



Phenotypic characterisation of Baltic populations of *Phytophthora* *infestans*

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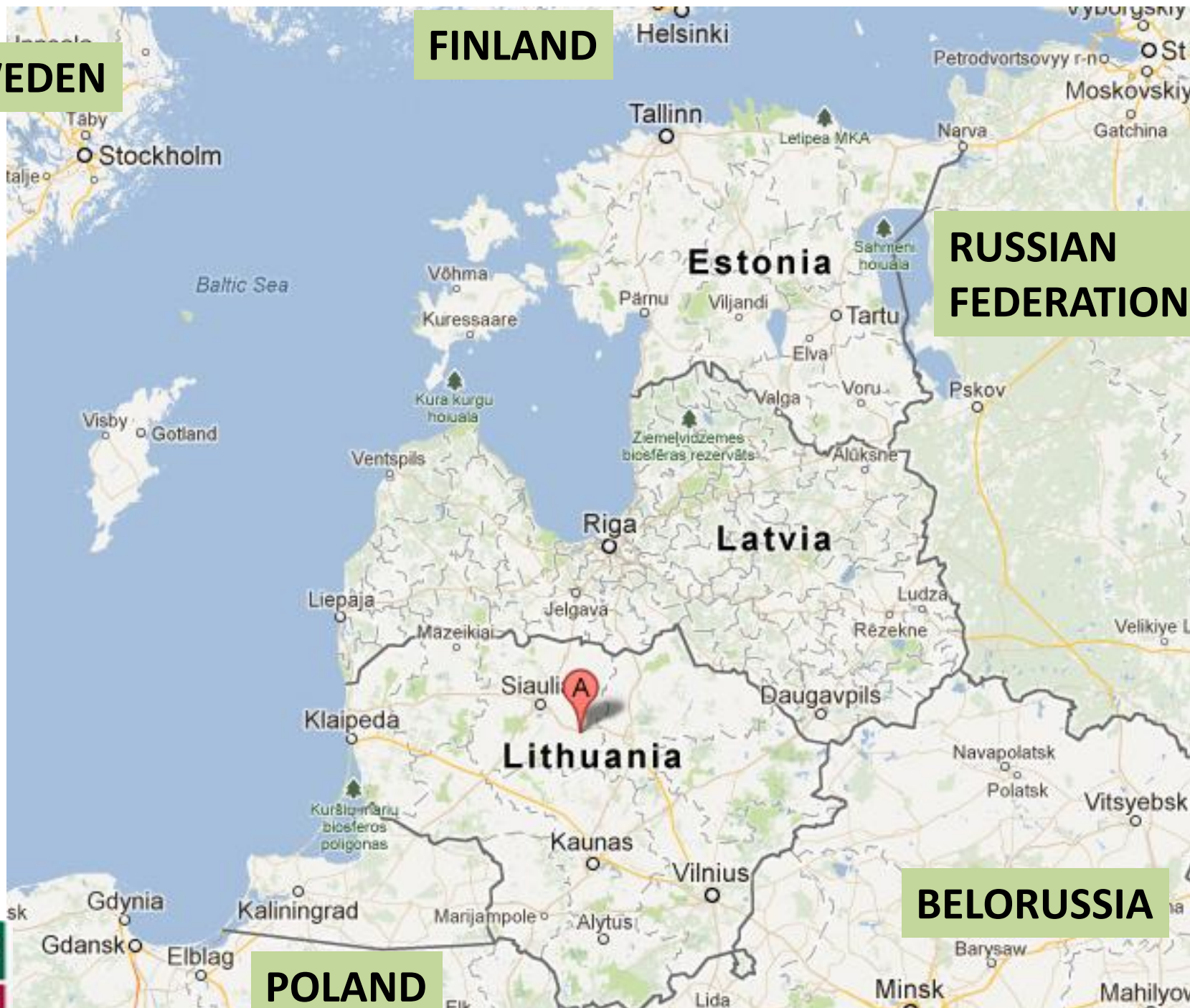
SWEDEN

FINLAND

**RUSSIAN
FEDERATION**

BELORUSSIA

POLAND





- Latvia and Lithuania are the most potato loving countries with about **117 kg** consumed per capita.
- In Estonia 98 kg



But.....

- In Estonia ca 30% of potato fields are allotments or small growers fields.
- In Estonia, as well as the oospore infection, these allotments are the main initial and on-going source of late blight inoculum throughout the growing season, dispersing inoculum to large ware and seed potato fields.



NEW BALTIC POPULATION STUDY: Since 2010-

Isolates collection of *P. infestans*

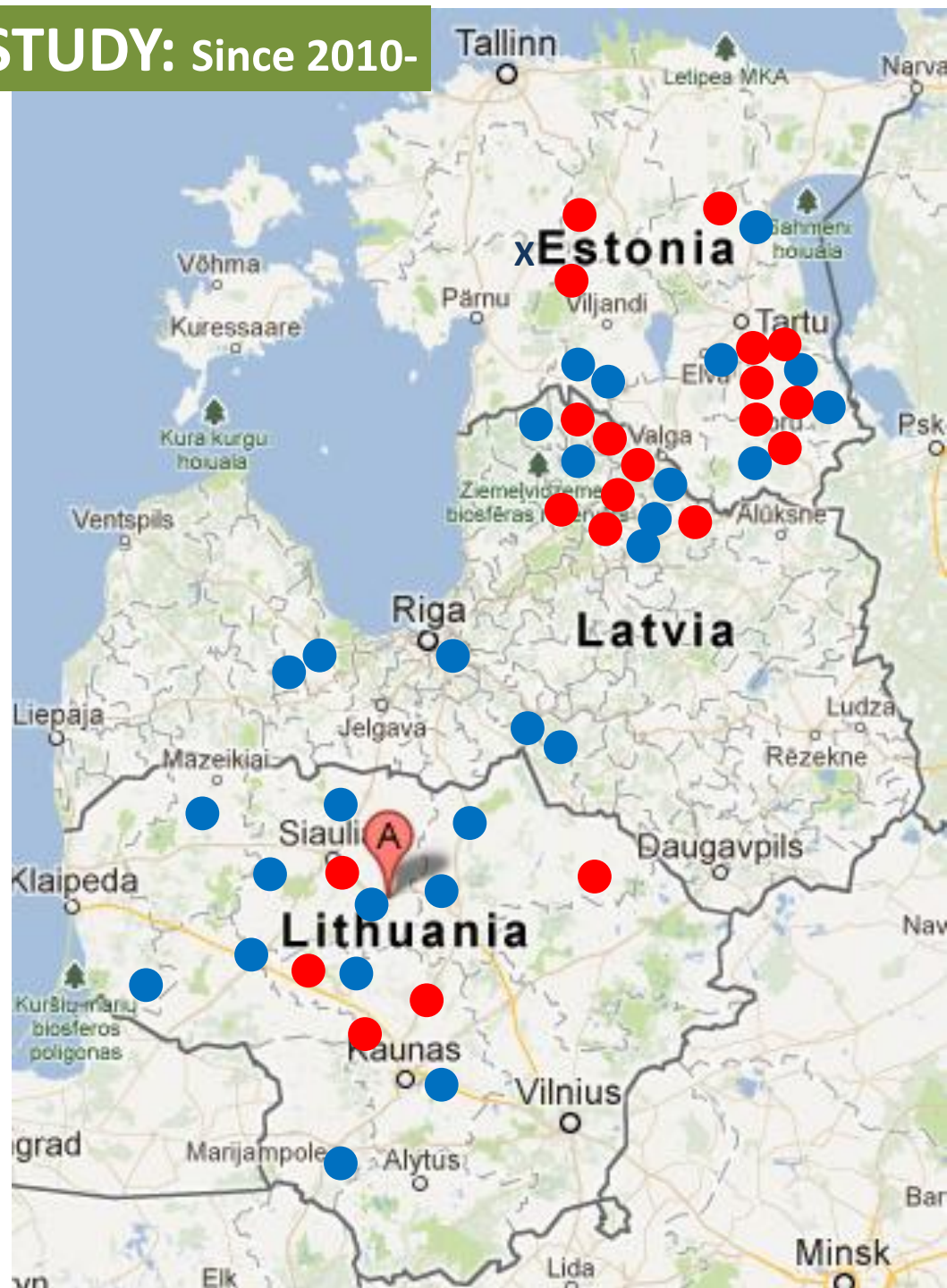


- - 2010
- - 2011

Country	No of isolates	Fields
Estonia	128	16
Latvia	102	17
Lithuania	63	16
Total	293	49

Potato fields:

- Large scale conventional (LSC)
- Small scale conventional (SSC)
- Organic
- Breeding field plots



NEW BALTIC POPULATION STUDY

CHARACTERISATION OF ISOLATES (2010-2011)

Used markers

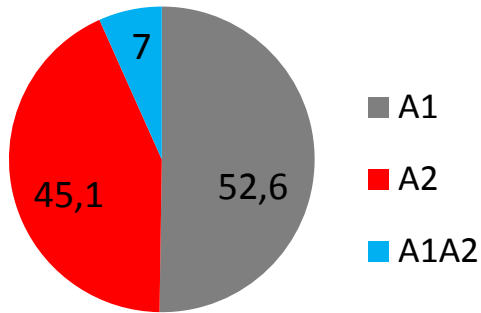
- Mating type determination (293)
- Response to metalaxyl, (165)
- Virulence tests (293)

Black's differential set R1-R11

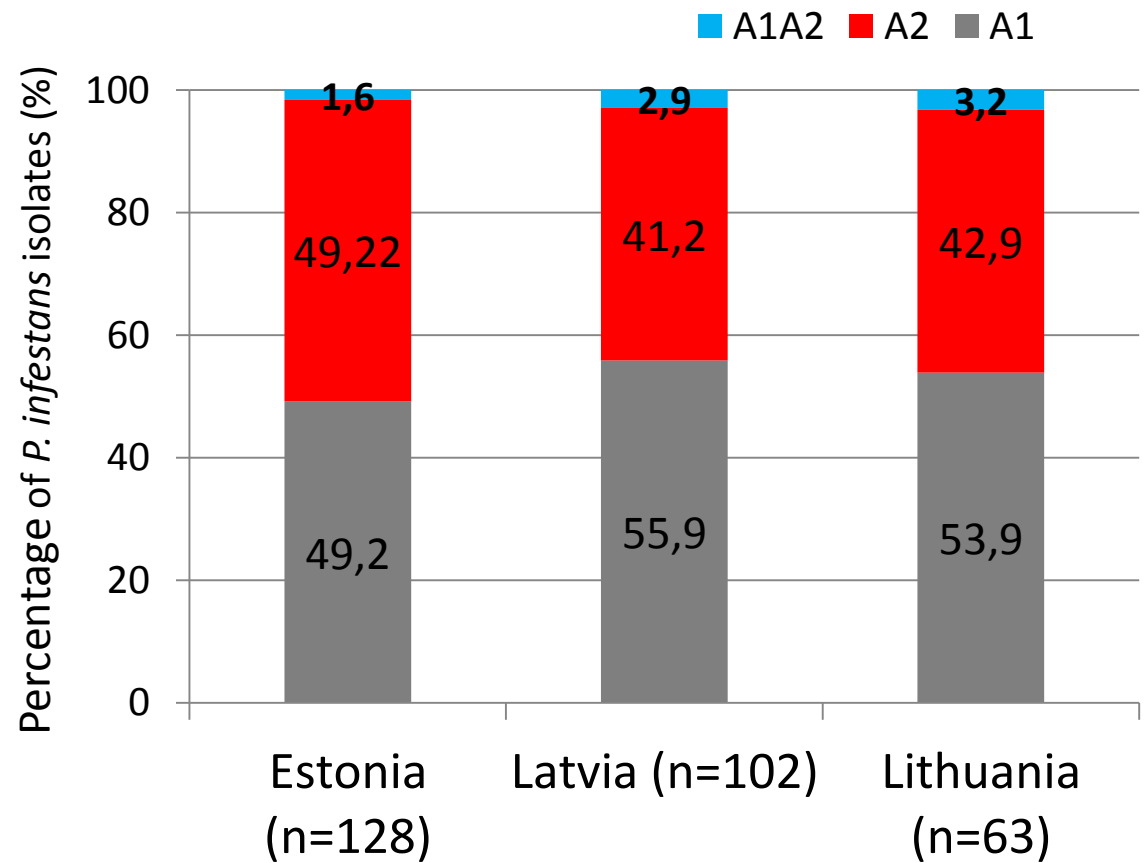


MATING TYPE

Baltic countries (N=293)



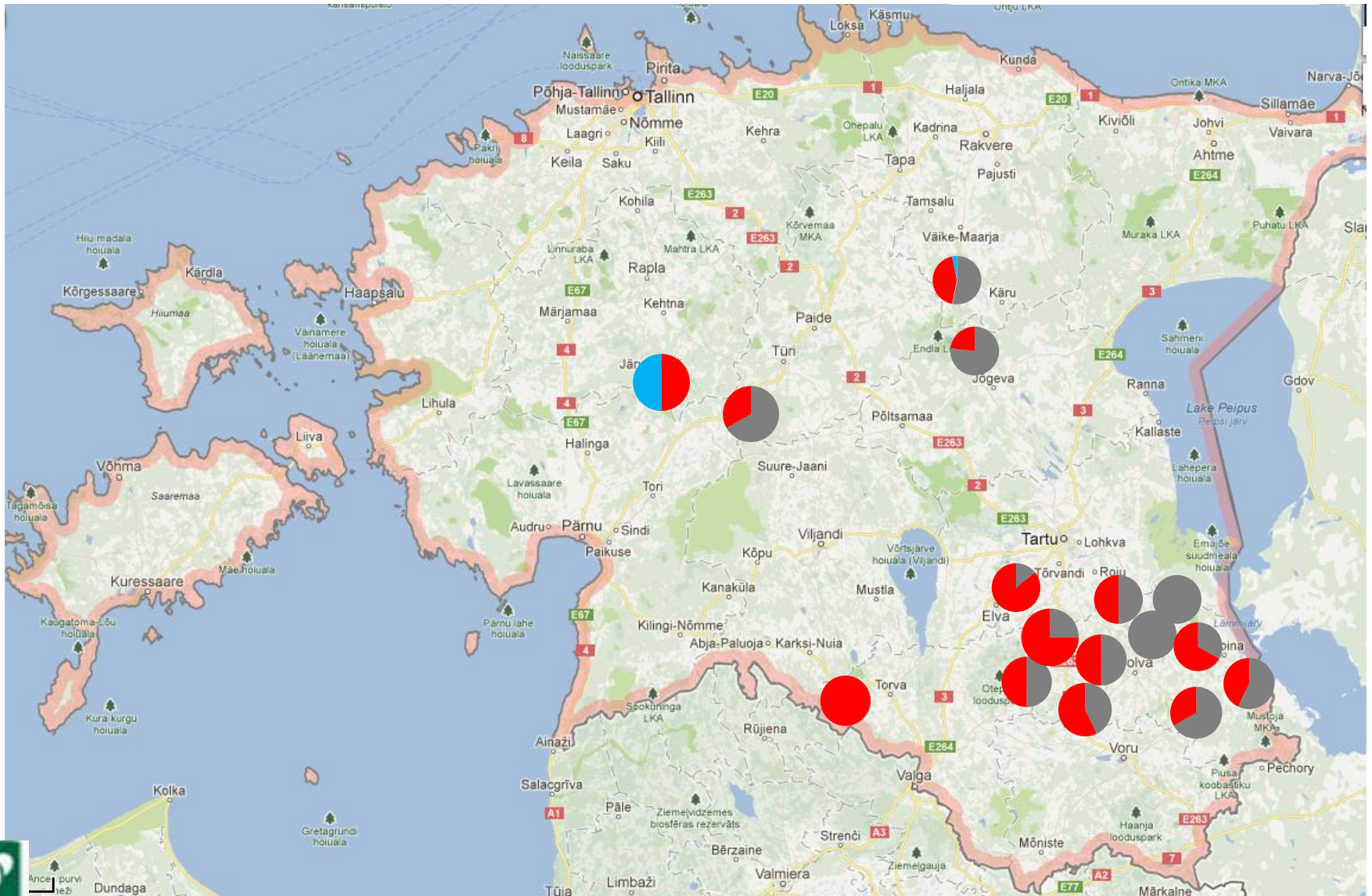
P=0.72



MATING TYPE DISTRIBUTION: ESTONIA (n=128; 16 fields)

P<0,001

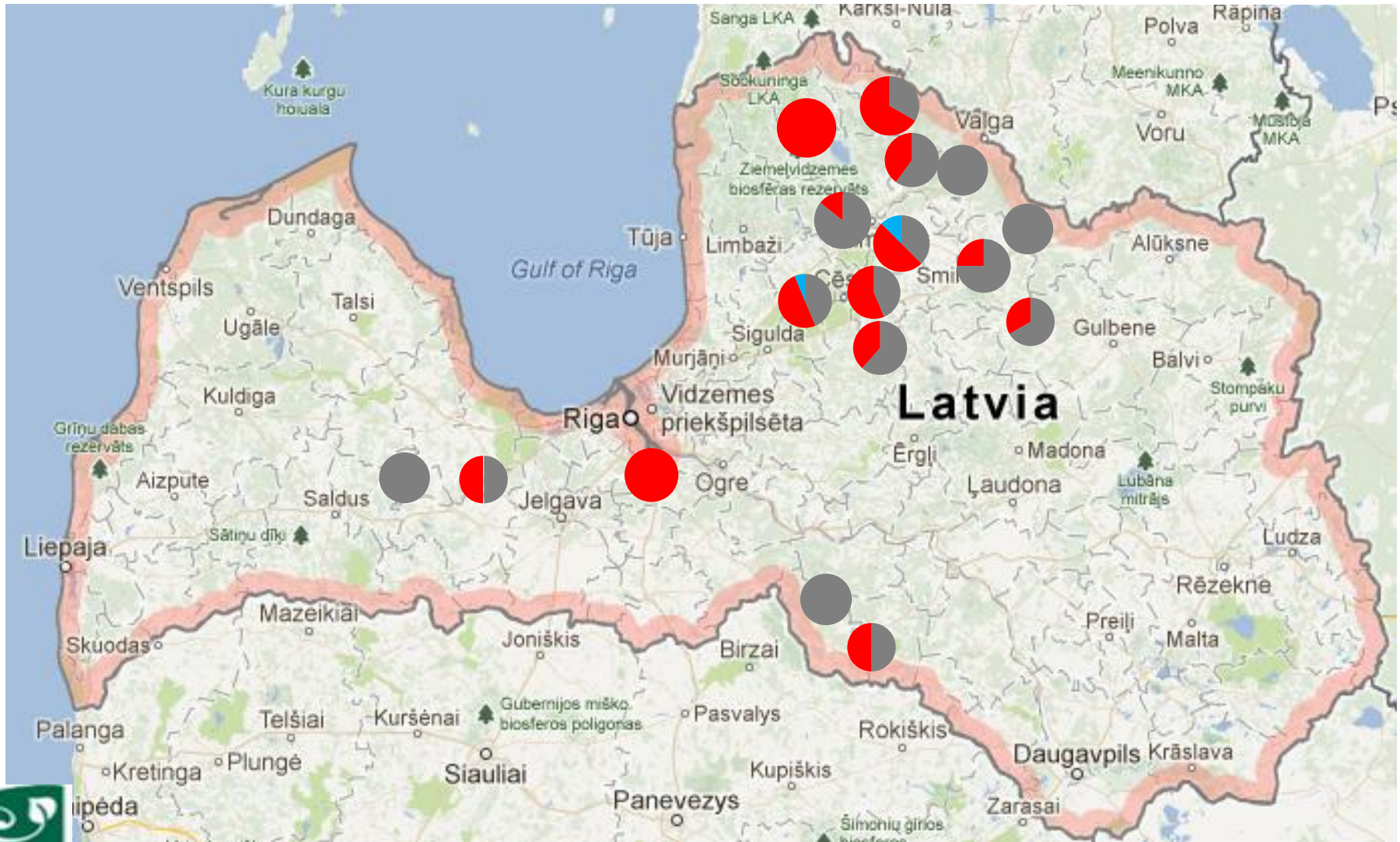
■ A1 ■ A2 ■ A1A2



MATING TYPE DISTRIBUTION: LATVIA (n=102; 17 fields)

p= 0,58

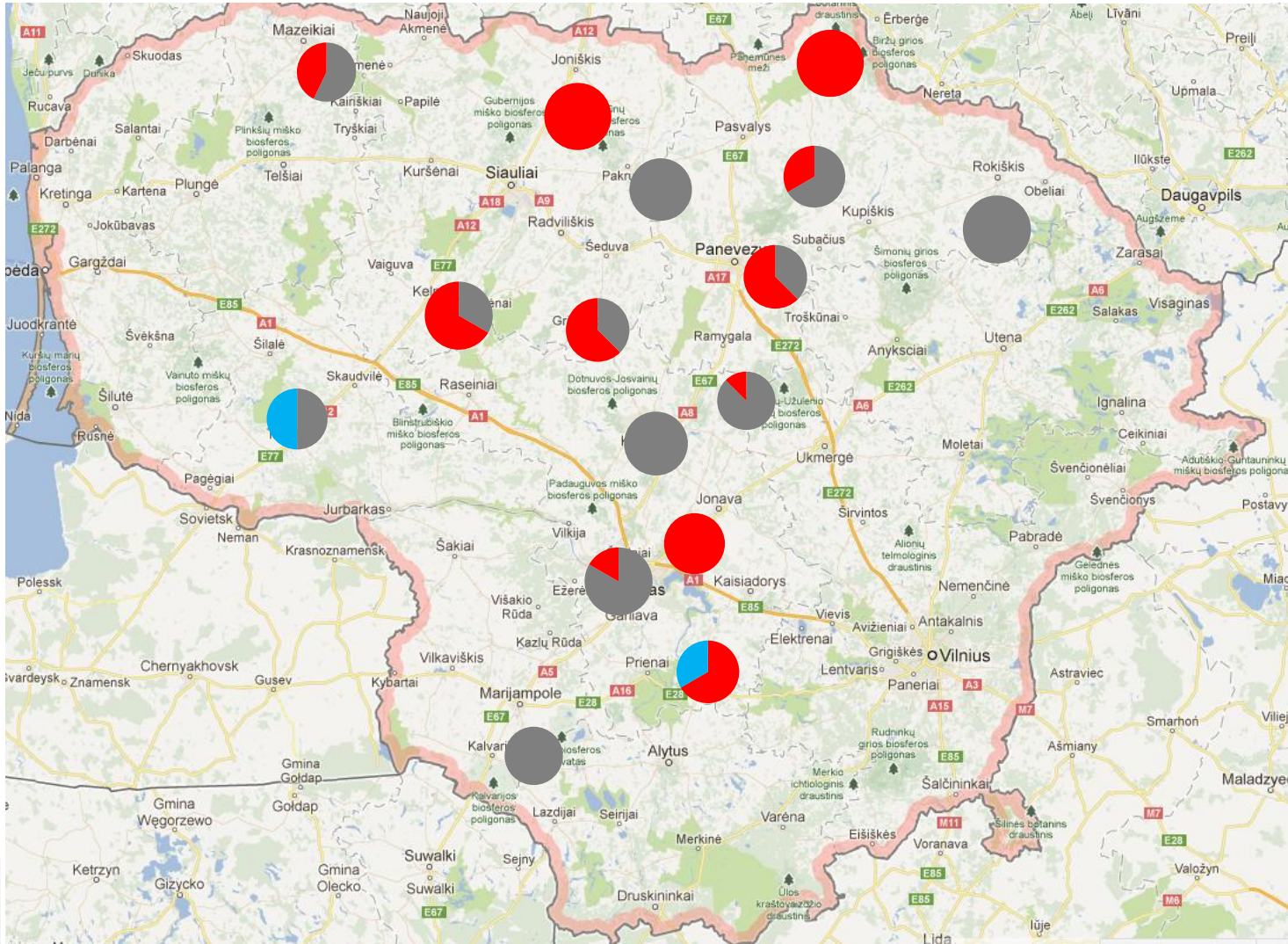
■ A1 ■ A2 ■ A1A2




MATING TYPE DISTRIBUTION: LITHUANIA (n=63; 16 fields)

p= 0,023

■ A1 ■ A2 ■ A1A2

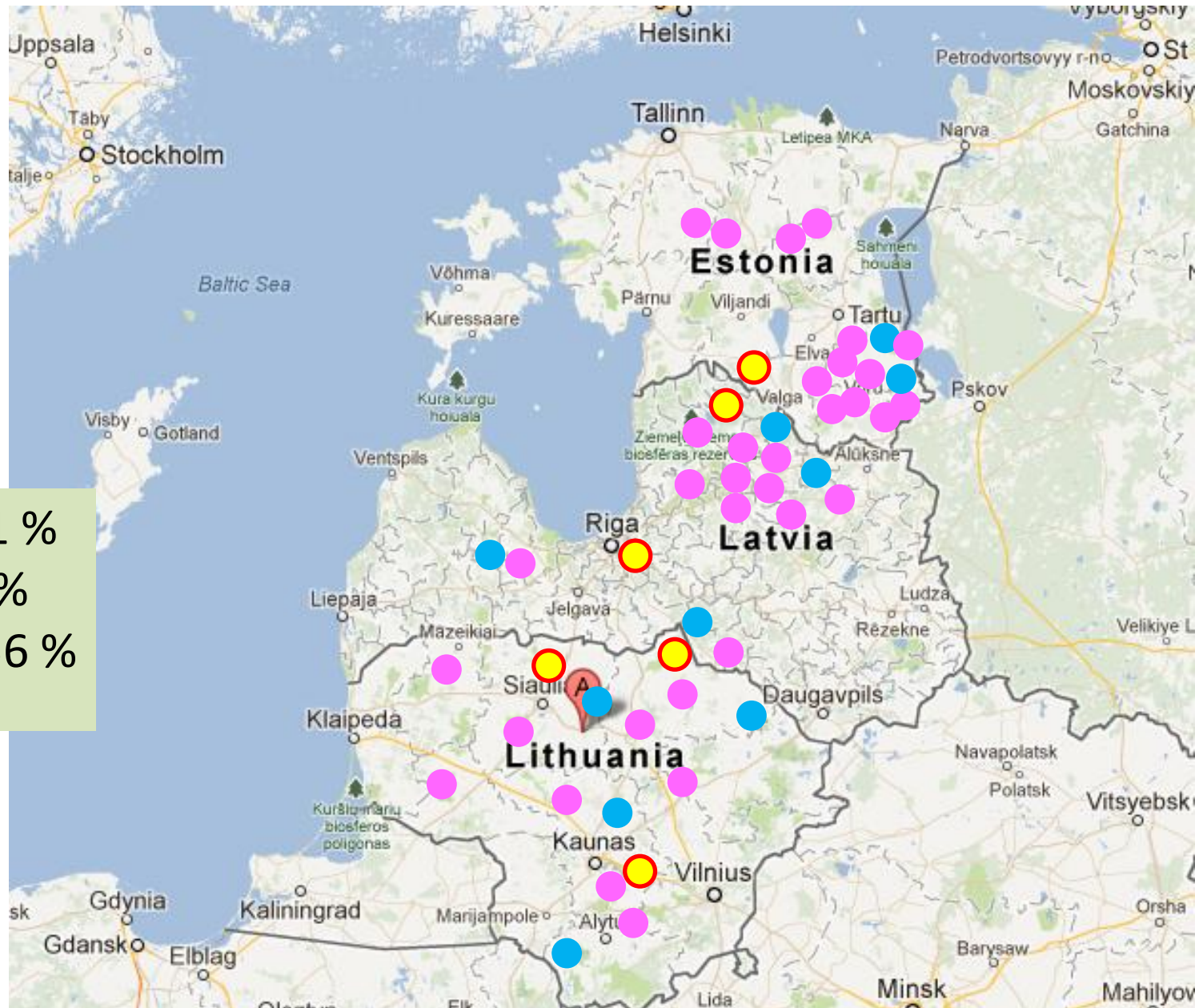


BOTH MATING TYPES COEXISTED ON 67 % OF FIELDS

-  - A1
-  - A2
-  - A1 & A2

- 49 fields

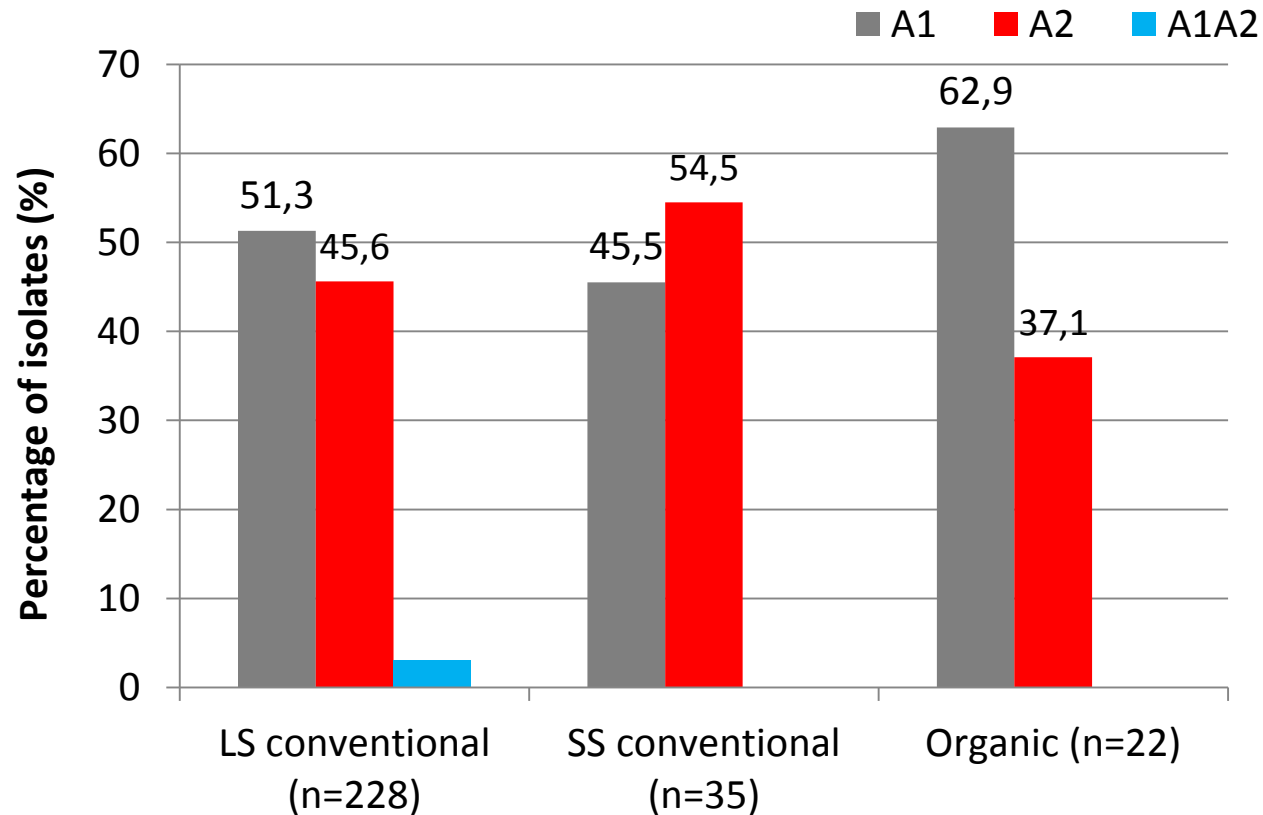
- Estonia – 81 %
- Latvia – 65 %
- Lithuania- 56 %



MATING TYPE: different management practices

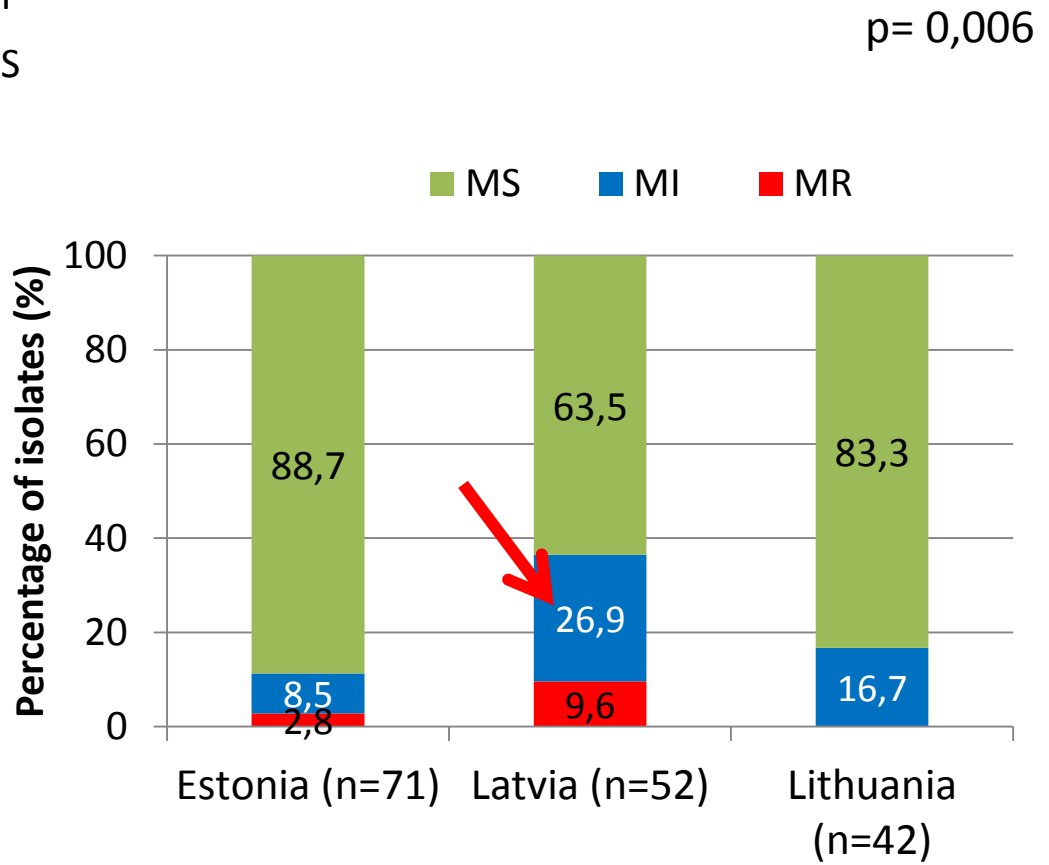
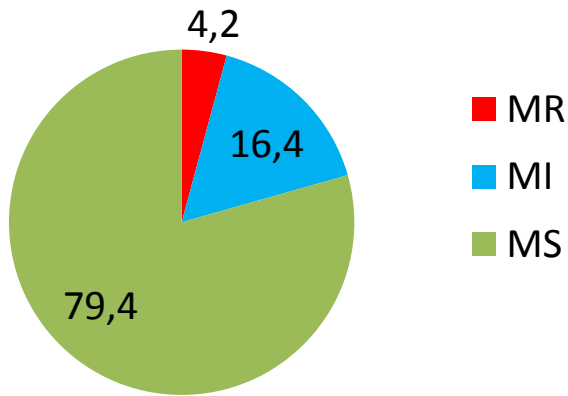
Baltic countries (n=285)

p= 0,45



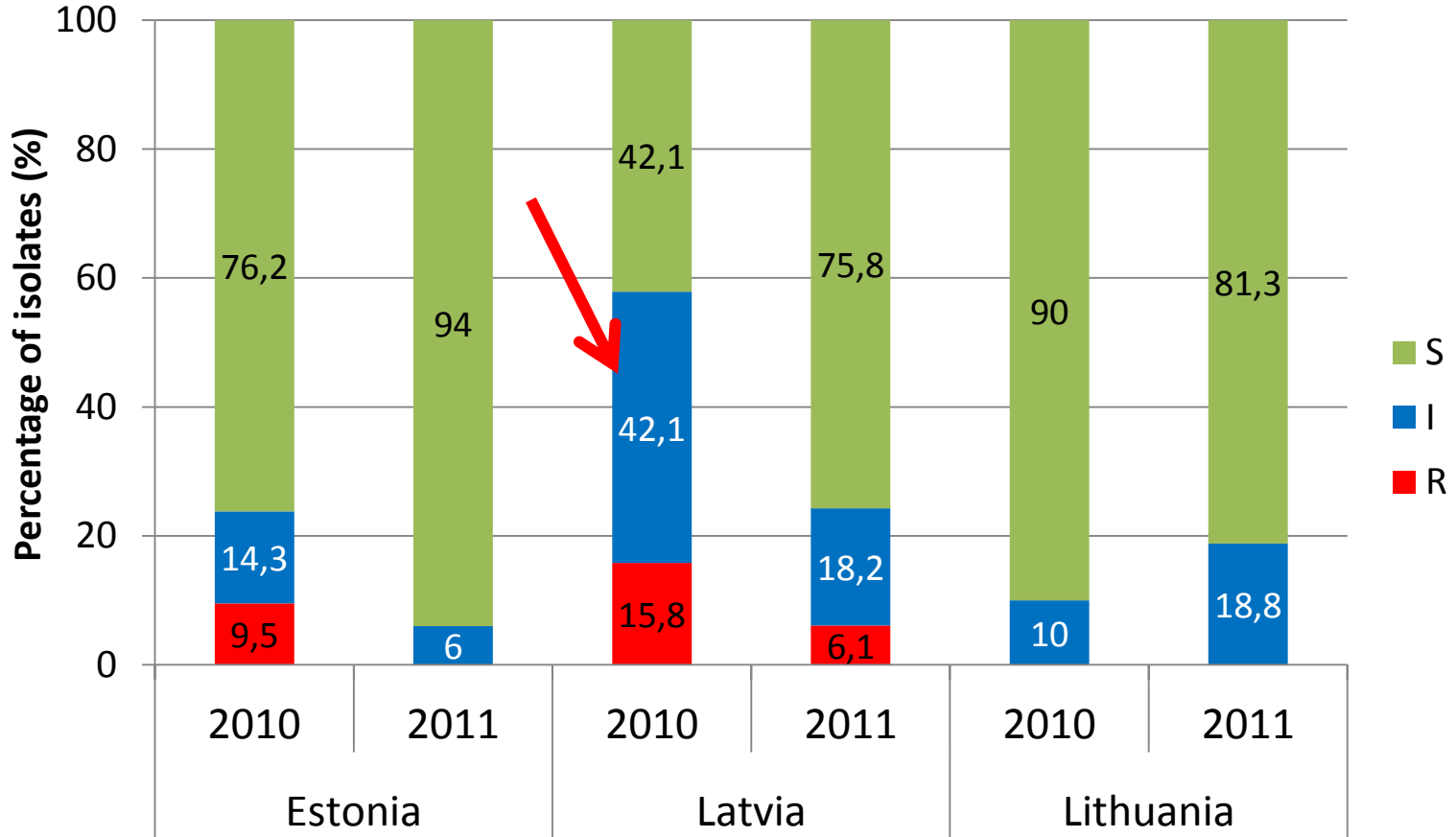
RESPONSE TO METALAXYL

Baltic countries (N=165)

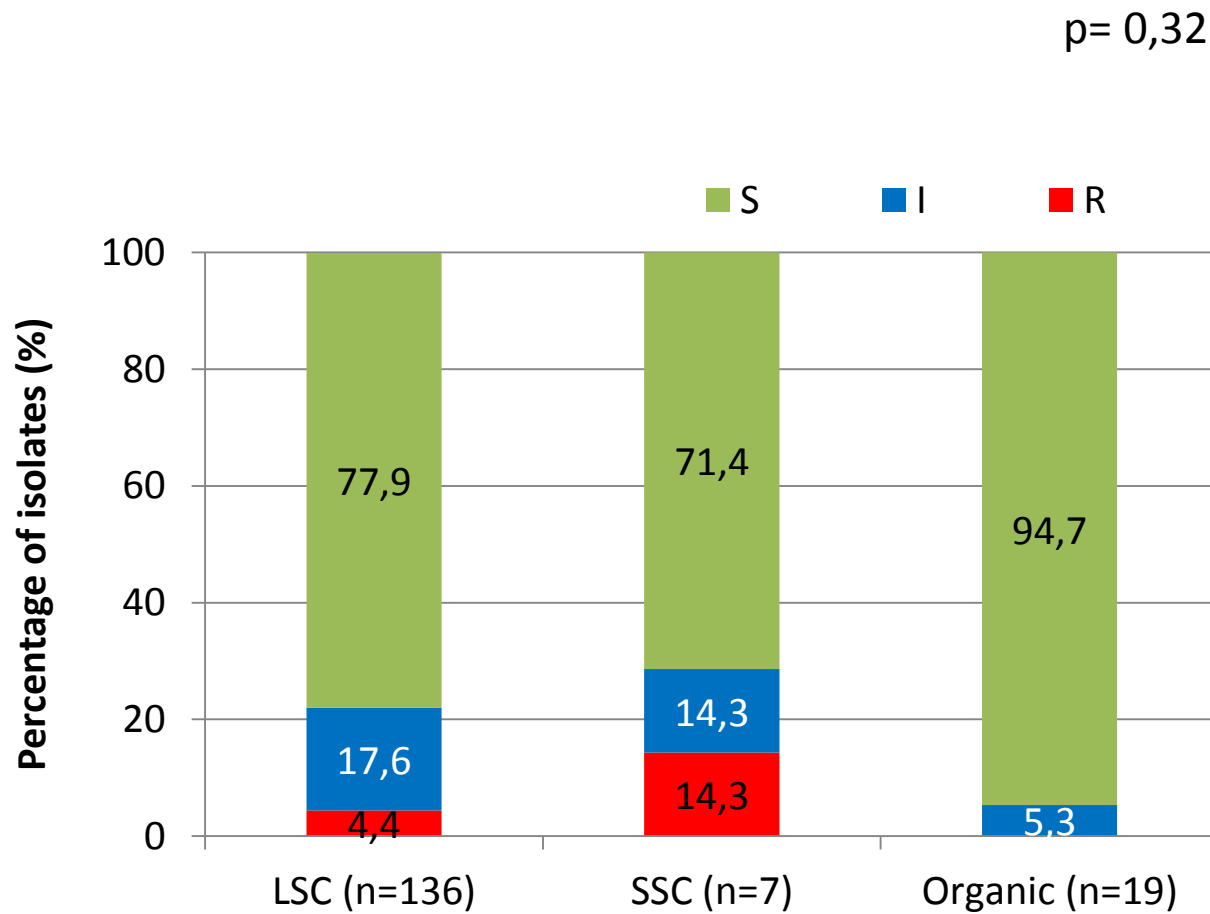


RESPONSE TO METALAXYL:YEARS

p= 0,008

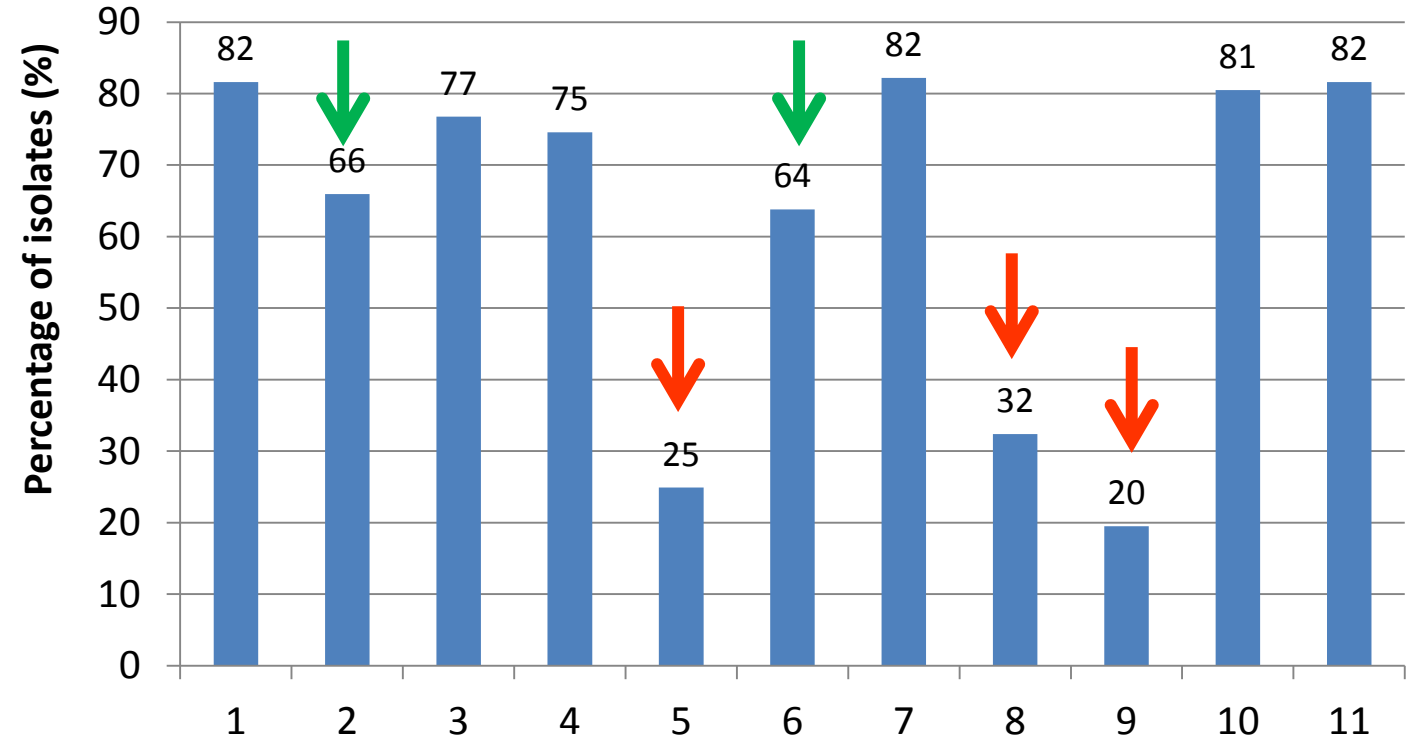


RESPONSE TO METALAXYL: different management practices



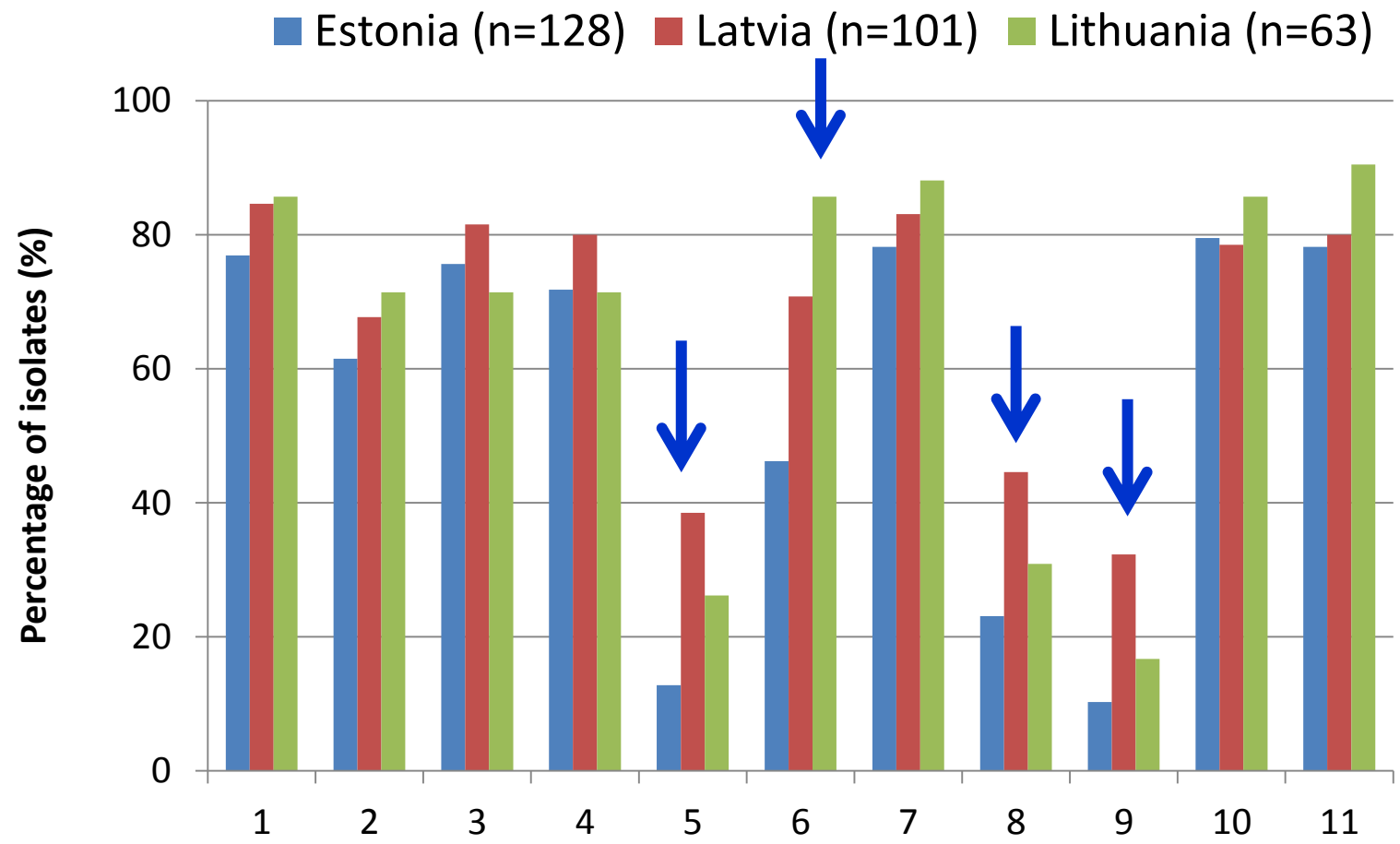
PATHOTYPES BASED ON BLACK'S R-gene DIFFERENTIALS

Baltic countries (n=292)



PATHOTYPES BASED ON BLACK'S R-gene DIFFERENTIALS

P<0,001



Estonia (n=110)

- 64 races was found
- 73% of races found only once
- Most common races:
 - **1.2.3.4.6.7.10.11** – 11 isolates
 - 1.3.4.7.10.11 – 10 isolates
 - 1.2.3.4.7.10.11 – 9 isolates

Latvia (n=96)

- 69 races was found
- 80 % of races found only once
- Most common races
 - 1.2.3.4.5.6.7.8.9.10.11 – 11 isolates
 - 1.2.3.4.5.6.7.8.10.11 – 4 isolates
 - **1.2.3.4.6.7.10.11** – 4 isolates

Lithuania (n=59)

- 43 races was found
- 74 % of races found only once
- Most common races
 - 1.2.3.4.5.6.7.8.9.10.11 – 4 isolates
 - 1.2.3.4.5.6.7.8.10.11 – 4 isolates
 - **1.2.3.4.6.7.10.11** – 4 isolates

Country	Shannon index (Hs)
Estonia	0.78
Latvia	0.88
Lithuania	0.88

CONCLUSIONS

- The both mating types were found from all Baltic countries.
- No significant differences are found on the frequency of A2 mating type between Baltic countries.
- The high and stable frequency of A2 isolates and the occurrence of both mating types on the same field indicates a potential for **sexual recombination** in Baltic countries.
- Metalaxyl sensitive isolates were dominated in all studied Baltic countries' populations. Still, there was differences between countries and years.
- Race diversity showed a high diversity in all three countries' populations.

ACKNOWLEDGEMENTS

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THANK YOU FOR YOUR ATTENTION!

