Strategies for reducing vector populations and transmission of *Xylella fastidiosa* in olive groves

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VECTOR CONTROL

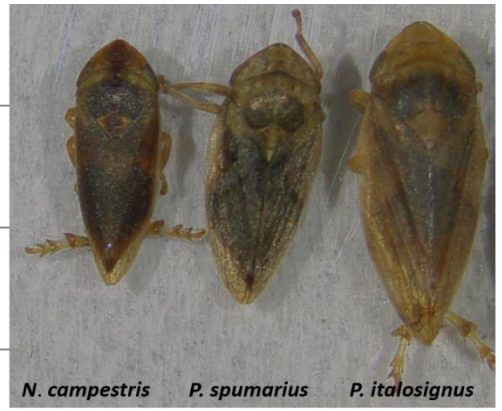
- Control vector is the election method to achieve immediate and effective results in order to mitigate the spread of vector-borne pathogens and the diseases.

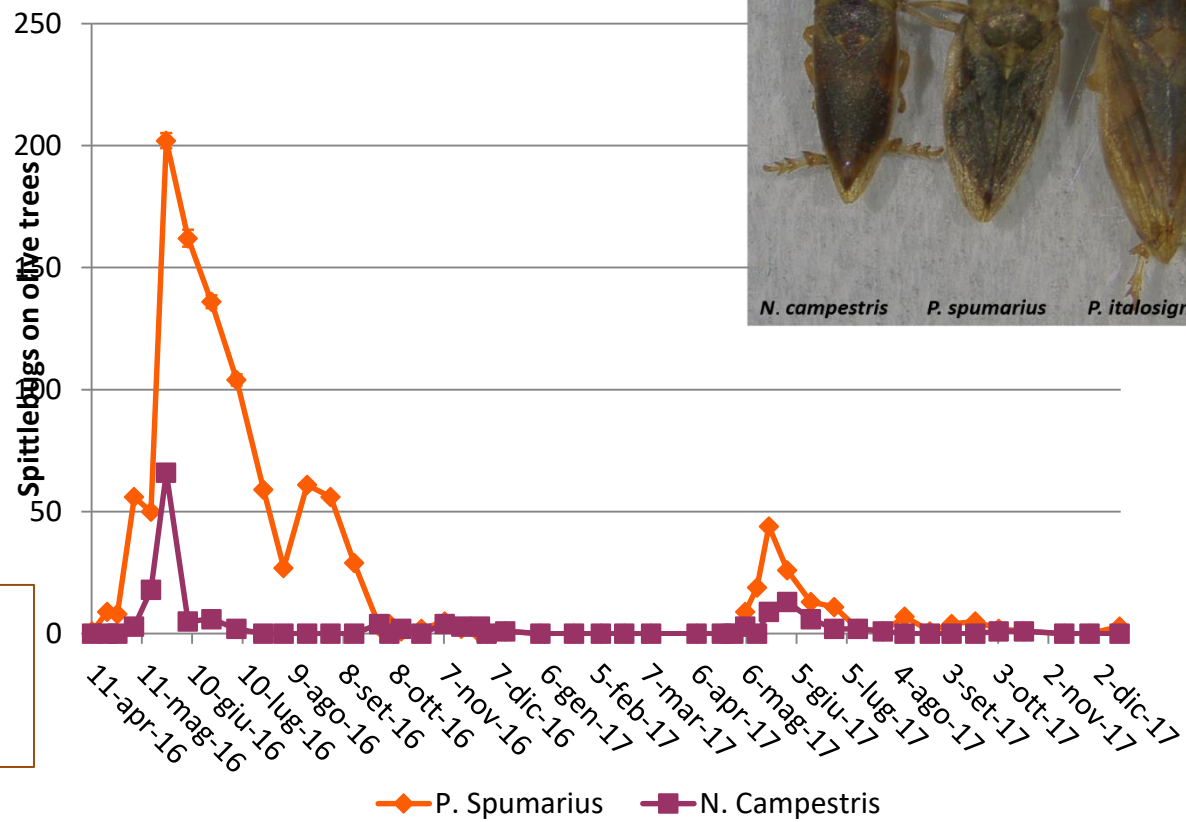
GOAL:
- Reduce populations of spittlebugs

Juveniles

Adults

GOAL:
- reduce number of visits





Effectiveness of different management approaches in order to reduce juveniles of Ph and NC

undisturbed groud vegetation

Soil tillage: N4

Herbicides: end of winther

Pyroweeding: stage N4

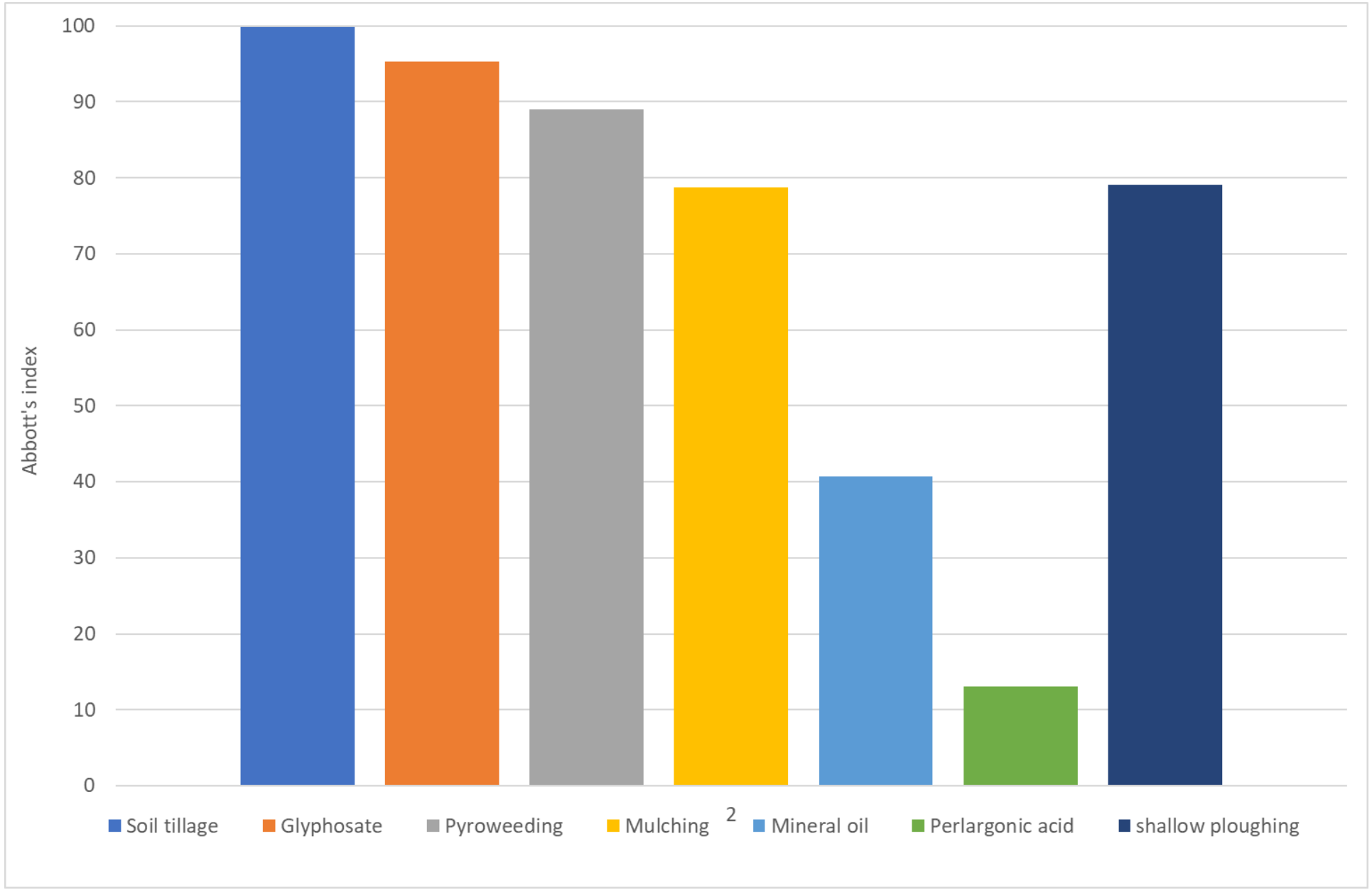
mulching: stage N4

Mineral oil: end of February

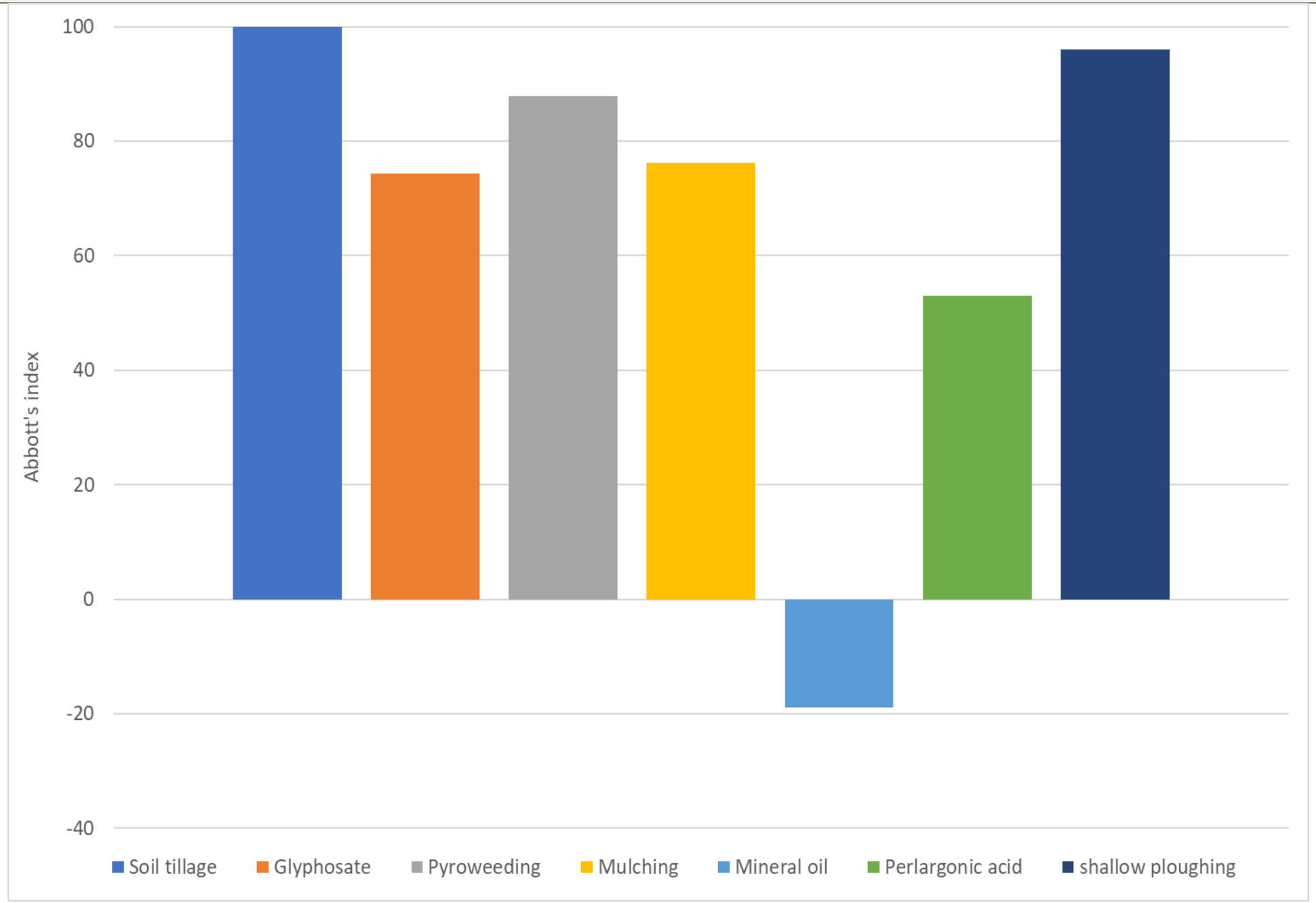
Herbicides: stage N4

Shallow ploughing: stage N4

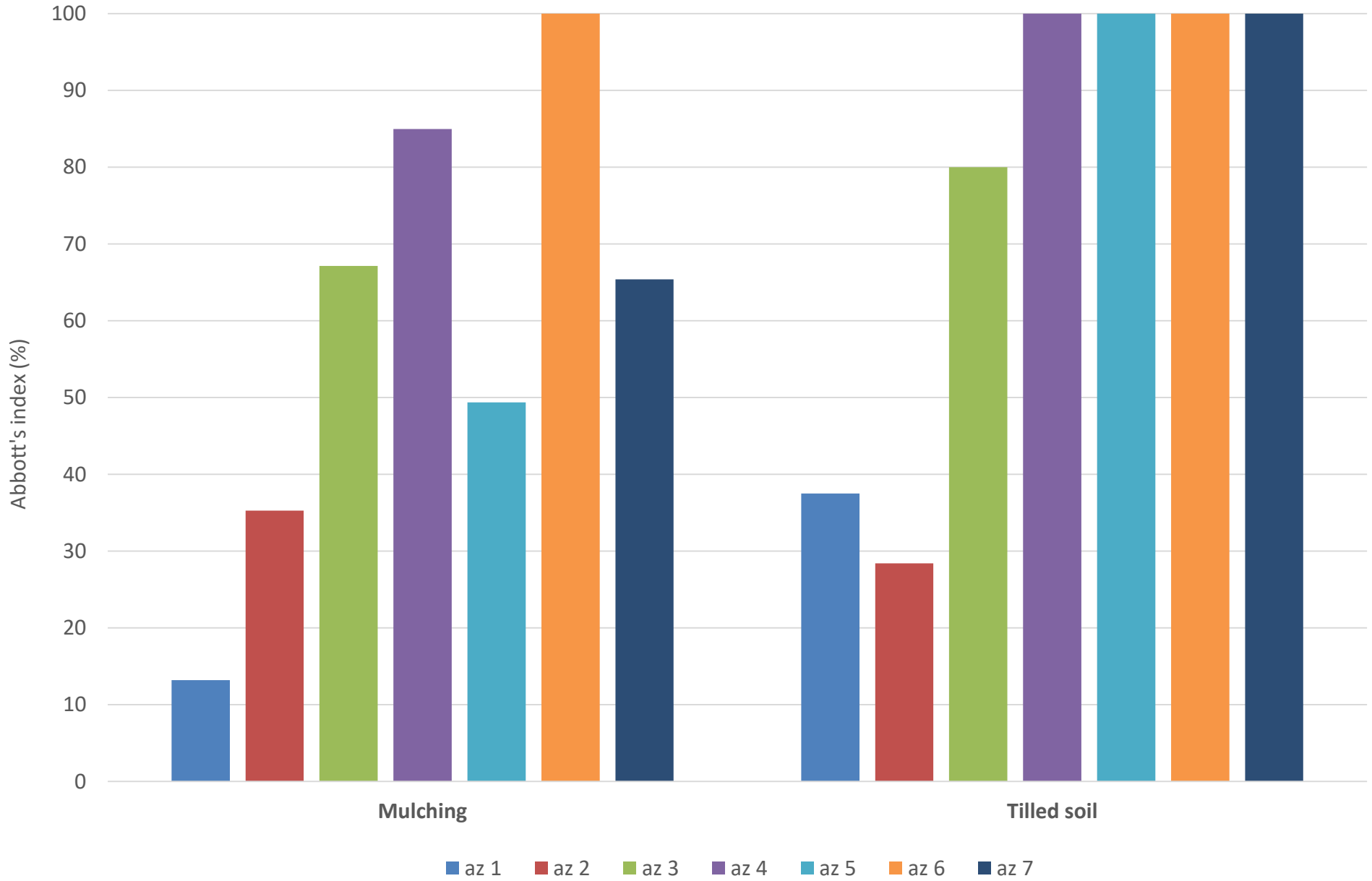
RESULTS: Effectiveness against juveniles of *P. spumarius*



RESULTS: Effectiveness against juveniles of *N. campestris*



Mulching versus soil tillage: effectiveness against juveniles of *P. spumarius*

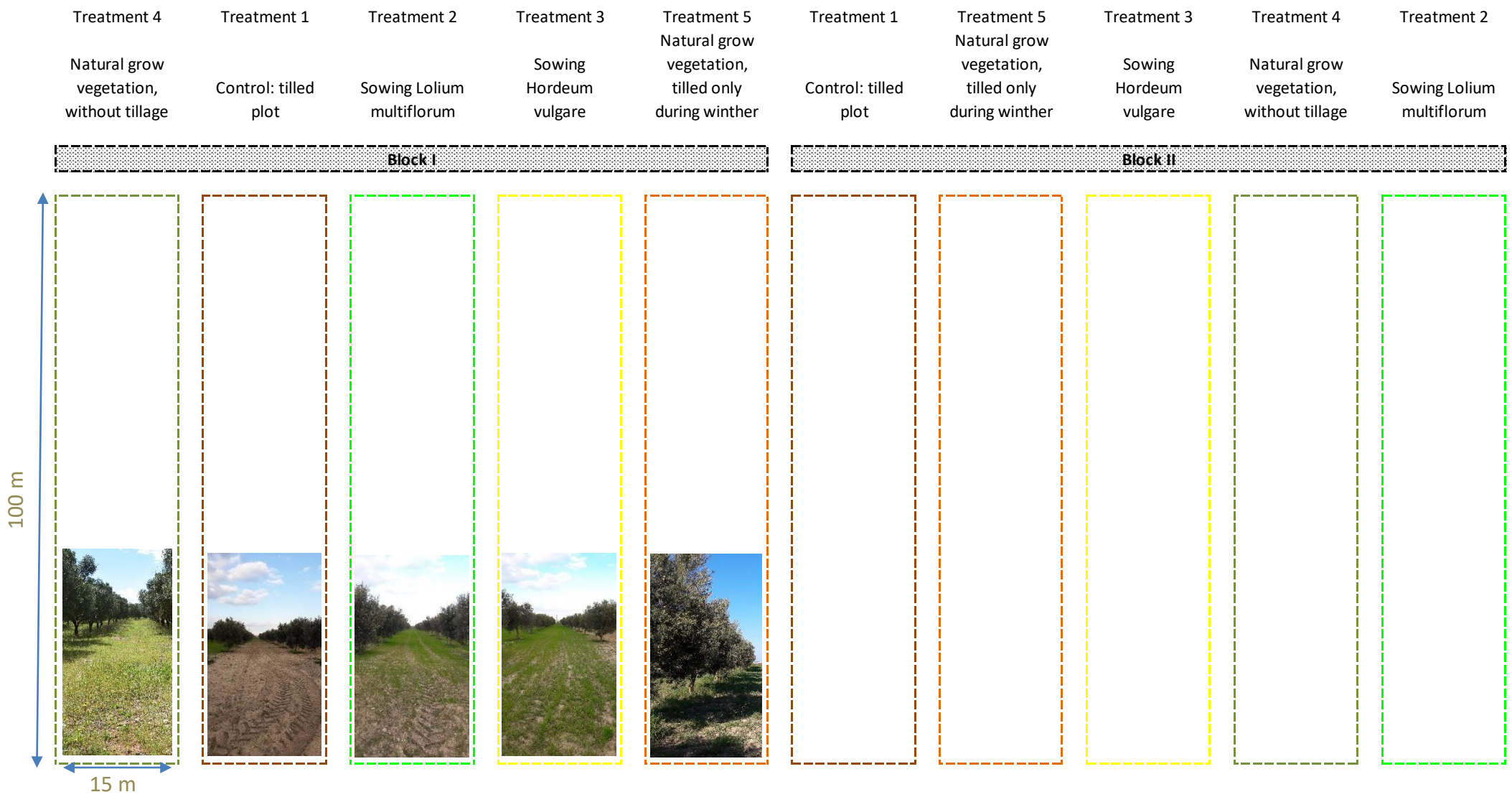


Soil tillage: accurate operations are necessary to ensure high efficiency

Az 1: Abbott index (37,5%)	Az 2: Abbott index (28,4%)

EXPERIMENTAL TRIALS: sowing poaceae

Survey in the olive orchards for three consecutive years (2017-2018-2019)



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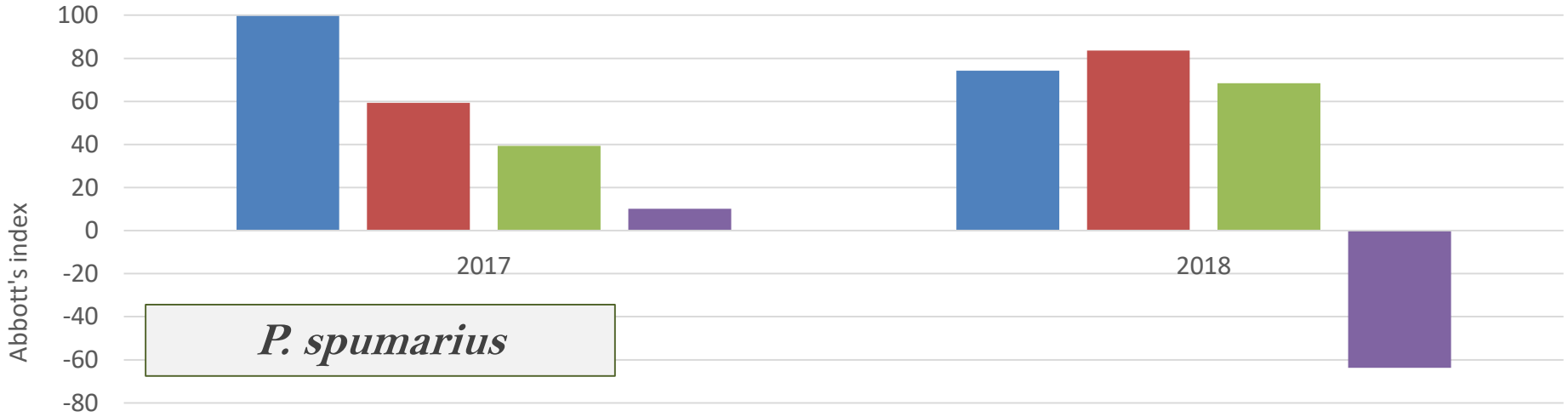
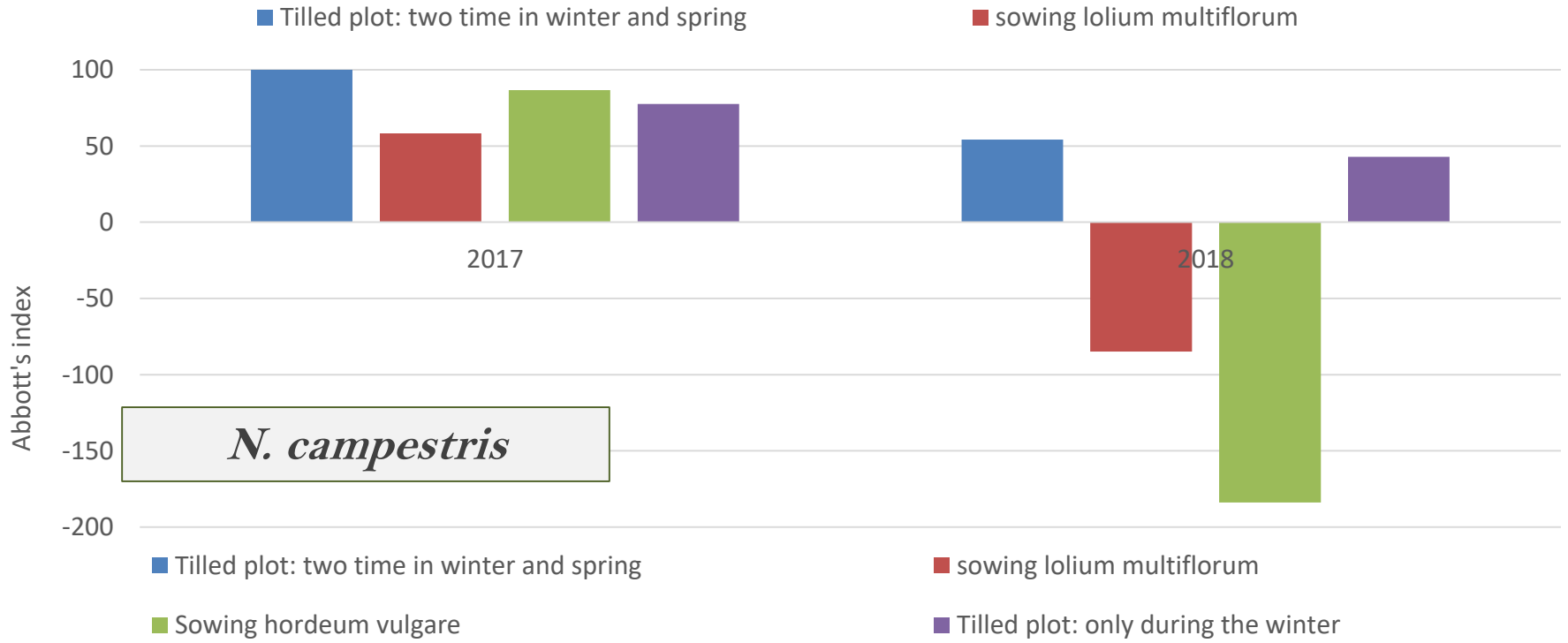
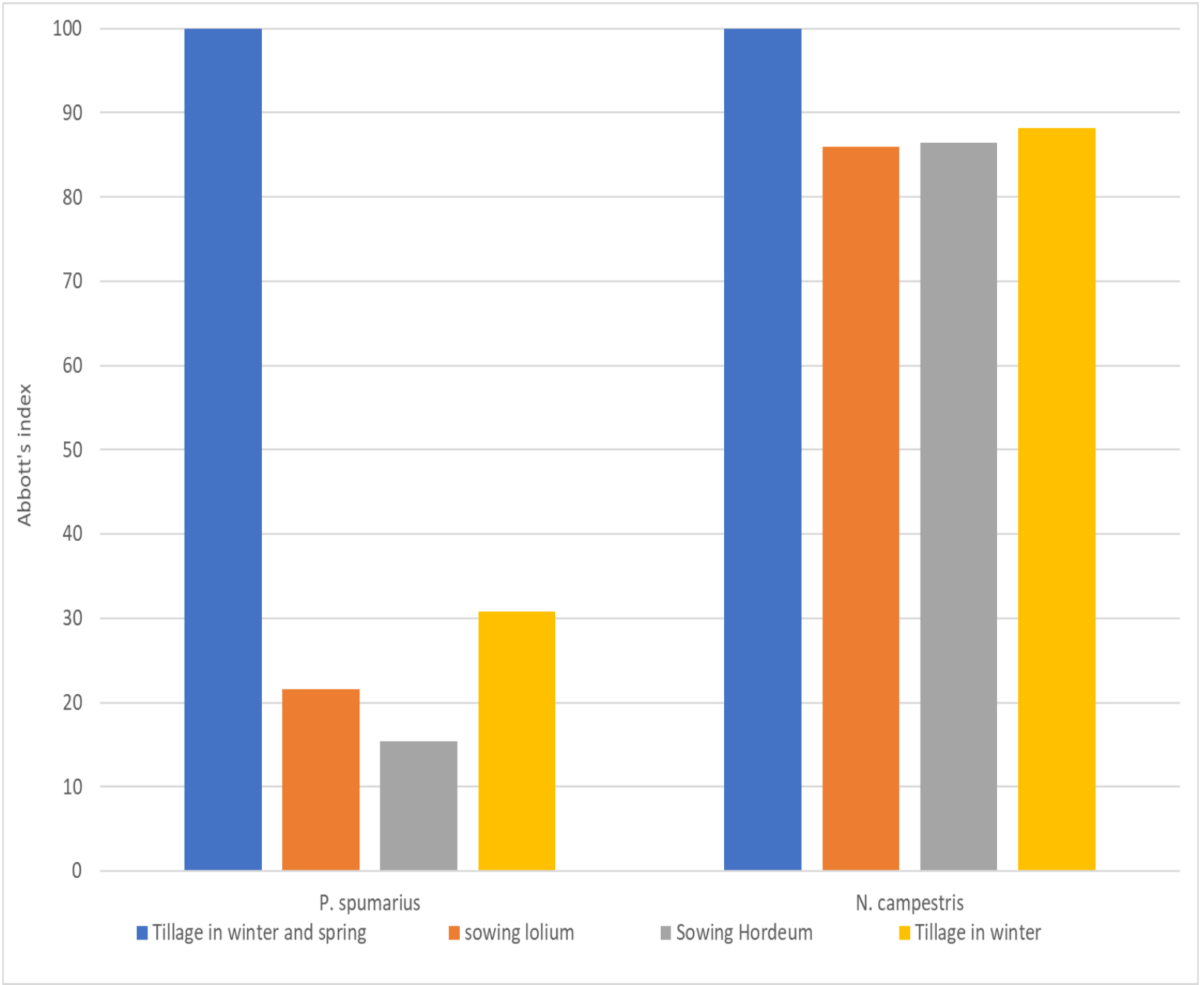
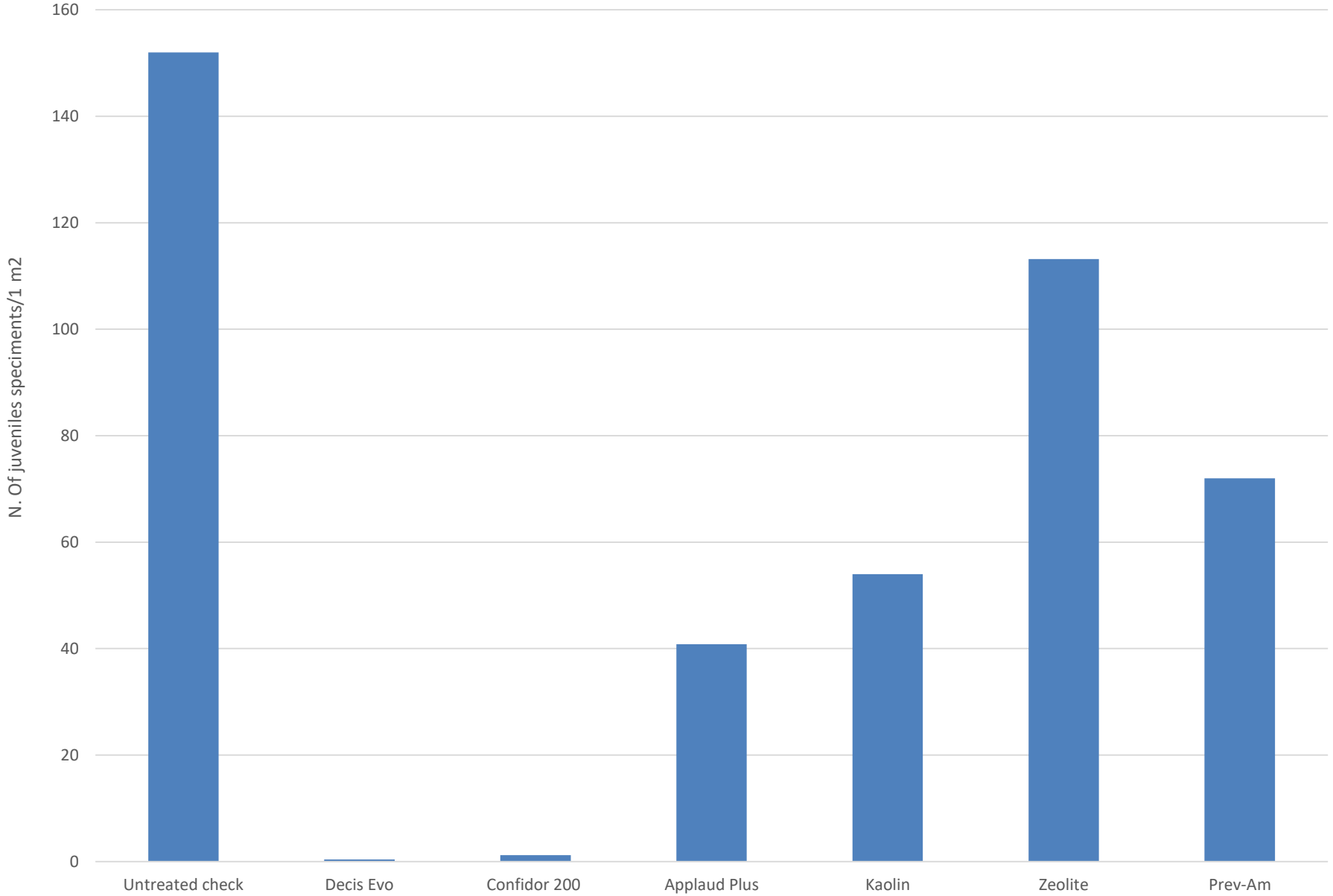




EXPERIMENTAL TRIALS: sowing poaceae



Evaluation of the efficacy of different compounds to suppress juveniles of *P. spumarius*



TESTING TRAPS FOR MONITORING ADULTS

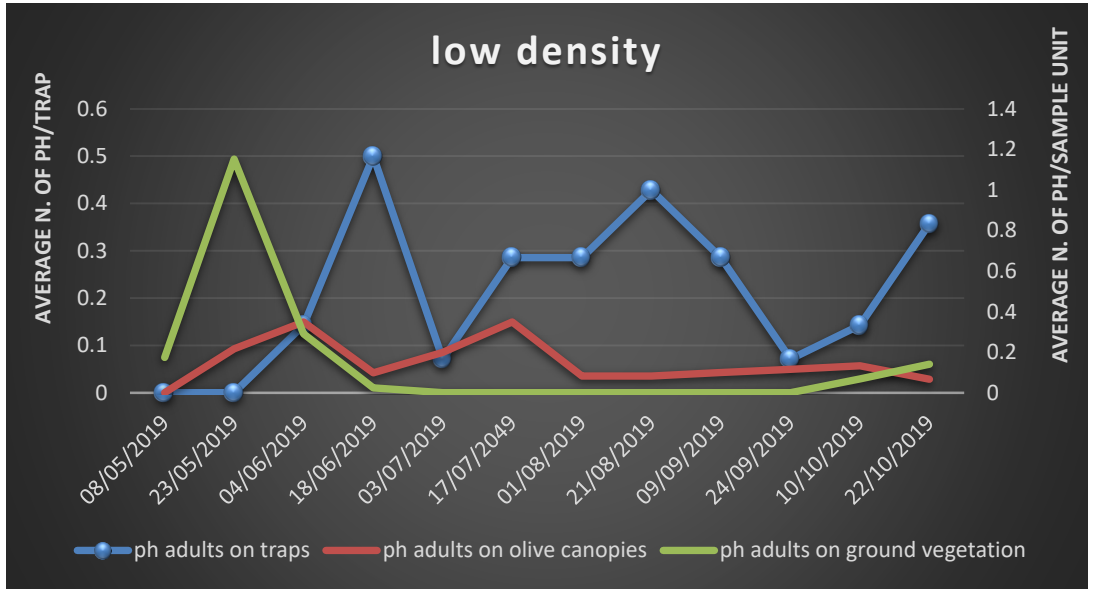
Sweep net compared with coloured traps

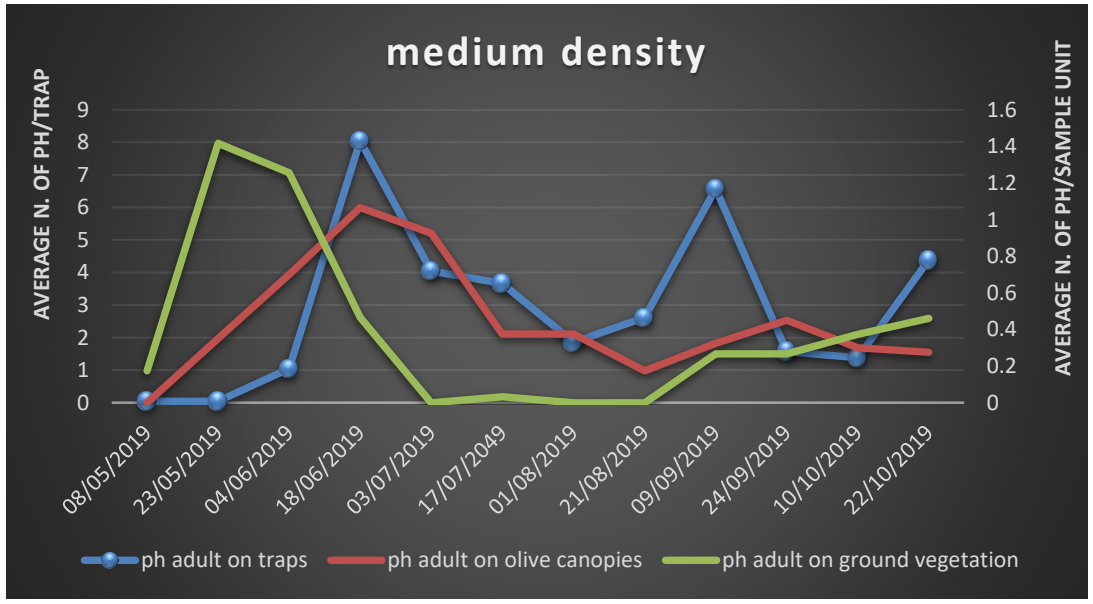
June

October

Russell IPM
INTEGRATED PEST MANAGEMENT

Seasonal FLUCTUATION USING yellow sticky trap

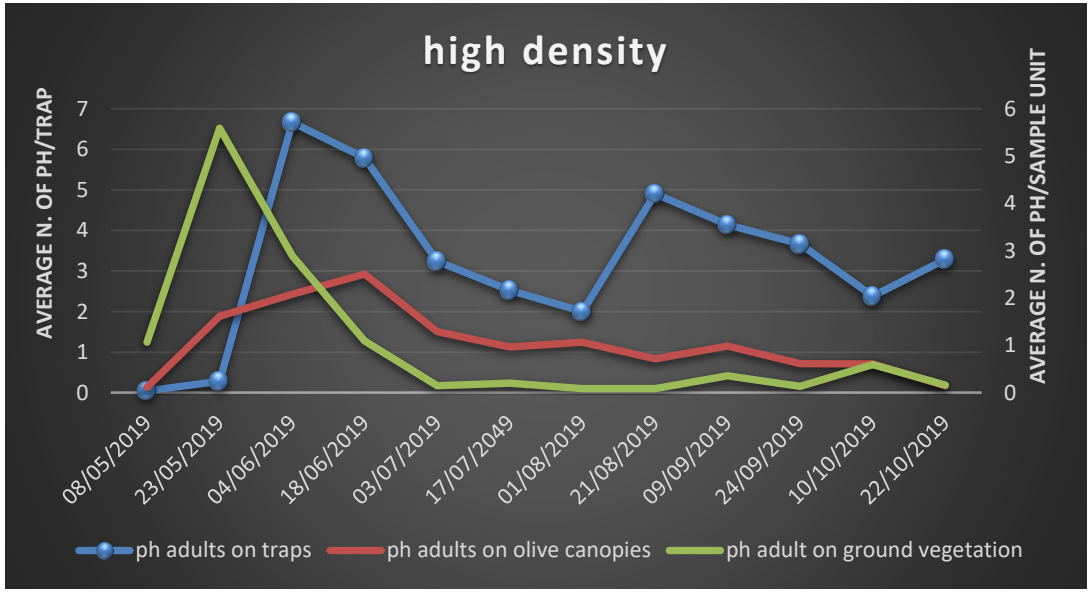




- 9 field trials were monitored:

1) 3 field with **low density** population;
2) 3 field with **medium density** population;
3) 3 field with **high density** popolation;

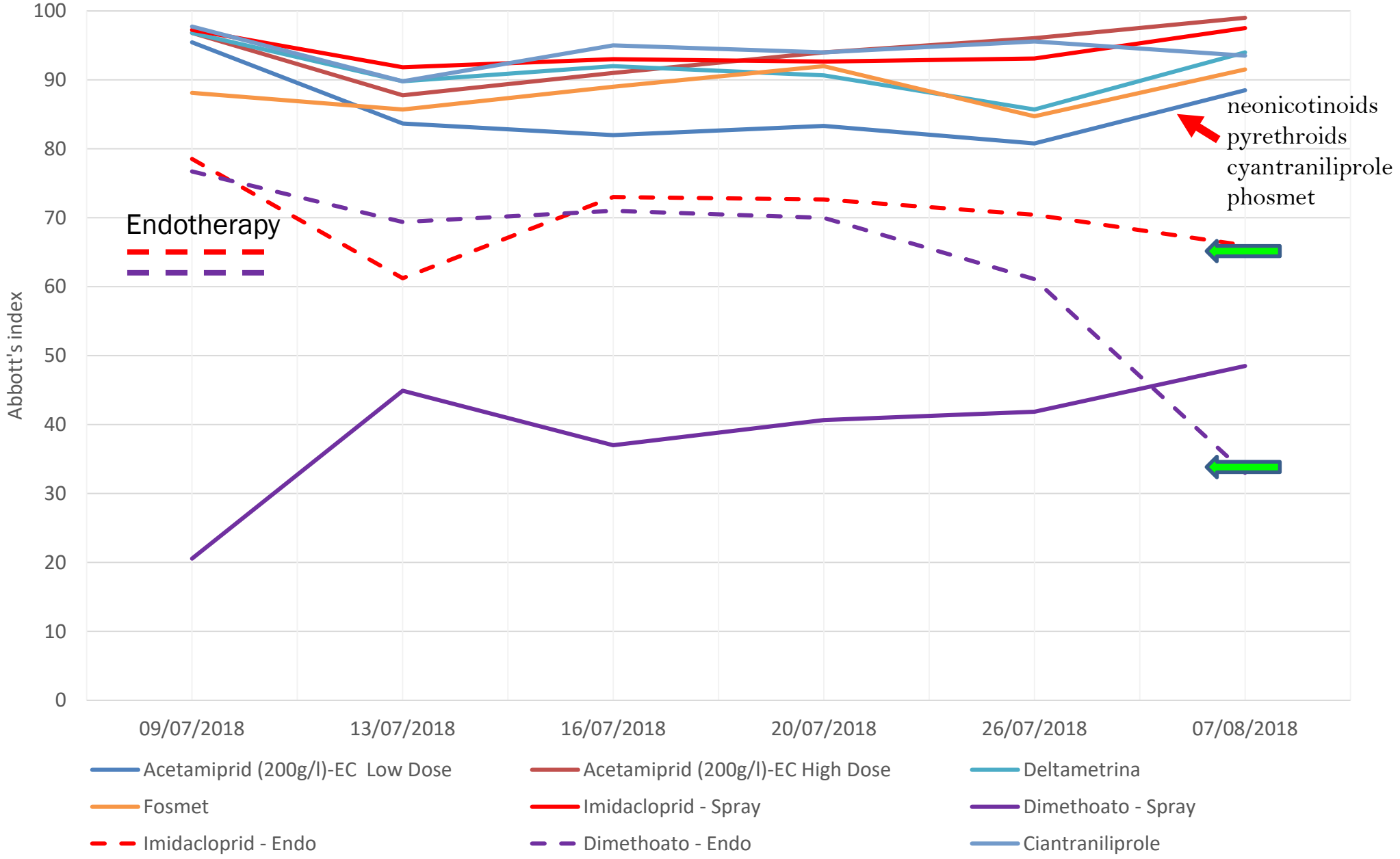
In each field, **21 traps** were positioned at **150 cm** above the ground vegetation, replaced every two weeks



- Adults on traps captured later than sweep net;

- **Consistent results were obtained using both approaches**

Application of synthesis insecticides



Use of kaolin (repellent)

- New plantation in the infected area. Starting trial: 2016, young olive trees 3-years old; tested Xf-free;

- 3 replication;
- 24 plants/treatments;

- Applied volume: 1000 L/ha;

- Time applications: May to October;

- Application: 12 to 15 days;

- Plants left to natural vector infection;

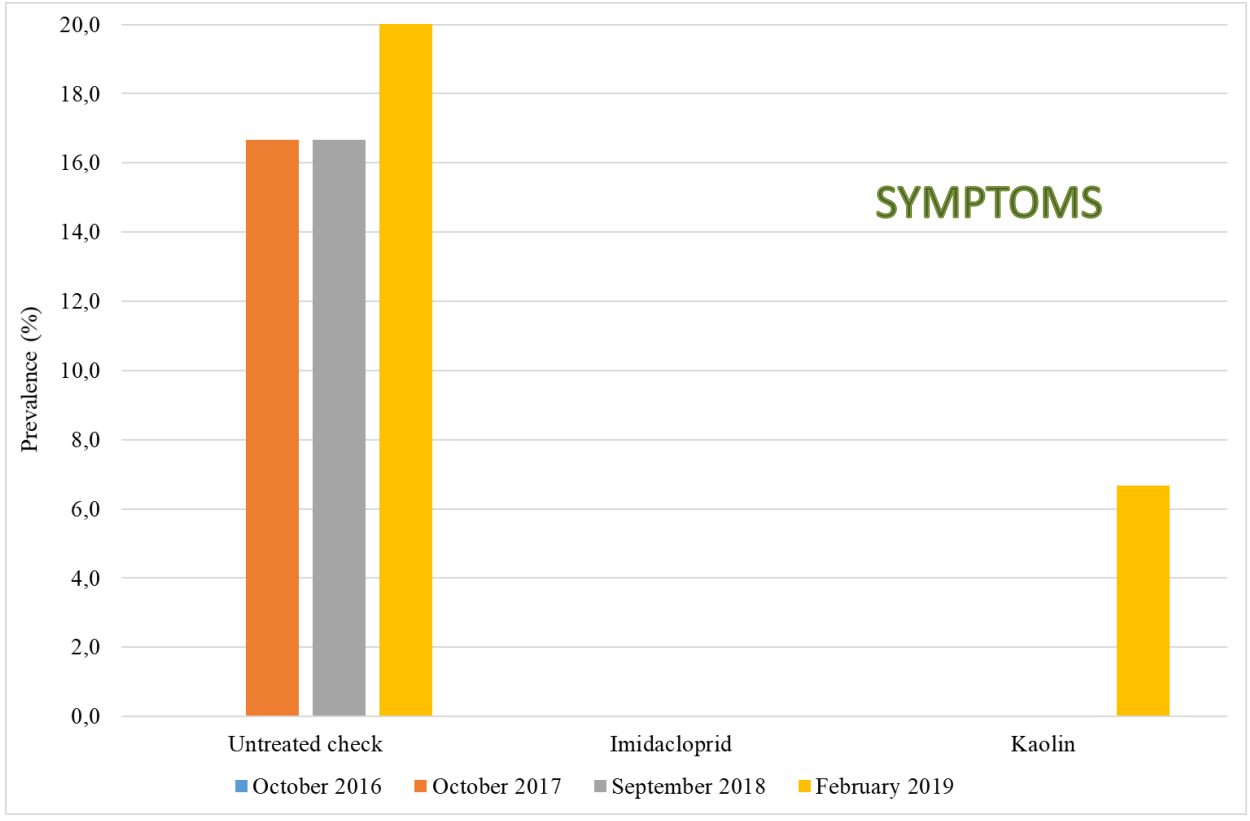
Product name or code	Active substance (a.s.)	Content a.s. (% or g/L) and formulation	Formulate rate (kg/ha)	Mode of application
Untreated control				
Confidor 200 O-Teq	Imidacloprid	(200 g/L) OD	1.125	Spray
--	Kaolin	(80%) WG	40	Spray

Use of kaolin (repellent)

Untreated control

Imidacloprid

Kaolin



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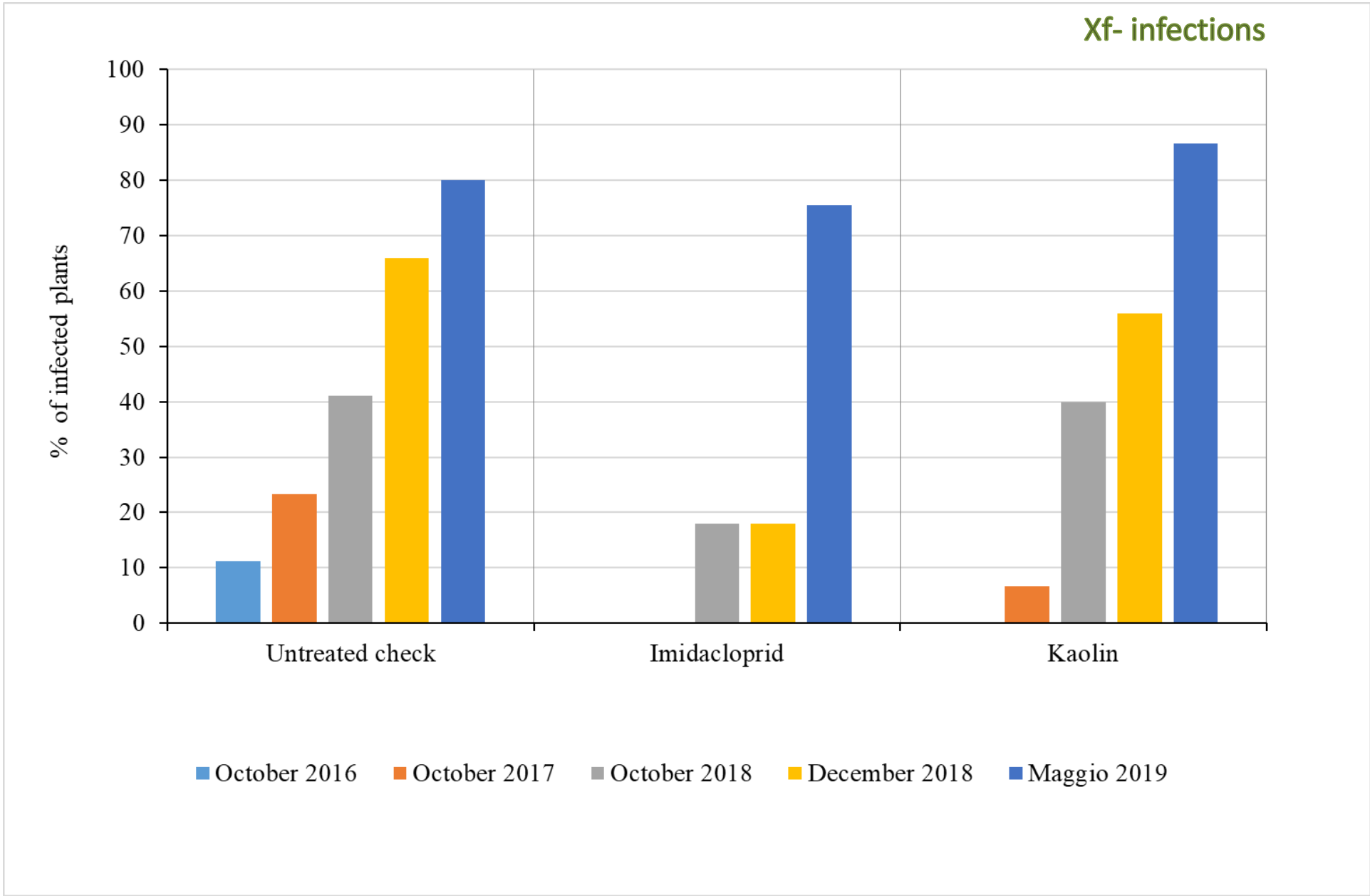


CONCLUSIONS

- An integrated pest management strategy based on control of nymphs and adults is needed to suppress populations of *P. spumarius.*

- **Soil tillage** performed at the right time of the development of the nymphs remains the most effective strategy to suppress immature and prevent the emergence of adults;

- Alternative others methods can be used (herbicides, insecticides, pyroweeding and mulching).

- **Disrupting egg masses** using soil tillage in late winter proved to be effective against *N. campestris* but not against *P. Spumarius*;

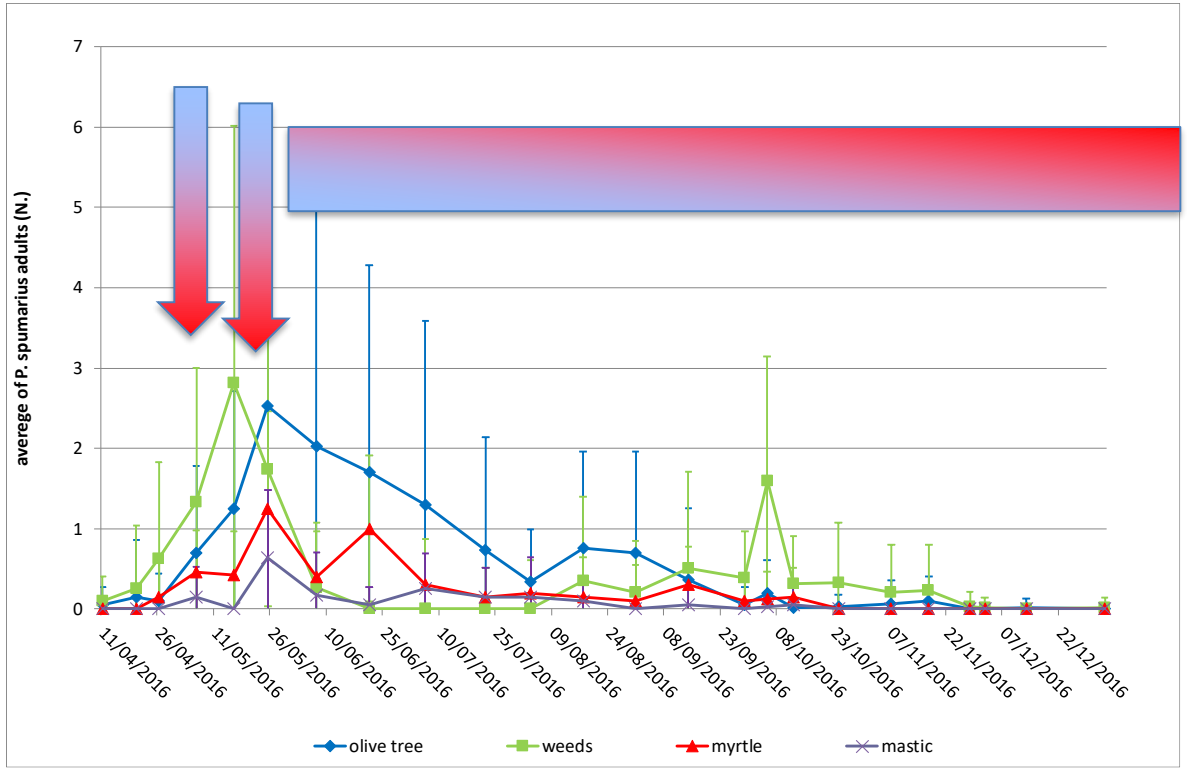
- Sowing **Poaceae species** to replace the ground vegetation was not very effective against both spittlebugs, several factors can influence positively or negatively the results.

CONCLUSIONS

- **Use of inert compound (as repellent) against adults** did not reduce the spread of the infection in the long term period;

- Similar results were obtained with **chemical applications,** confirming that short inoculation periods results in successfull transmission events;

These evidences further supports the need to focus on the control of the juvenile populations



CONCLUSIONS

The data indicate that **yellow traps** in orchards with **high/medium density population of adults of *P. spumarius*** are generally more efficient than sweep net.

With **low population density**, traps were less efficient but still provided useful information on the presence of spittlebugs.

Thus, **yellow sticky trap**:
-, can be combined with sweep net for a better evaluation of the population dynamics;

- could be used for monitoring the presence of spittlebugs and give indication for the application of insecticides;

- evaluate the efficacy of insecticides applications;

THANKS FOR YOUR ATTENTION!!!

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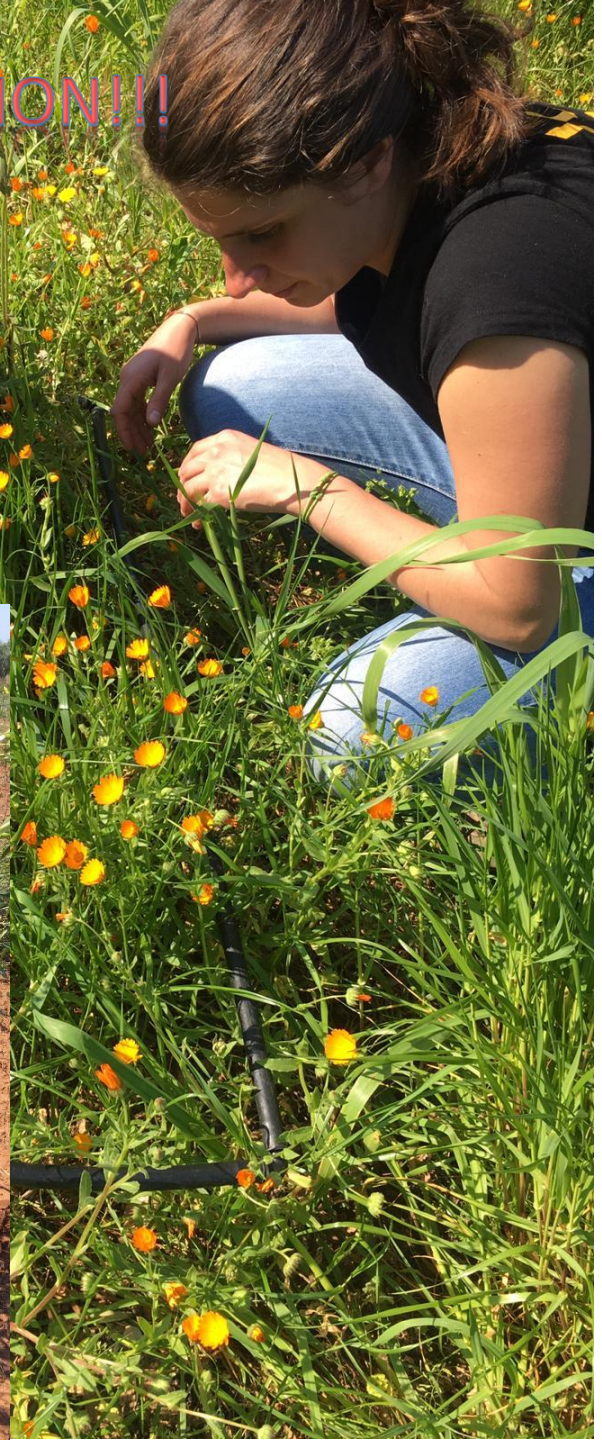

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