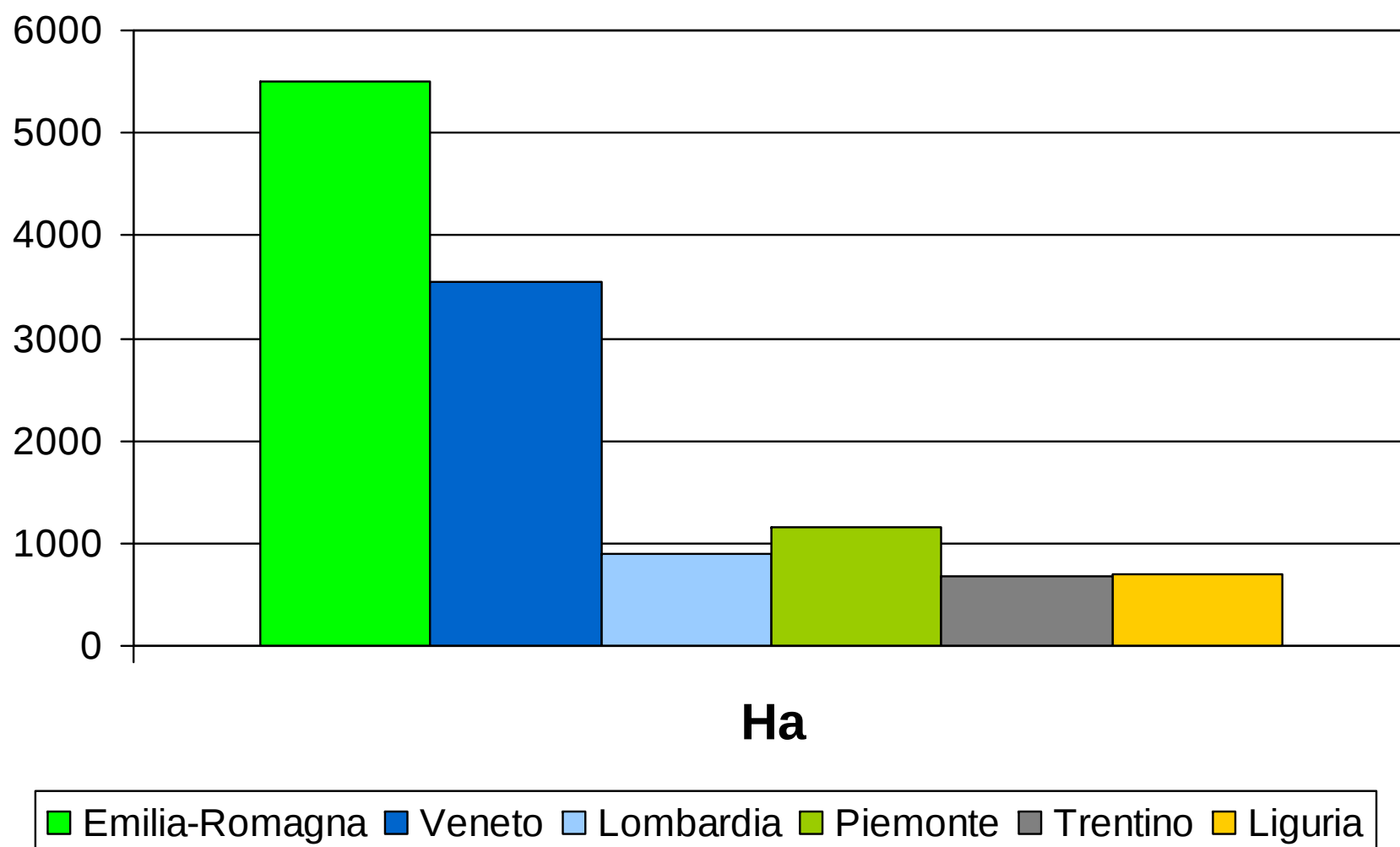


Phthorimaea operculella

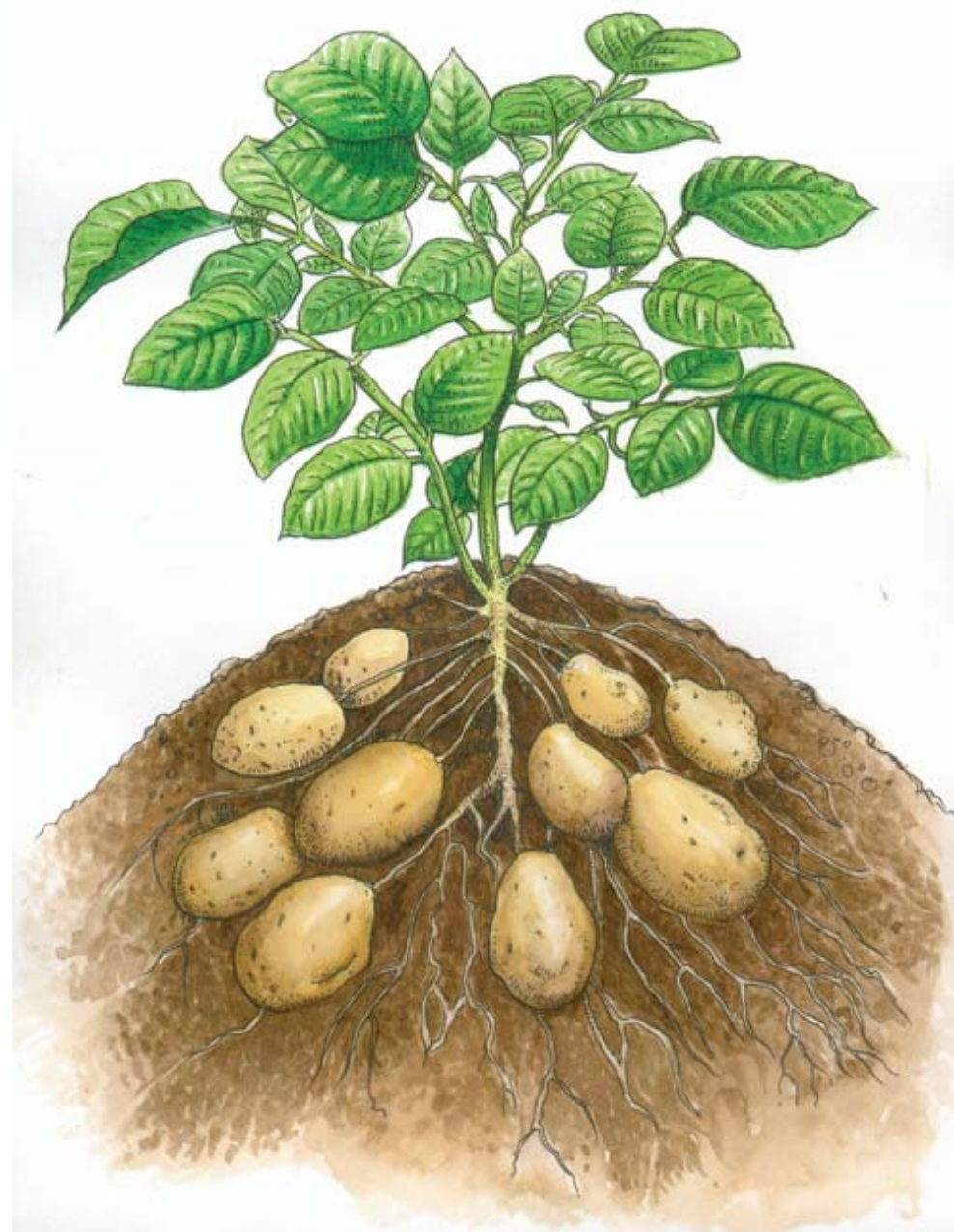
**MONITORING
IN EMILIA-ROMAGNA**

Massimo Bariselli – Alda Butturini
Plant Protection Service

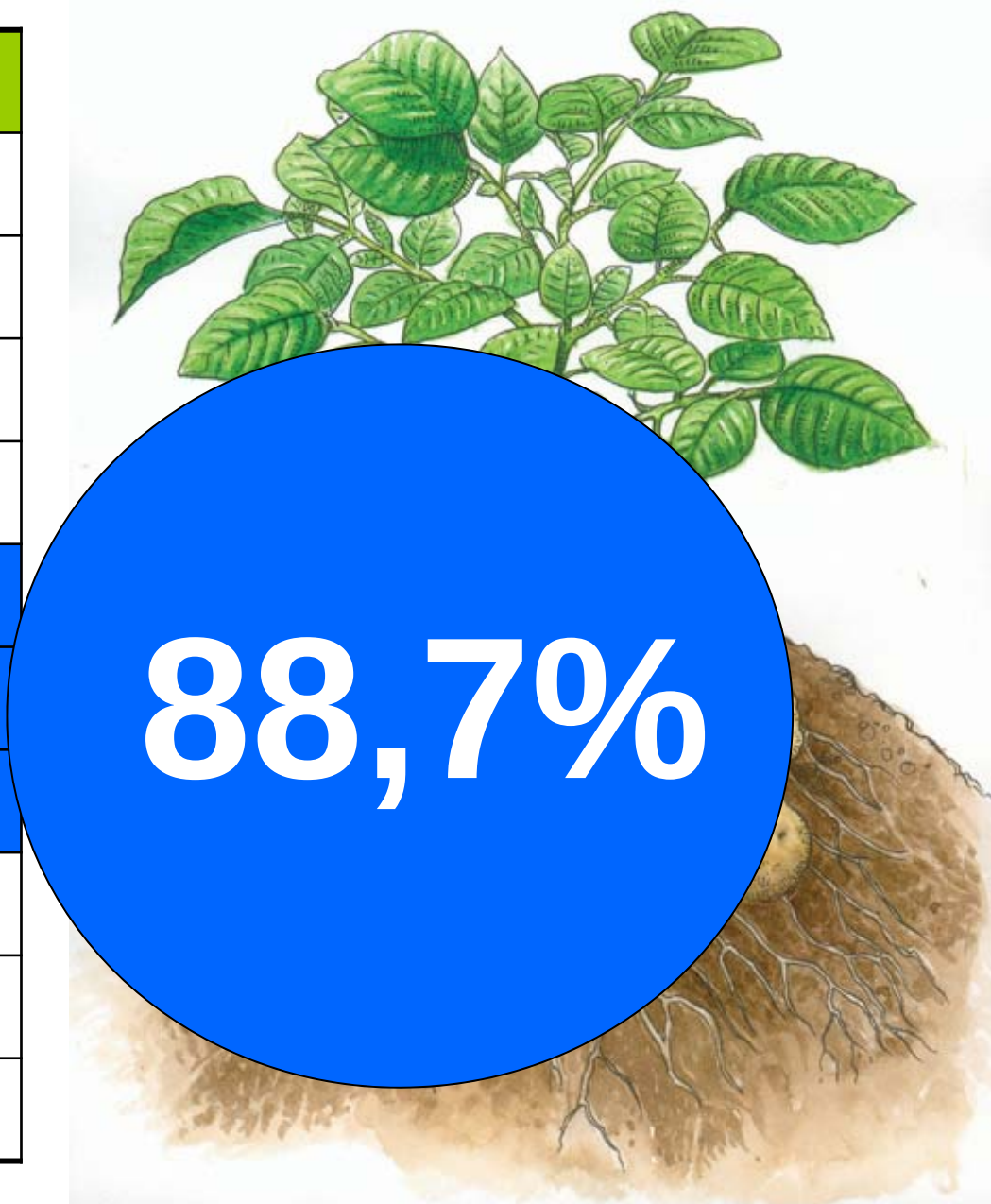
Main Potato growing area in the north of Italy



Province	Ha
Piacenza	63
Parma	60
Reggio Emilia	120
Modena	90
Bologna	2735
Ferrara	1173
Ravenna	997
Forlì Cesena	230
Rimini	120
Total	5588



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The coming of the moth



- First damage recorded: 2002
- Lack of knowledge about pest biology in our environment
- Lack of knowledge about pest control strategy



Pest Distribution & damages



Year	Distribution	Damages
2002	Very limited	1-2 farms
2003	Limited (Budrio potato growing area)	Severe damages in few farms
2004	Limited	No damage
2005	Limited (part of Bologna province)	No damage
2006	Limited but increasing	No damage
2007	Entire Bologna province	Severe (Budrio area)
2008	Bologna, Ferrara, Romagna, and other northern region	Medium damages in many farms
2009	North of Italy	Slight damages on early and medium varieties.
2010	North of Italy	No damage
2011	North of Italy	Slight damage
2012	North of Italy	Many damages. Severe in some farms
2013	North of Italy	No damage

At present the moth is the potato key-pest



The Pest monitoring

- Carried out in the potato growing area of Bologna, Ferrara and Ravenna
- **More than 100 pheromone traps** weekly geo-referenced and counted
- **Field technicians** of two producer associations (ASSOPA e APPE) involved in the monitoring



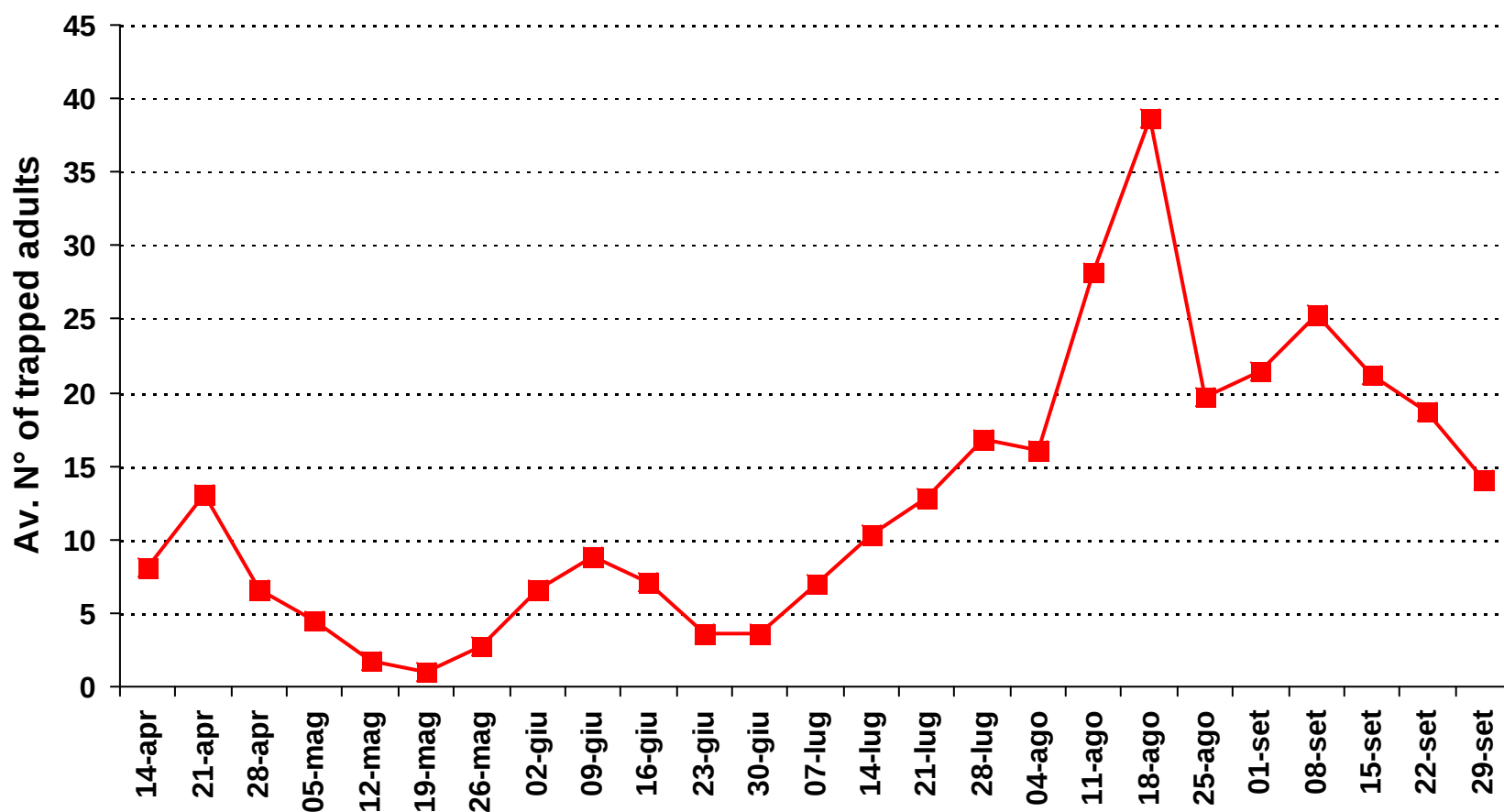


The pest monitoring

	A	B	C	P	Q	R	S	T	U	V
1	ELENCO AZIENDE TIGNOLA ANNO 2008			CATTURE TIGNOLA PATATA 2008 PROVINCIA DI BOLOGNA						
2	NUMERO		NOME AZIENDA	SETTIMANA	SETTIMANA	SETTIMANA	SETTIMANA	SETTIMANA	SETTIMANA	SETTIMANA
3	TRAPPOLA		E INDIRIZZO PRODUTTIVO	11/06/08	18/06/2008	25/06/2008	02/07/2008	09/07/2008	15/07/2008	23/07/2008
4										
5	T80	Baricella (Discarica)	Galuzzi Massimo - Via Bocche Baricella (BO)							
6	T19	Budrio	Mattei Bruno - Via Cerlacchia 3 - Budrio BO	18	17				11	non pervenute non pervenute
7	T20	Budrio	Mattei Bruno - Via Cerlacchia 3 - Budrio BO	5	12				14	non pervenute non pervenute
8	T27	Budrio	Piazzzi Ezio - Via S.zenone 5 maddalena di cazzano Budrio	70	45	7	3			19 16
9	T28	Budrio	Piazzzi Ezio - Via S.zenone 5 maddalena di cazzano Budrio	55	39	5	3			42 22
10	T07	Budrio	Fustini Giulio - Via Olmo 47 - Budrio BO	9	4	3	4	67		40 21
11	T08	Budrio	Fustini Giulio - Via Olmo 47 - Budrio BO	14	5	6	9	68		26 13
12	T09	Budrio	Fustini Giulio - Via Olmo 47 - Budrio BO	12	10	3	6	72		30 23
13	T35	Budrio	Saggiorato Alberto - Via Rabuina 21 - Budrio BO	4	10		0	0		20
14	T36	Budrio	Saggiorato Alberto - Via Rabuina 21 - Budrio BO	4	7		0	0		20
15	T61	Budrio	Mazzola Gioacchino - Via Trapanino 1- Budrio BO	5	6	4	4	0		0
16	T62	Budrio	Mazzola Gioacchino - Via Trapanino 1- Budrio BO	7	8	2	3	0		3
17	T04	Budrio (Bagnarola)	Pondrelli Augusto - Via calamone 7- Bagnarola di Budrio BO	9	9	10	8	14		37 14
18	T05	Budrio (Bagnarola)	Pondrelli Augusto - Via calamone 7- Bagnarola di Budrio BO	29	19	21	8	13		25 19
19	T06	Budrio (Bagnarola)	Pondrelli Augusto - Via calamone 7- Bagnarola di Budrio BO	21	29	22	8	17		14 13
20	T10	Budrio (Bagnarola)	Dal Cero Silvio - Via Calamone 6 - Bagnarola di Budrio BO	14	7	0	0	0		0 9
21	T11	Budrio (Bagnarola)	Dal Cero Silvio - Via Calamone 6 - Bagnarola di Budrio BO	8	2	0	0	0		0 9
22	T69	Budrio (Cento)	Bottazzi Giancarlo via passo pecore 33 cento di Budrio	3	0	0	2	5		23 15
23	T70	Budrio (Cento)	Bottazzi Giancarlo via passo pecore 33 cento di Budrio	3	1	1	3	0		4 7
24	T71	Budrio (Cento)	Bottazzi Giancarlo via passo pecore 33 cento di Budrio	0	0	0	3	0		2
25	T67	Budrio (Dugliolo)	Govoni Albano - Via Casoni - Dugliolo di Budrio BO	25	non pervenute	non pervenute	non pervenute			
26	T68	Budrio (Dugliolo)	Govoni Albano - Via Casoni - Dugliolo di Budrio BO	45	non pervenute	non pervenute	non pervenute			
27	T49	Budrio (Vedrana)	Busato Francesco - Via Bacchieri - Vedrana di Budrio BO	10	7	1	2	4		13 26
28	T50	Budrio (Vedrana)	Busato Francesco - Via Bacchieri - Vedrana di Budrio BO	4	14	2	1	0		5 13
29	T51	Budrio (Vedrana)	Minarelli Isacco - Vedrana di Budrio Bo	11	12	9	0	22		23 44
30	T52	Budrio (Vedrana)	Minarelli Isacco - Vedrana di Budrio Bo	8	7	4	0	1		9 7
31	T59	Cadriano 82	Fini Liliana via cadriano 82 BO	5	3	3	1	12		3 4
32	T60	Cadriano 82	Fini Liliana via cadriano 82 BO	7	5	0	0	11		1 3
33	T37	Castel S.Pietro	Pirazzini Romolo via stradelli Guelfi 3134 Castel S.Pietro	0	0	0	0	0		0 1
34	T38	Castel S.Pietro	Pirazzini Romolo via stradelli Guelfi 3134 Castel S.Pietro	0	1	0	1	0		2 2
35	T31	Castel S.Pietro	Montroni -Brini Via Corlo 811 -Castel S.Pietro BO	0	0	7	0	0		15 0
36	T32	Castel S.Pietro	Montroni -Brini Via Corlo 811 -Castel S.Pietro BO	0	0	2	0	0		15 0
37	T45	Castelguelfo	Zucchini Franco - Via Montanara, 4 Castelguelfo BO	7	2	0		2		3 3
38	T46	Castelguelfo	Zucchini Franco - Via Montanara, 4 Castelguelfo BO	7	2	0		1		1 1
39	T15	CastelS.Pietro	Dalla Casa Luigi - Via S.Biagio 3618 - Castel S.Pietro BO	0	1	0	5	0		0 2
40	T16	CastelS.Pietro	Dalla Casa Luigi - Via S.Biagio 3618 - Castel S.Pietro BO	0	1	1	10	0		0 2
41	T43	CastelS.Pietro	Menetti Giuseppe -via cova 590 CastelS.Pietro BO	4	2	1		4		3 3
42	T44	CastelS.Pietro	Menetti Giuseppe -via cova 590 CastelS.Pietro BO	0	2	0		4		3 3
43	T01	Castenaso	Rizzi Massimiliano - Via Bagnarola 1 -Castenaso BO	3	5	4	6	3		10 6
44	T02	Castenaso	Rizzi Massimiliano - Via Bagnarola 1 -Castenaso BO	3	10	3	2	5		12 8
45	T03	Castenaso	Rizzi Massimiliano - Via Bagnarola 1 -Castenaso BO	non installata	non installata	non installata	non installata	non installata	non installata	non installata

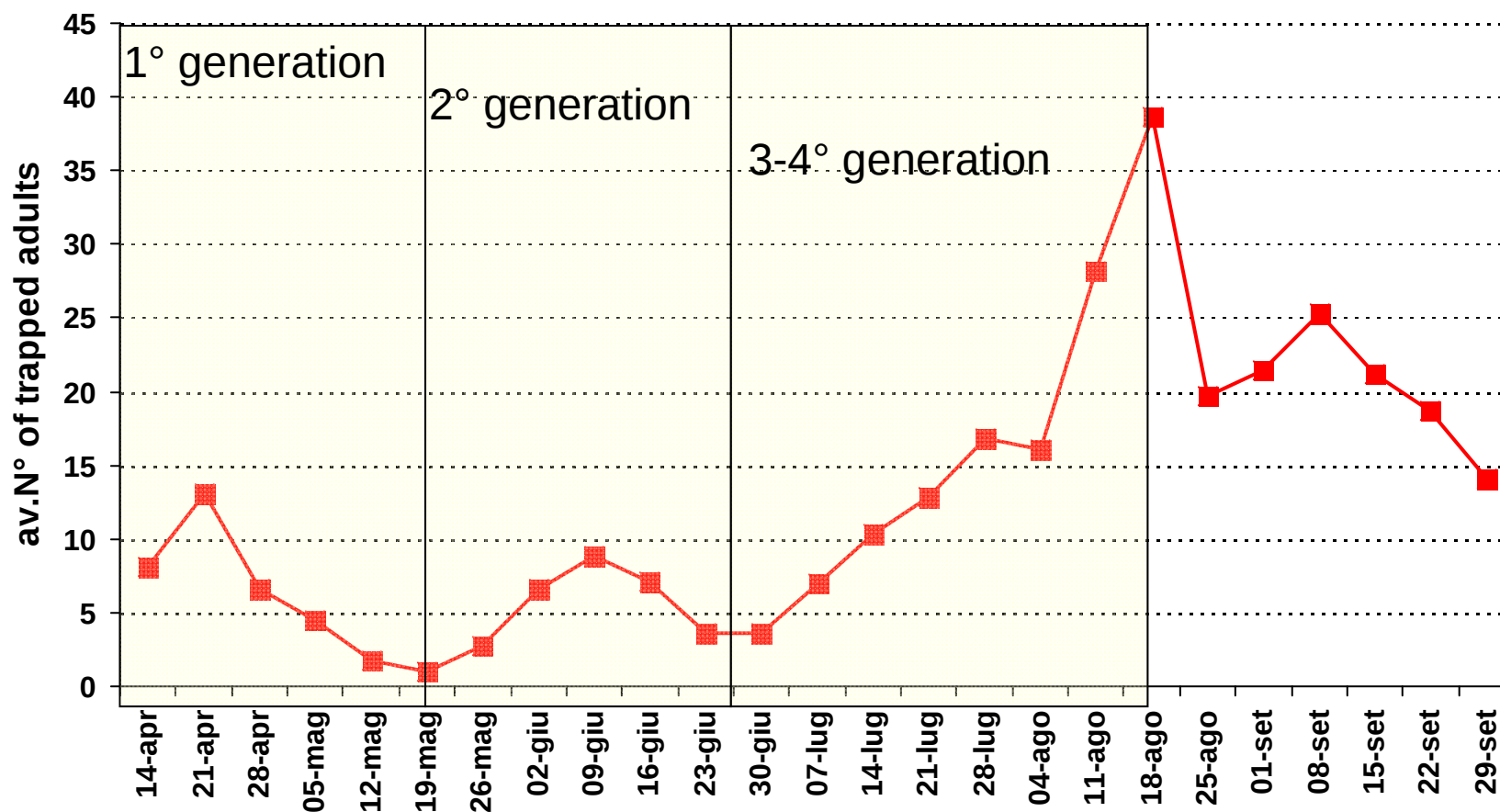
The pest monitoring

Bologna province - 2008 (data are the average of 121 TRAPS)



The Pest monitoring

Bologna province - 2008 (data are the average of 121 TRAPS)



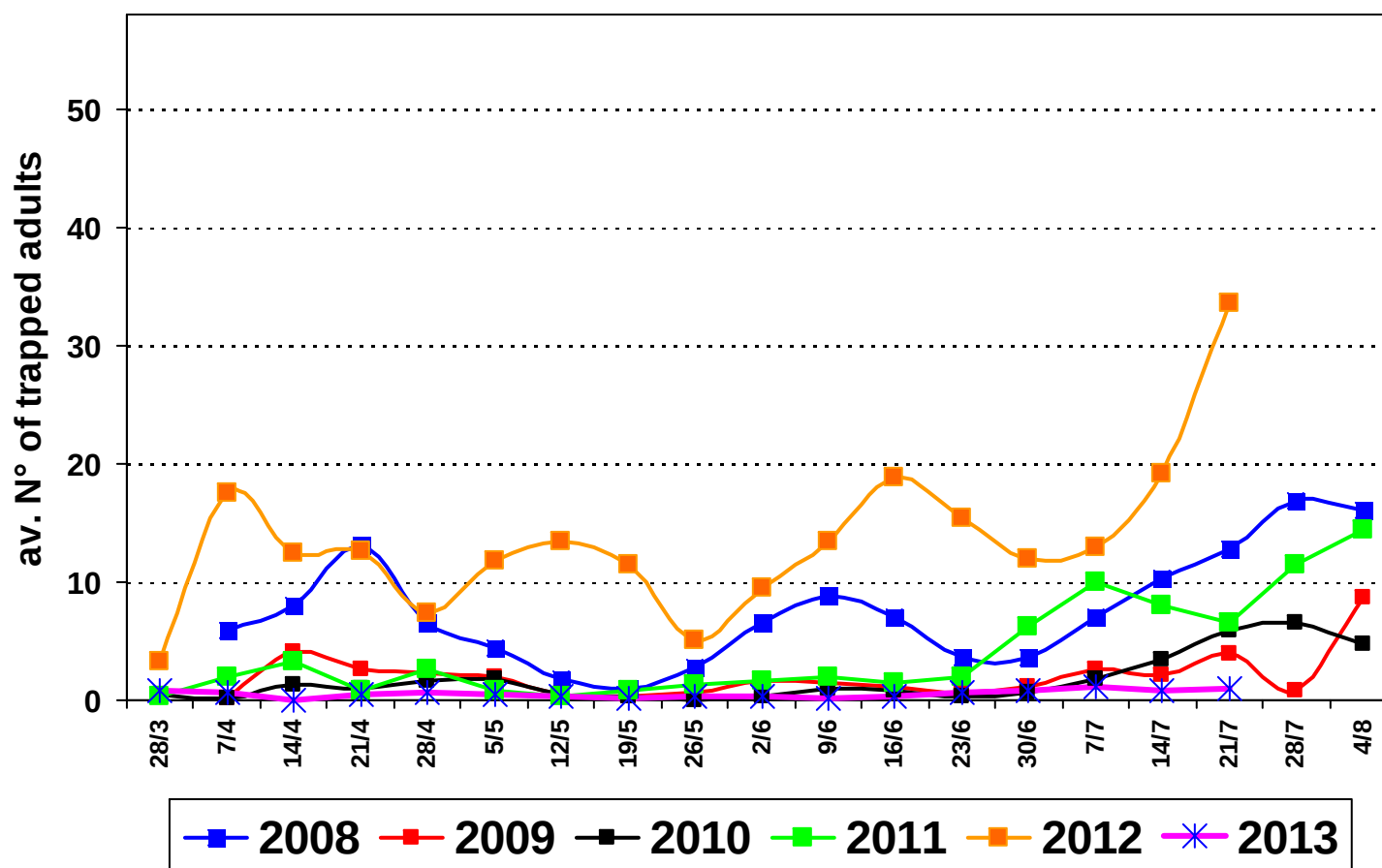
The pest monitoring

- The technical committee diffuses traps data on a weekly bases
 - Farm captures
 - General moth flight curve
 - Moth flight comparison with the previous years
- The technical committee discusses the phytosanitary situation and suggest the best control strategy



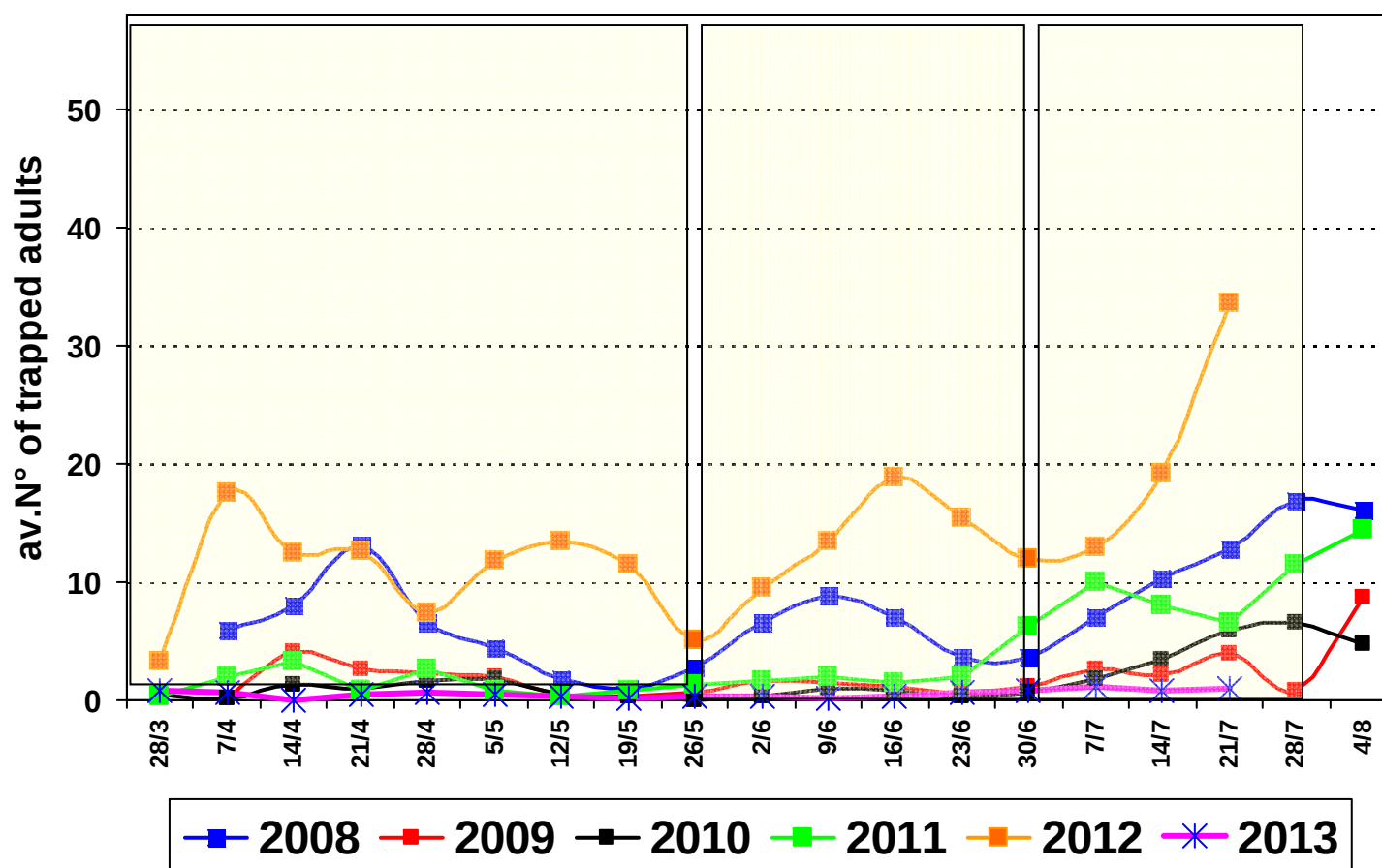
The pest monitoring

Bologna province over the year 2008 -2012



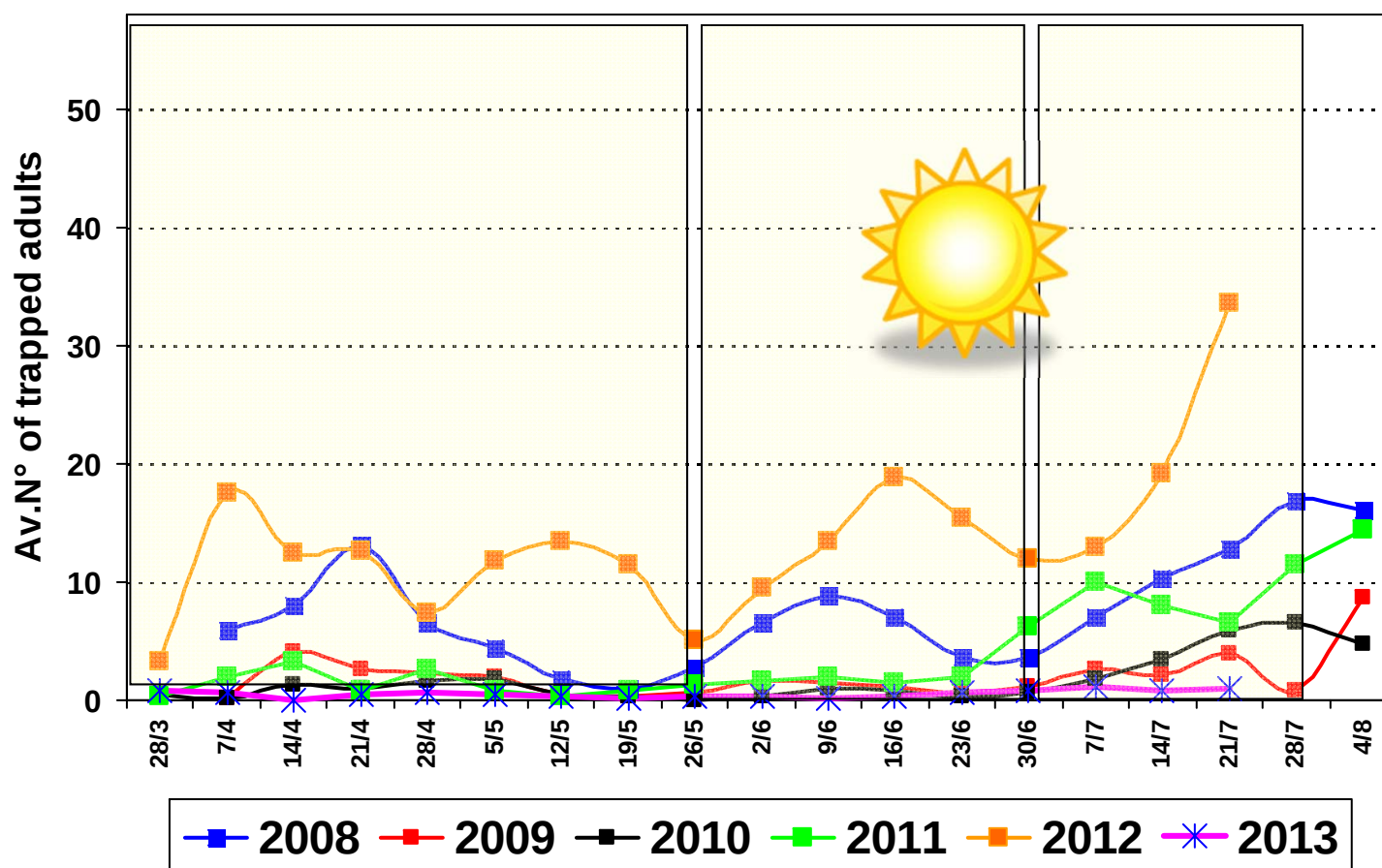
The pest monitoring

Bologna province over the year 2008 -2012



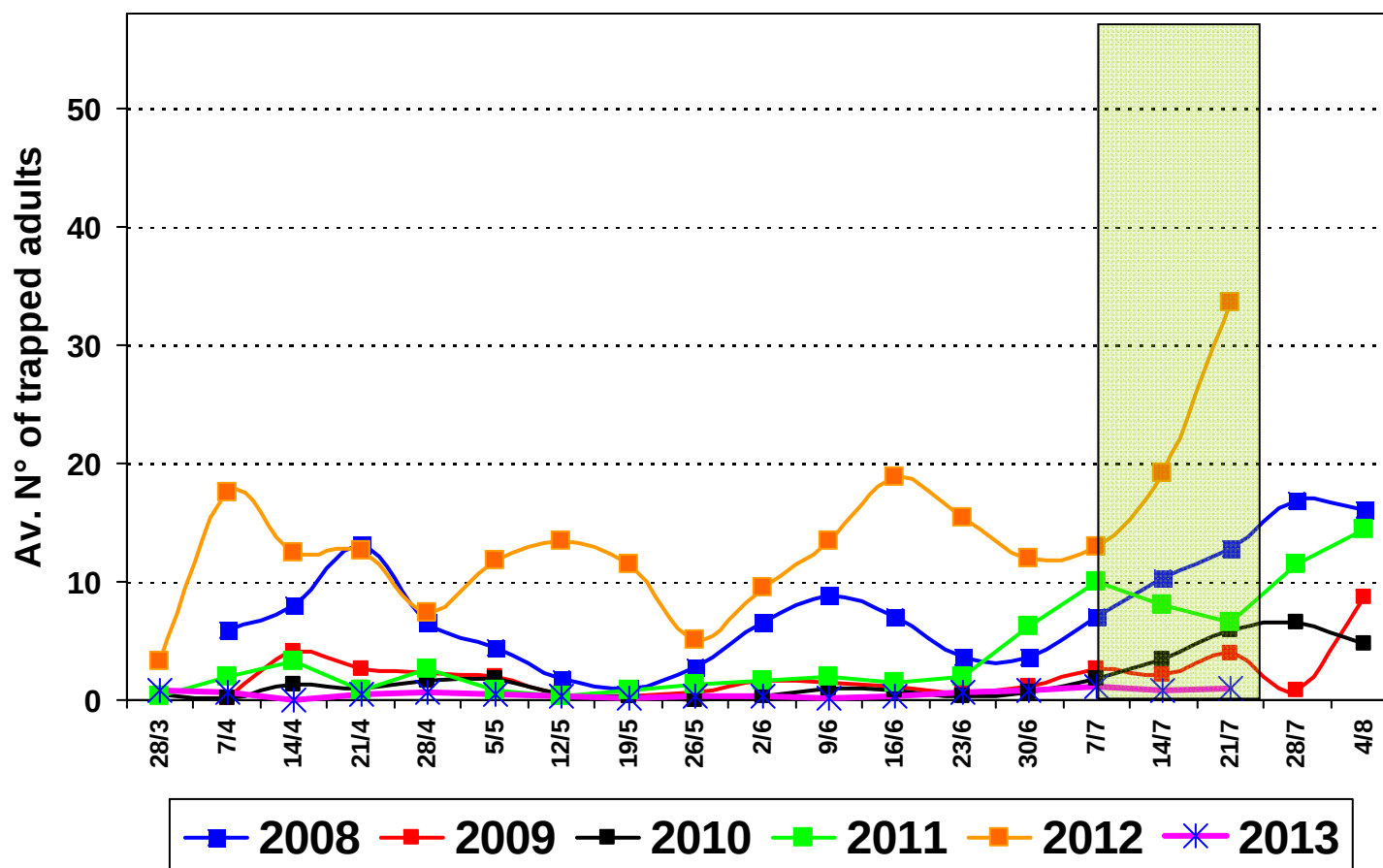
The pest monitoring

Bologna province over the year 2008 -2012



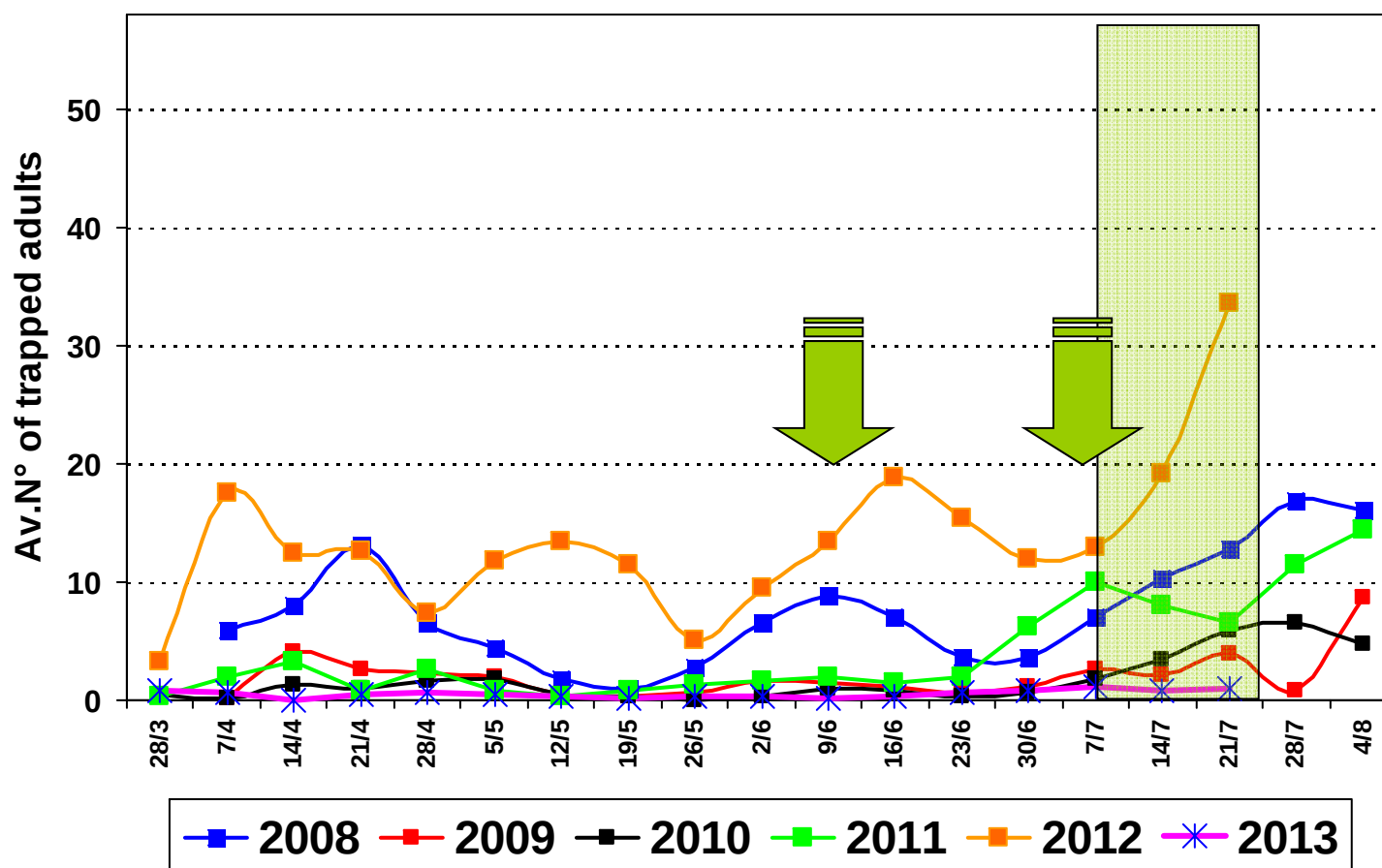
The pest monitoring

Bologna province over the year 2008 -2012



The pest monitoring

Bologna province over the year 2008 -2012



Risk Evaluation Criteria

Monitoring with
pheromone traps



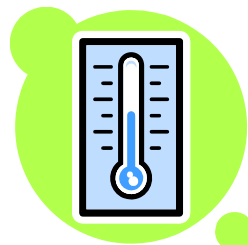
Monitoring of
leaf damages

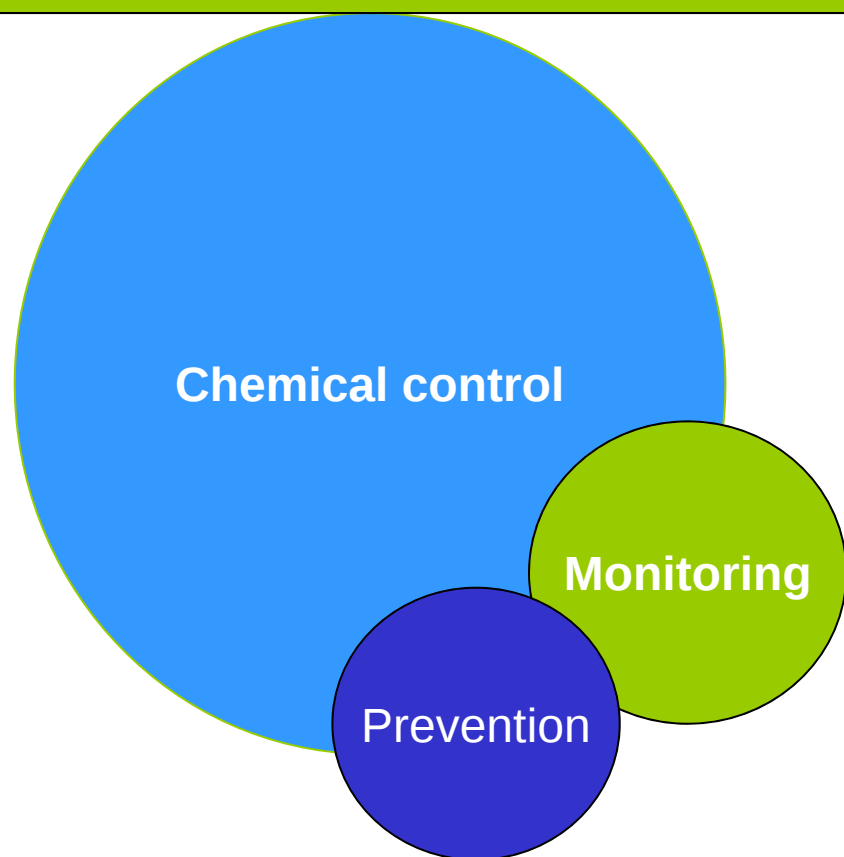


Farm's pest pressure
in the previous year

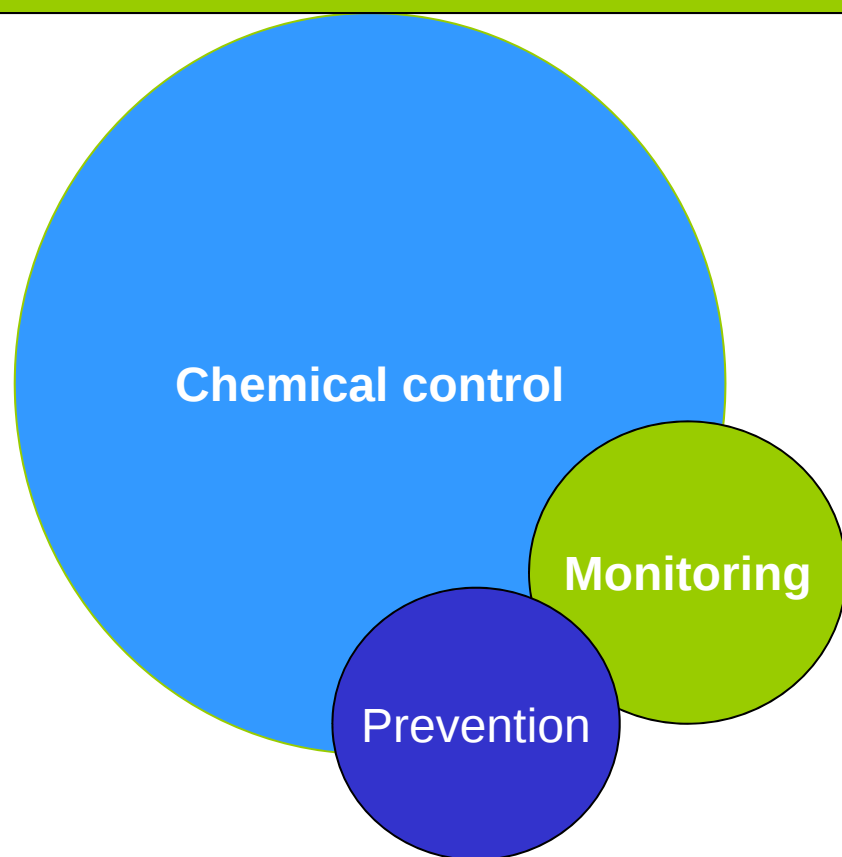


Climate:
temperature and rainfall





In the past



In the past

Chemical control:

- Sprays not related to pest biology
- Lack of information about insecticide efficacy
- Lack of information about the correct spray timing

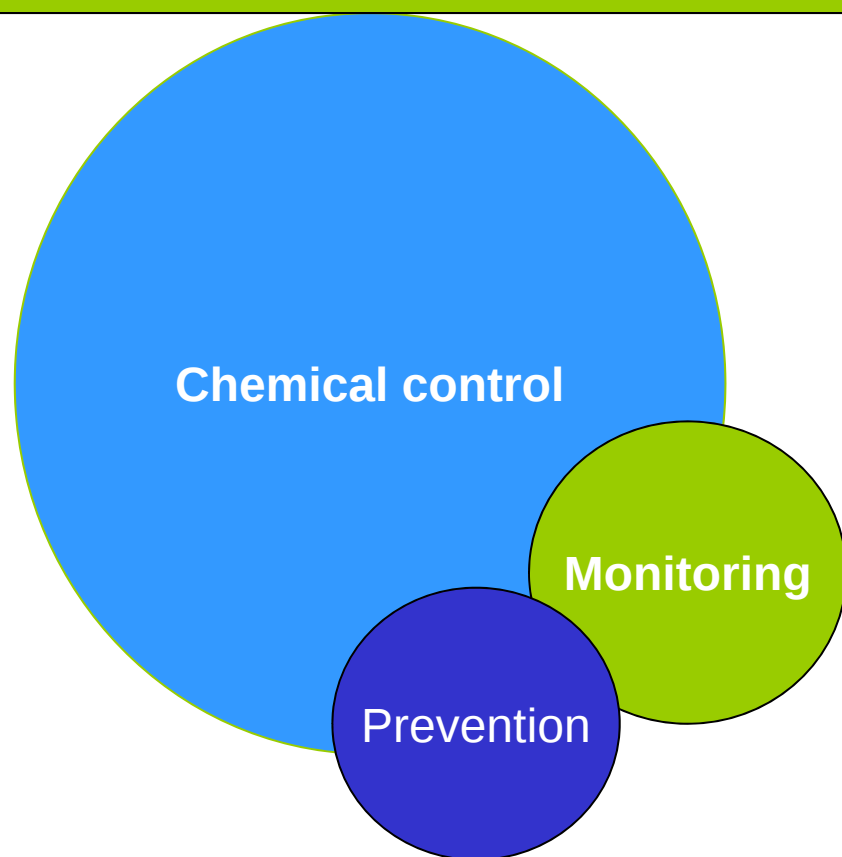
Monitoring

- 20 pheromone traps in Bologna potato growing area

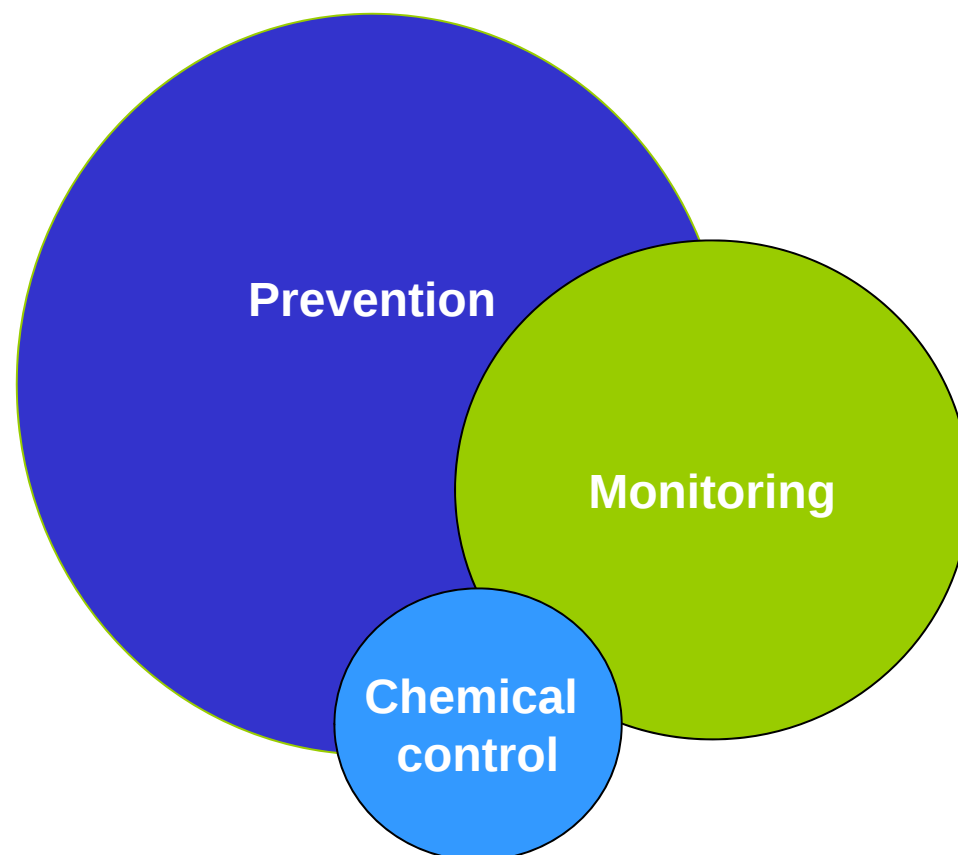
Prevention

- No preventive action

Today



In the past



Chemical control:

- Spray applied following the pest flight curve
- First information on insecticide efficacy

Today

Monitoring

- More than 100 official pheromone traps trappole
- Entire Region Monitoring
- Monitoring in all the potato growing areas of northern Italy

Prevention

- Winter/spring temperature
- Correct agronomic practices
- Tuber Drying management
- Storage management
- Crop residue management

