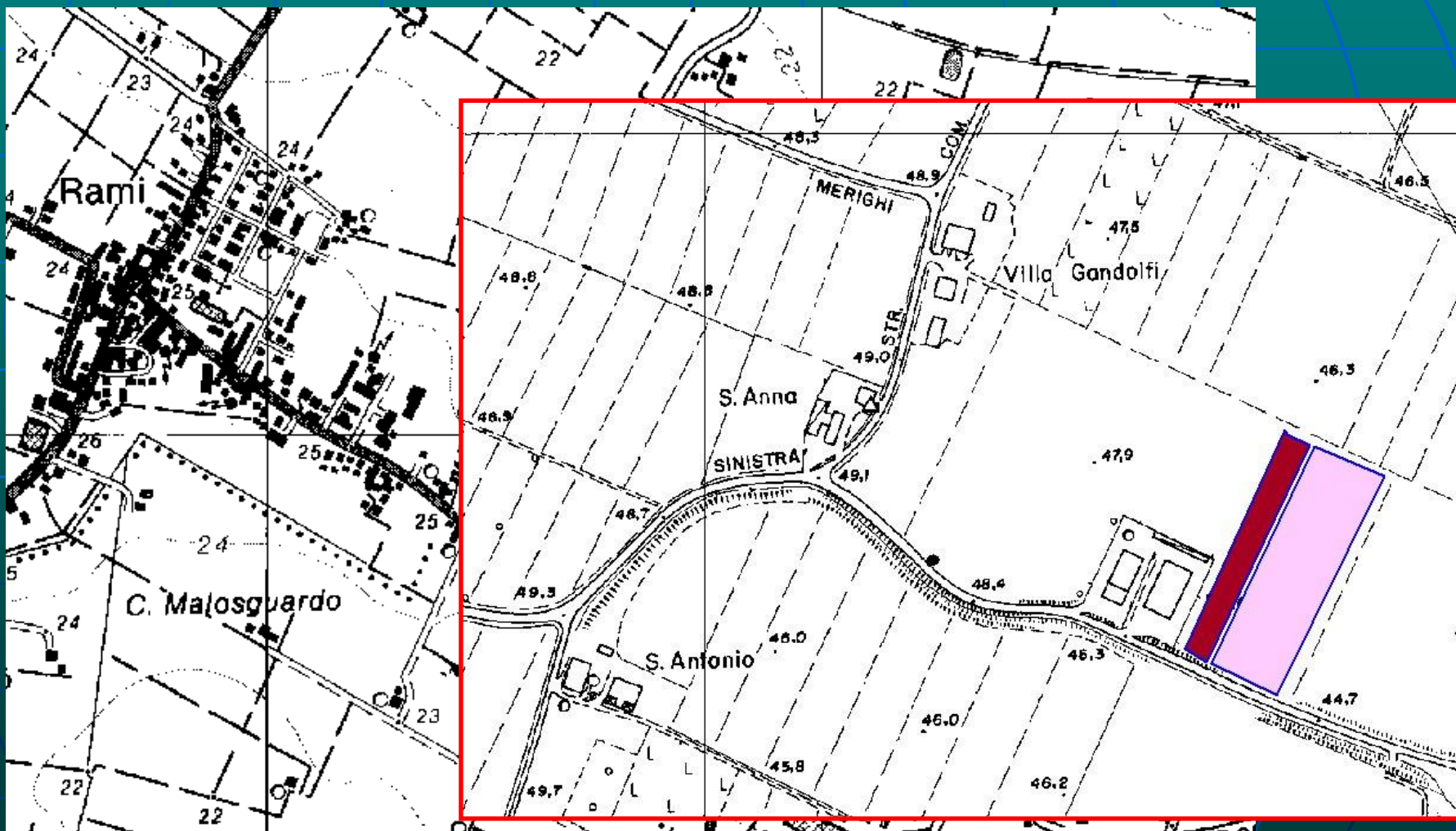
Nursery	Rasadnici
Farm	Poljoprivredne firme
Seed company	Sjemenske firme
Public green area	Javno zelenilo
Green urban area	Gradsko zelenilo
Dryng kiln	Sušnice
Olive oil mill	Drobilice
Sawmill	Pilane
Experimental field	Ogledna polja
Quarantine sites	Karantinski prostori
Water monitoring	Monitoring voda
Apiary movement ..	Premještanje košnica



Cartografia di riferimento **Relevantna kartografija**

- Map (CTR) 1:250.000, 1:25.000, 1:5.000
topografska karta (CTR) 1:250.000, 1:25.000, 1:5.000
- Colour air photo (2014)
Slike iz zrakau boji (2014)
- Infrared air photo (2011)
Infracrvene fotografije iz zraka(2011)
- Panchromatic and multispectral satellite image
Satelitske slike panhromatske i multispektralne

CTR 1:25.000 - 1:10.000 - 1:5.000 - multiscalata





Colour air photo

Fotografije iz zraka u boji



Infrared image

Slika infracrvena



Other informative contents (raster and vectorial)

Ostali informativni sadržaji (raster i vektorski)

Soil map

Karta korišćenja tla

Vegetation map

Karta vegetacije

Pedological map

Pedološka karta

Geological map

Geološka karta

Grapewine register

Katastar vinogradarstva

Weather

Meteorološki

Rivers, Canals, Lakes

Reke, Kanali, Jezera

Administrative limit

Administrativne granice

Built-up area

Naseljeni centri

Roads and house number

Putevi i kućni brojevi

Soil digital model

Digitalni model terena

Contour line

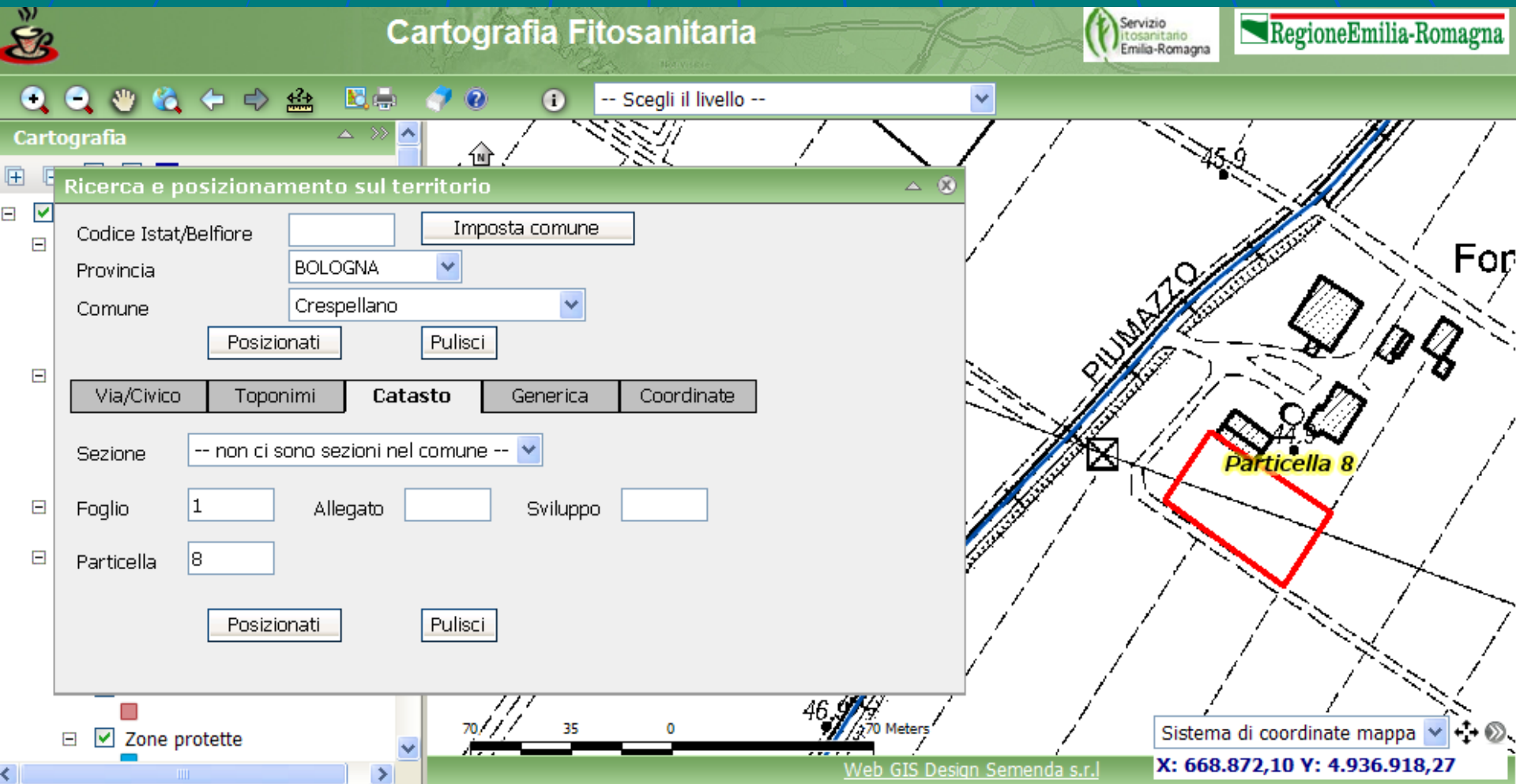
Krivulje nivoa terena

Spot elevation

Kotirane tačke

Cadastral integrated services

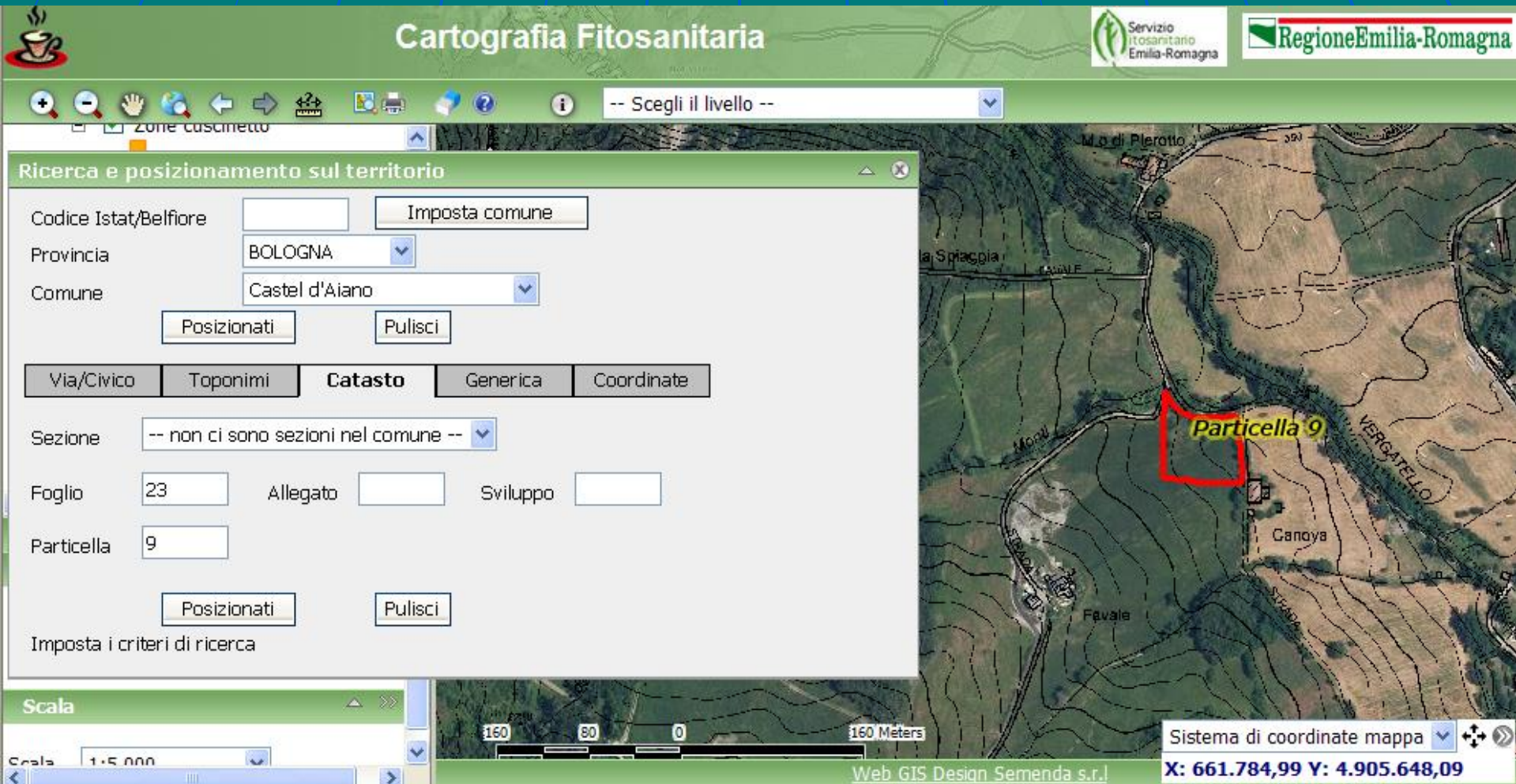
Integrirani katastarski servisi



The screenshot displays the FitoGIS web application interface. At the top, the title "Cartografia Fitosanitaria" is visible, along with logos for the Servizio fitosanitario Emilia-Romagna and Regione Emilia-Romagna. The main map area shows a cadastral plan with a red rectangle highlighting a specific parcel labeled "Particella 8". A search window titled "Ricerca e posizionamento sul territorio" is open, containing the following fields and controls:

- Codice Istat/Belfiore: [] [Imposta comune]
- Provincia: BOLOGNA [v]
- Comune: Crespellano [v]
- Buttons: Posizionati, Pulisci
- Navigation tabs: Via/Civico, Toponimi, **Catasto**, Generica, Coordinate
- Sezione: -- non ci sono sezioni nel comune -- [v]
- Foglio: 1 [] Allegato: [] Sviluppo: []
- Particella: 8 []
- Buttons: Posizionati, Pulisci

At the bottom of the interface, there is a scale bar (0 to 70 meters), a coordinate system dropdown menu, and the coordinates: X: 668.872,10 Y: 4.936.918,27. The footer includes the text "Web GIS Design Semenda s.r.l." and "EU Twinning Project in Bosnia and Herzegovina Assistance in the development of a monitoring database related to GIS technology".



Cartografia Fitosanitaria

Servizio fitosanitario Emilia-Romagna

Regione Emilia-Romagna

Zone Cuscinetto

-- Scegli il livello --

Ricerca e posizionamento sul territorio

Codice Istat/Belfiore Imposta comune

Provincia BOLOGNA

Comune Castel d'Aiano

Posizionati Pulisci

Via/Civico Toponimi **Catasto** Generica Coordinate

Sezione -- non ci sono sezioni nel comune --

Foglio 23 Allegato Sviluppo

Particella 9

Posizionati Pulisci

Imposta i criteri di ricerca

Scala

Scala 1:5.000

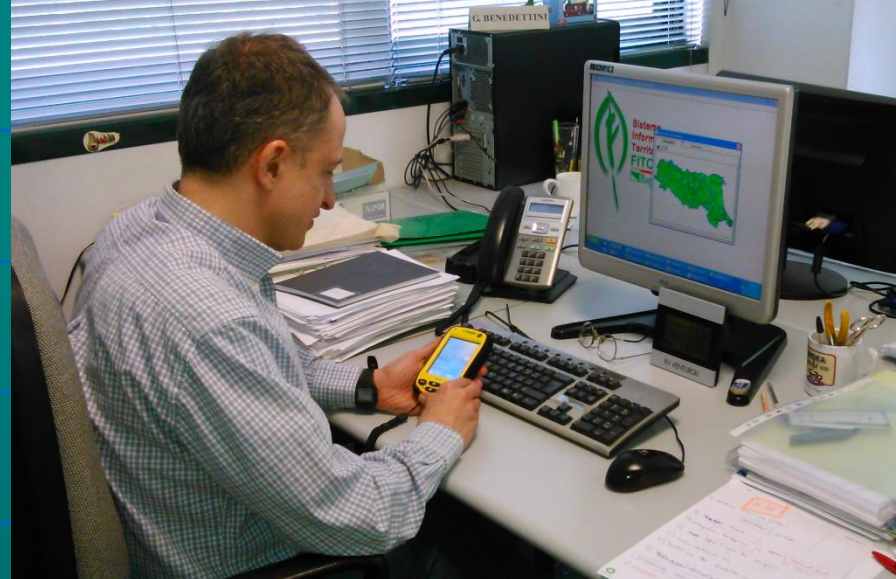
160 80 0 160 Meters

Sistema di coordinate mappa

Web GIS Design Semenda s.r.l.

X: 661.784,99 Y: 4.905.648,09

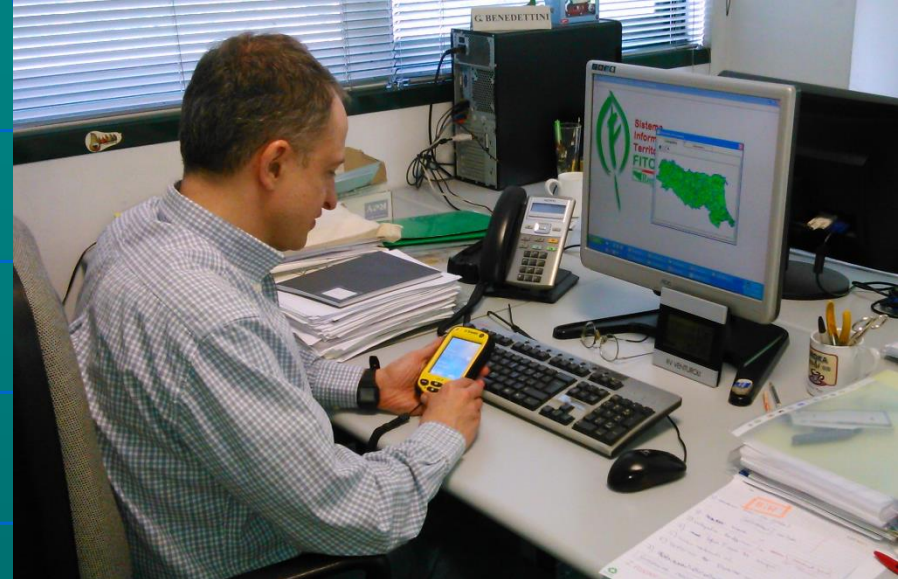
Use Upotreba



- Inspection activity planning
Programiranje aktivnosti inspekcije
- Support production for field activity
Izrada podloga za aktivnosti u polju
- Territory monitoring
Monitoring teritorije
- Thematic cartography publication on WEB
Publikacija tematskih kartografija na WEB-u
- Disclosure
Oglašavanje popularizacija

Use Upotreba

- Administrative documents
Administrativne dokumente
- Defining of Pest Free Area (PFE)
Definisanje Pest Free Area (PFE)
- Help for decisions
Pomoć kod donošenja odluka
- Data analysis concerning spreading of plant disease in time and space
Analiza podataka koji se odnose na fenomen širenja bolesti biljaka u vremenu i prostoru



FitoMAP - Servizio Fitosanitario (Ver. 4.2 del 17/01/2008) - [FitoMAP]

File Libertà Vista Temi Info

1: 22.818 Erwinia 2008 NOTE

ERWINIA 2008

VIVAI CAC BO 2009 (CATEC)

- pomac
- pomac-coll_va
- drupac
- drupac-coll_va
- drupac-pomac
- drupac-pomac-coll_va
- coll_va
- non identificato

LOCALITÀ PROV. DI:BO

COM. DELLA PROV. DI:BO

R252035E.TIF (Image)

R252035O.TIF (Image)

R25221NE.TIF (Image)

Scale 1 : 22.818 X: 694989,91 Y: 941738,45

Buffer

Selezione

Tema di riferimento per tracciare il Buffer: Erwinia 2008

Tema sul quale viene effettuata la selezione: Vivai CAC BO 2009

Inserire i dati per la generazione dei Buffers:

Da (m): 0 A (m): 1000 Simbologia: Buffer 1

Definizione grafica: Elevata Scarsa

Buffer sulle entità:

Selezionate

Presenti nella vista

Nr. 9 entità trovate

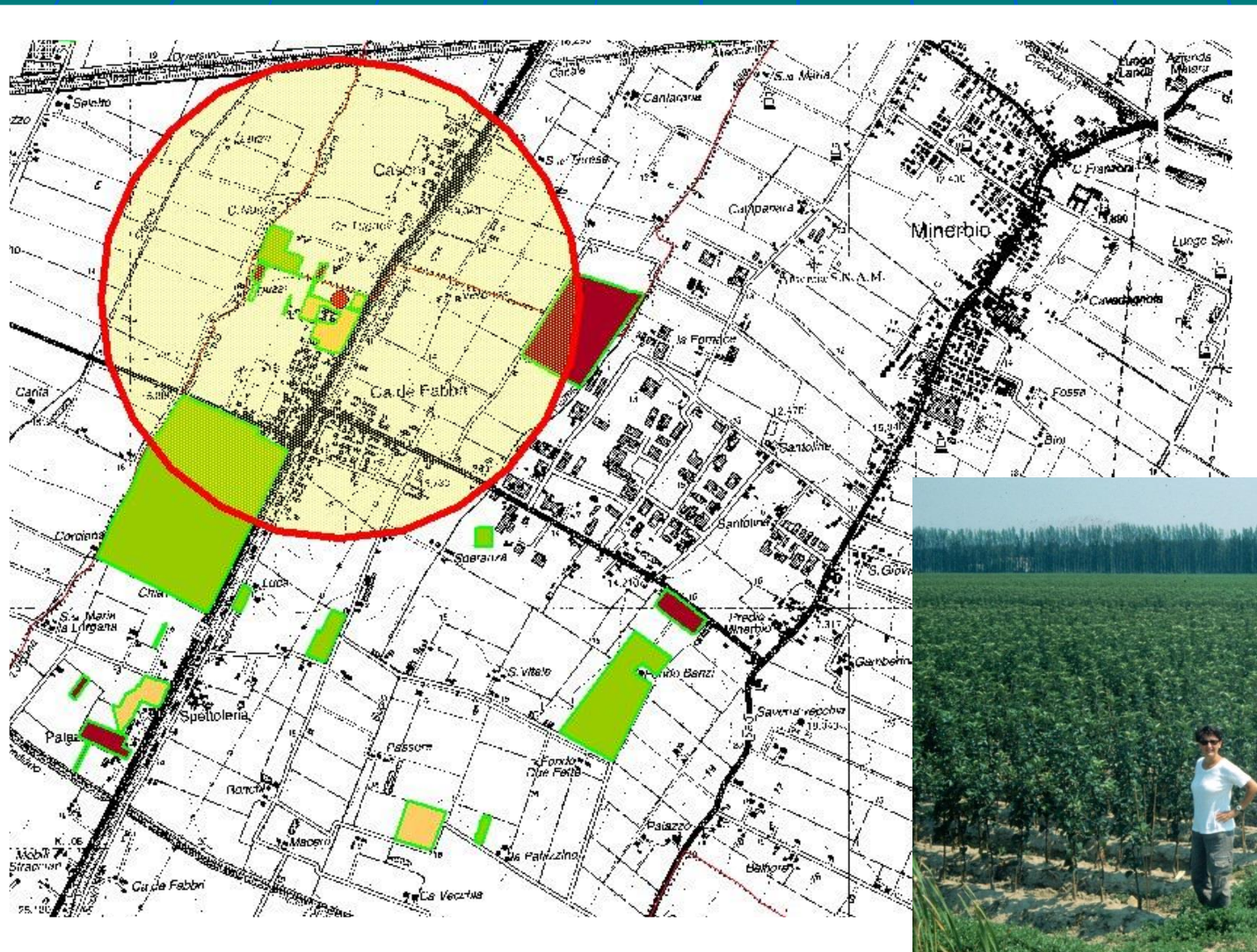
ORA	ISPETTORE	RUP	POMACEE	NOTE	AREA	CAMPIONE
09:48:53	Finelli	1854		GRUPPIONI ANGELO A	21051,873	
11:41:13	Finelli	218	ornamentali	MONTANARI ARMANDI	126482,366	
	Finelli	1854	ornamentali	GRUPPIONI ANGELO -	30518,572	
	Finelli	128		RIGHETTI MARCO	401252,308	
3:12:11 am	De Vincentis	1861	astoni	MENGOLI	3222,983	
3:30:26am	De Vincentis	1861	astoni	MENGOLI	554,486	
3:06:09am	De Vincentis	224	portinnesti	POLUZZI VITTORINO	2046,805	
3:19:09am	De Vincentis	224	portinnesti	POLUZZI VITTORINO	2879,347	
3:13:52am	De Vincentis	1861		MENGOLI	1678,618	

Caricamento griglia 0 9

Export

Path di destinazione c:\programmi\fitomap\exportnuovitemi

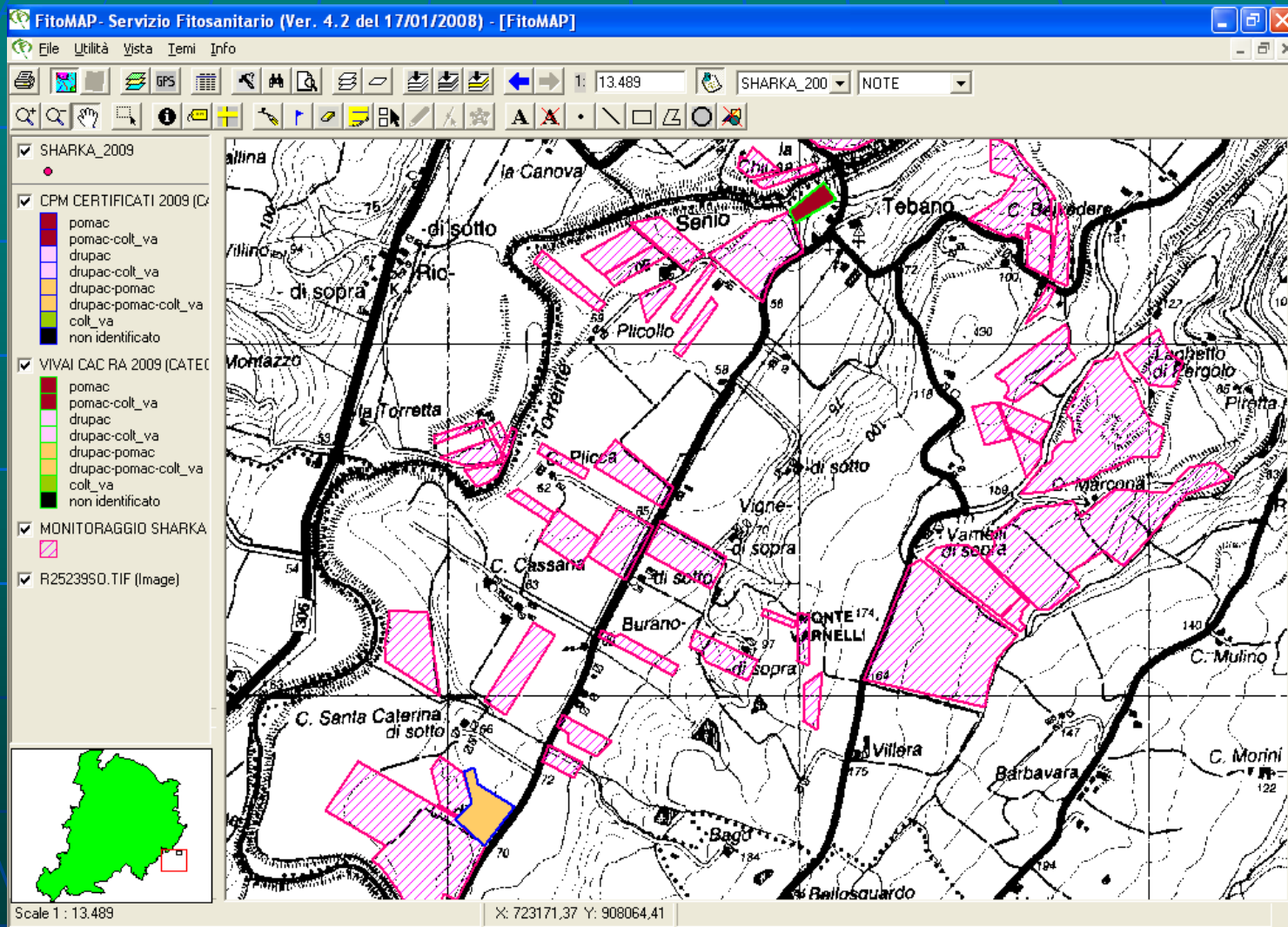
Nome tema: Export Shape





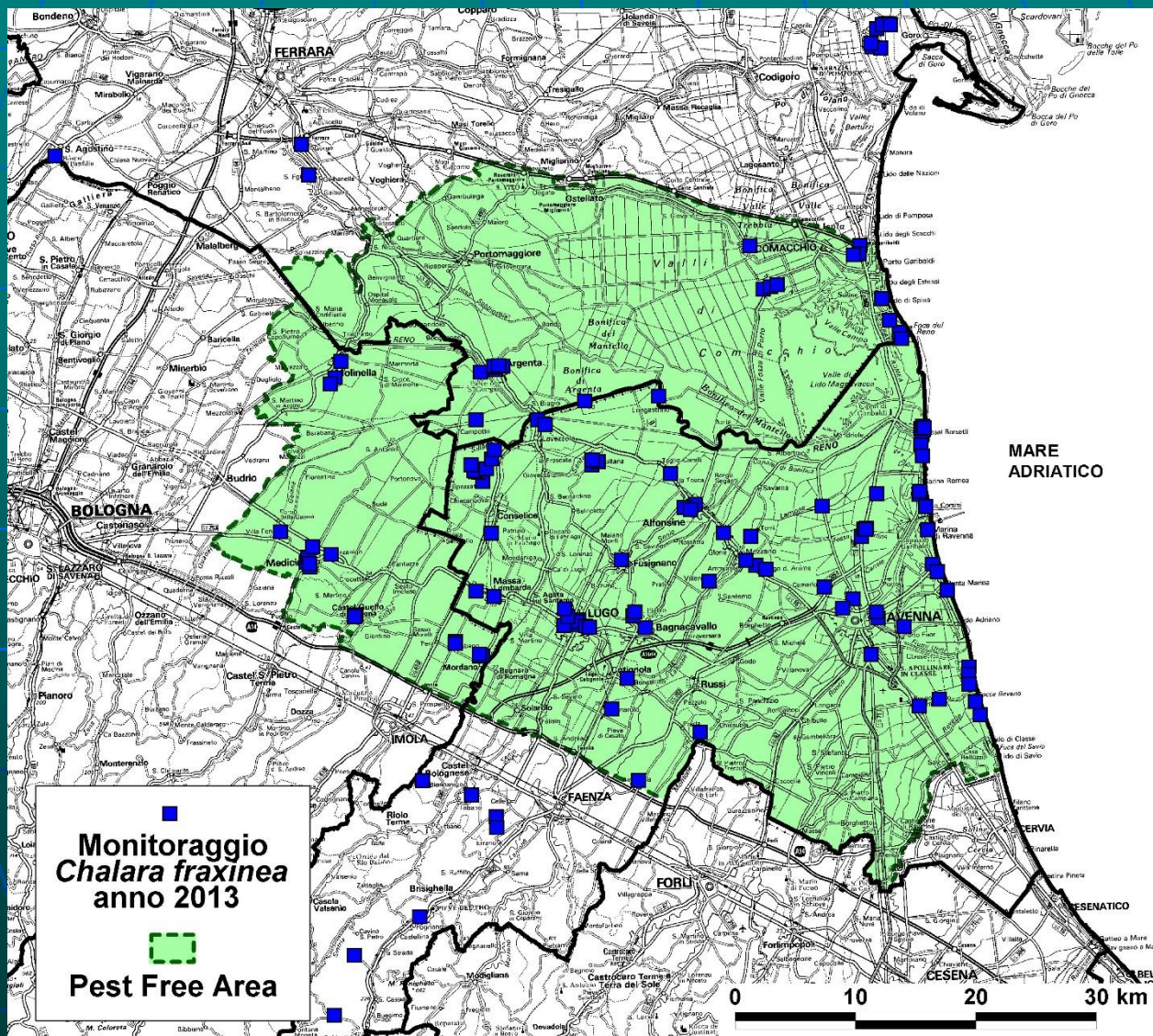
13





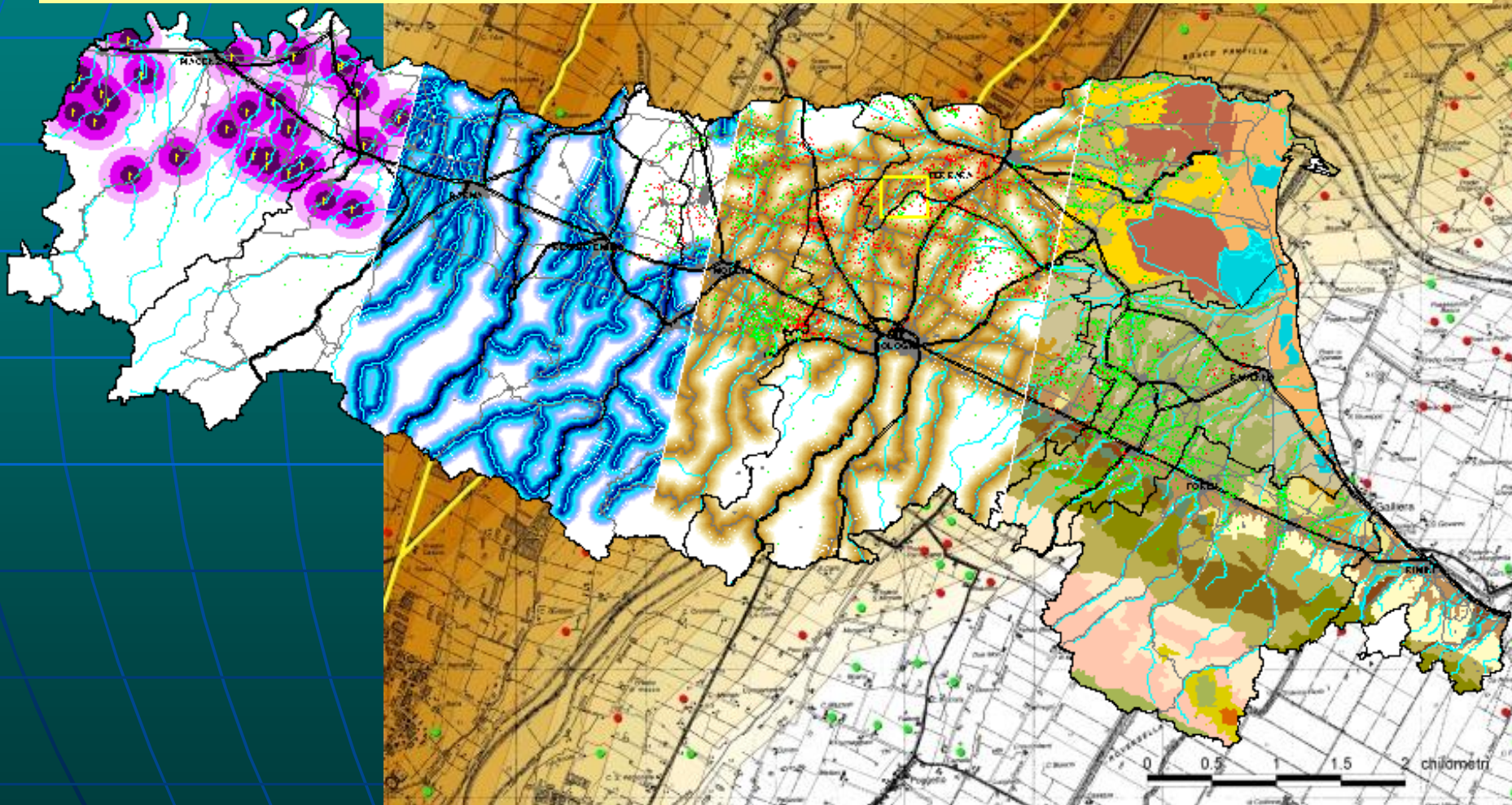
Defining of Pest Free Area (PFE)

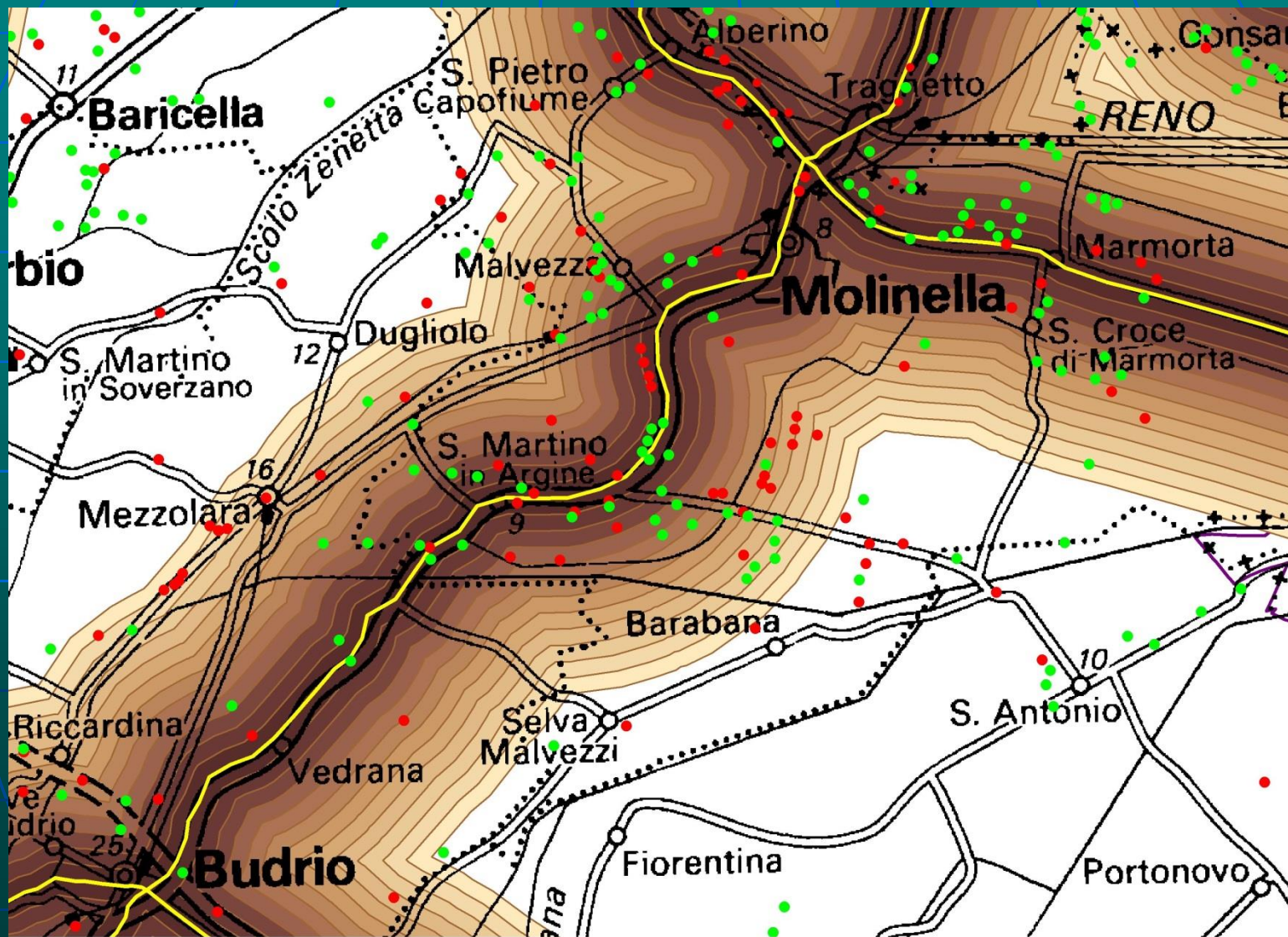
Definisanje Pest Free Area (PFE)



ArcView and spatial and temporal analysis

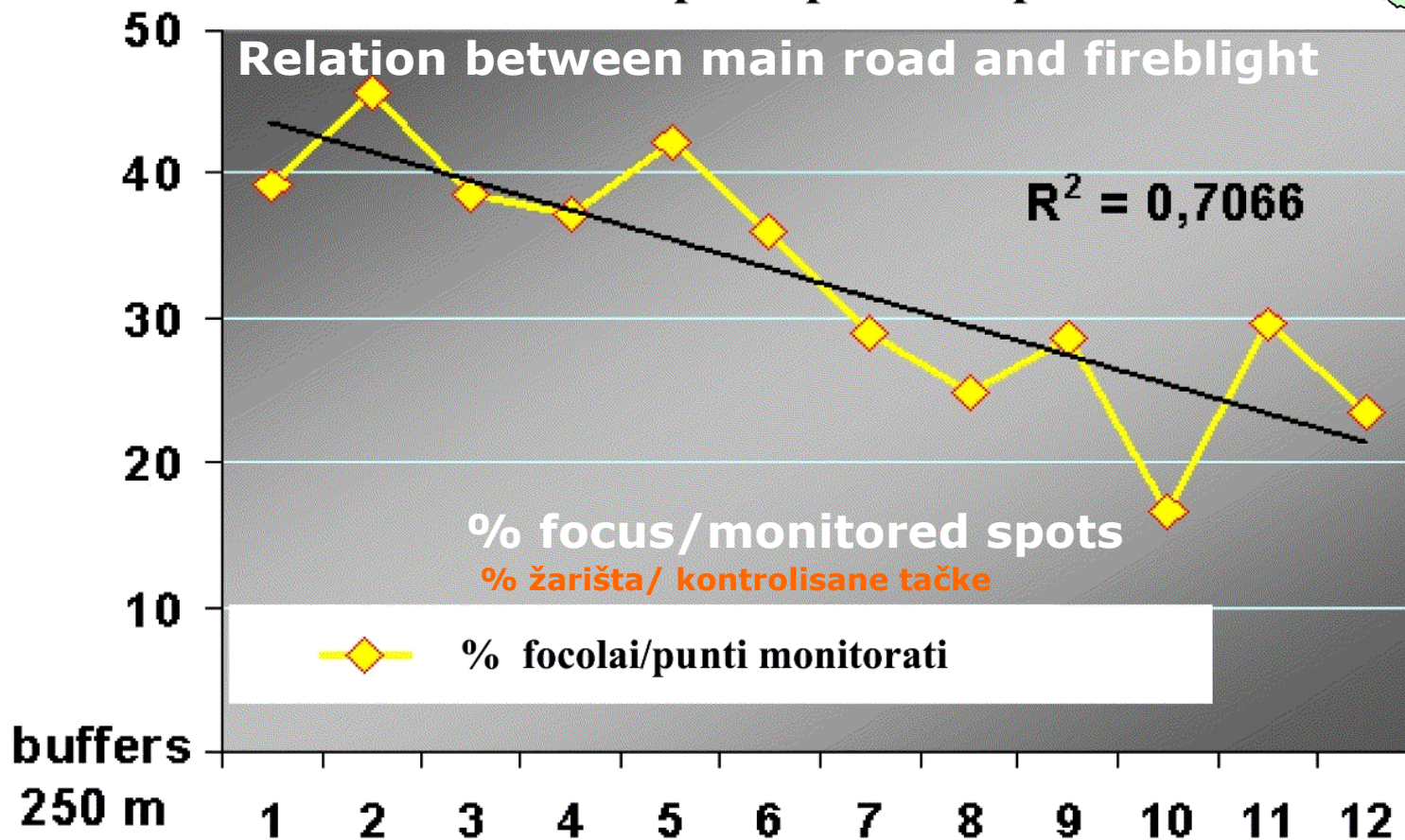
ArcView i analiza prostora i vremenskih uslova

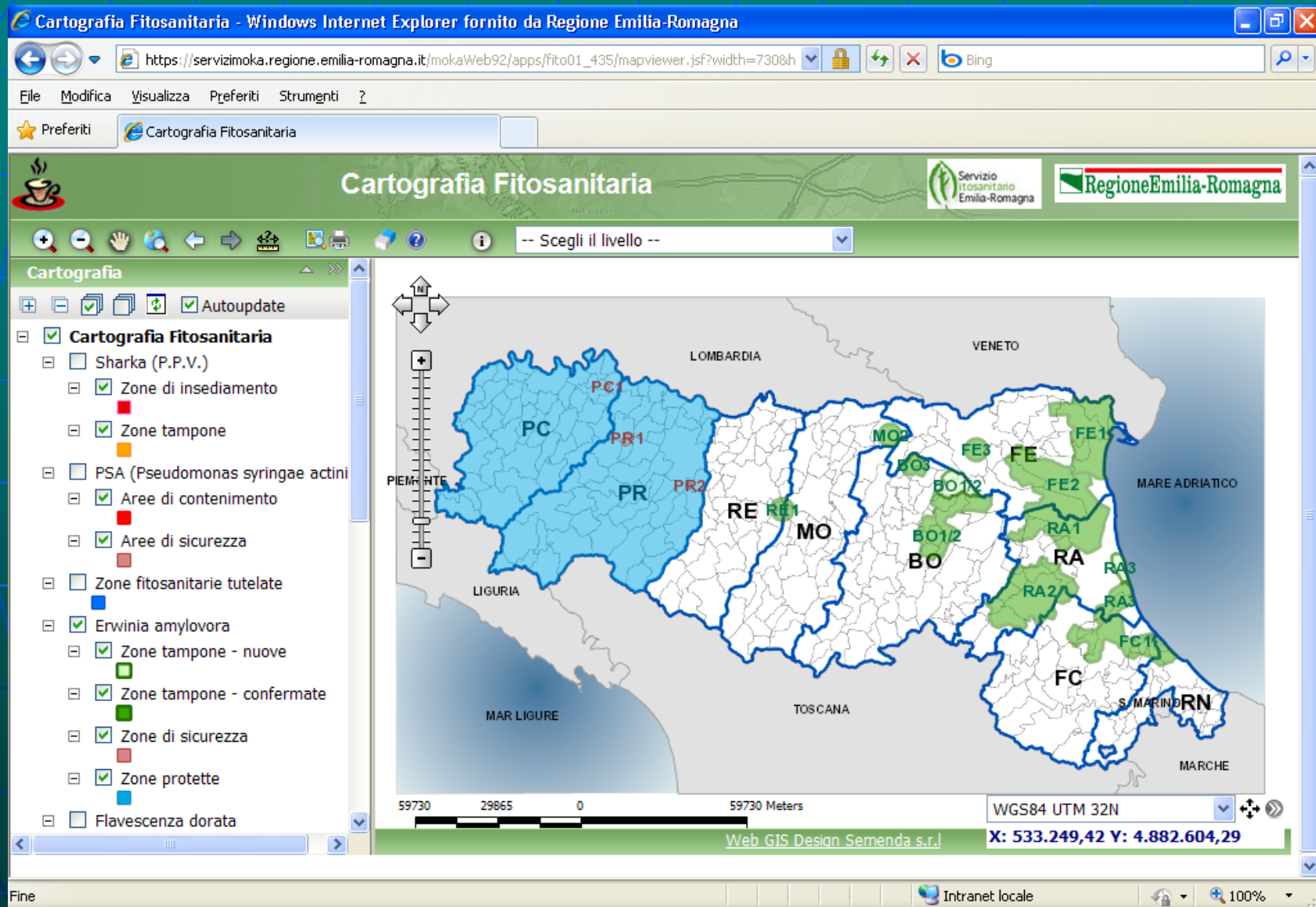


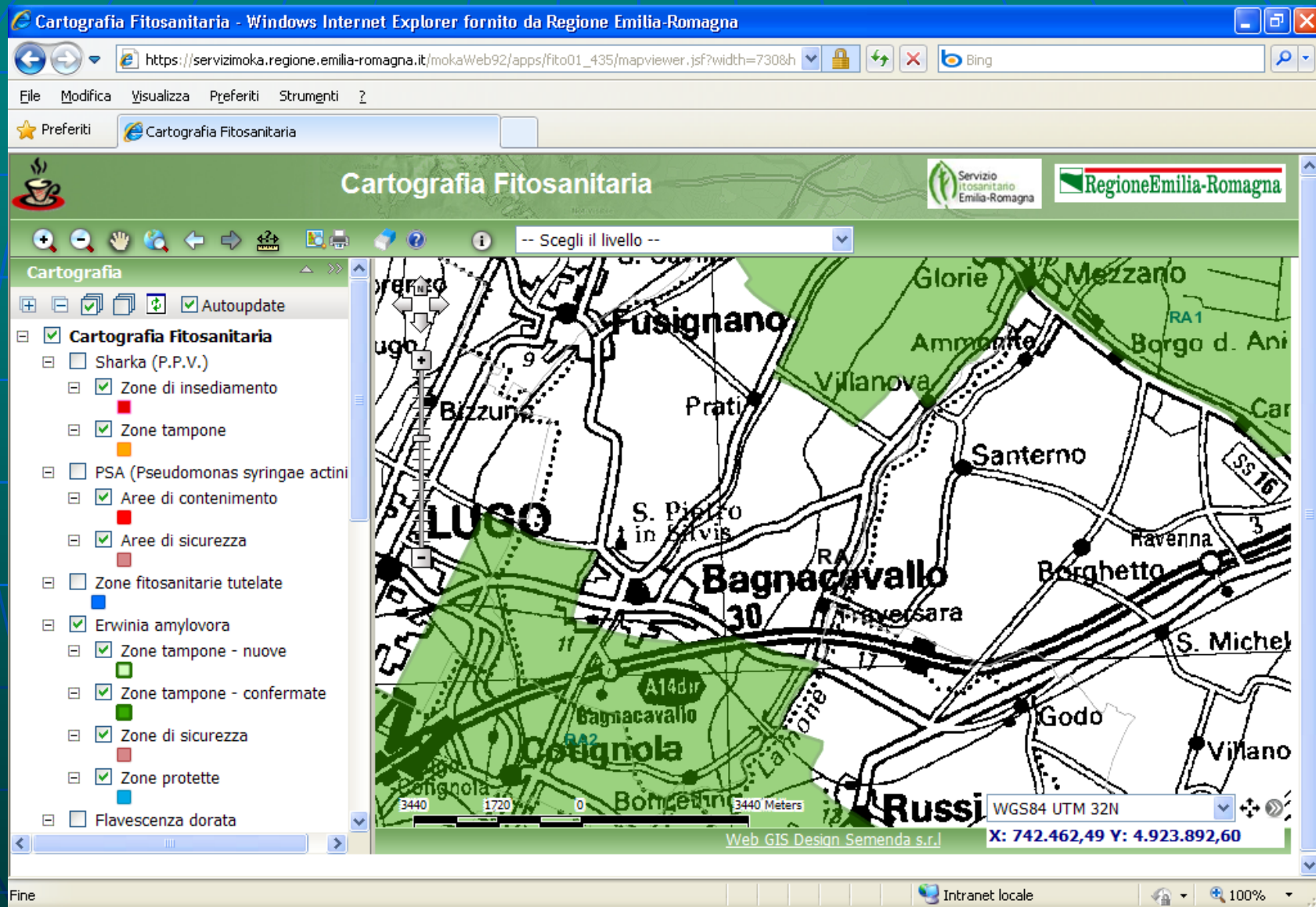


Odnos između glavnih puteva i napada štetočina ili bolesti

Relazione tra strade principali e colpo di fuoco







The screenshot shows a web browser window displaying the 'Cartografia Fitosanitaria' application. The browser address bar shows the URL: https://servizimoka.regione.emilia-romagna.it/mokaWeb92/apps/fito01_435/mapviewer.jsf?width=730&h. The application title is 'Cartografia Fitosanitaria' and it is provided by the Regione Emilia-Romagna. The map displays several phytosanitary zones in green, including 'Zone di insediamento', 'Zone tampone', 'Aree di contenimento', 'Aree di sicurezza', 'Zone fitosanitarie tutelate', 'Erwinia amylovora', 'Zone tampone - nuove', 'Zone tampone - confermate', 'Zone di sicurezza', 'Zone protette', and 'Flavescenza dorata'. The map shows the area around Lugo, Bagnacavallo, and Russi, with various roads and landmarks labeled. The status bar at the bottom indicates the coordinates: WGS84 UTM 32N, X: 742.462,49 Y: 4.923.892,60.

Fine

Intranet locale

100%



FitoGIS

Thematic cartography publication on WEB Objavljivanje tematske kartografije na WEB-u

Cartografia Fitosanitaria - Windows Internet Explorer fornito da Regione Emilia-Romagna

https://servizimoka.regione.emilia-romagna.it/mokaWeb92/apps/fito01_435/mapviewer.jsf?width=730&h

File Modifica Visualizza Preferiti Strumenti ?

★ Preferiti Cartografia Fitosanitaria

Cartografia Fitosanitaria

Servizio fitosanitario Emilia-Romagna Regione Emilia-Romagna

-- Scegli il livello --

Cartografia

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

160 80 0 160 Meters

WGS84 UTM 32N
X: 735.553,55 Y: 4.921.533,17

Intranet locale 100%

- **New architecture of database**
DB relazionale - GeoDataBase Esri
Nova arhitektura banke podataka
- **Link with database RER:**
farm registry, official producer registry, import-export certification, analysis lab, cadaster
Povezivanje sa bazom podataka RER:
registar poljoprivrednih firmi, službeni registar proizvođača, certifikati uvoza-izvoza, laboratorijske analize, katastar
- **ExtraRER database link**
Povezivanje s bankama podataka izvan RER-extra RER
- **Internal and external users management**
Upravljanje internim –eksternim korisnicima
- **Centralised maintenance**
Centralizovano održavanje

- Geo baza podataka – memorisati glavne teritorijalne jedinice na RDBMS (Oracle)
- FitoGIS Web – Web GIS aplikacija za ubacivanje i promjene podataka o teritorijalnim jedinicama od inspektora i tehničara
- FitoGIS Web Flex – Web GIS aplikacija za bazu podataka i upravljanje analizom.

