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# Sustainable Territorial Wines (STW): Field-Scale Application of DSS and Best Practices for Plant Disease Management in Friuli Venezia Giulia Region

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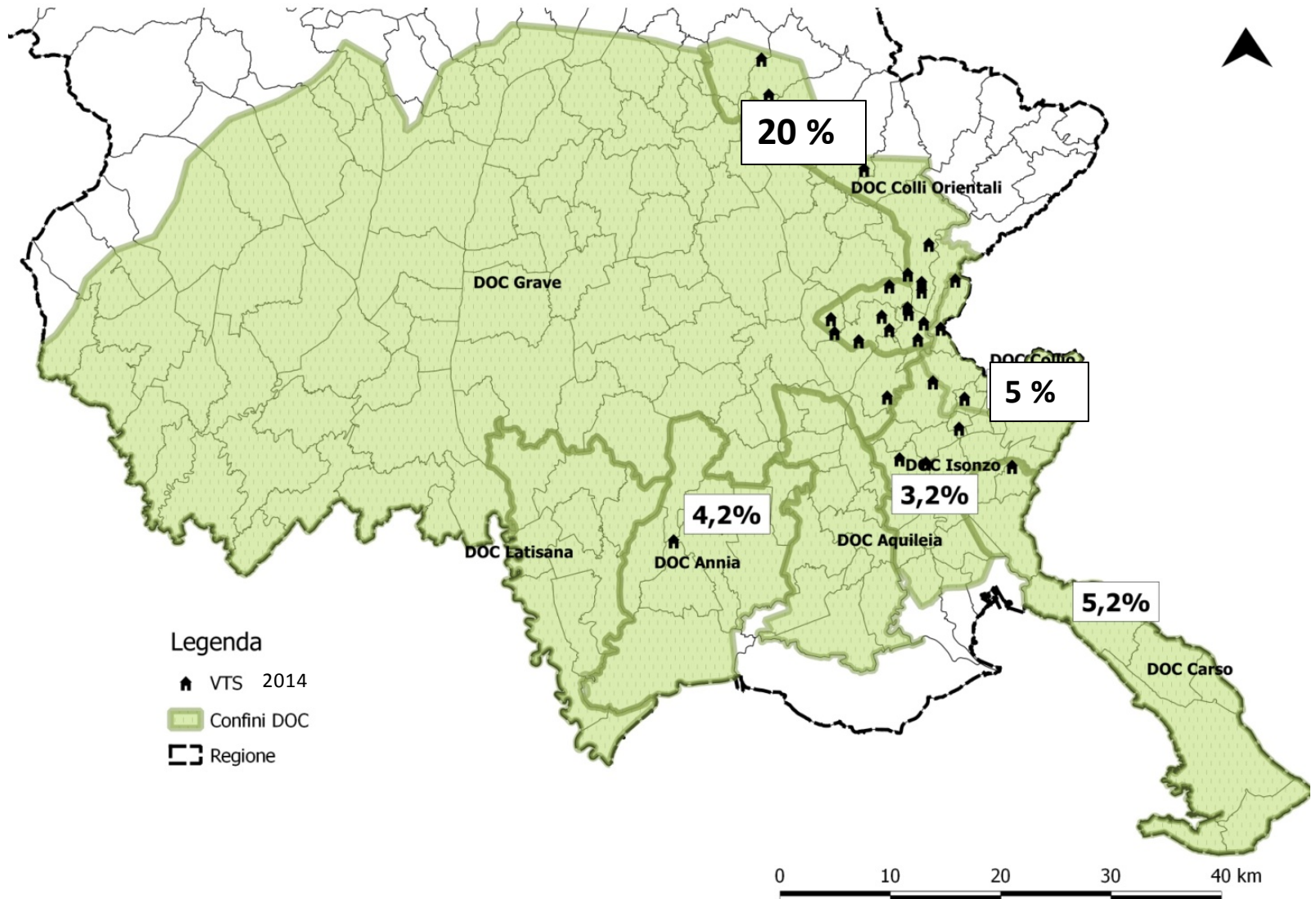
**DIRECTIVE 2009/128/EC OF THE EUROPEAN PARLIAMENT AND OF THE  
COUNCIL of 21 October 2009  
establishing a framework for Community action to achieve the  
sustainable use of pesticides**

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use of pesticides**

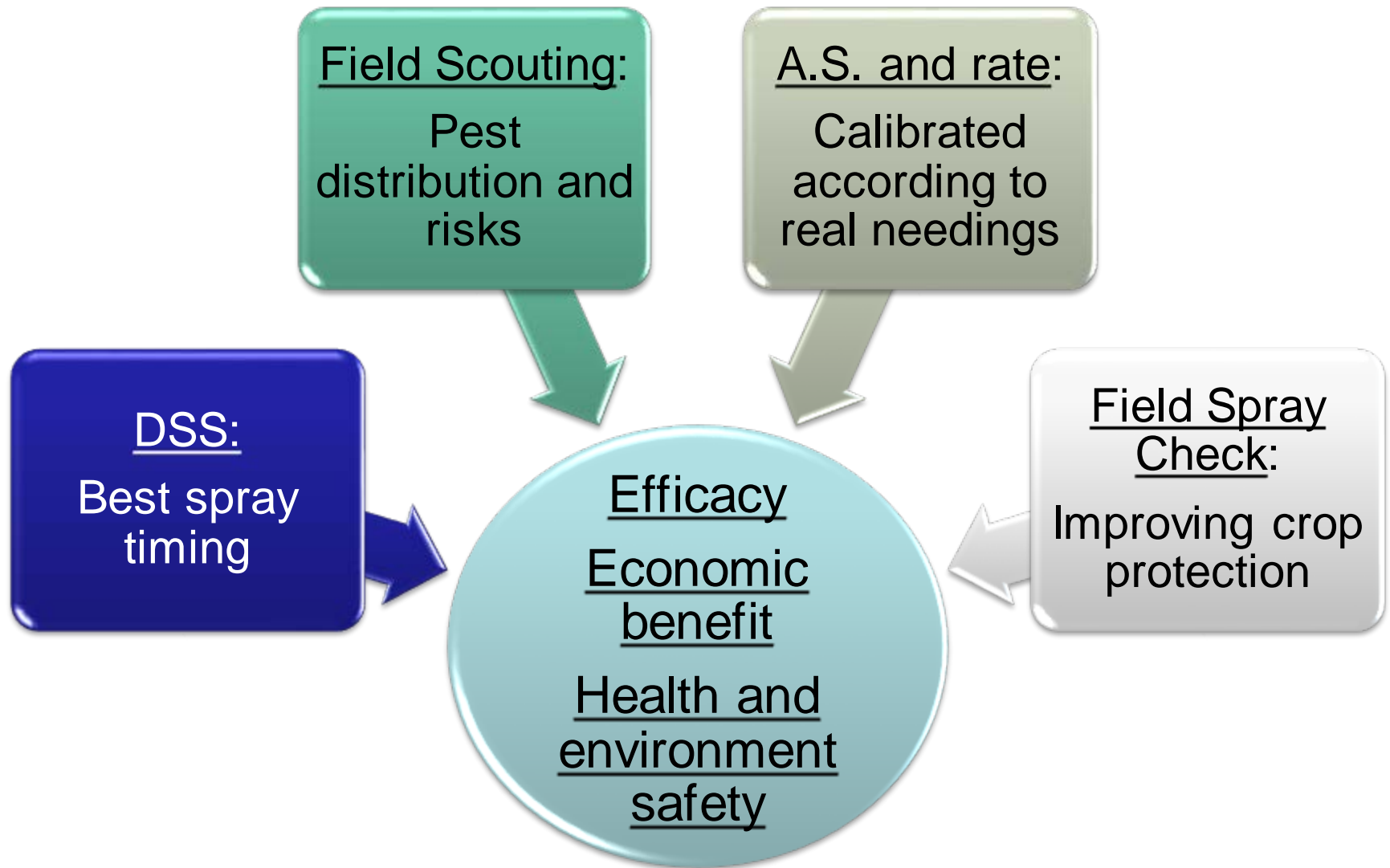
- **reducing the risks and impacts** of pesticide use on human health the environment
- **promoting the use of integrated pest management and of alternative approaches** or techniques such as non-chemical alternatives to pesticides

- Project born as right approach to exploit directive as an opportunity for farmers and to prepare them to new management methods
- STW leaded by PERLEUVE srl - Cormons, specialized in agronomical services for vine pest management
- 14 farms(345 ha) dei Colli Orientali del Friuli e Ramandolo - 2012
- 29 farms (741 ha) dei Friuli Colli Orientali e Ramandolo , Collio e Friuli Isonzo - 2014
- 34 farms (900 ha) dei Friuli Colli Orientali e Ramandolo , Collio e Friuli Isonzo - anno 2015

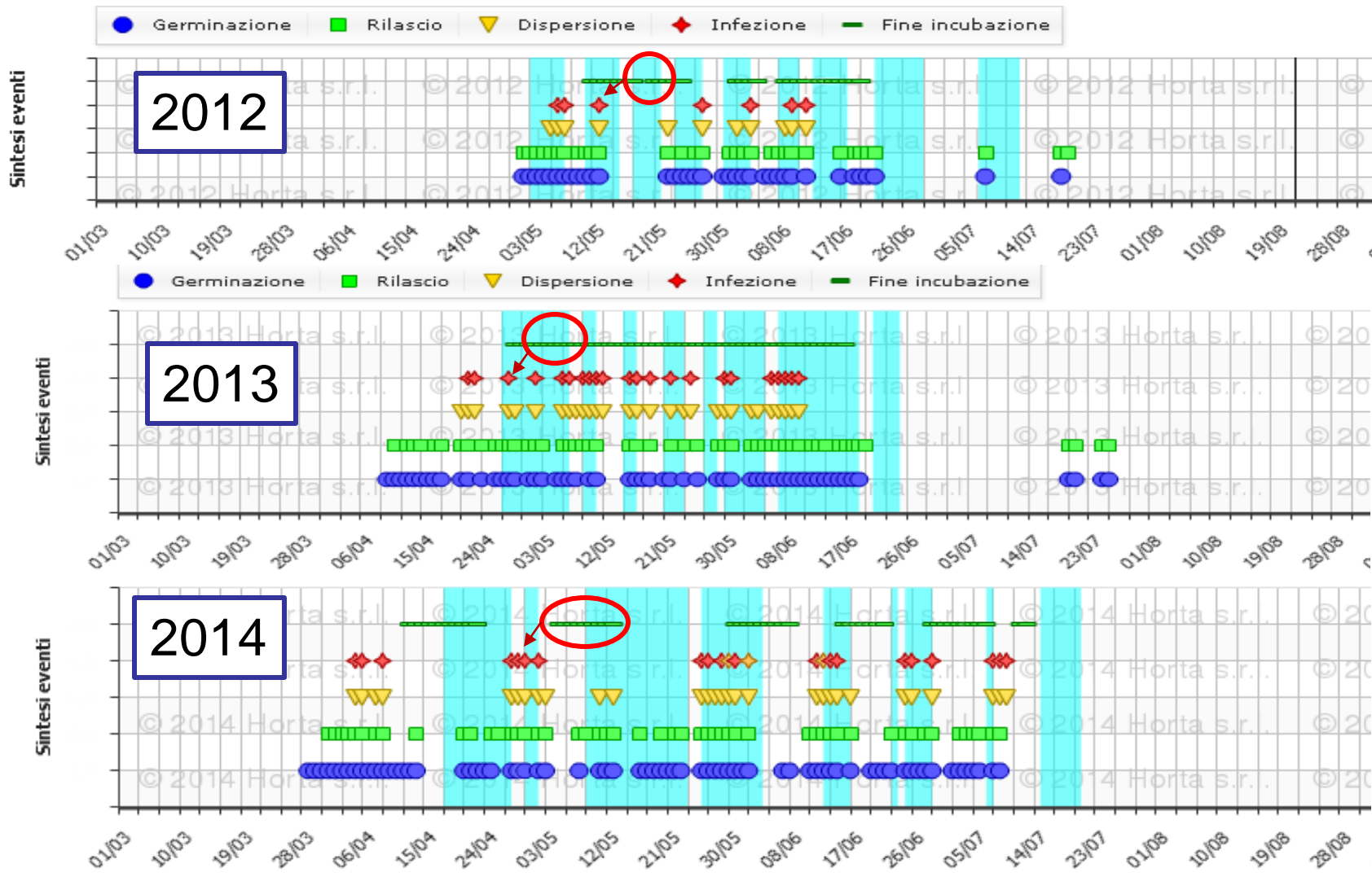
# Wine-growing area involved in the project



# STW approaches

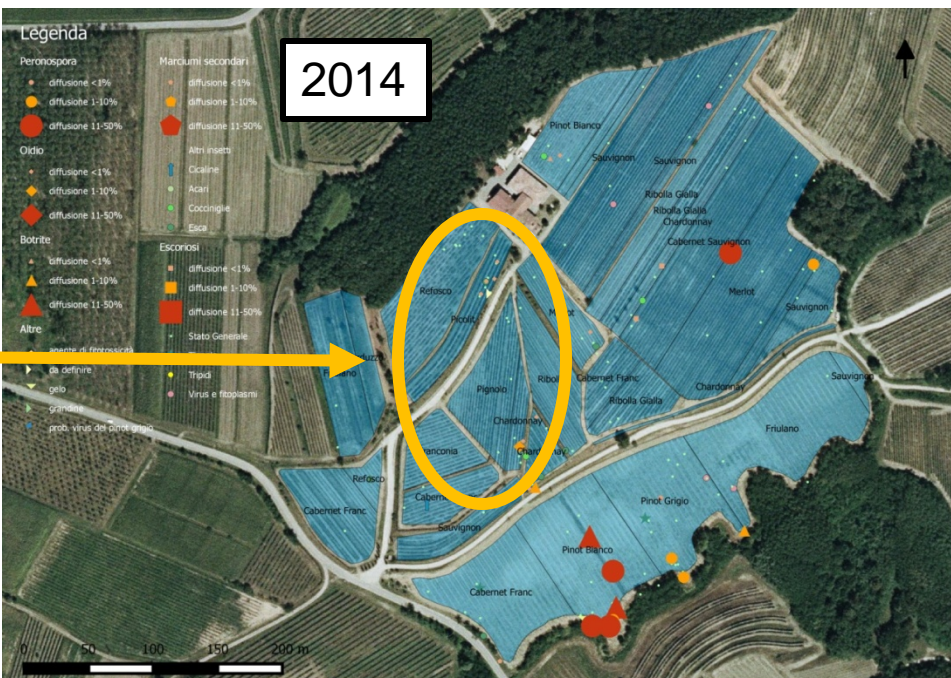
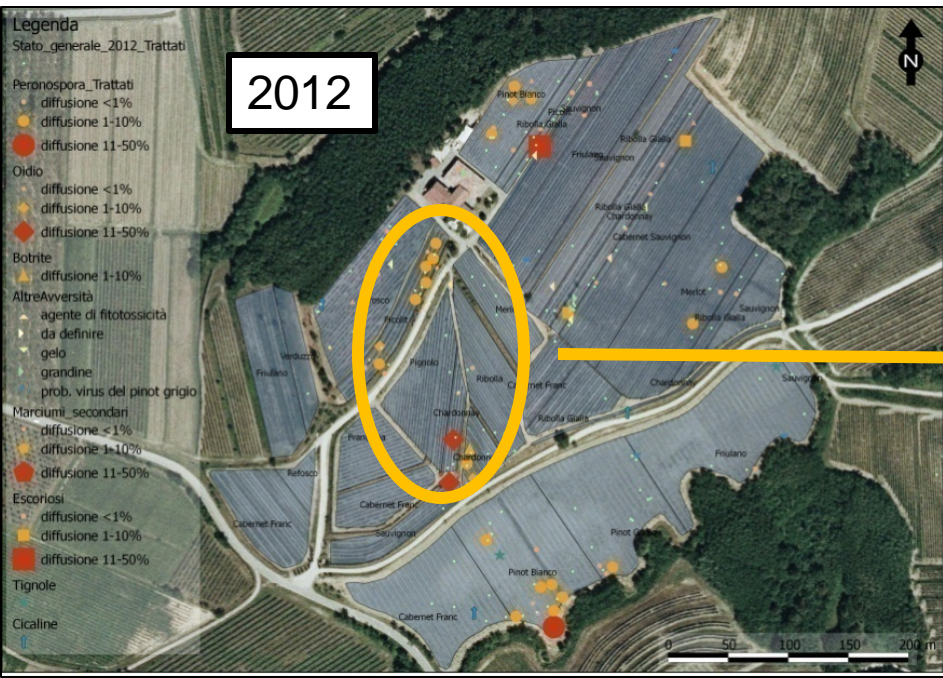


# Vite.net: *Plasmopara viticola* Model



# Vineyard sensitivity and disease pressure

- GIS vineyard mapping
- GPS data collection
- Further elaboration and evaluation
- *Differential management*

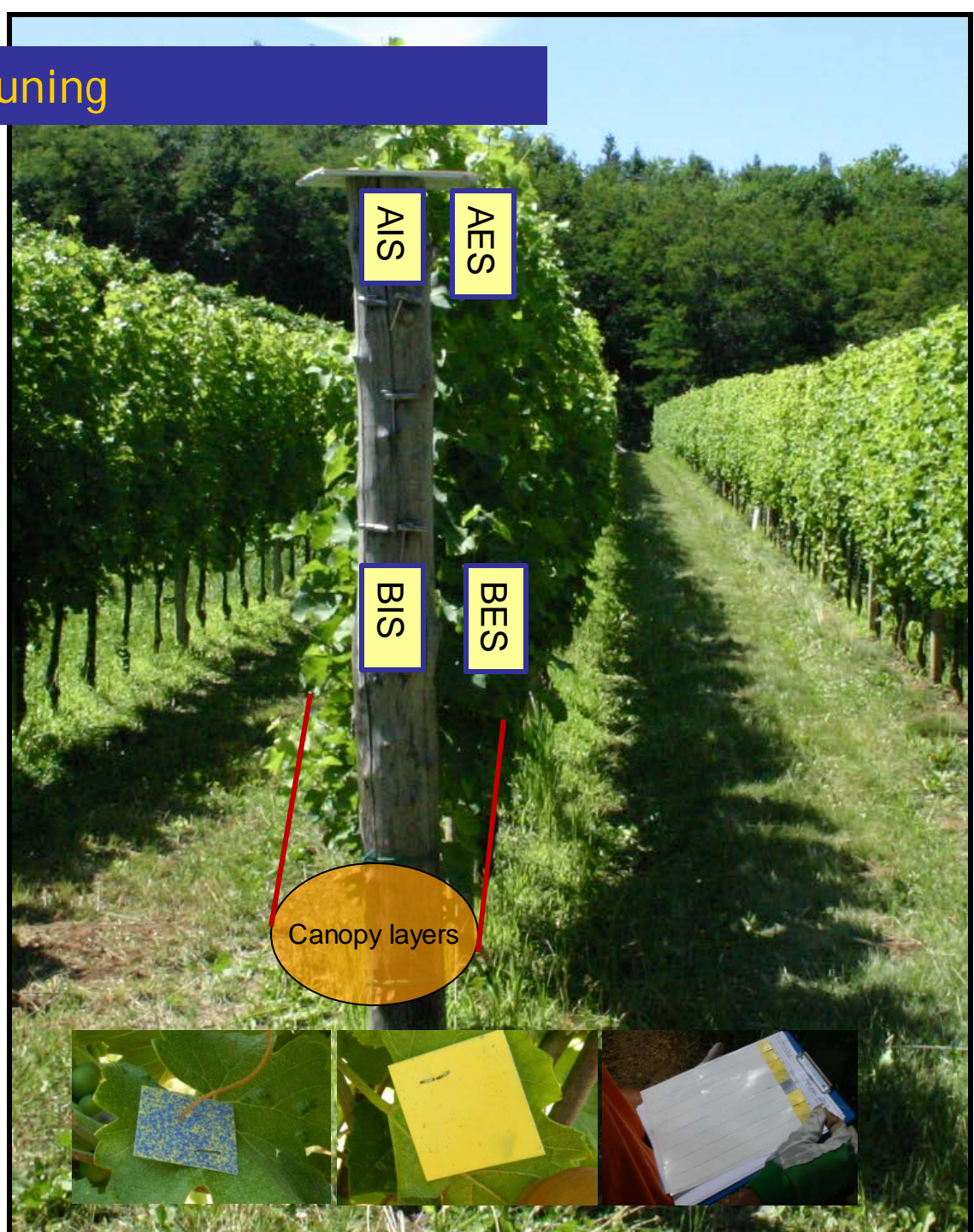


## Spraying efficacy - Sprayer tuning

Water sensitive papers application in the canopy:

- Upper and lower part of the canopy
- Canopy layer
- Upper and lower part of the leaf

With software image analysis you can describe spraying distribution and drop size





Farm code	Management	Copper (kg/ha) mean 2013-2014	Total Surface (ha)	Downy mildew 2013			Downy mildew 2014		
				Vineyards with Downy mildew %	Damage on leaves %	Damage on clusters %	Vineyards with Downy mildew %	Damage on leaves %	Damage on clusters %
INT_AV_01	Advanced IPM	2,3	26,26	85	1,02	0,46	49	0,74	0,00
INT_AV_02	Advanced IPM	1,6	44,00	23	0,90	0,01	41	2,41	0,18
INT_01	IPM	1,3	44,00	54	0,07	1,43	25	0,14	0,00
INT_02	IPM	2,5	52,00	7	1,10	0,09	10	0,44	0,00
INT_REG	Regional IPM	4,8	-	10	1,25	0,94	80	7,33	0,56
BIO_01	Organic	3,0	7,76	94	2,58	3,37	100	3,98	3,15
BIO_02	Organic	3,9	30,00	40	2,14	2,07	30	0,17	0,01
BIO_REG	Regional Organic	10,0	-	97	15	9,5	85	13	5

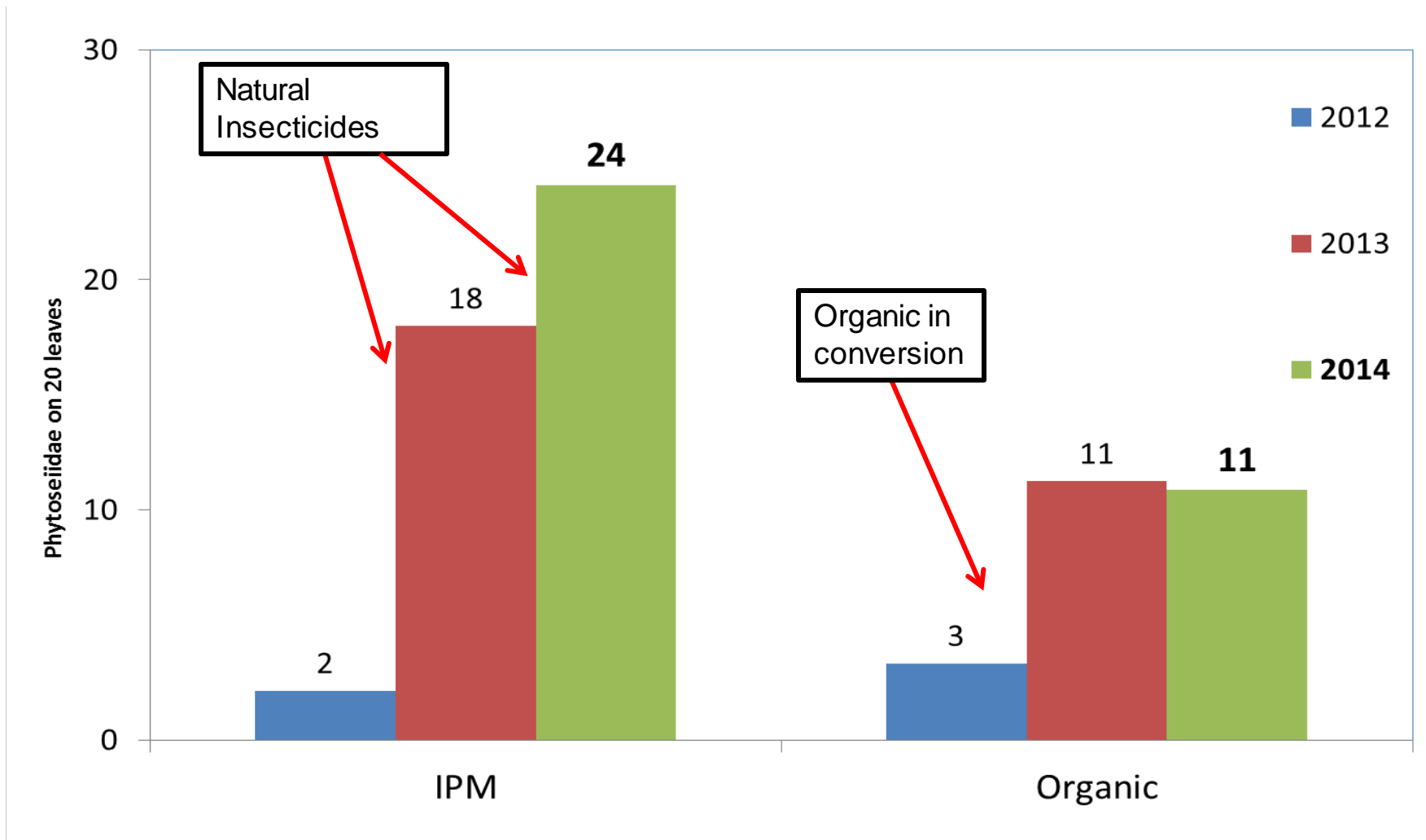
- Checked vineyards: **1081** (anno 2014)
- Generally damage distributed in restricted areas
- **Efficacy of the strategies**
- **Damages registered because of::**
  - Vineyard sensitivity: variety, position, altitude...
  - Spraying efficacy
  - Treatment timing

Farm code	Management	Copper (kg/ha) mean 2013-2014	Total Surface (ha)	Treatment number 2013	Treatment number 2014
INT_AV_01	Advanced IPM	2,3	26,26	11	13
INT_AV_02	Advanced IPM	1,6	44,00	10	13
INT_01	IPM	1,3	44,00	11	13
INT_02	IPM	2,5	52,00	12	14
INT_REG	Regional IPM	4,8	-	14	17
BIO_01	Organic	3,0	7,76	14	15
BIO_02	Organic	3,9	30,00	13	15
BIO_REG	Regional Organic	10,0	-	15	20

Less treatments than regional standard

- IPM: 2-4
- Organic: 1-5

# Environmental indicators: Phytoseiidae - Biological Control Agent



- substitution of chemical insecticides with natural one

- Conversion period from conventional to organic management

## Costs for pesticides

IPM	Black Rot	Grey Mould	Weeds	Insects	Esca	Powdery mildew	Downy mildew	Total
2012	23	53	21	53	4	104	309	567
2013	20	33	22	42	20	115	322	574
2014	9	49	18	39	9	120	298	542
<i>Mean</i>	17	45	20	45	11	113	310	<b>561</b>

Organic	Black Rot	Grey Mould	Weeds	Insects	Esca	Powdery mildew	Downy mildew	Total
2012		31		20		69	260	380
2013				45		89	237	371
2014		53		62	12	87	194	408
<i>Mean</i>		42		42	12	82	230	<b>386</b>

### IPM

- Pesticide costs per year per ha
  - **STW: 560 €/year/ha**
  - **Regional IPM: 750 €/year/ha**

### Organic

- Pesticide costs per year per ha
  - **STW: 400 €/year/ha**
  - **Regional Org: 550 €/year/ha**

## Conclusion

- National and International law with public opinion: need to reduce impact of agriculture
- Farms, with STW management, reduced the treatment number and improved environment and yield quality, limiting risks for workers and consumers
- Potential benefit through territorial quality in the wine market
- Brand arrangement to endorse results and discussion with the public

**Thank you for attention!**

