MONITORING ACTIVITY OVER SUGAR BEET GROWING AREAS

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- **Rainfall & shallow water table depth**
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Project: "Consolidating sugar beet areas"

In the period 2008-2010 our main activity is focused on:

"Consolidating sugar beet areas" project.

The main goal of the project is to increase the competitiveness of sugar beet (higher yields and lower costs) through:

- ***1st Phase***
  - Identification of sugar beet growing areas belonging to each sugar plant
  - Identification of main agronomical problems to investigate in order to reach the main goal in each sugar beet growing area
  - Planning of experimental trials in each sugar beet growing area to solve its specific agronomical problems

Project: "Consolidating sugar beet areas"

- ***2nd Phase***
  - –Strong activity in dissemination using:

    guide lines: technical information about sugar beet cultivation for each growing area explained by sugar beer grower association extension services to their farmers

    monitoring activity to obtain information directly from farmers or crop fields (about pest, disease, irrigation, crop costs and yields, fertilization, weed control). This information's have to be disseminate to other sugar beet growers in order to inform them how to manage, to warm and/or prevent

    information transfer using technical notes sent by mail, agronomical reviews, meetings, field meetings with farmers, web site, sms

Project: "Consolidating sugar beet areas"

- ***3rd Phase***
  - Recollection of guide lines from farmers at the end of crop cycle (in progress)
  - Verifying and measuring of the guide lines application level and of their effects in terms of increasing yield in comparison to other farms in the same sugar beet growing area
  - If necessary, there will be a correction of the guide lines and of field trials and then, in the next campaign, the project will restart with the 1st phase

Monitoring activity carriyng out in 2008

Activities and numbers for each sugar plant

MONITORING ACTIVITIES	PONTELONGO	SAN QUIRICO	MINERBIO
NITROGEN (soil samples in autumn)	15	30	20
CERCOSPORA LEAF SPOT (weekly observations in June)	10	10	10
LEPIDOPTERA (weekly observations from May to September)	6*	6*	6*
RAINFALL & SHALLOW WATER TABLE DEPTH (15-days observations from half May until the end of August)	0	20	0
HETERODERA SCHACHTII (soil samples in autumn)	30	30	30
CONORHYNCHUS MENDICUS (*CLEONUS* weekly observations from April to June)	2	0	4
CROP CULTIVATION COSTS (economical analysis on sugar beet)	20	15	10

*** 2 observations made by BETA**

Lepidoptera monitoring

Aim of this activity is to keep under control the most dangerous Lepidoptera pests for sugar beet in the period May-September.

A good knowledge about the species and their showing time allows insecticide treatments to be effective.

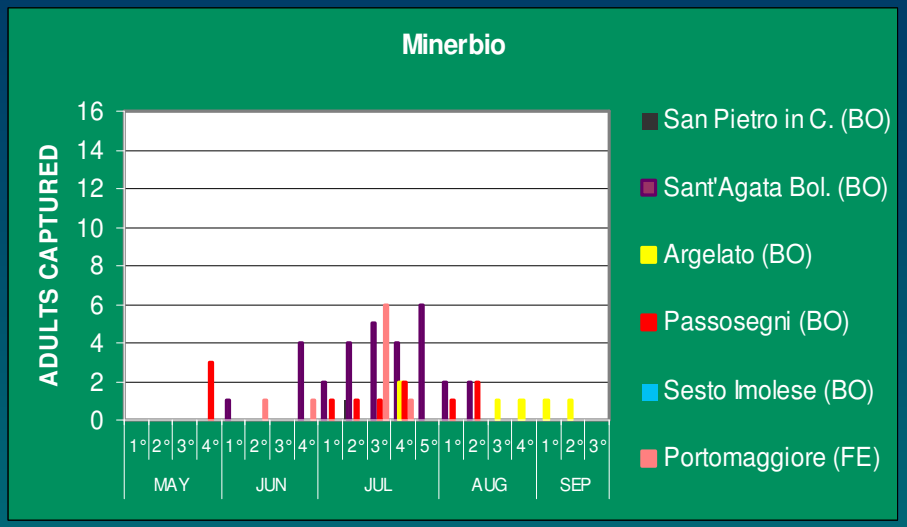
We monitor the following species using different pheromones attractive traps to capture adults

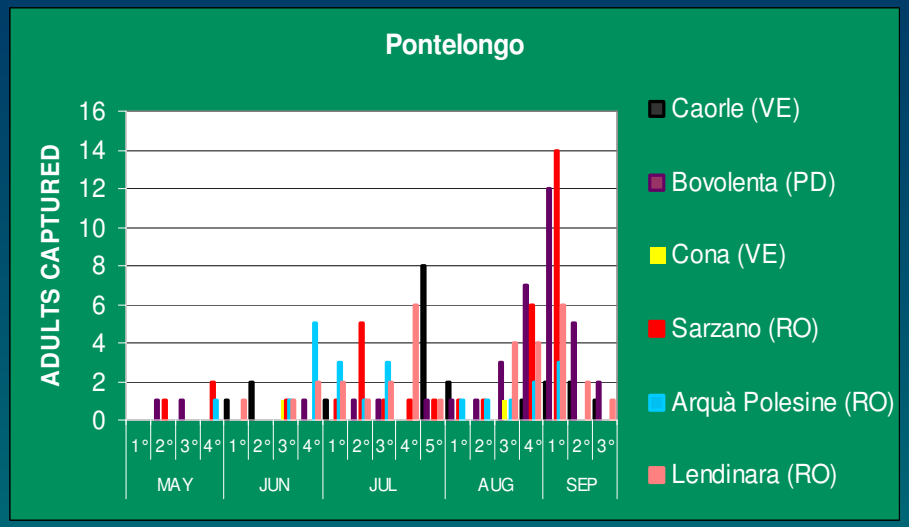
Mamestra brassicae

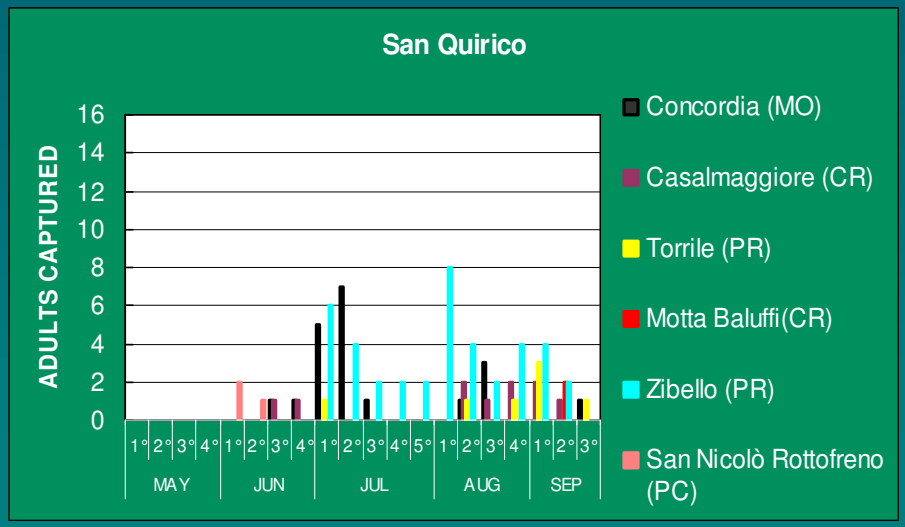
Spodoptera exigua

Autographa gamma

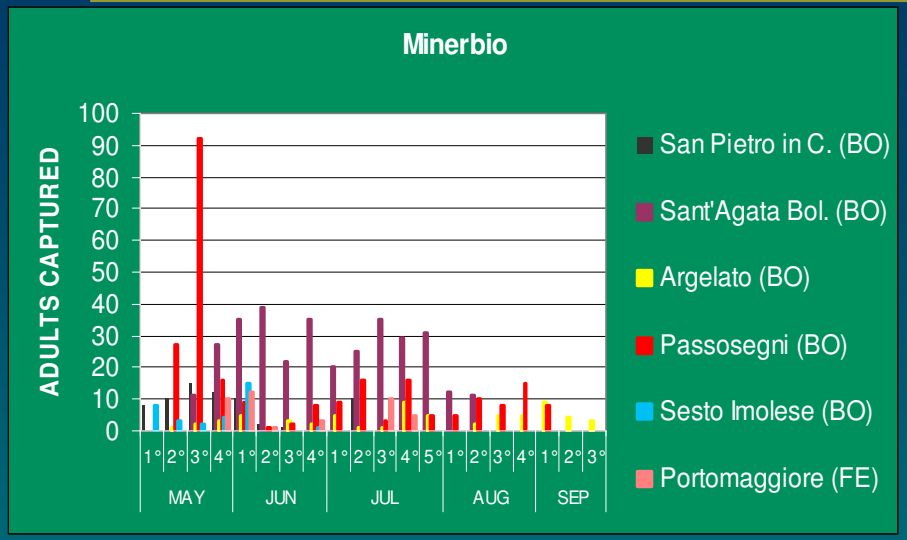
Lepidoptera monitoring: *Mamestra brassicae*

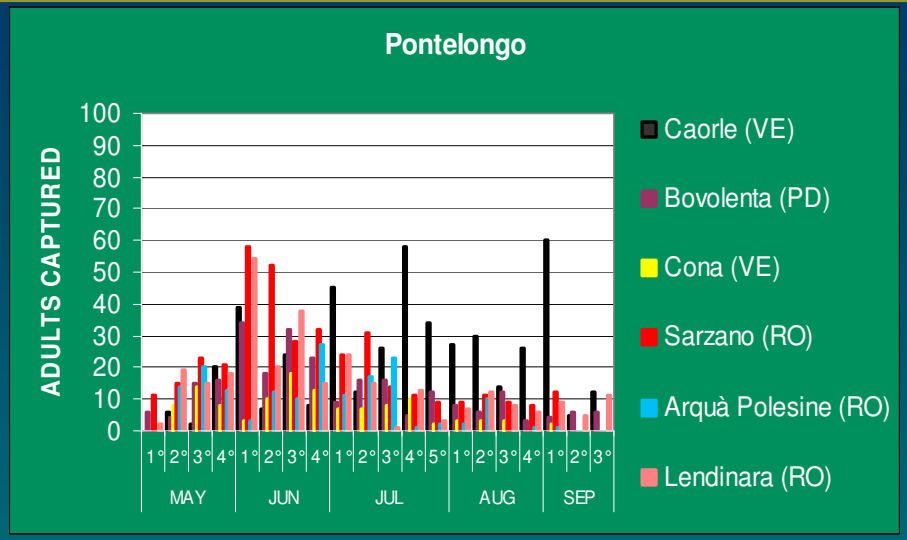


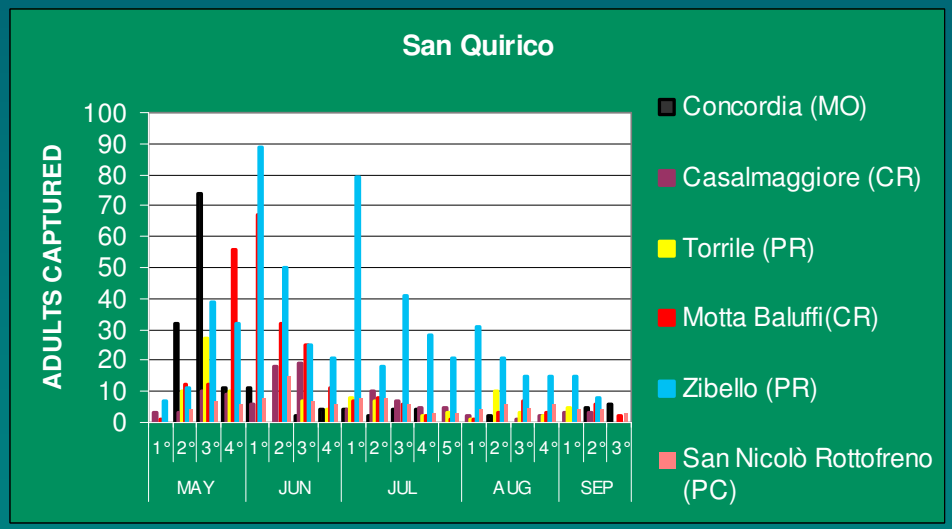




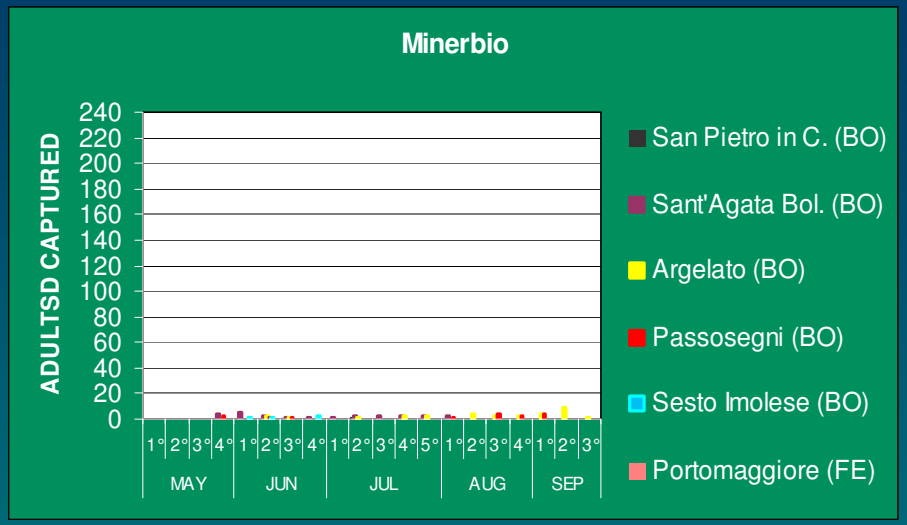
Lepidoptera monitoring : *Autographa gamma*

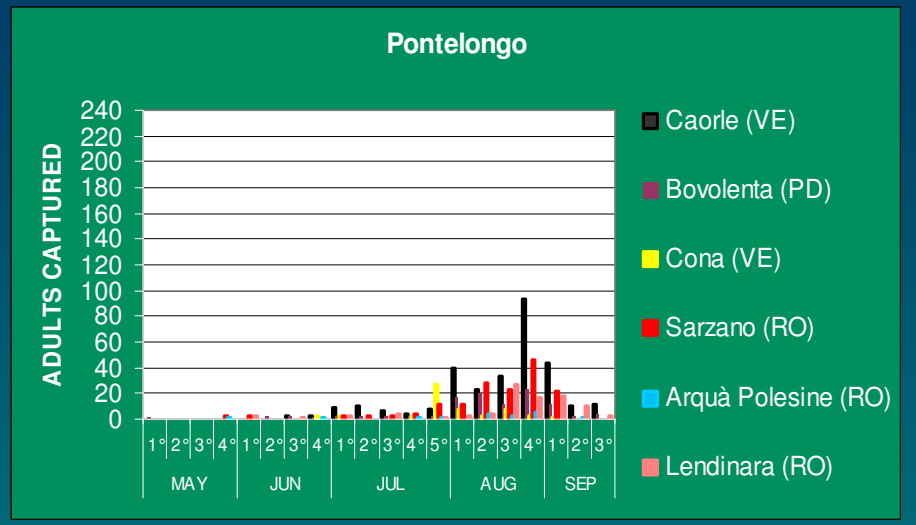


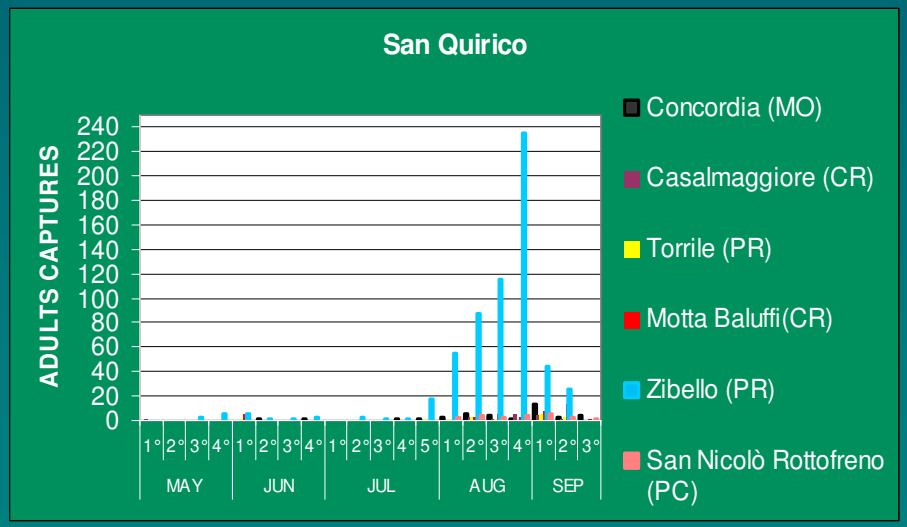




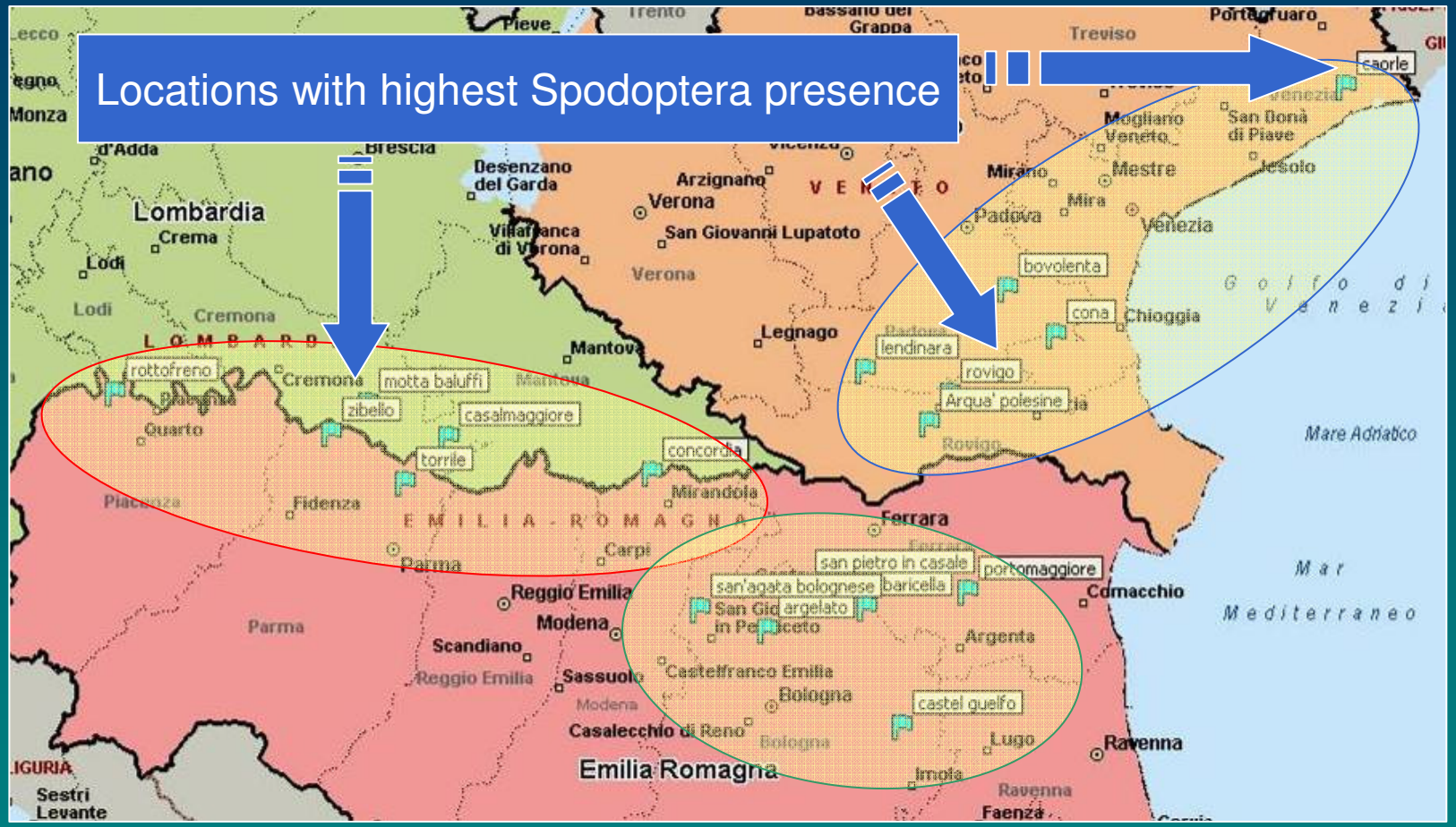
Lepidoptera monitoring : *Spodoptera exigua*







Lepidoptera monitoring: locations

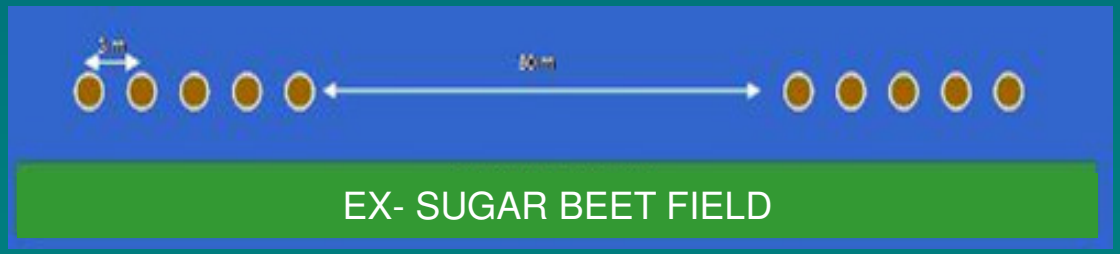


Cleonus monitoring

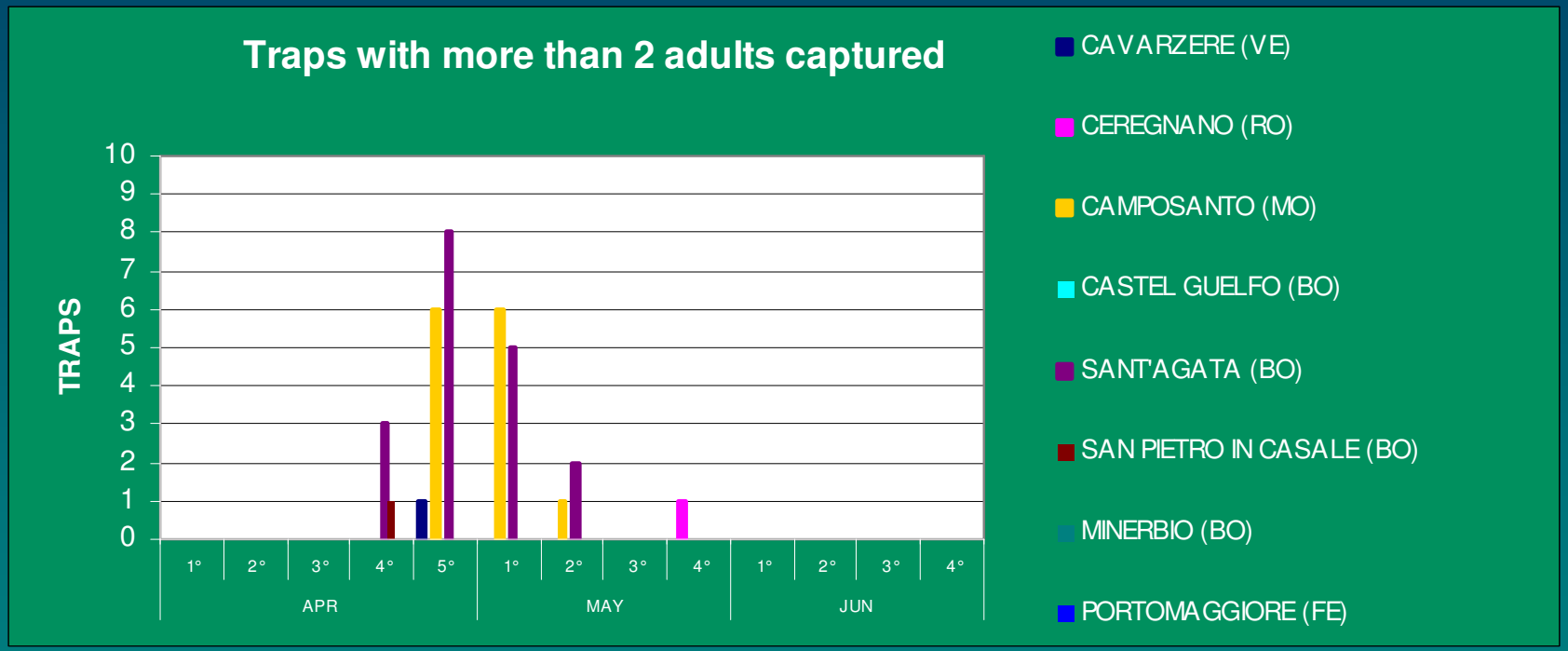
To have an effective monitoring a 2 group of 5 traps were buried until the edge in the soil with a distance of 50 meters between each group and 3 meters among each traps.

Figures about the adults captured each week in the period April-June are important to define the timing of treatments in order to prevent important damages

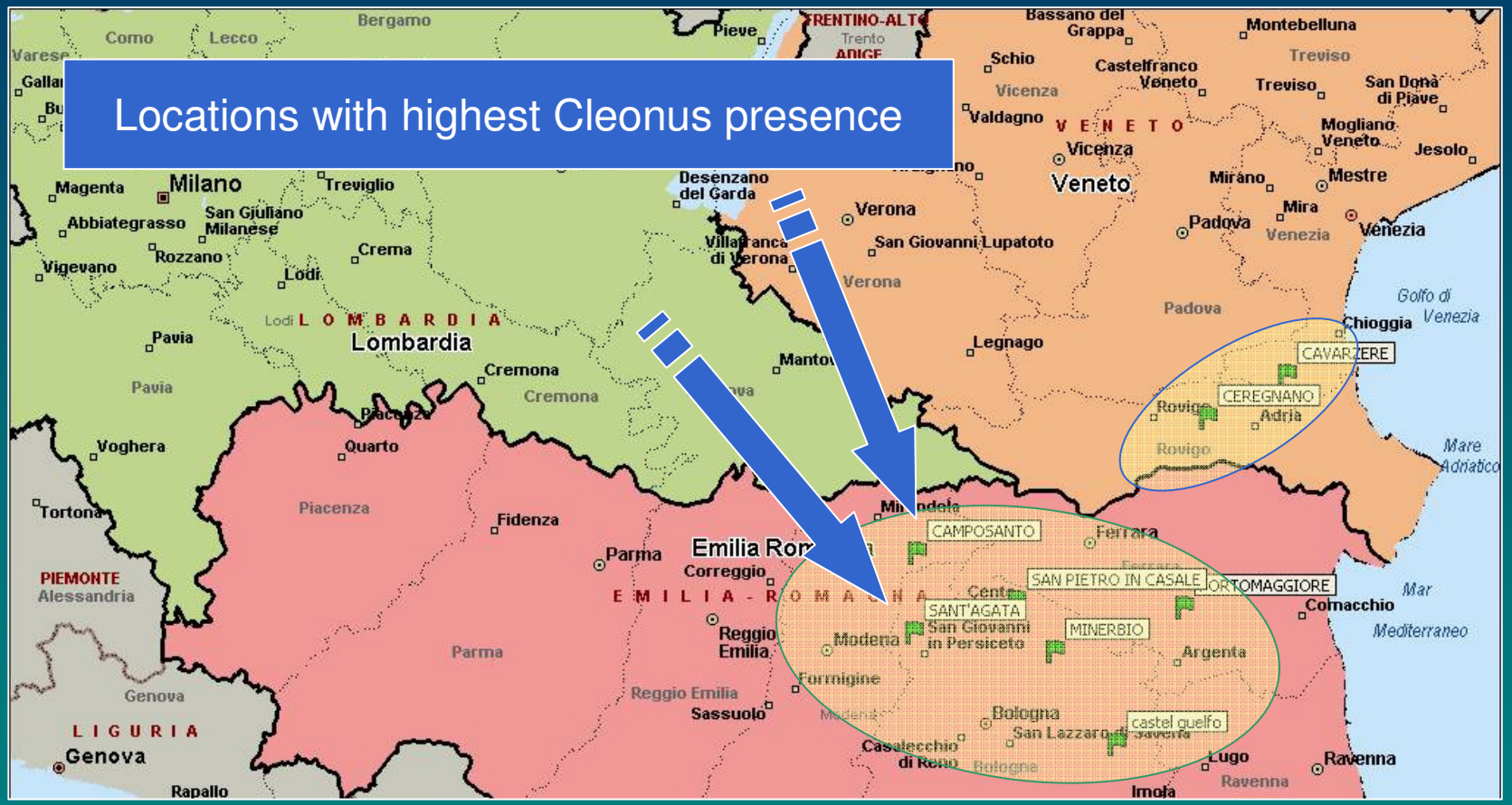
Two adults captured in a week in one trap is the starting line to spray insecticide



Cleonus monitoring: results



Cleonus monitoring: locations

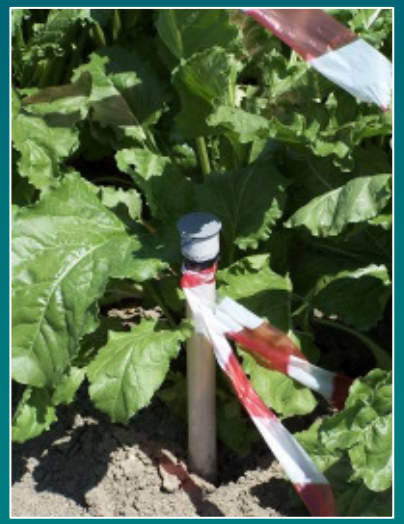


Rainfall and shallow water table depth

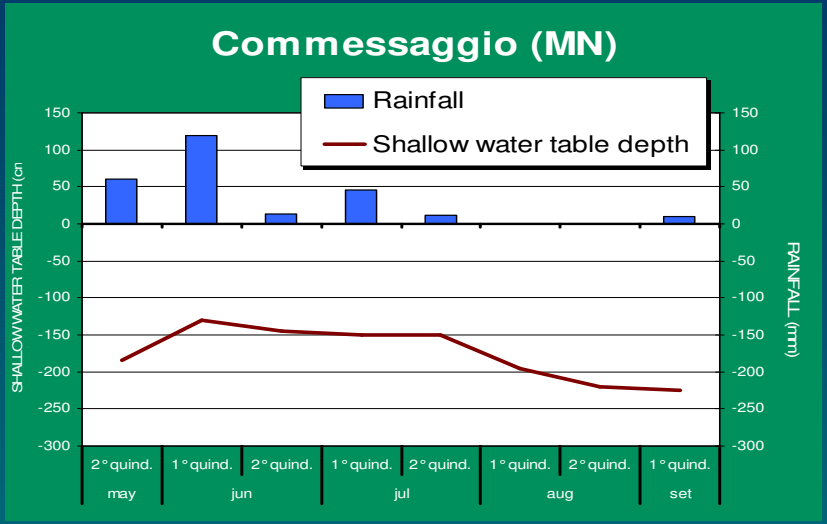
The amount of rainfall and the shallow water table depth are two important parameters used in Beta irrigation software “AcquaFacile” to manage sugar beet irrigation

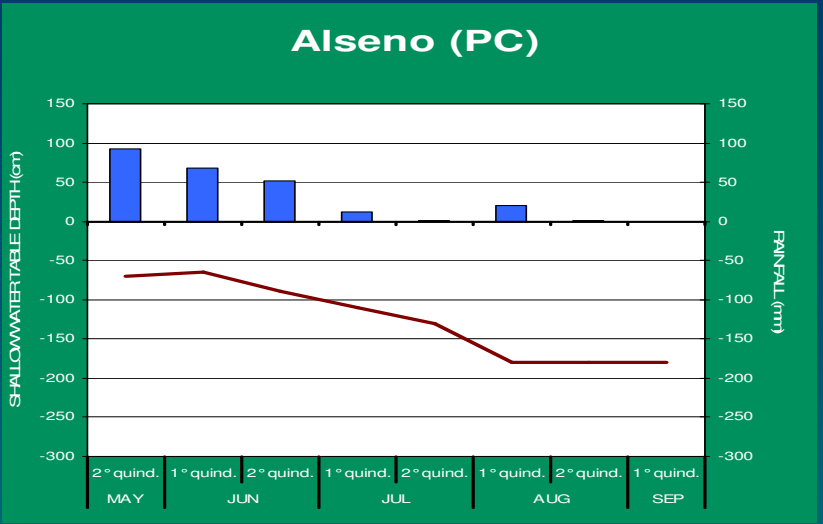
“AcquaFacile” has been developed by Beta and, based on the Hargreaves equation, it allows to calculate reference irrigation volume and irrigation system efficiency. Moreover, it is possible to update, save, export water balances and import weather data.

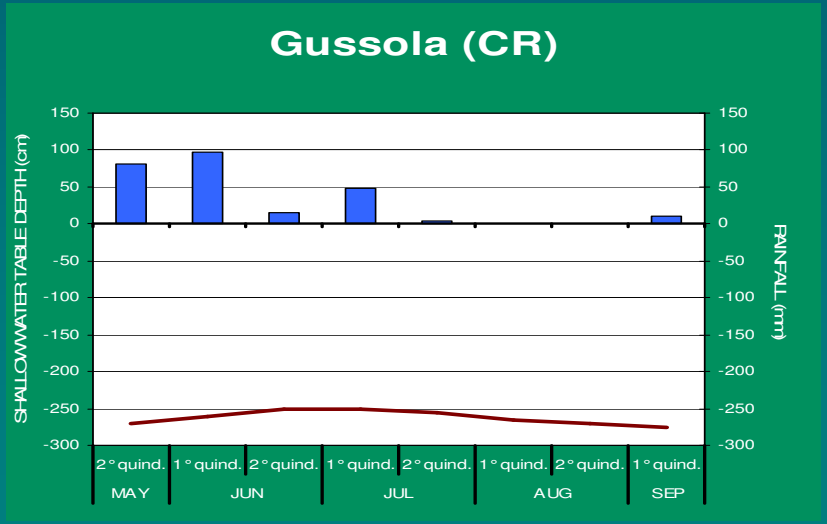
A low shallow water table depth allows to avoid some irrigations.

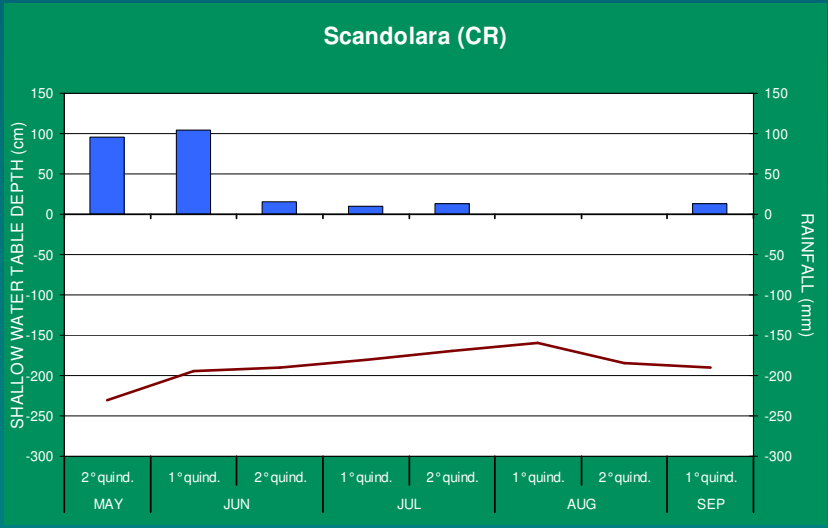


Rainfall and shallow water table depth

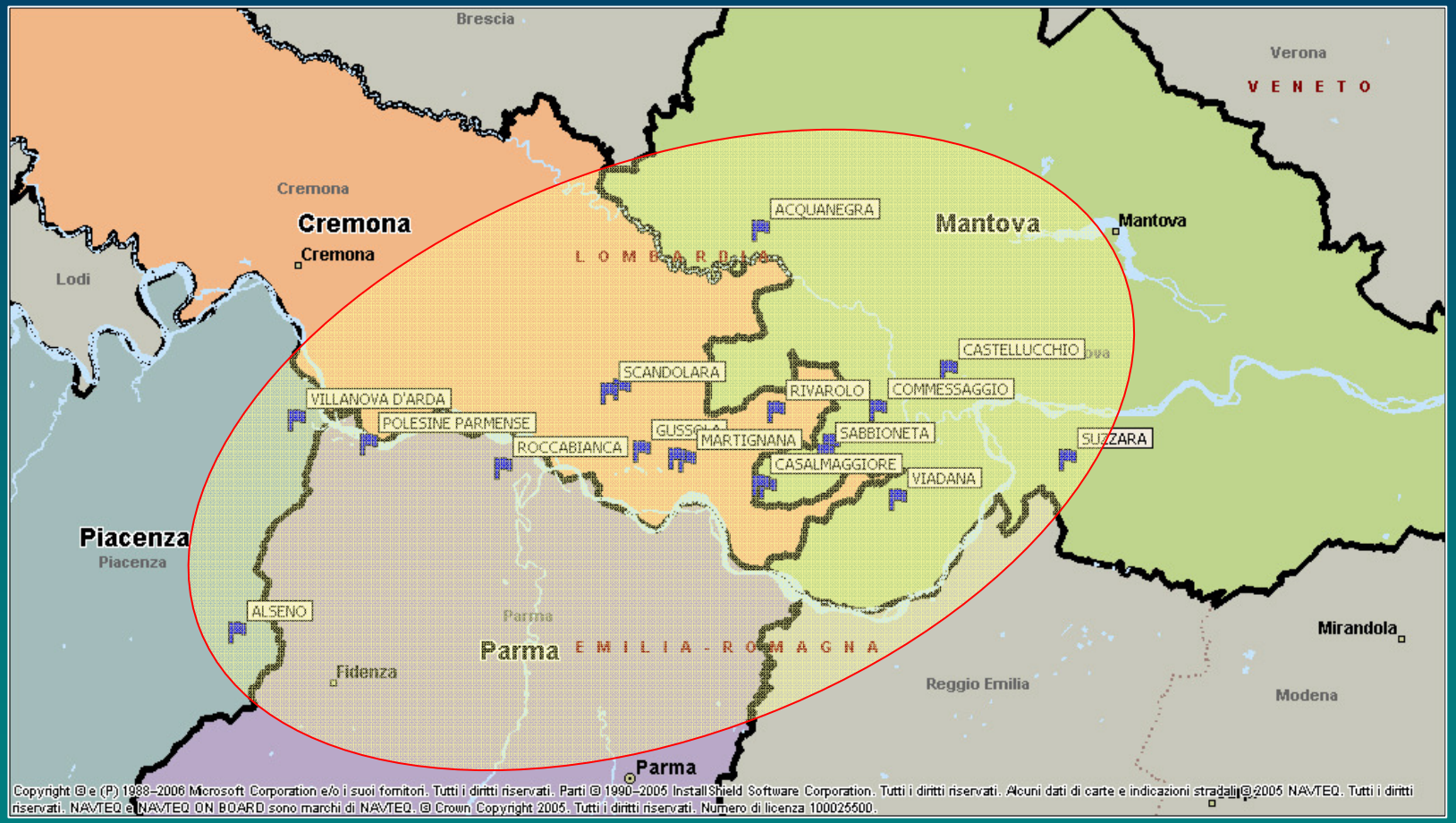








Rainfall and shallow water table depth



Cercospora leaf spot monitoring

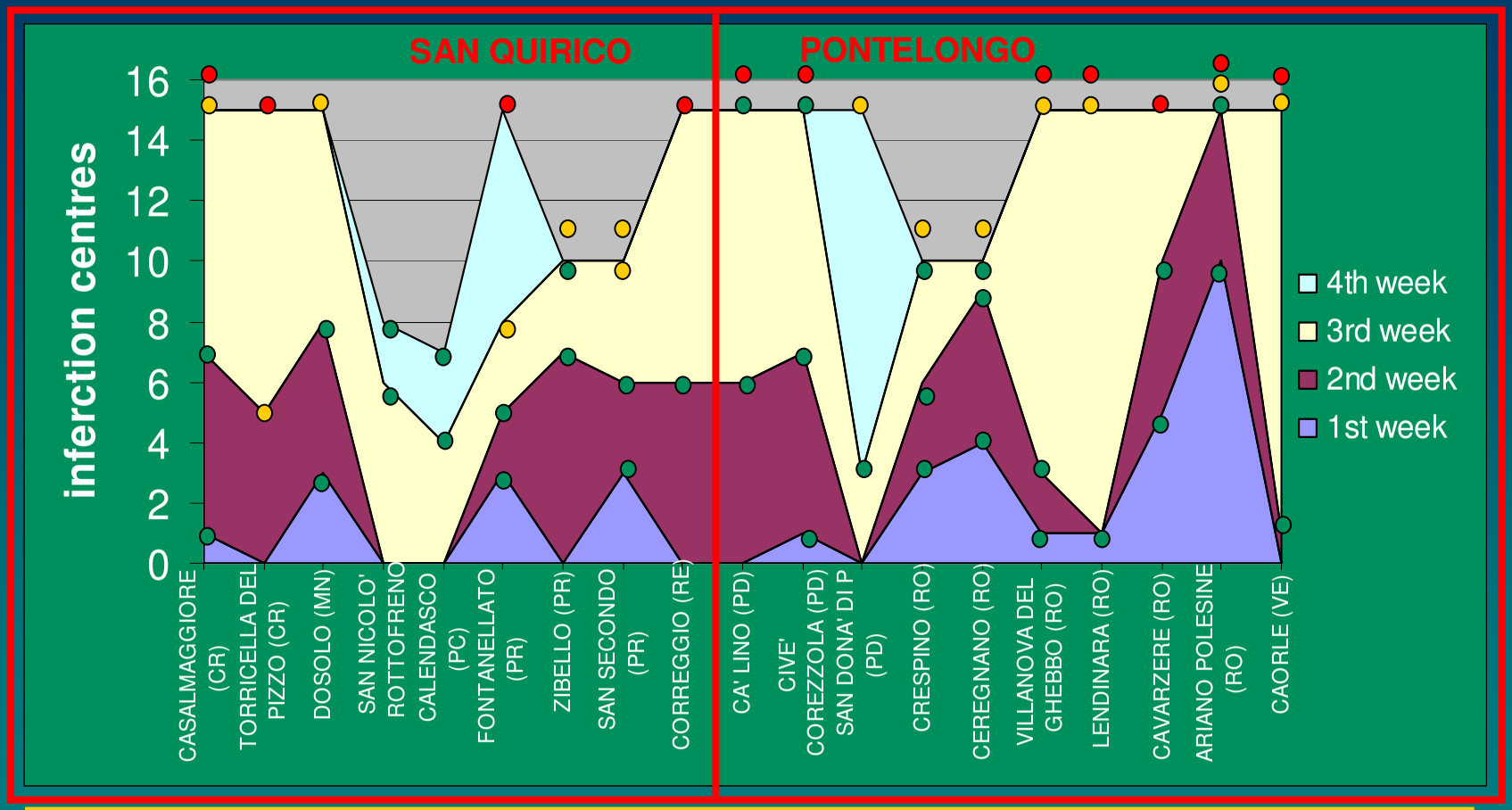
The aim of the activity is to verify if Beta's advising schemes are able to reach an effective control of the disease.

Every year, in Italy it is important to define the first treatment date and monitoring activity allows to reach this goal.

This monitoring has been realized by weekly observations of the leaves, marking the numbers of infection centres and their severity during June.

Moreover, it is carrying out studies to understand the relation between infection rate, temperature and humidity.

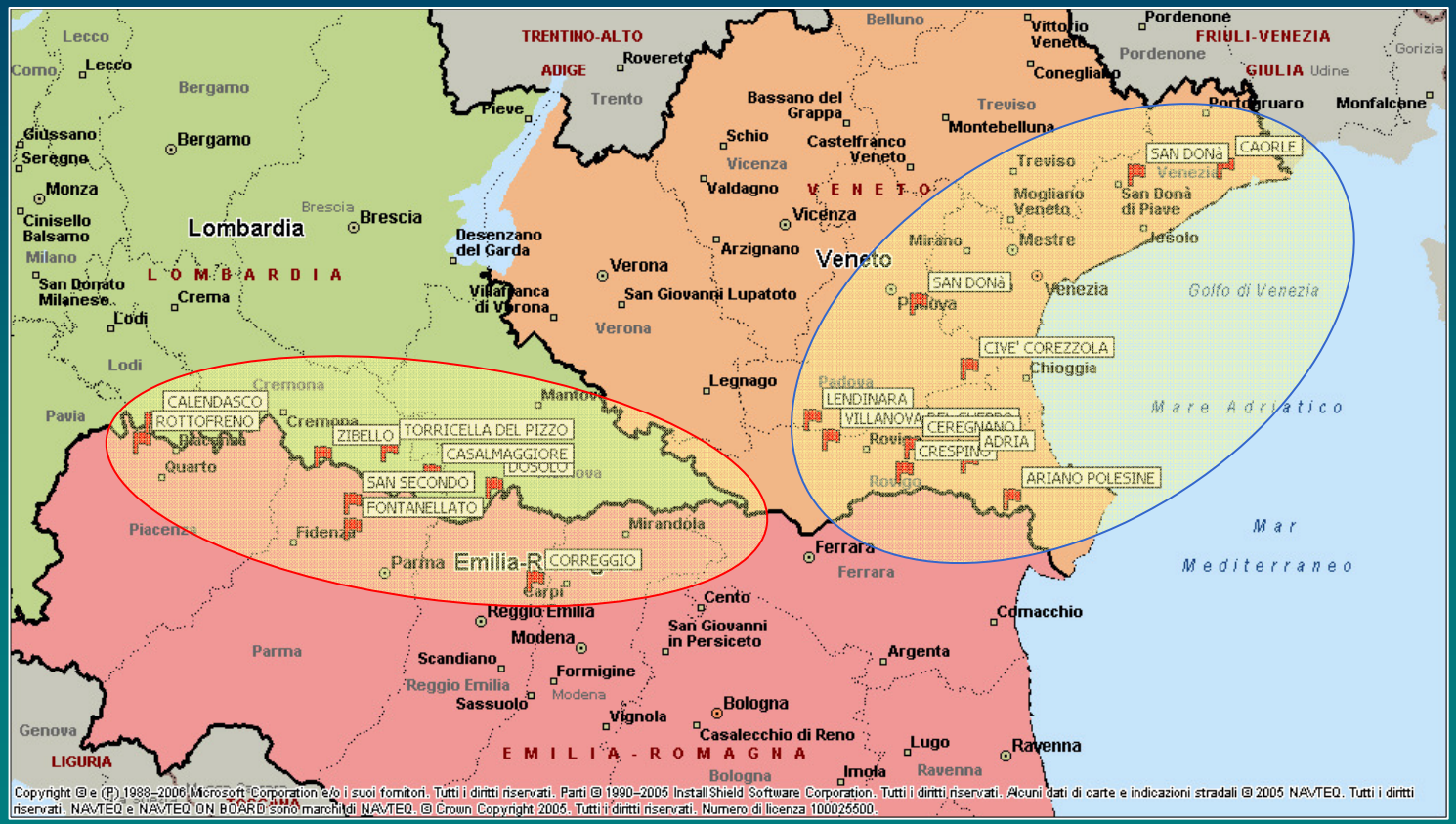
Cercospora leaf spot monitoring



severity

- single necrotic spot (one leaf)
- single necrotic spots (more leaves)
- more leaves with coalescing spots

Cercospora leaf spot monitoring locations



Nitrogen monitoring (in progress)

The purpose of this activity is to define the level of nitrogen in autumn in the main sugar beet growing areas.

This figures allows to prepare a fertilization advising scheme where we suggest the amount of nitrogen for the crop.

The data analysis processing is done by Beta using NIB software, and we compare yearly autumnal soils samples to those taken in the previous year and moreover we take into account winter rainfall.

Homegeneous areas	Rainfall Oct 06 Jan 07 (mm)	2007 Advice N Kg/ha	Rainfall Oct 07 Jan 08 (mm)	Nitrogen contribution compared to 2007	2008 Advice N Kg/ha
VP Nord-orientale (Pontelongo)	152	90 - 100	200	-	70-80
Delta del Po	140	90 - 100	165	invariato	90 - 100
Comprensori di Bologna, Modena, Ravenna, Alto Ferrarese (Minerbio)	158	90 - 100	218	invariato	90 - 100

Nematode monitoring (in progress)

The purpose of this activity is to define the Heterodera schachtii spreading level in the sugar beet growing areas

In several areas of Minerbio sugar plant this activity reach more than 50% of the farms.

This figures are very important to define the varieties to use.

Beta trials in infested soil - 2008

Variety	Seed industry	Juice purity	Grower income
MASSIMA	KWS	101,3	137,2
FLORIDA	Betaseed	100,3	135,8
HOUSTON	Betaseed	101,5	134,9
8K13	KWS	99,7	128,2
PIERA	KWS	100,3	126,8
VERDI	Sesvanderhave	98,9	124,3
PAULETTA	KWS	97,8	121,0
FERNANDO	Strube Dieckmann	98,6	119,1
A 147	Hilleshog	98,4	118,3
COLORADO	Betaseed	97,4	115,6
RIMA	Sesvanderhave	100,0	100,0
FIELD MEDIA ABS. VALUES		**90,9**	**1801,0**
RIMA MEDIA ABS. VALUES		**91,4**	**1455,5**
LSD test (0,05)		**1,6**	**12,4**

Monitoring cultivation costs (in progress)

Aim of the activity is to analyze crop cultivation costs in the several sugar beet growing areas.

Monitoring activity allows us to understand:

-which are the most expensive agronomical techniques or operating machines in order to reduce their costs

- the sugar beet net income compared to other arable crop ones.