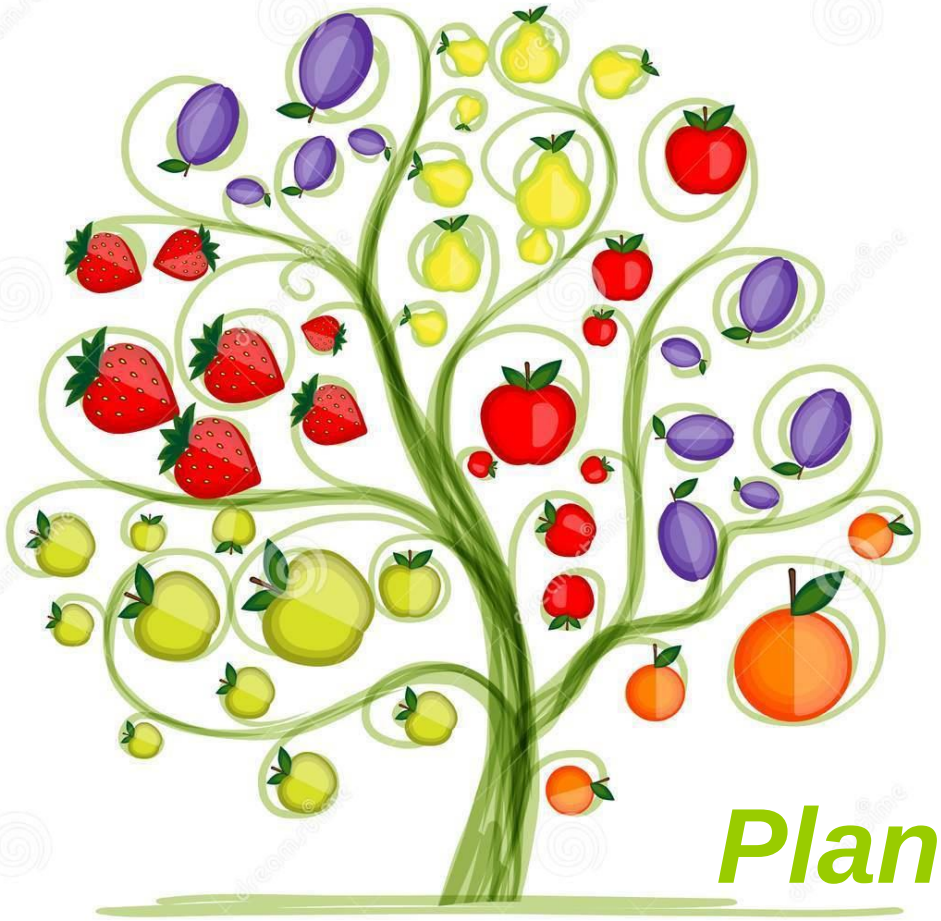
Twinning projekt EU

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

OVERVIEW OF HARMFUL ORGANISMS: FRUIT SPECIES.
METHODS FOR DIAGNOSTICS , IDENTIFICATION AND MONITORING

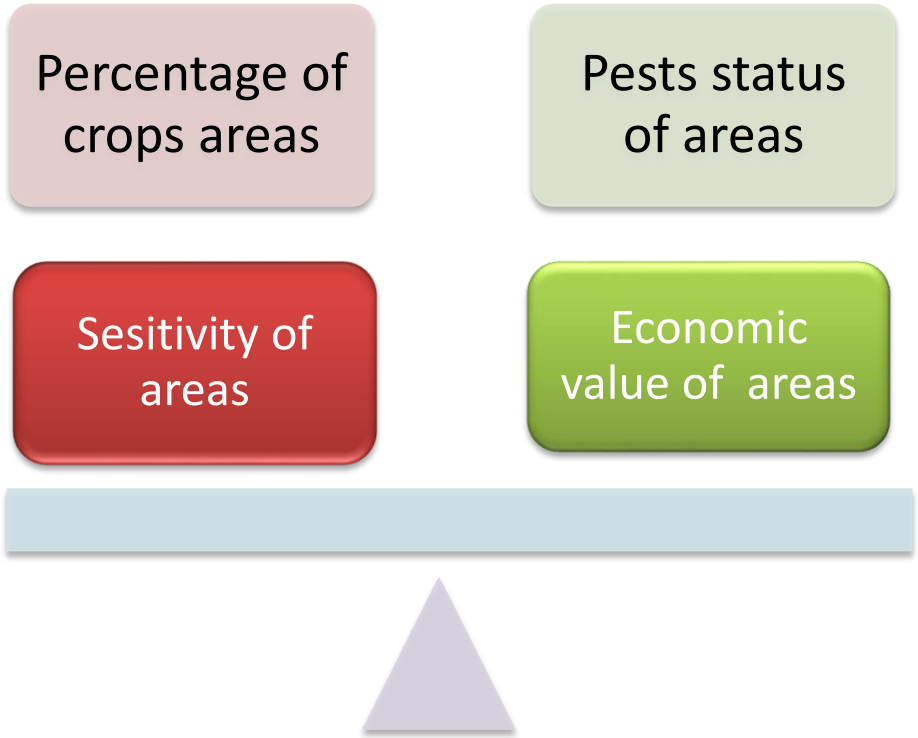
Banja Luka 2015-06-21/24



Plant Health Service surveys on Orchards

Planning surveys and monitoring

Which criteria using for planning surveys on orchards?



Planning surveys and monitoring

1) PERCENTAGE of crops

Potatoes crops in Lombardy (about 5% of cultivated area)
No particular problems, all the region pest free area

UPDATE	PROV	ATTIVITA'	PERIODO DEI CONTROLLI		HA COLTIVATI PER PROVINCIA	HA-SITI-N° CONTROLLI
			DA	A		
	CR PV	PATATA IN CAMPO (Globodera, Ralstonia, Clavibacter, Tignola e PSTVd, Epitrix, Synchritium)	maggio/giugno	metà luglio	790 Ha (Dichiaraz. SIARL 2014) — 5%	40 HA in almeno 10 appezzamenti diversi prendere 3 punti GPS diversi per ogni HA controllato a distanza di almeno 60m
	BS	GLOBODERA, RALSTONIA CLAVIBACTER E TIGNOLA PATATA CONTROLLI DI CAMPO	maggio/giugno	metà luglio	193 — 5%	10 HA
	CO	GLOBODERA, RALSTONIA CLAVIBACTER E TIGNOLA PATATA CONTROLLI DI CAMPO	maggio/giugno	metà luglio	64 — 5%	3 HA
	CR	GLOBODERA, RALSTONIA CLAVIBACTER E TIGNOLA PATATA CONTROLLI DI CAMPO	maggio/giugno	metà luglio	89 — 5%	5 HA
	MN	GLOBODERA, RALSTONIA CLAVIBACTER E TIGNOLA PATATA CONTROLLI DI CAMPO	maggio/giugno	metà luglio	189 — 5%	10 HA
	PV	GLOBODERA, RALSTONIA CLAVIBACTER E TIGNOLA PATATA CONTROLLI DI CAMPO	maggio/giugno	metà luglio	195 — 5%	10 HA

Planning surveys and monitoring

2) PEST STAUS of AREAS

FD in Lombardy spread almost everywhere (except province of Sondrio- pest free area)

	PROV	ATTIVITA'	PERIODO DEI CONTROLLI DA	PERIODO DEI CONTROLLI A	HA COLTIVATI PER PROVINCIA	HA-SITI-N° CONTROLLI
VITE 	BG BS LC MI LO MN PV SO	XYLELLA e FD VIGNETI + CONTROLLO VETTORE	luglio	settembre	da dichiarazioni SIARL 2014 (esclusi vivai): 21656 Ha	150
	BS	FD VIGNETI + CONTROLLO VETTORE	luglio	settembre	5671	30
	MI-LO	FD VIGNETI + CONTROLLO VETTORE	luglio	settembre	172	10
	MN	FD VIGNETI + CONTROLLO VETTORE	luglio	settembre	1713	20
	PV	FD VIGNETI + CONTROLLO VETTORE			12627	70
	SO	FD VIGNETI + CONTROLLO VETTORE	luglio		776	8

INFESTED AREA

PEST FREE AREA

Proportionally to surfaces, **MORE** inspectios in **PEST FREE AREA (detection surveys)**

Planning surveys and monitoring

3) SENSITIVITY of AREAS

Bursaphelenchus xylophilus in Lombardy region (not present). Visula inspections and traps for Monochamus

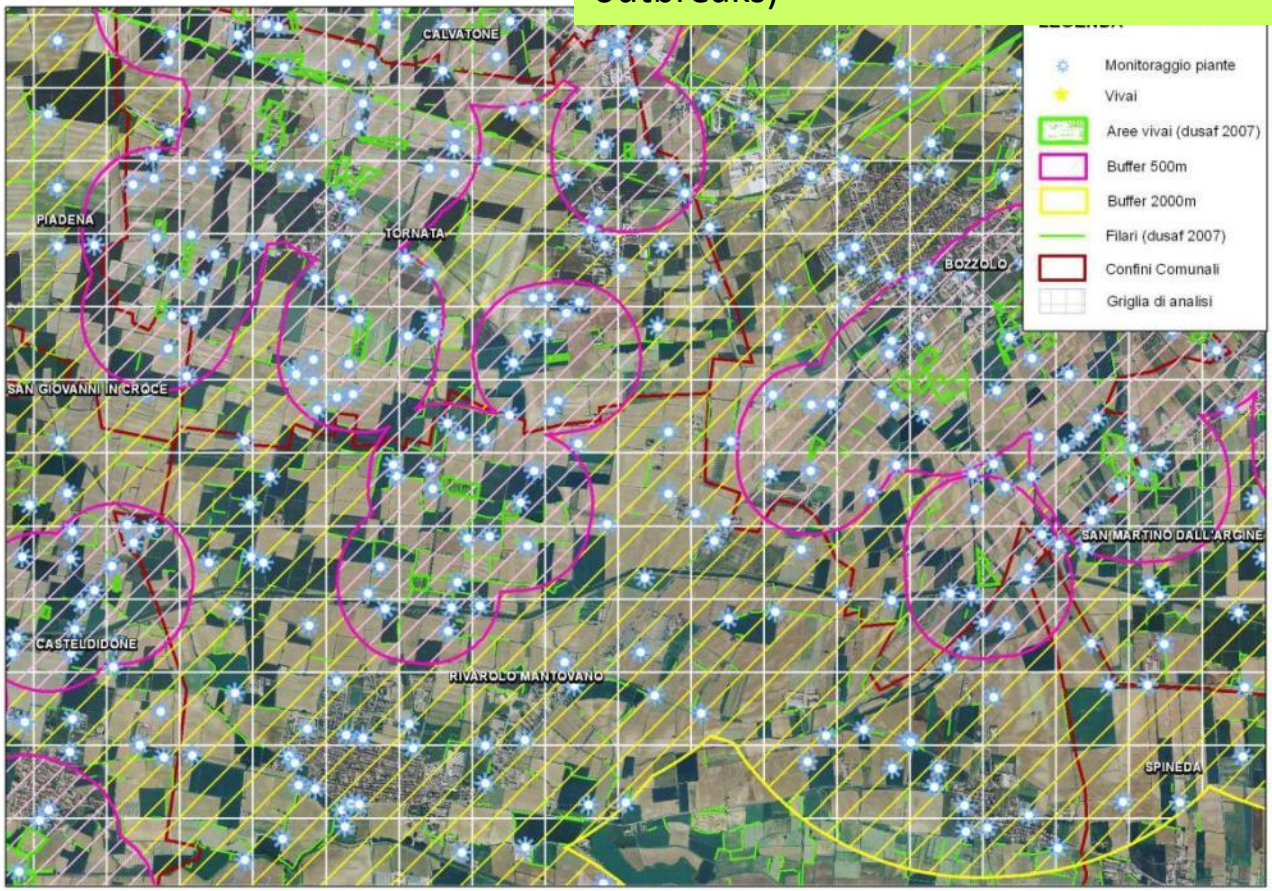
UPDATE	PROV	ATTIVITA'	PERIODO DEI CONTROLLI		HA COLTIVATI PER PROVINCIA	HA-SITI-N° CONTROLLI
			DA	A		
	BS CO MI VA	BURSAPHELENCHUS XYLOPHILUS	maggio	metà novembre		10 siti di Verde pubblico
	BS	NEMATODE DEL PINO BURSAPHELENCHUS XYLOPHILUS	maggio	metà novembre		1 siti
	CO	NEMATODE DEL PINO BURSAPHELENCHUS XYLOPHILUS	maggio	metà novembre		1 siti
	LC	NEMATODE DEL PINO BURSAPHELENCHUS XYLOPHILUS	maggio	metà novembre		1 siti
	MI	NEMATODE DEL PINO BURSAPHELENCHUS XYLOPHILUS	maggio	met	EXPO	4 siti
	VA	NEMATODE DEL PINO			MALPENSA INTERNATIONAL AIRPORT	3 siti
		TRAPPOLE				

More visual inspections and traps around sensitive areas

Planning surveys and monitoring

4) ECONOMICAL VALUE of AREA

Rinforced surveillance for Anoplophora in the strategic area for nurseries in MN province (very faraway from Anoplophora outbreaks)



Plant Health Service surveys on Orchards

➢Plant Protection Service addresses monitoring on **quarantine/regulated pests** (in orchards too)

PSA

XYLELLA

SURVEYS OF LOMBARDY REGION ON ORCHARDS

ERWINIA and APP

FD and XYLELLA

SHARKA

PPS surveys on Orchards (Pome fruits)

Host	Target pests	Surveys (other than nurserie)	
 **Pome Fruits**	***Erwinia amylovora***	***1) Orchards***	➢ *New orchards (1-2 year)* ➢ *Orchards in Pest Free Area (ZTMN1)* ➢ *Orchards in Strategic area (nurseries of propagating material of apple plants- ZFT)*
		2) Regional network (sentinel point)	
		3)Delimited area of outbreaks	
	Apple Proliferation Phytoplasm	***1) Orchards***	➢*During autumnal surveys of Erwinia in apple fields*

Erwinia amylovora (fire blight)

Pome Fruits

Quarantine pest

- Decision 2000/29/CE Annex .II
- **D.M.**10 settembre 1999, n. **356**

In case of findings

-creation of demarcated area (1km buffer) that has to be inspected twice a year for 3 growing season

-distruction of infected plants, all hosts whithin 10m from infected plants, other symptomatic hosts inside the outbreak

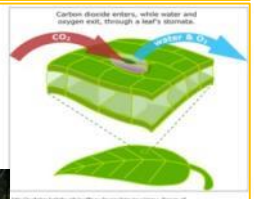
-measure on nurseries inside demarcated area

Erwinia amylovora (fire blight): Biology and pathways

- **Bacteria Gram -**

- **Pathways:** principally through ooze during springtime, carried by
  - ✓Insects,
  - ✓Birds,
  - ✓Rain
  - ✓Wind,
  - ✓Pruning
  - ✓Infected plants (propagating material infected or not certified)

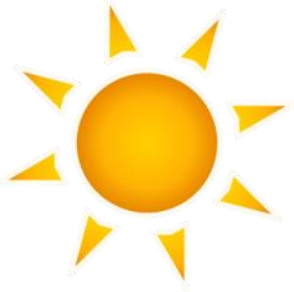
- **Entryway:**
  - ✓Natural openings on leaves and flowers (stomi)
  - ✓ Wounds caused by storms, by pruning, by stings of insects



Erwinia amylovora (fire blight): Biology and pathways

-Growing range of temperature (optimum)

> 15-18° C and < 32-35° C



-Time for monitoring (twice a year)

1° turn : from the half of May to the half July.

&

2° turn from the half of September to the end of October

- Host plants : Rosacee **Maloidaea** (Pomoidee) - pome fuit, wild and ornamental plants -

Erwinia amylovora (fire blight): Host plants

Amelanchier spp.






Erwinia amylovora (fire blight): Host plants

Chaenomeles (Cydonia) japonica






Erwinia amylovora (fire blight): Host plants

Cotoneaster spp.

Erwinia amylovora (fire blight): Host plants

Cotoneaster spp.

Erwinia amylovora (fire blight): Host plants

Cotoneaster spp.

Erwinia amylovora (fire blight): Host plants

Crataegus spp.

Erwinia amylovora (fire blight): Host plants

Crataegus spp.

Erwinia amylovora (fire blight): Host plants

Cydonia spp.

Erwinia amylovora (fire blight): Host plants

Eriobotrya spp.

Erwinia amylovora (fire blight): Host plants

Malus spp.

Erwinia amylovora (fire blight): Host plants

Malus spp.

Erwinia amylovora (fire blight): Host plants

Mespilus spp.

Erwinia amylovora (fire blight): Host plants

Photinia davidiana

Erwinia amylovora (fire blight): Host plants

Pyracantha spp

Erwinia amylovora (fire blight): Host plants

Pyrus spp.

Erwinia amylovora (fire blight): Host plants

Pyrus spp

Erwinia amylovora (fire blight): Host plants

Sorbus spp.

Erwinia amylovora (fire blight): Host plants

Sorbus spp.

Erwinia amylovora (fire blight): Host plants

Sorbus spp.

Erwinia amylovora (fire blight): Symptoms

- Wilting on flowers and leaves
- Leaves become black, are similar to leather on touch, don't fall down but are joined to the branches, don't crumble
- Young shoots bend ('*shepherds crook*')
- Little fruits dry, become black, remain joined to the branches
- Cankers and cracks can appear on bark
- Under the bark the tissue is reddish
- With favourable weather conditions, infected tissues can produce a grey/white ooze like little drops

Erwinia on Pyrus

Erwinia on Cotoneaster

Pome Fruits

Erwinia on Malus

Pome Fruits

Erwinia on Crataegus

Erwinia on Pyracantha

Pome Fruits

Other symptoms

Pome Fruits

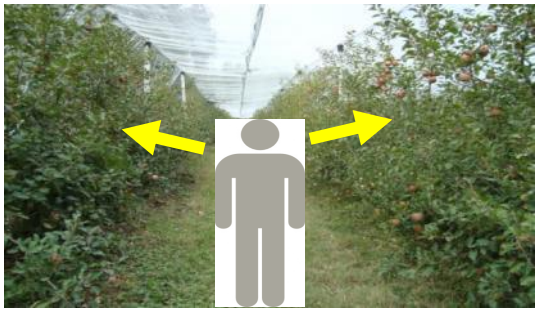
Other symptoms

Pome Fruits

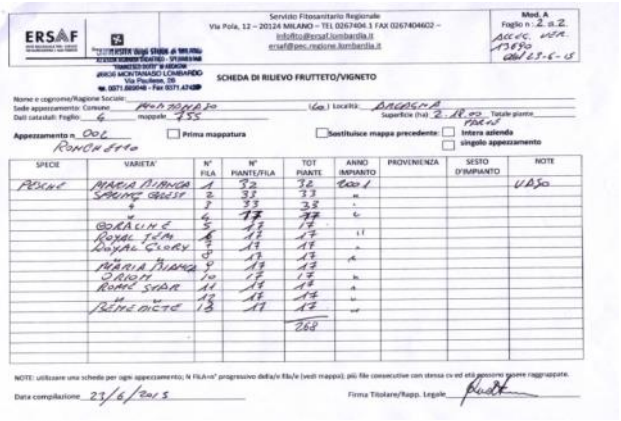
Erwinia amylovora (fire blight): surveys in orchards

Pome Fruits

➢Symptoms are easily visible (1 person can check on left and right)



➢Record all the information collected survey (extention, species, data, address, etc.) on field data sheet



➢Make an official report of the survey

➢Take coordinates of the orchard monitored

Erwinia amylovora (fire blight): surveys in orchards

Pome Fruits

➢Other diseases and abiotic factors can cause symptoms similar to those caused by Erwinia (ex. Pseudomonas, Nectria, Zeuzera, weeding)

If there are at least 2 or 3 symptoms of Erwinia take a sample

Make an official report of samples and give a copy to the owner of the orchards

Mark the plant and take coordinates indicating the official code of the sample

Remember to sterilize scissor/pruner and other instruments used

Erwinia amylovora (fire blight): surveys in orchards

Pome Fruits

➢NB: if you take a sample, cut about 10cm under the infected part in order to sample the transition area between diseased and healty part

Erwinia amylovora (fire blight): surveys in orchards

Pome Fruits

And… If the sample is positive to lab test?

Official management of situation

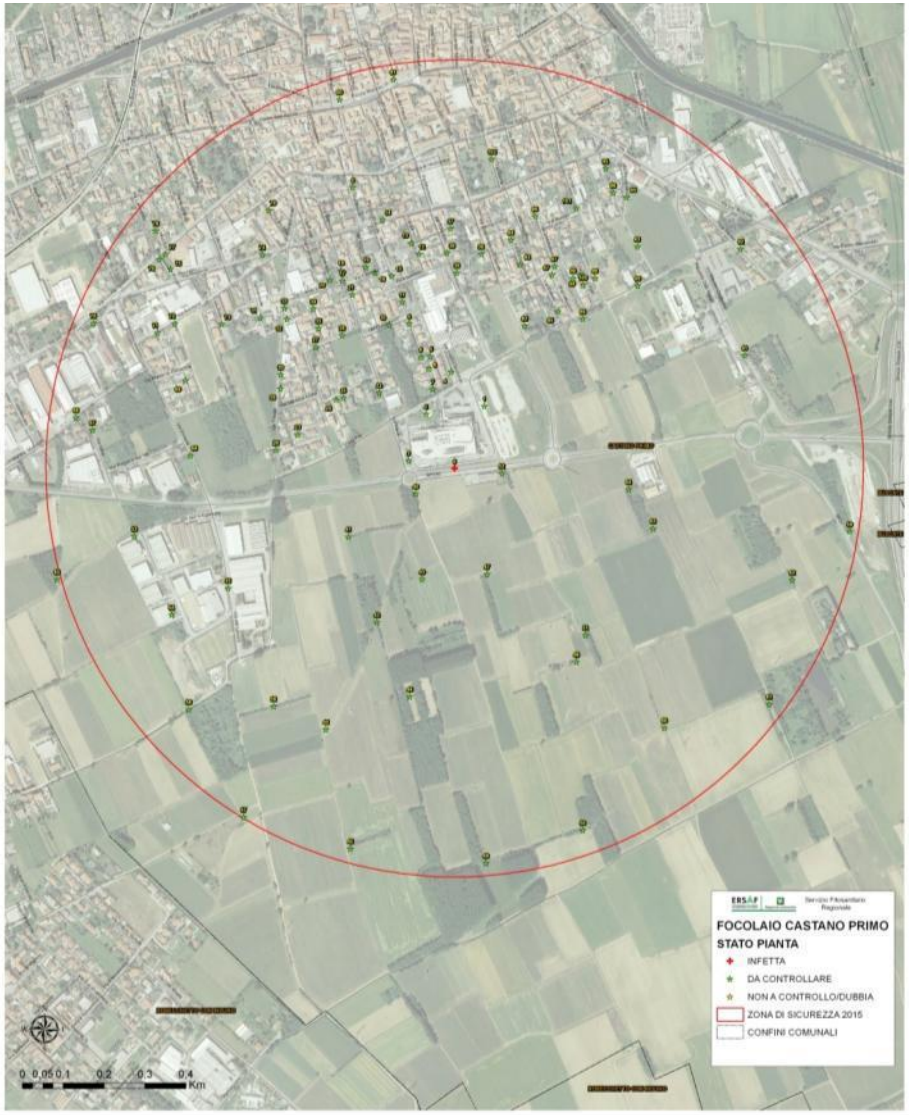
- ➢Official notification to national / european authorities
- ➢Official institution of demarcated area (1km radius)
- ➢Official measure on beehive

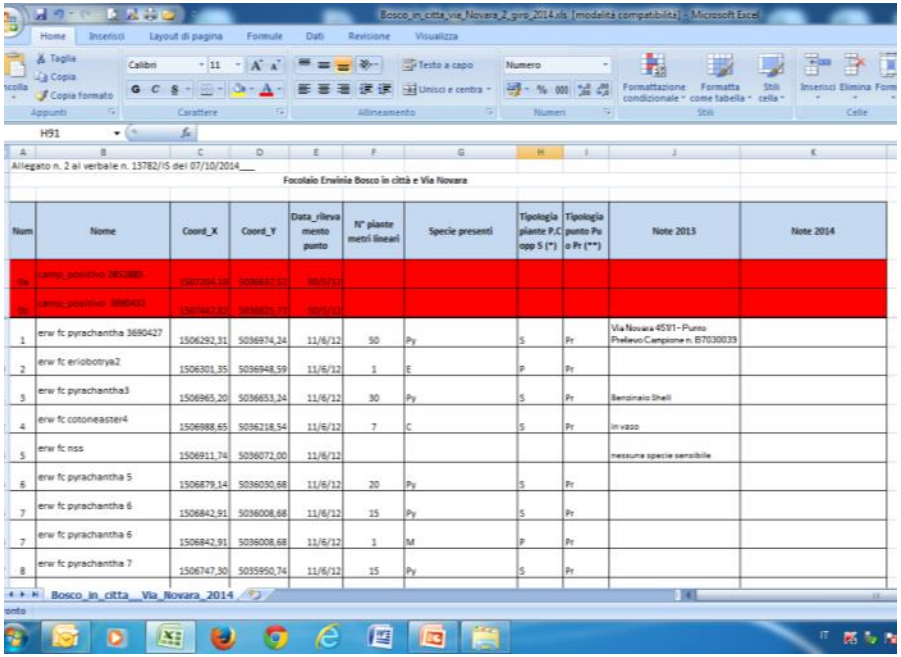
Practical management of situation

- ➢Application of phytosanitary measure on infected field
- ➢Verify if nurseries of host plants are inside delimited area (eventual application of phytosanitary measure)
- ➢Surveys on delimited area for 3 years

Erwinia amylovora (fire blight): surveys

Pome Fruits





Allegato n. 2 al verbale n. 13782/IS del 07/10/2014___

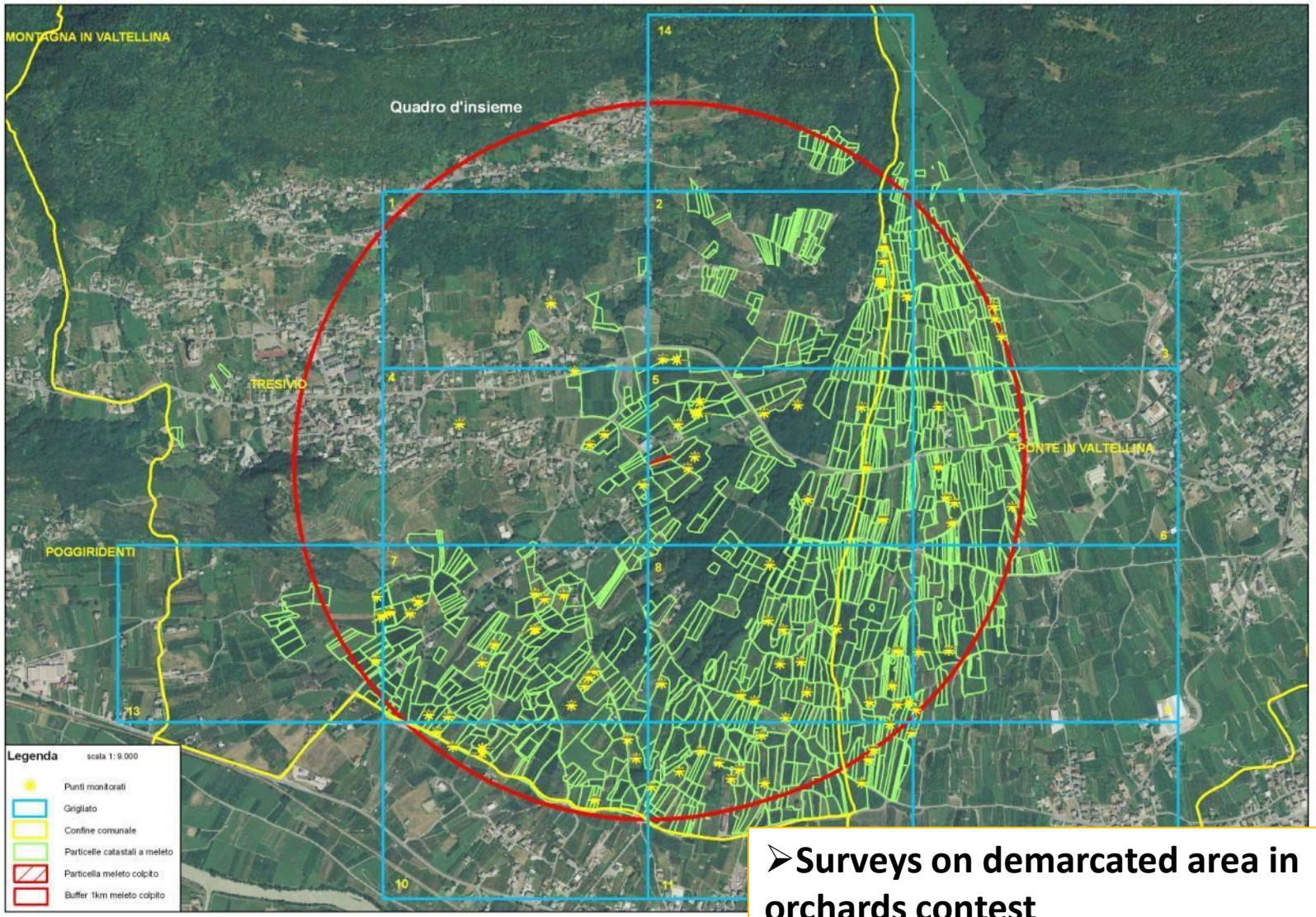
Focolaio Erwinia Bosco in città e Via Novara

Num	Nome	Coord_X	Coord_Y	Data_rilevamento punto	N° piante metri lineari	Specie presenti	Tipologia pianta P.C opp S (*)	Tipologia punto Pu o Pr (**)	Note 2013	Note 2014
1	erw fc pyrachantha 3690427	1506292,31	5036974,24	11/6/12	50	Py	S	Pr	Via Novara 4571 - Punto Prelievo Campione n. B7030039	
2	erw fc eriobotrya2	1506301,35	5036948,59	11/6/12	1	E	P	Pr		
3	erw fc pyrachantha3	1506965,20	5036653,24	11/6/12	30	Py	S	Pr	Benzinaio Shell	
4	erw fc cotoneaster4	1506988,65	5036218,54	11/6/12	7	C	S	Pr	in vaso	
5	erw fc nss	1506911,74	5036072,00	11/6/12					nessuna specie sensibile	
6	erw fc pyrachantha 5	1506879,14	5036030,68	11/6/12	20	Py	S	Pr		
7	erw fc pyrachantha 6	1506842,91	5036008,68	11/6/12	15	Py	S	Pr		
7	erw fc pyrachantha 6	1506842,91	5036008,68	11/6/12	1	M	P	Pr		
8	erw fc pyrachantha 7	1506747,30	5035950,74	11/6/12	15	Py	S	Pr		

➢**Surveys on demarcated area in urban context**

Erwinia amylovora (fire blight): surveys

Pome Fruits



➢**Surveys on demarcated area in orchards contest**

Apple Proliferation Phytoplasm

Pome Fruits

Associated to autumnal control of apple plants for Erwinia, we do the monitoring Apple Proliferation Phytoplasm

Apple Proliferation Phytoplasm is spread in principal apple production area of Lombardy (infested area), so we address surveys on:

- New orchards
- Pest free area (few)
- Plants before planting

Apple Proliferation Phytoplasm: symptoms

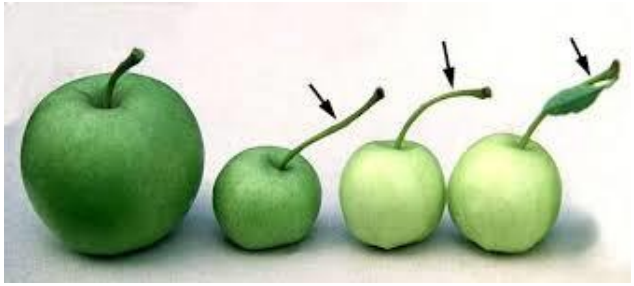
Pome Fruits

Symptoms visible on late summer-autumn (sometimes infected plants are asymptomatic)

- Uncontrolled growth and proliferation of young shoot on the year branch like "**Witches broom**"

- Fruits and leaves are smaller than normal
- Enlarged stipules
- Chlorosis and reddening of the leaves

- Blossom later than normal (summer)



PPS surveys on Orchards (Stone fruits)

Host

Stone Fruits

Target pests

Sharka

Surveys *(other than nurseries)*

1) Orchards

- *New orchards in Pest Free Area*
- *Collection orchards in Pest Free Area*

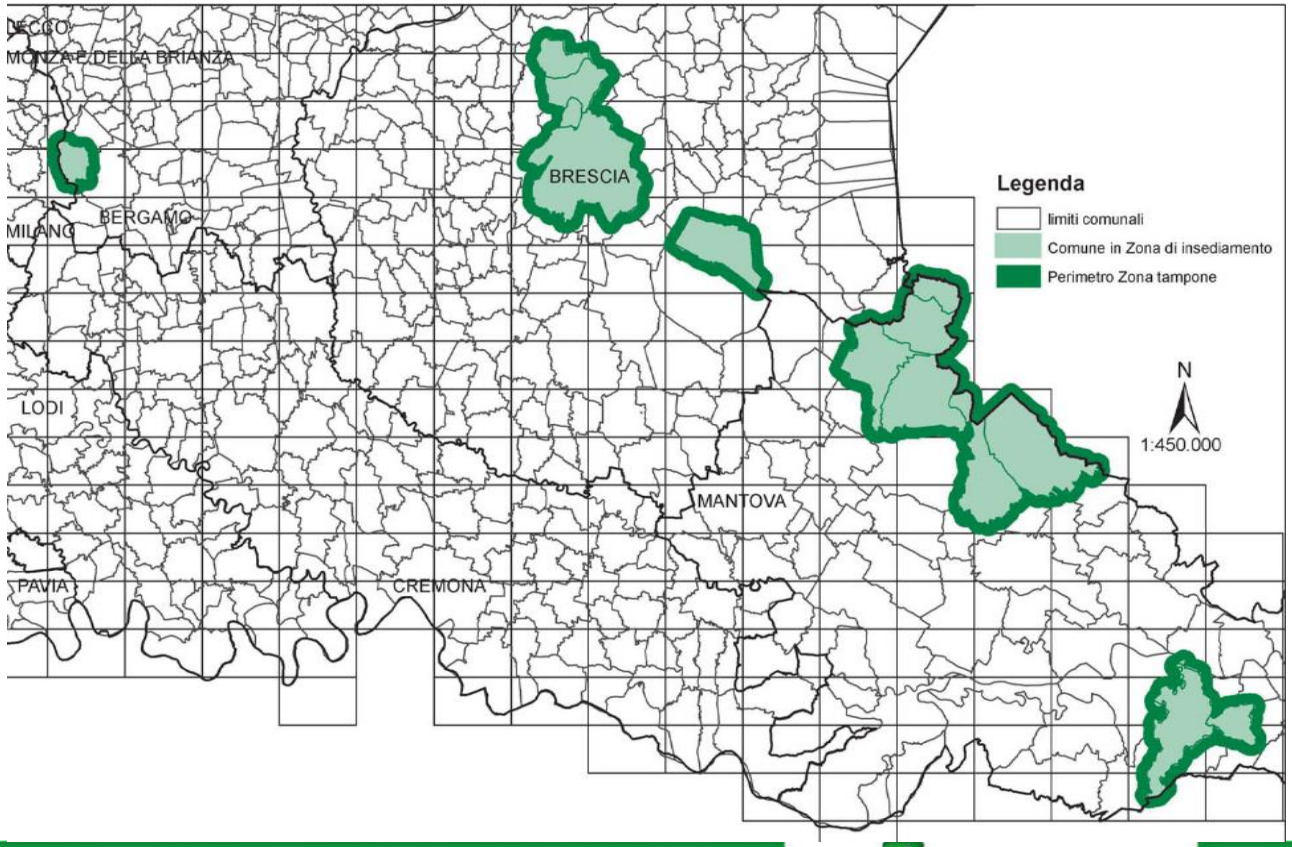
Plum pox Virus (sharka)

Stone Fruits

Quarantine pest

- Decision 2000/29/CE Annex .II
- D.M. 28 luglio 2009

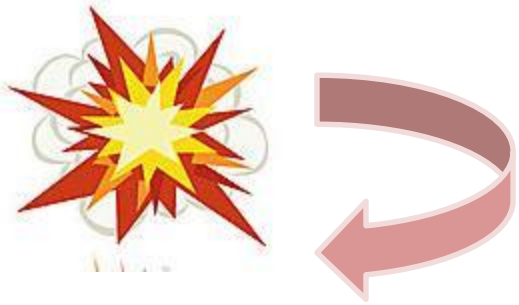
Spread in different areas of the region (infested areas)



Plum pox Virus (sharka)

Stone Fruits

In case of findings



-creation of demarcated area (1km buffer) control for 3 year

-distruction of infected plant, other symptomatic hosts inside the outbreak (if infection is >10% distruction of all the orchard)

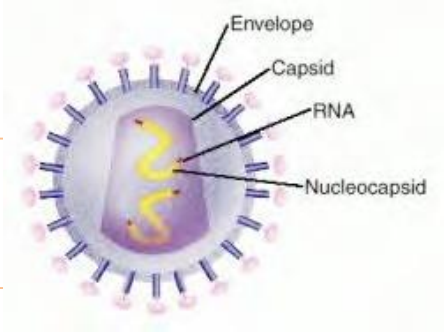
-measure on nurseries inside demarcated area

PPV (Sharka): Biology and pathways

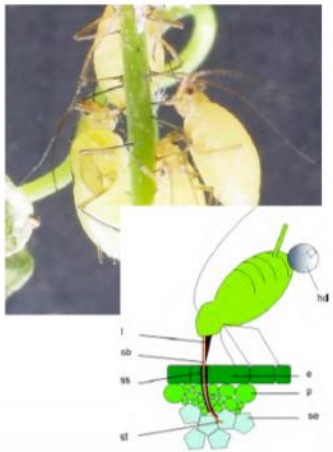
Stone Fruits

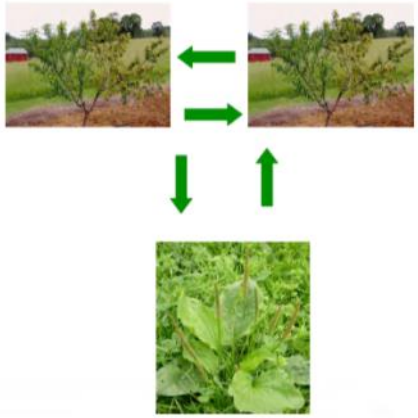
- **Virus**

(4 strains: PPV-D; PPV-M; PPV-C; PPV-EA)
That differ for hosts species



- **Pathways:**
  - ✓Infected plants (propagating material infected or not certified)
  - ✓Aphids





PPV (Sharka): Biology and pathways

Stone Fruits

-**Time for monitoring**

- Early Spring during the blossom (for peaches with pink flowers)
- Late May/early June (symptoms on leaf)
- (Late summer/early autumn -symptoms on fruits)

- Host plants :stone fuit (Prunus spp.), fruit, wild and ornamental plants -

PPV (Sharka): Host plants

Stone Fruits

Prunus persica

PPV (Sharka): Host plants

Prunus armeniaca

Stone Fruits

PPV (Sharka): Host plants

Prunus domestica

Stone Fruits

PPV (Sharka): Host plants

Prunus avium

Stone Fruits

PPV (Sharka): Host plants

Prunus dulcis

Stone Fruits

PPV (Sharka): Host plants

Other prunus

Stone Fruits

PPV (Sharka): symptoms

Stone Fruits

- Symptoms differ by host and season
- Chlorotic rings or lines on leaves
- Chlorotic rings on fruits
- Depressed areas on fruits (fruits are deformed) in correspondence of chlorotic areas on the skin
- Only on apricot the stone can show rings and spots of differents colours
- On pink flowers (peaches), colors is not uniform but striated
- Symptoms on leaves fade away during the season

PPV (Sharka): symptoms

Stone Fruits

PPV (Sharka): symptoms

Stone Fruits

PPV (Sharka): symptoms

Stone Fruits

PPV (Sharka): symptoms

Stone Fruits

PPV (Sharka): symptoms

Stone Fruits

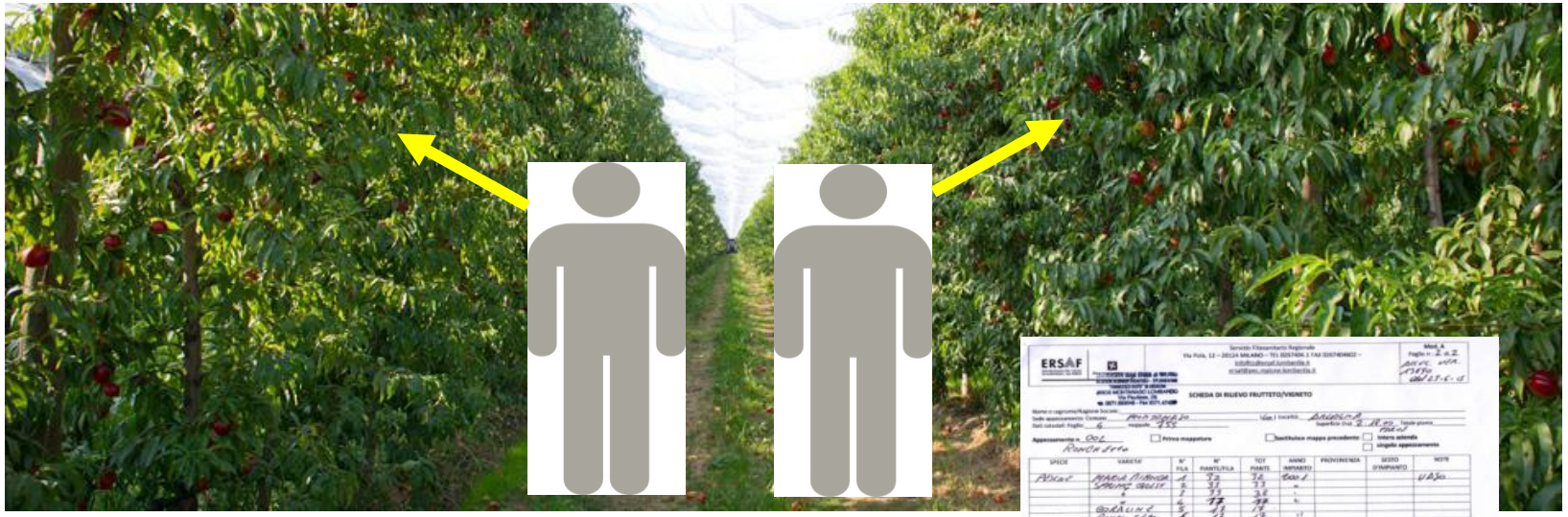
PPV (Sharka): symptoms

Stone Fruits

PPV (Sharka): surveys on orchard

Stone Fruits

➢Symptoms are not easily visible (2 person per row, one check on the left, on on the right)



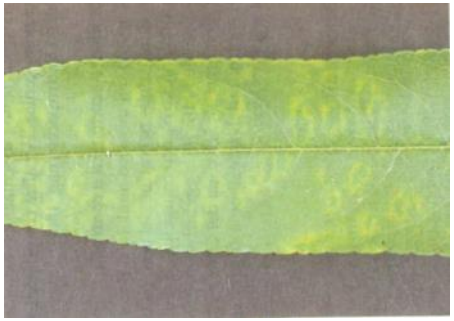
➢For monitoring procedures (see Erwinia)

➢If you take a sample, **not** required to **sterilize** the instruments is

PPV (Sharka): surveys on orchard

- Symptoms of Sharka are similar to other diseases (not quarantine pests)

- PNSRV (Prunus Ring Spot Necrotic Virus)
- ACLSV (Apple Chlorotic Leaf Spot Virus)
- AMV (Apple Mosaic Virus)
- PDV (Prunus Dwarf Virus)



- For a correct determination take a sample

PPS surveys on Orchards (vineyard)

Host	Target pests	Surveys (other than nurserie)	
	FD (Flavescence dorée)	1) Vineyard	➢ Orchards in Pest Free Area (Province of Sondrio) ➢ Orchards in infected area
Grape	Xylella fastidiosa	1) Vineyard	➢During surveys for FD
		2) Olive orchards	

FD (Flavescence dorée) : symptoms

- It is spread by **vector insects**
  - ***Scaphoideus titanus*** **(FD)**
  - ***Hyalesthes obsoletus*** **(LN)**

RegioneLombardia

Giunta Regionale
Agricoltura
U.O. Sviluppo di Industrie e Filiere Agroalimentari

Palazzo Lombardia
Piazza Città di Lombardia, 1
20124 Milano

tel. 02 6765 3734 fax 02 6765 2757
www.regione.lombardia.it
E-mail: agricoltura@pec.regione.lombardia.it

COMUNICATO DEL SERVIZIO FITOSANITARIO REGIONALE

5 giugno 2014

Trattamenti obbligatori contro *Scaphoideus titanus*,

vettore della Flavescenza Dorata della vite

In attuazione della Deliberazione della Giunta regionale 03.08.2000 n. 7/904, di recepimento da parte della Regione Lombardia del Decreto ministeriale 31.05.2000 inerente "Misure per la lotta obbligatoria contro la Flavescenza dorata della vite",

SU TUTTO IL TERRITORIO VITATO REGIONALE
È OBBLIGATORIO EFFETTUARE TRATTAMENTI INSETTICIDI
CONTRO *Scaphoideus titanus*, VETTORE DELLA FLAVESCENZA DORATA DELLA VITE

utilizzando **esclusivamente prodotti fitosanitari autorizzati per la lotta alle cicaline della vite.**

- Its optimum for growing occurs **from July to October**

FD (Flavescence dorée) : symptoms

- Shoots fail to lignify, are thin, rubbery, and hang pendulously.

- During winter, the non-lignified branches blacken and die. Late-infected shoots also blacken in winter but survive and grow a little in the following spring.

- Numerous small black pustules form along the diseased branches of susceptible cultivars. At the end of summer longitudinal fissures appear in the bark at the base of badly diseased branches.

- The leaves show colour aberrations and downward-rolled margins.

- In white-fruited cultivars there is a yellowing of the portion of the lamina exposed to the sun that confers a metallic lustre to the leaf surface.

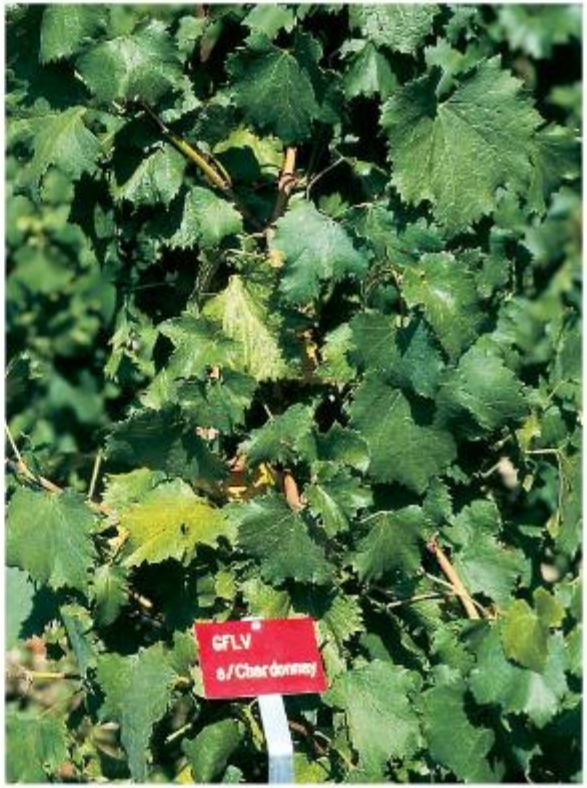
- Later in the season, well defined creamy-yellow spots a few mm in diameter appear along the main veins.

PPS surveys on Orchards: symptoms

FD (Flavescence dorée): symptoms

➢Symptoms of Flavescence doreè a are similar to other other diseases (not quarantine pests)

37. Giallumi infettivi dovuti a virosi

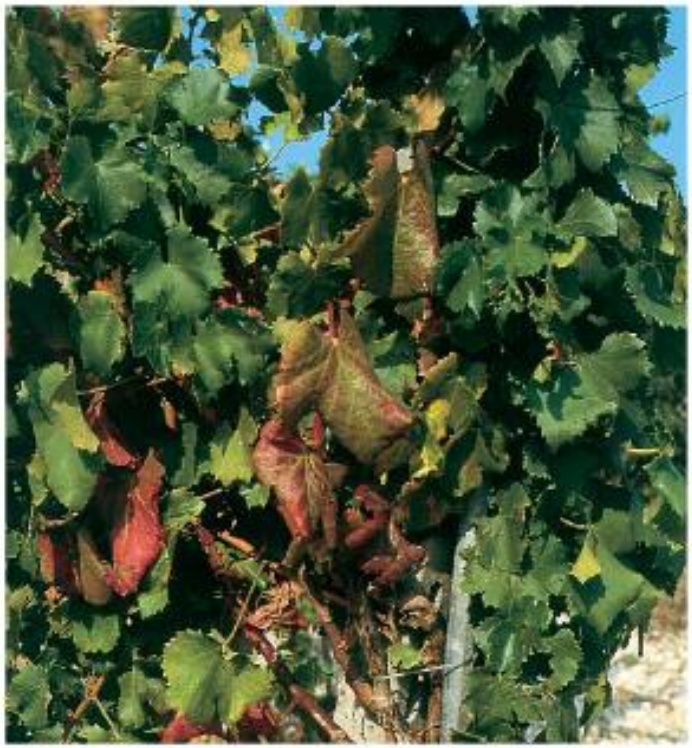


38. Giallume e malformazione infettivi

Damage caused by viruses

FD (Flavescence dorée) : symptoms

➢Symptoms of Flavescence doreè a are similar to other problems:



50. Alterazioni fogliari in tralcio con lesione basale

Damage to the base of the Vitis branch

51. Sintomi fogliari da carenza di potassio

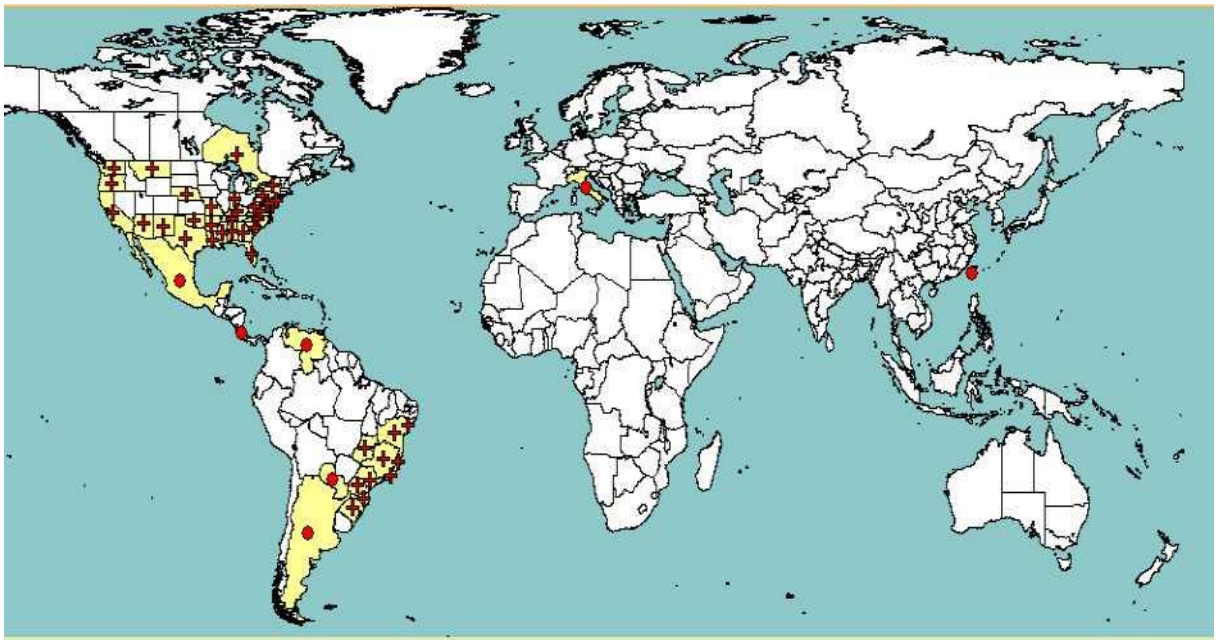
Potassium deficiency

Focus on *Xylella fastidiosa* in vineyard

Bacteria identified for the first time at the end of XIX century on vineyard in California (Pierce's disease)

Vineyard

- **Gram –**
- Xylematic bacteria



Focus on *Xylella fastidiosa* in vineyard

➢It is spread by **vector insects** (Cicadellidae and Cercopidae) in spring time

Vineyard

Homalodisca vitripennis
(=H. coagulata)

Carneocephala fulgida

Draeculacephala minerva

Graphocephala atropunctata

Philaenus spumarius.
(Obradovic.,2010)

Cicadella viridis
(Obradovic.,2010)

➢Its optimum for growing occurs **from July to October**

Focus on *Xylella fastidiosa* in vineyard

Vineyard

Nowadays ,5 differents strains of *Xylella fastidiosa* have been identified:

- *Sandy* (host: Nerium oleander)
- *Multiplex*; (host: *Prunus dulcis, Olea europaea*, other forestry and fruit plants)
- *Tashke*; (Host *Chitalpa tashkentensis)*
- *Fastidiosa*; "Pierce's disease"

- *Pauca*; (Host*: Cirus spp* and *Coffea*).

Genetically differents.

Focus on *Xylella fastidiosa* in vineyard

Vineyard

Symptoms of *Xylella fastidiosa subs. Fastidiosa (Pierce's disease)* on grapevine

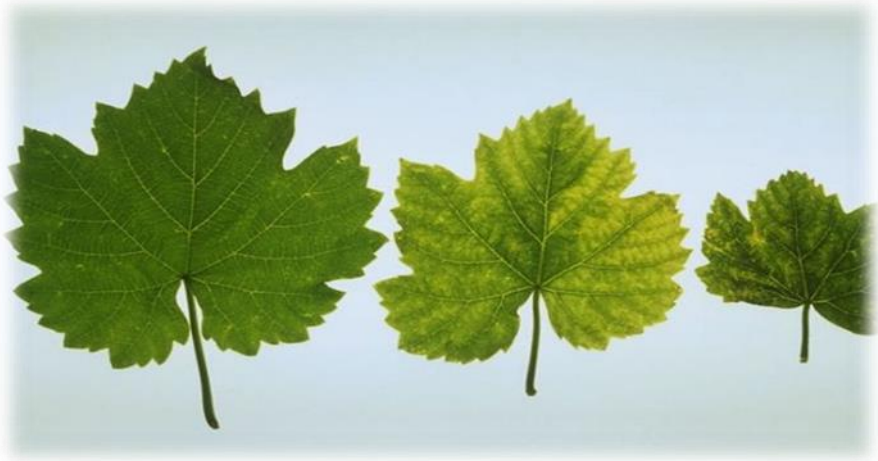
- In summertime plants show **symptoms** similar to **water stress**,
- Leaves become **yellow or reddish** on the edge
- **Bunch wilting**
- Old leaves **dry** and fall down, but the stalk remain joined to the branch
- **Wood** on new branch is **irregular**
- **New shoots** are produced on the bottom

Focus on *Xylella fastidiosa* in vineyard

Vineyard

cv.Merlot

cv.Chardonnay



Focus on *Xylella fastidiosa* in vineyard

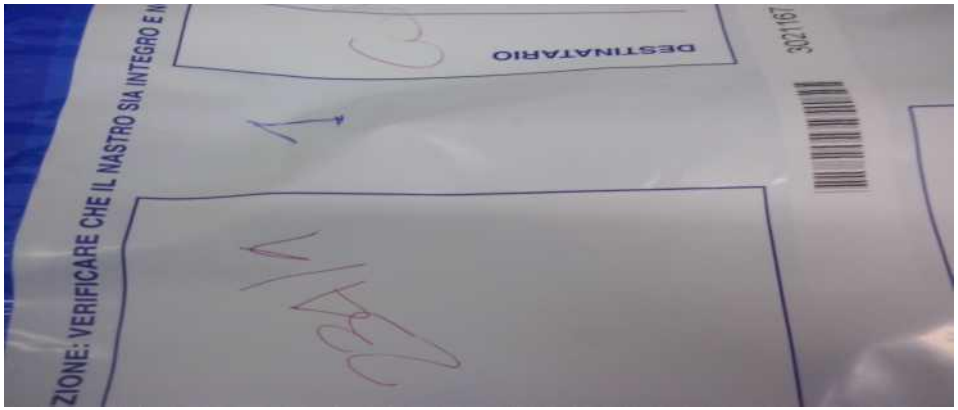
Vineyard

X.f. is monitored toghether with Grape Yellows

Both symptoms are easily visible
(1 person per 2 rows)

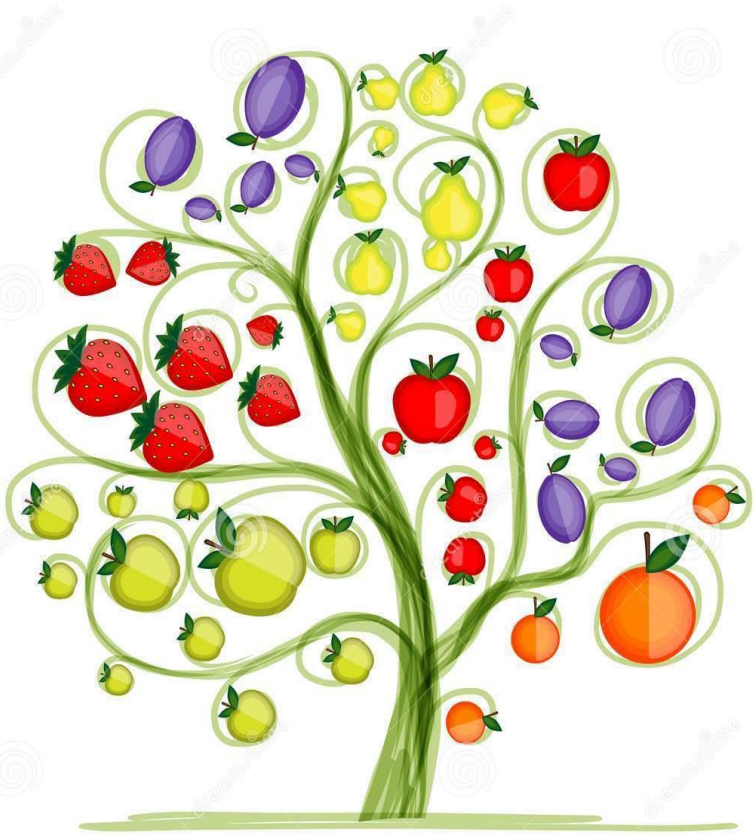
For a correct identification of Pierce's disease, take a sample

1 sample consist on 20 symptomatic leaves with stalks



OVERVIEW OF HARMFUL ORGANISMS: FRUIT SPECIES.
METHODS FOR DIAGNOSTICS , IDENTIFICATION AND MONITORING

Banja Luka 2015-06-21/24



Enjoy your work!

Plant Health Service surveys on Orchards

Veronica Cappa- *Lombardy Region Plant Health Service –*