SURVEY PLANNING IN LOMBARDY REGION

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PLANT HEALTH SERVICE - MILANO
ERSAF

PPS
LABORATORY
FONDAZIONE MINOPRIO

PPS
REGIONE LOMBARDIA
D.G. AGRICOLTURA

Demetra

Parco
Montevecchia

Consorzio
Villoresi

Centro
Vitivinicolo
Bresciano

COPROVI

Consorzio
Valcalepio

- ERSAF -
PPS

Apilombardia

Distretto
Riso e rane

Ente
Nazionale
Risi

AIPOL

CONDIFESA
Brescia

Consorzio vini
mantovani

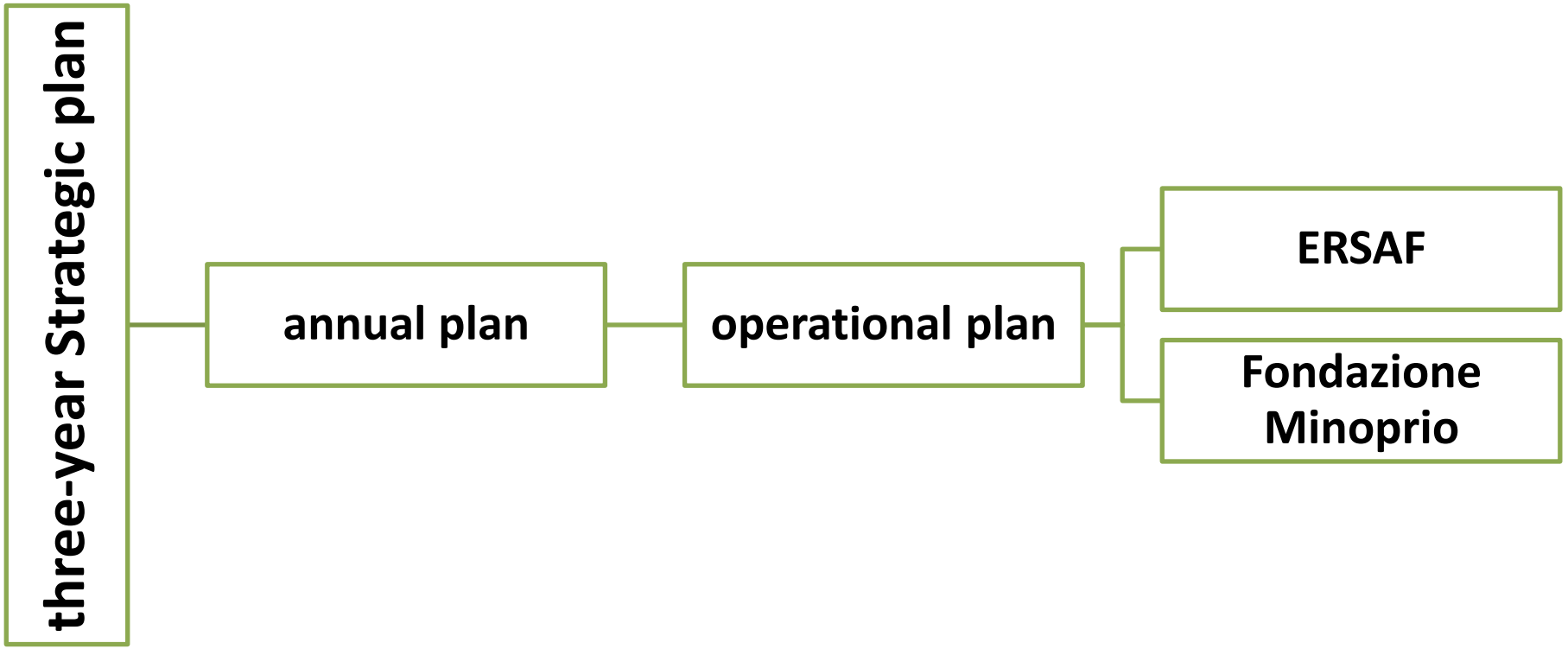
ARAL

Fondazione
Fojanini

Italianostra/
Boscoincittà

Consorzio Forestale
Padano

Organisation activities



Resources

Attività	Ente attuatore	2015	2016	2017
P.O. Attività fitosanitarie	ERSAF	300.000,00	300.000,00	300.000,00
P.O. supporto diagnostico alle attività del servizio fitosanitario	F. Minoprio	385.000,00	385.000,00	385.000,00
P. O. potenziamento SFR	ERSAF	202.000,00	da definire in base al riparto Mipaaf	da definire in base al riparto Mipaaf
P.O. lotta ad Anoplophora spp. a) monitoraggio, riqualificazione, tagli, trattamenti insetticidi	ERSAF	1.300.000,00	da definire in base alle disponibilità di bilancio	da definire in base alle disponibilità di bilancio
b) ricerca e comunicazione	F. Minoprio	80.000,00		
Totali		**2.267.000,00**	**685.000,00**	**685.000,00**

THE ROUTE TAKEN BY THE DATA

REGIONAL PLANT HEALTH SERVICE

NATIONAL MEASURES

NPPO

EC- DG SANTE'

REGIONAL MEASURES

EUROPEAN COMMISSION

EUROPEAN MEASURES

A SERIOUS RESPONSIBILITY

ECONOMIC LOSSES

ENVIRONMENTAL IMPACT AND BIODIVERSITY LOSS

The PPS of Lombardy Region conducts monitoring in order to:

- define the pest status of its territory:
  - to issue export certification
  - to apply emergency measures
  - to maintain a pest free area
- collect the data required by DG SANCO and NPPO
- prepare a contingency plan on a new pest;
- verify the effectiveness of control measures applied
- develop defense strategies in low input of PPPs

The monitoring is carried out in

- field crops
- orchards
- vineyards
- forests
- green areas
- sites considered to be sources of risk such as wood processors
- nurseries

NUMBER OF PESTS

2003

6

TIPO	N°
INSETCTS	1
FUNGI	1
BACTERIA	1
FITOPLASMA	2
VIRUS/VIROID	1

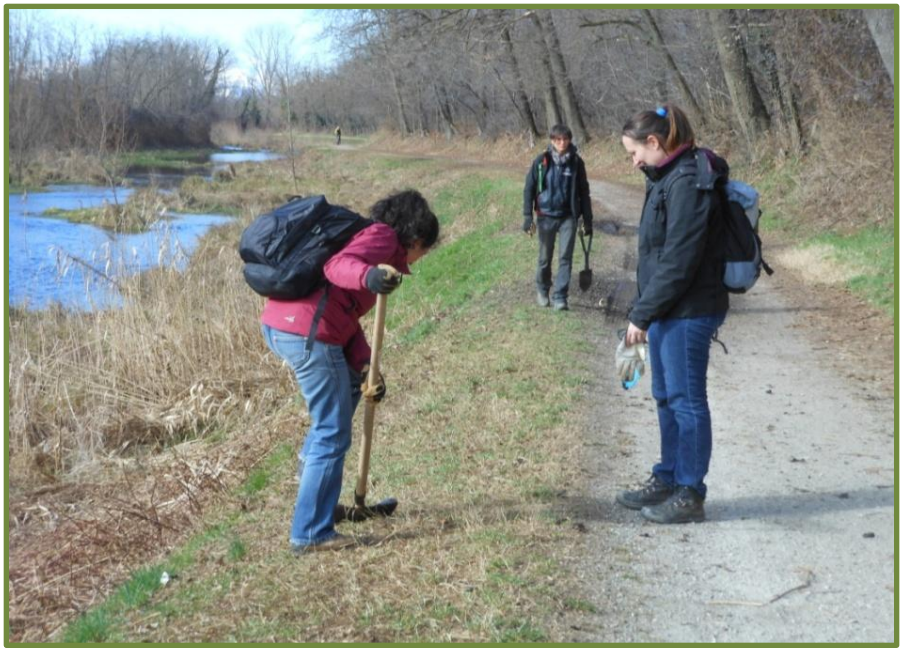
2013

48

TIPO	N°
INSECTS	14
FUNGI	8
BATTERIA	4
FITOPLASMA	4
VIRUS/VIROID	13
NEMATODES	4
SNAILS	1

In 2014 the monitoring was carried out on 43 pests + *(Popillia japonica)*

	N°
INSECTS	13
FUNGI	8
BACTERIA	4
PHYTOPLASMA	4
VIRUS/VIROID	9
NEMATODES	4
SNAILS	1



INSETTI	*Drosophyla suzuki* *Rhynchophorus ferrugineus* *Paysandisia archon* *Dryocosmus kuriphilus* *Monochamus spp.* *Tuta absoluta* *Epitrix spp.* *Lissorhoptrus oryzophilus* *Antispila oinophylla* *Spodoptera littoralis* *Diabrotica virginifera virginifera* *Lobesia botrana*
FUNGHI	*Phytophthora ramorum* *Gibberella circinata* *Chalara fraxinea* *Valsa ceratosperma* *Plasmopara viticola* *Unicinula necator, Oidium tuckeri* *Guignardia bidwellii*
BATTERI	*Erwinia amylovora* *Pseudomonas syringae pv. Actinidiae PSA* *Ralstonia solanacearum* *Clavibacter michiganensis subsp. michiganensis* *Xanthomonas campestris pv. vesicatoria*

FITOPLASMI	**Grapevine flavescence dorée phytoplasma** **Grapevine bois noir phytoplasma** **Apple Proliferation Phytoplasma** ***Potato Stolbur phytoplasma*** ***Phytoplasma solani***	**APP**
VIRUS/ VIROIDI	***Plum Pox Virus*** ***Citrus Tristeza Virus*** ***Pepino Mosaic Virus*** ***Cucumber mosaic virus*** ***Tomato Spotted Wilt Virus*** ***Tomato Yellow leaf curl virus*** ***Alpha Mosaic Virus*** ***Iris Yellow Spot Virus*** ***Iris Yellow Spot Virus*** ***Potato spindle tuber viroid***	**PPV** **CTV** **PeMV** **CMV** **TSWV** **TYLCV** **AMV** **IYSV** **ToMV** **PSTVd**
NEMATODI	***Bursaphelenchus xiliphilus*** ***Globodera spp.*** ***Synchytrium endobioticum*** ***Heterodera glycines***	
MOLLUSCHI	***Pomacea spp.***	

NATIONAL PLANNING 2014

	ITALIA	Abruzzo	Basilicata	Calabria	Campania	Emilia-Romagna	Friuli Venezia Giulia	Lazio	Liguria	Lombardia	Marche	Molise	Piemo
Anoplophora chinensis													
n° vivai ispezionati		20		3	30	195	30			700	100	24	450
n° ispezioni altri siti (garden)		0		3	5		0			0	50	10	0
n° ispezioni aree verdi		10		5	150	450	80			35.000	500	20	50
n° ispezioni foresta		10		10	5	35	80			1.100	5	30	3
Rhynchophorus ferrugineus													
n° siti di produzione ispezionati		15		0	300	87	1			10	135	20	350
n° siti ispezionati aree verdi		70		140	100	130	30			36	1.000	300	0
n° siti ispezionati foresta		0		0	0	0	0			0	0	0	0
n° trappole posizionate		0		0	0	10	5			10	0	10	0
Epitrix cucumeris, E. similaris, E. subcrinita, E. tuberis													
Patata	–												
sup. coltivata in regione (ha)		3.660		4.603	7.461	5.216	400			630	500	20	857
sup. monitorata (campionata) (ha)		60		100	120	350	20			200	25(2,5)	10	30
n° ispezioni sui tuberi (n° campioni durante la coltivazione o la raccolta)		40		60	150	50	20			4	5	3	14
n° ispezioni visive in campo (adulti)		50		30	200	80	20			40	5	3	
n° piante ispezionate (= riga 16 x 100)				400	2.000		100			4.000	100	3	0
Pomodoro e altri ospiti	–												0
sup. coltivata in regione (ha)				-	5.500	#####	25			5.620	458	800	1.880
sup. monitorata (ha)		5		-	100		1			200	0	60	
n° ispezioni visive in campo (adulti)		10		-	100		10			40	0	350	64
n° piante ispezionate (= riga 21 x 50)					1.000		50			2.000	0	8 milio	1.280.000

TO DG SANTE' (EC)

Survey results for Anoplophora chinensis - report 2013

Member State:	ITALY

	Nurseries		Other Sites (e.g. garden centres)		Public Green and Gardens		Forestry Sites	
regione	No. of nurseries inspected	No. of findings / outbreaks	No. of inspection sites	No. of findings / outbreaks	No. of inspection sites	No. of findings / outbreaks	No. of inspection sites	No. of findings / outbreaks
BASILICATA	0	0	0	0	0	0	0	0
CALABRIA	2	0	0	0	0	0	0	0
CAMPANIA	60	0	25	0	178	0	0	0
EMILIA ROMAGNA	195	0	0	0	450	0	35	0
FRIULI VENEZIA G	47	0	35	0	80	0	97	0
LAZIO	40	0	3	0	3100	0	289	0
LIGURIA	9	0	0	0	70	0	4	0
LOMBARDIA	32**	1	0	0	34.921	0	1.100	0
MARCHE	10	0	1	0	94	0	0	0
MOLISE	23	0	9	0	24	0	44	0
PIEMONTE	460	0	0	0	46	0	5	0
PUGLIA	0	0	12	0	174	0	16	0
SARDEGNA	9	0	5	0	10	0	22	0
SICILIA	105	0	12	0	58	0	5	0

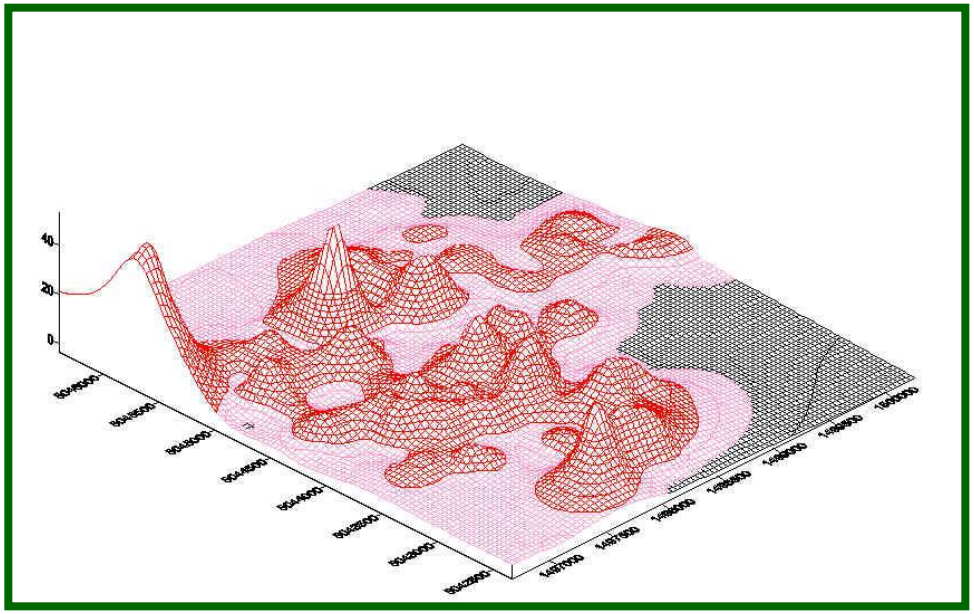
PEST STATUS TO EPPO

N°	Scientific name of the pest		Status as extracted from EPPO PQR on 18 March 2014	Current status (confirm, complete or amend)
1.	Bacteria and phytoplasma	Clavibacter michiganensis spp. insidiosus (McCulloch) Davis et al.	Present, no details	Assente
2.		Elm phlöem necrosis mycoplasm	Present, restricted distribution	Assente
3.		Erwinia amylovora (Burr.) Winsl. et al.	Present, restricted distribution; few occurrences in Sicily	Assente tutto il territorio in ZP ad eccezione della provinia di MN e SO, presente Zona Tampone MN1
4.		Grapevine flavescence dorée MLO	Present, restricted distribution	Insediata in tutte le provimcie ad eccezione di SO
5.		Potato stolbur mycoplasma	Present, restricted distribution Sicily Present, no details	Assente su patata
6.		Pseudomonas syringae pv. persicae (Prunier et al.) Young et al.	—	Assente
7.		Spiroplasma citri Saglio et al.	Present, few occurrences	Assente
8.		Xanthomonas campestris pv. phaseoli (Smith) Dye	Present, restricted distribution	Assente
9.		Xanthomonas campestris pv. pruni (Smith) Dye	Present, restricted distribution; present, no details in Sardinia and Sicily	Assente, una sola segnalazione in provincia di MN nel 2006
10.		Xylophilus ampelinus (Panagopoulos) Willems et al.	Present, no details	Assente
11.	gi	Atropellis spp.		Assente
12				Presenti aree indenni,

Indicate the pest status following ISPM 8 terminology available here:
https://www.ippc.int/publications/determination-pest-status-area

STRATEGIC PLANNING STEPS:

✓**which data to collect:** data requested by DG SANCO and by NPPO, but also other data to develop control strategies or monitor their effectiveness (ex. *Anoplophora chinensis* N. of exit holes and sawdust per infested tree)



STRATEGIC PLANNING STEPS:

✓**how:** detailed protocols are processed on how to make the survey, which species to control (all host plants or those specified by an EC Emergency Decision or listed in EPPO standard or those most at risk) and which symptoms are to be checked

Anoplophora glabripennis	*Anoplophora glabripennis*	*Anoplophora glabripennis*
Genera listed by the Lombardy Regional Law	**Genera listed by EPPO Standard PM 9/15**	**Genera listed by EPPO Standard PM 9/15**
Acer	***Acer***	***Fraxinus***
Betula	***Betula***	***Morus***
Salix	***Salix***	***Platanus***
Populus	***Populus***	***Prunus***
Ulmus	***Ulmus***	***Pyrus***
	Aesculus	***Robinia***
	Albizia	***Sorbus***
	Alnus	***Sophora***
	Carpinus	***Fagus***

STRATEGIC PLANNING STEPS:

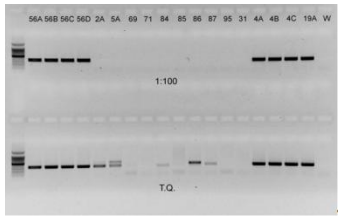
✓**how many:** n ha, n sites according to the importance of the crop in the area and of its GDP;

✓**Who and time commitment:** n. days for inspectors, agents, technicians calculated on the basis of efficiency ratios that vary from crop to crop, but also from area to area (ex, if the ground is flat, hilly or terraced. We have developed performance indices based on real data recorded in recent years;

	INDEX	AVERAGE COST(€)
FD in Vineyards	1,5 ha/day	118/ ha
SHARKA PPV in orchards	2,0 ha/day	95/ha
Erwinia in orchards x	3,5 ha/day	61/ha
PSA in orchards	1,5 ha/day	132/ha
Rhynchophorus RPW	0,6 site/day	319/site
Drosophyla suzukii	0,9 site/day	232/site
Bursaplenchus in forestry	1,9 site/day	108/site
Monochamus x PWN	0,4 site/day	510/site
Tomato crops	9,0 ha/day	22/ha
Potato crops	4,5 ha/day	33/ha
CTV in public gardens	3,7 site/day	54/site

STRATEGIC PLENNING STEPS:

✓**when:** on a scientific basis, the timing depends on the cycle of the HO, the presence of symptoms, the expiry of the reporting
✓**support tools:** GPS, laboratory analysis, pheromone or kairomones traps, binoculars, tree-climber, platform), etc.



SPREADSHEET

	PROV	ATTIVITA'	PERIODO DEI CONTROLLI		HA COLTIVATI PER PROVINCIA	HA-SITI-N° CONTROLLI	HA-SITI-N° CONTROLLATI	CAMPIONI PRELEVATI	INVIO AL LABORATORIO	GG Effettive	indice Effettivo
			DA	A							
	BG BS LC MI LO MN PV SO	**FD VIGNETI + CONTROLLO VETTORE + Antispila oinophylla + BLACK ROT**	luglio	settembre	da dichiarazioni SIARL 2013 (esclusi vivai): **21621 Ha**	150 HA	**180,11**	**110**	max 15 campioni a settimana (avvisare il laboratorio quando si effettua il prelievo per allertare la ricezione	**106,25**	**1,7**
	BG	FLAVESCENZA DORATA VIGNETI + CONTROLLO VETTORE + Antispila oinophylla	luglio	settembre	655	10 HA	9,51	6	3 positivi a FD ed 1 positivo LN	9	1,1
	BS	FLAVESCENZA DORATA VIGNETI + CONTROLLO VETTORE + TIGNOLETTE +	luglio	settembre	5612	27 HA	31,46	16	5 positivi a FD e 5 positivi a LN	12	2,6
	LC	FLAVESCENZA DORATA VIGNETI + CONTROLLO VETTORE + Antispila oinophylla	luglio	settembre	53	7 HA	7,74	10	6 positicvi a FD e 1 positivo a LN	4	1,9
	MI-LO	FLAVESCENZA DORATA VIGNETI + CONTROLLO VETTORE + Antispila oinophylla	luglio	settembre	178	8 HA	8,77	12	7 positivi a FD e 3 positivi a LN	6,75	1,3
	MN	FLAVESCENZA DORATA VIGNETI + CONTROLLO VETTORE + Antispila oinophylla	luglio	settembre	1715	10 HA	14,15	8	8 positivi a FD	7	2,0
	PV	FLAVESCENZA DORATA VIGNETI + CONTROLLO VETTORE + Antispila oinophylla	luglio	settembre	12877	80 HA (vedi note)	100,18	37	34 positivi a FD e 2 positivi a LN	55,25	1,8
	SO	FLAVESCENZA DORATA VIGNETI +	luglio	settembre	470	8 HA	8,20	21	10 positivi a FD e 8	12,25	0,7

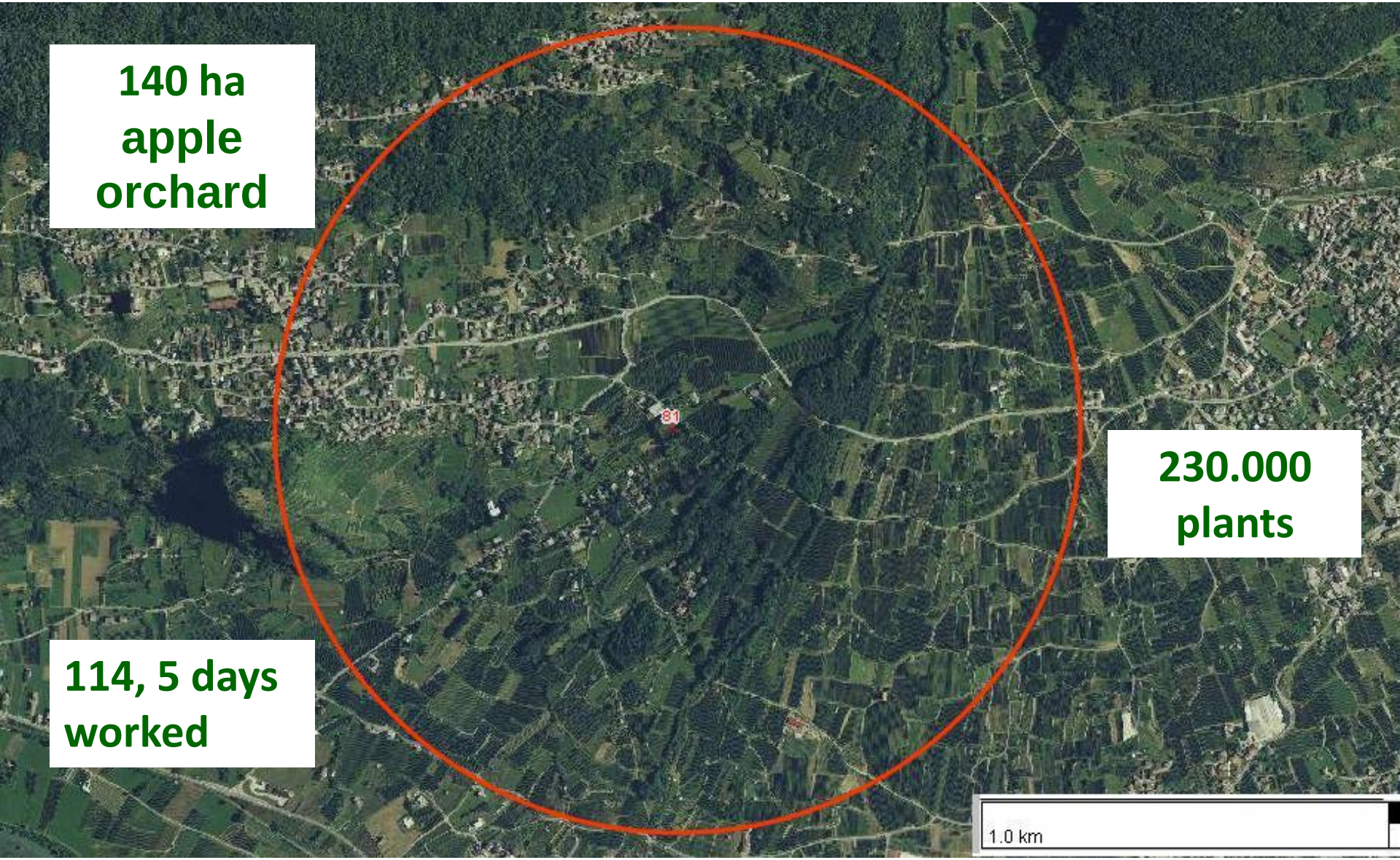
UPDATE 23_05	PROV	ATTIVITA'	GG Preventivate	GG Effettive	indice Effettivo	ISPETTORI/TECNICI ERSAF FITO	TECNICI CON CONVENZIONI, PROTOCOLLI D'INTESA _
  		VIROSI E FITOPLASMI DELLE SOLANACEE (PeMV, CMV, TSWV, PZSV, PVX, PVY, TYLCV, ToMV, AMV, PSTVd, Ca. Phytoplasma solani) e PSTVd viroide delle	0				
	PV	NEMATODE DELLA SOIA	6		**indice 2014**: 5HA/gg Bergamo Poggi	**indice 2013**: 5HA/gg Bergamo Poggi	
	TUTTE PROV.	POMACEA DEL RISO (produttori di piante	20				ENTE RISI
	PV, MI, LO	PUNTERUOLO DEL RISO					ENTE RISI
	PV	IRIS YELLOW SPOT VIRUS (IYSV)	2			Poggi	
	BS	XYLELLA FASTIDIOSA				Bazzoli-Michelotti solo se necessari campionamenti	AIPOL
	tutti	CERATOCYSTIS FIMBRIATA					
	BG	CERATOCYSTIS FIMBRIATA					DEMETRA
	BS	CERATOCYSTIS FIMBRIATA					CONS. FOR.PAD
	CO	CERATOCYSTIS					

AUDIT

- Direzione Generale Agricoltura
  - NPPO
- Food and Veterinary Office

Erwinia amylovora outbreak in Sondrio: how to change plans in course of work (Delimiting Survey

NEW OUTBREAK
AUTUMN 2010

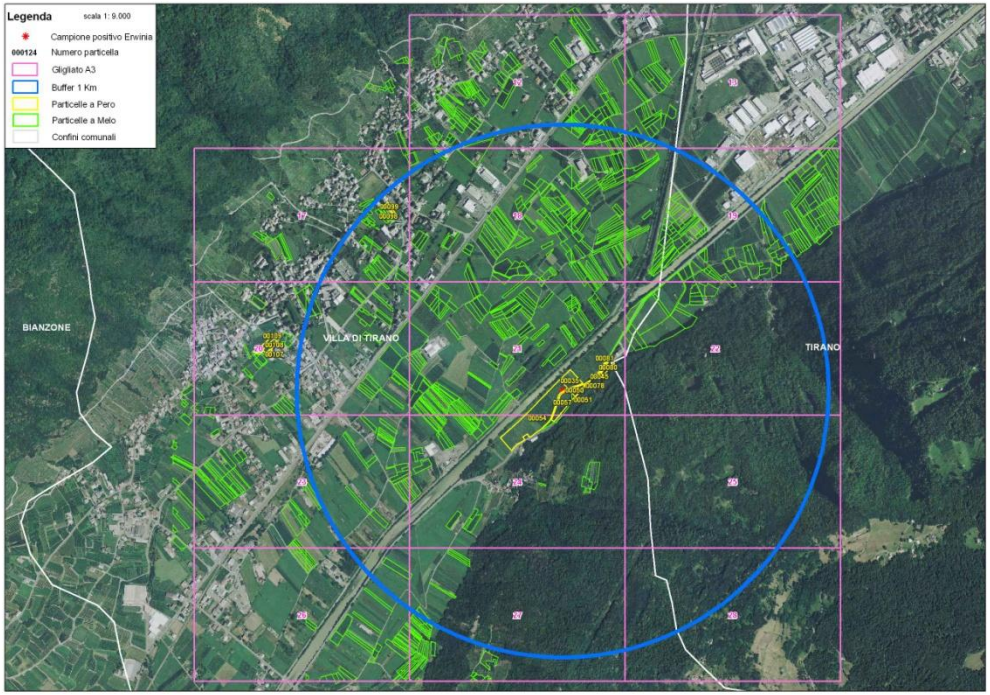

140 ha
apple
orchard
230.000
plants
114, 5 days
worked
B1
1.0 km

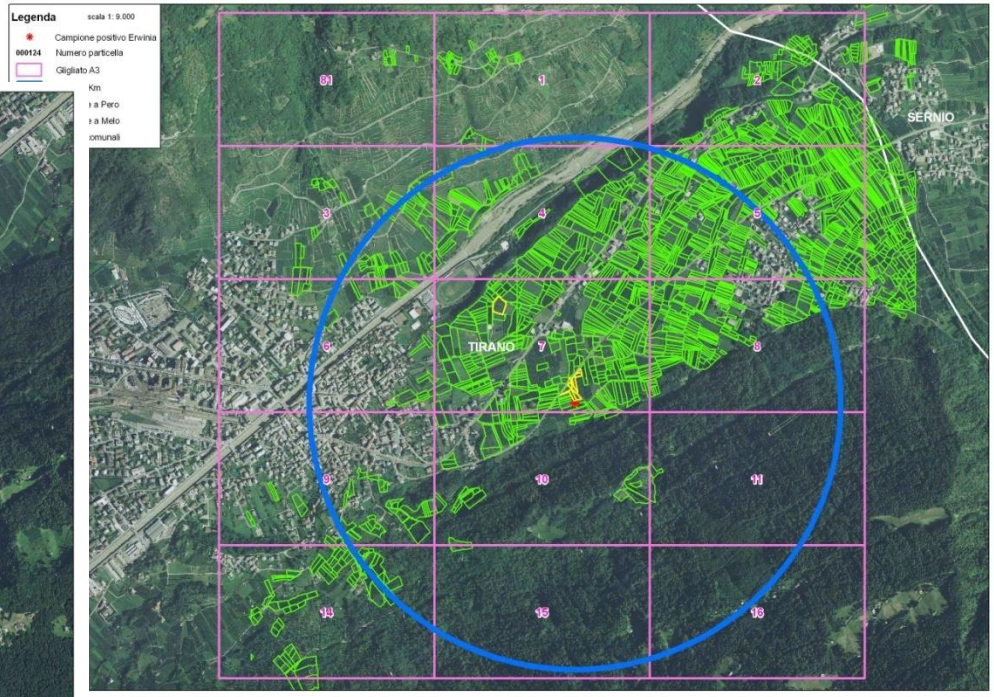
2011 OK NO POSITIVE

2012 2 NEW OUTBREAKS

VILLA DI TIRANO

TIRANO





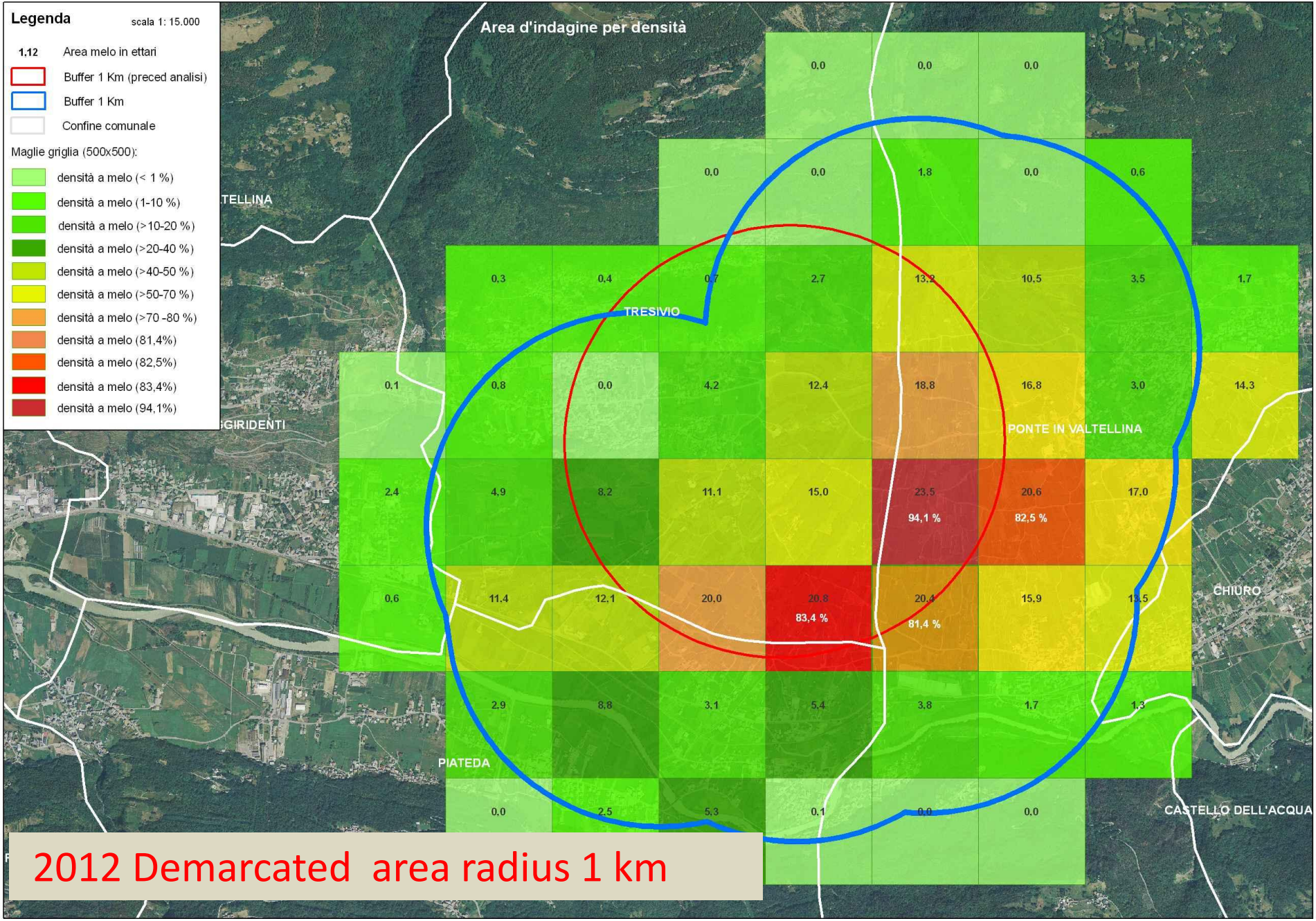
The demarcated area was divided into squares of 25 ha each one, the survey was carried according to n. of ha of apple / pear present:

within the squares with apple/pear orchards less than 40% of the surface: inspection of more than 10% of orchards;

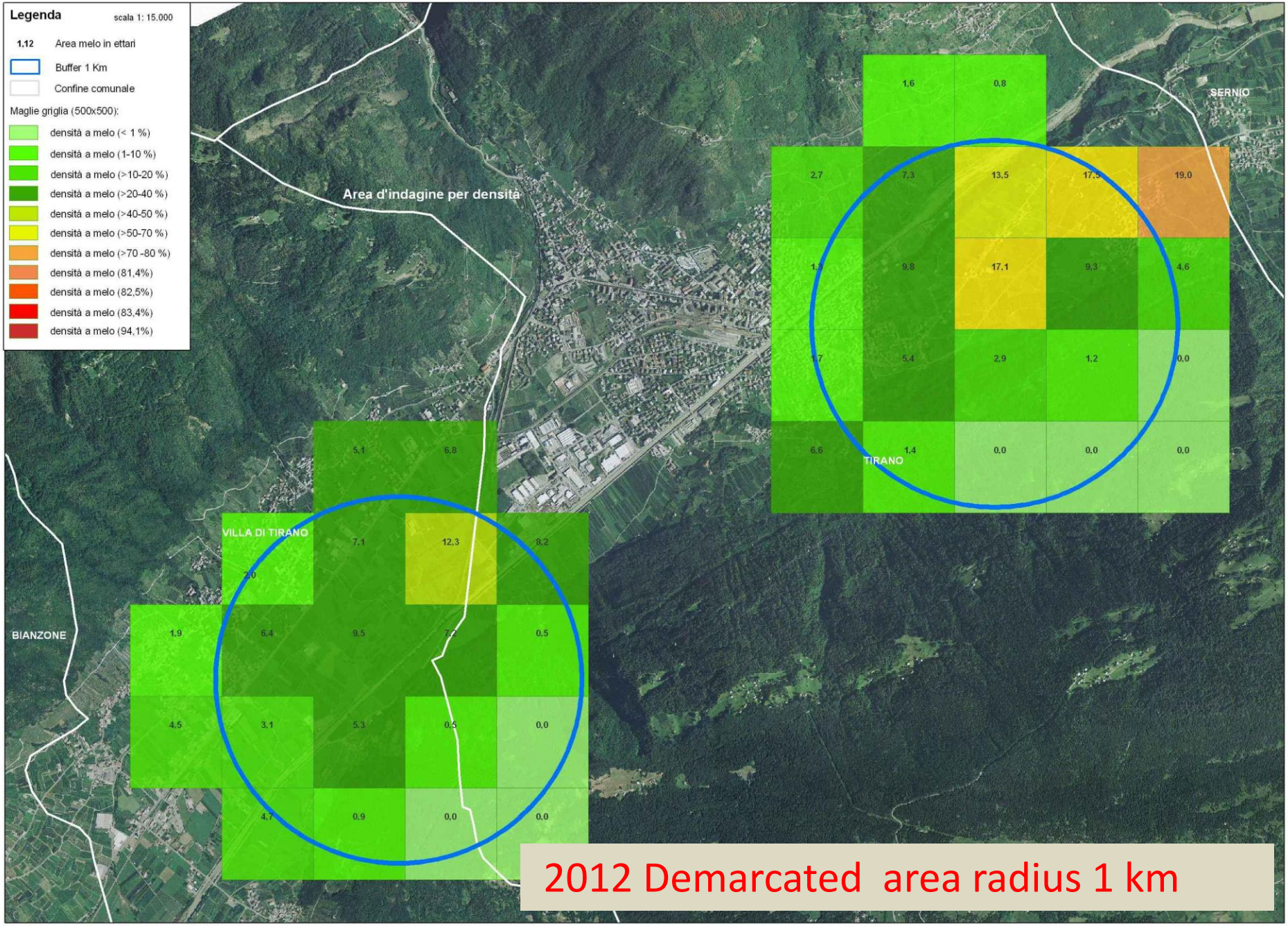
within the squares with apple/pear orchards between 40% and 80% of the surface: inspection of more than 15% of orchards;

within the squares with apple/pear orchards more than 80% of the surface: inspection of more than 20% of orchards;

Presence of unfested plants by *E. amylovora* while the previous inspection: inspection of more than 30% of orchards.



2012 Demarcated area radius 1 km



2012 Demarcated area radius 1 km

Detecting survey plan for CLB in nursery district

- **the Plantaregina district area extends for more than 50.000 ha and is specialized in the cultivation of full-size deciduous ornamental trees**
- **each year, almost 3 million plants of the species most vulnerable to *A. chinensis* are grown in open fields**
- **to protect this district and ensure its economic well-being, RPPS has designed and applied a stepped-up detecting survey, according to FAO ISPMs**

GENERAL GOALS

- protecting the territory
- keeping the district pest free
- protecting nursery production
- ensuring quality product
- ensuring district competitiveness
- informing producers and local authority

WORK PLAN

- drew up a map with a buffer zone of 2 km (500m + 1500m) radius around all the areas dedicated to nursery cultivation
- then drew up a buffer zone with a radius of 100 m around each nursery
- superimposed a grid of 500m on each side, leading to the creation of 2,156 cells subsequently classified based on the risk to plant health and identified by different colors

number of spy points:

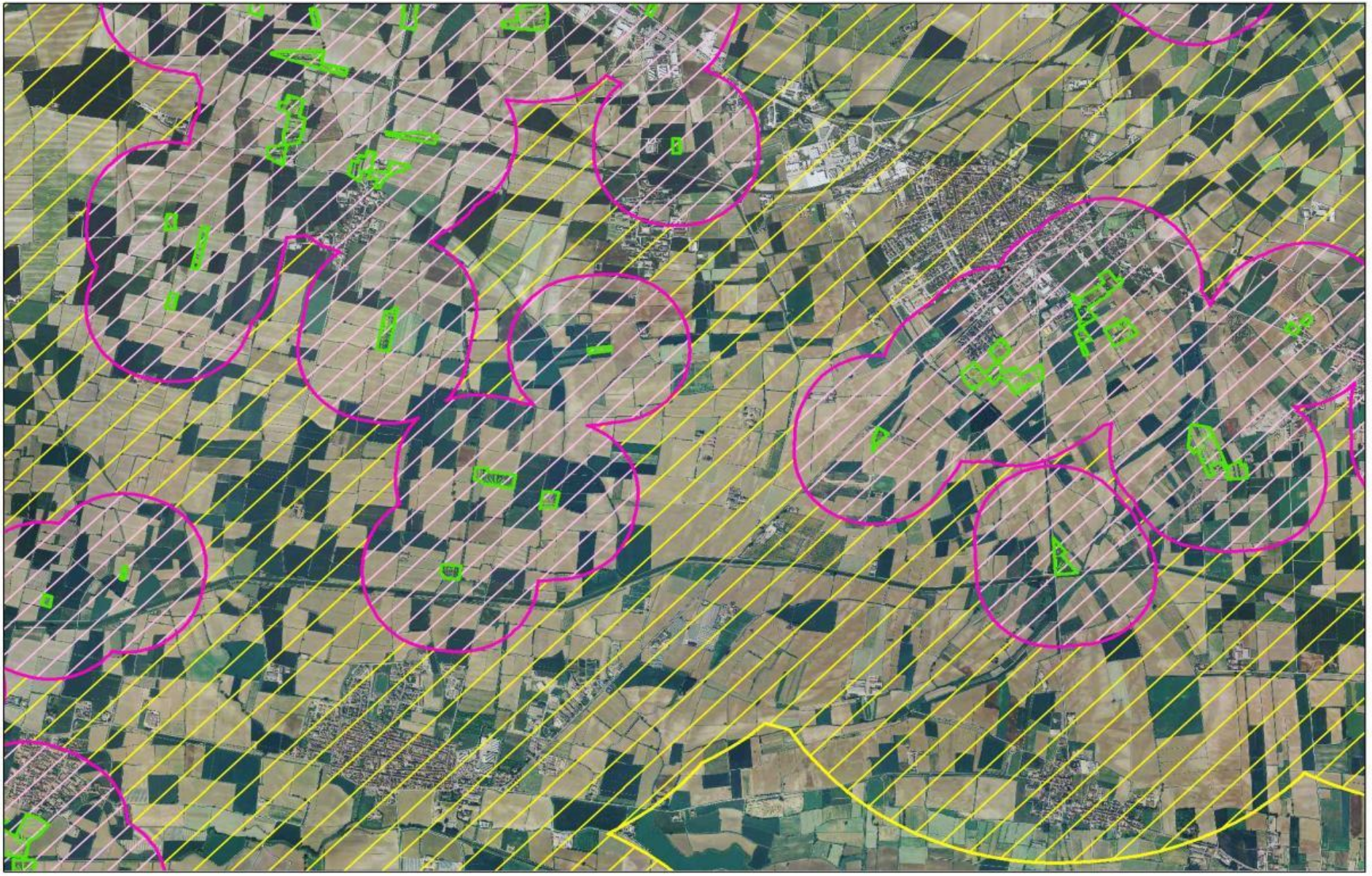
- 500 m buffer zones: from 2 to 4 sentinel points/grid unit
- 1500 m buffer zones: 1 sentinel point/grid unit

ORTOPHOTO

DUSAF

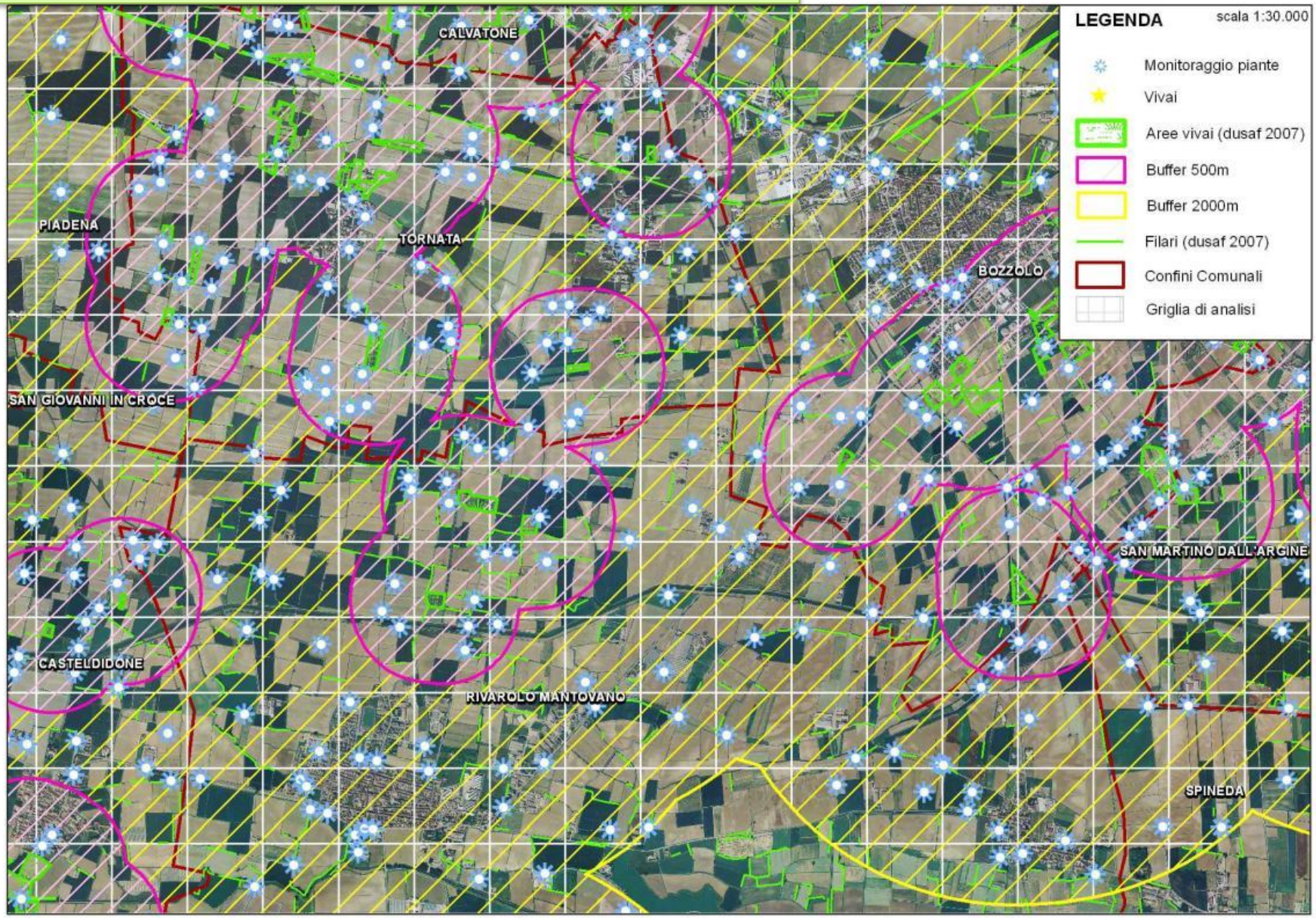
Buffer - 500 m

Buffer - 2000 m



500x500 m - Grid

Sentinel points map



Detecting Survey Results

- all nurseries and gardens
- buffer zone with a radius of 100 m around each nursery (visual inspections on host plants)
- inspections of 6.223 host plants in urban green areas of 31 municipalities
- inspections of 82.275 host plants in nursery fields
- checks on 3.450 sentinel points (11.233 trees)
- 140 days worked

The cost of the first year application plan was 40.000 euro

Annual maintenance is 30.000 euro

The District annual value of the production is 120.000.000 euro

0,025%

CONCLUSIONS

- Monitoring is an essential tool for the application of a proper plant health regime.
- Monitoring is extremely expensive and should be graduated according to the real risks.
- Need for clear *legenda,* key, for a unique reading of the DG SANTE survey template.
- Need to identify a unique procedure to collect data at national level and at European level.