Perceptions on soil macrofauna in the agricultural field

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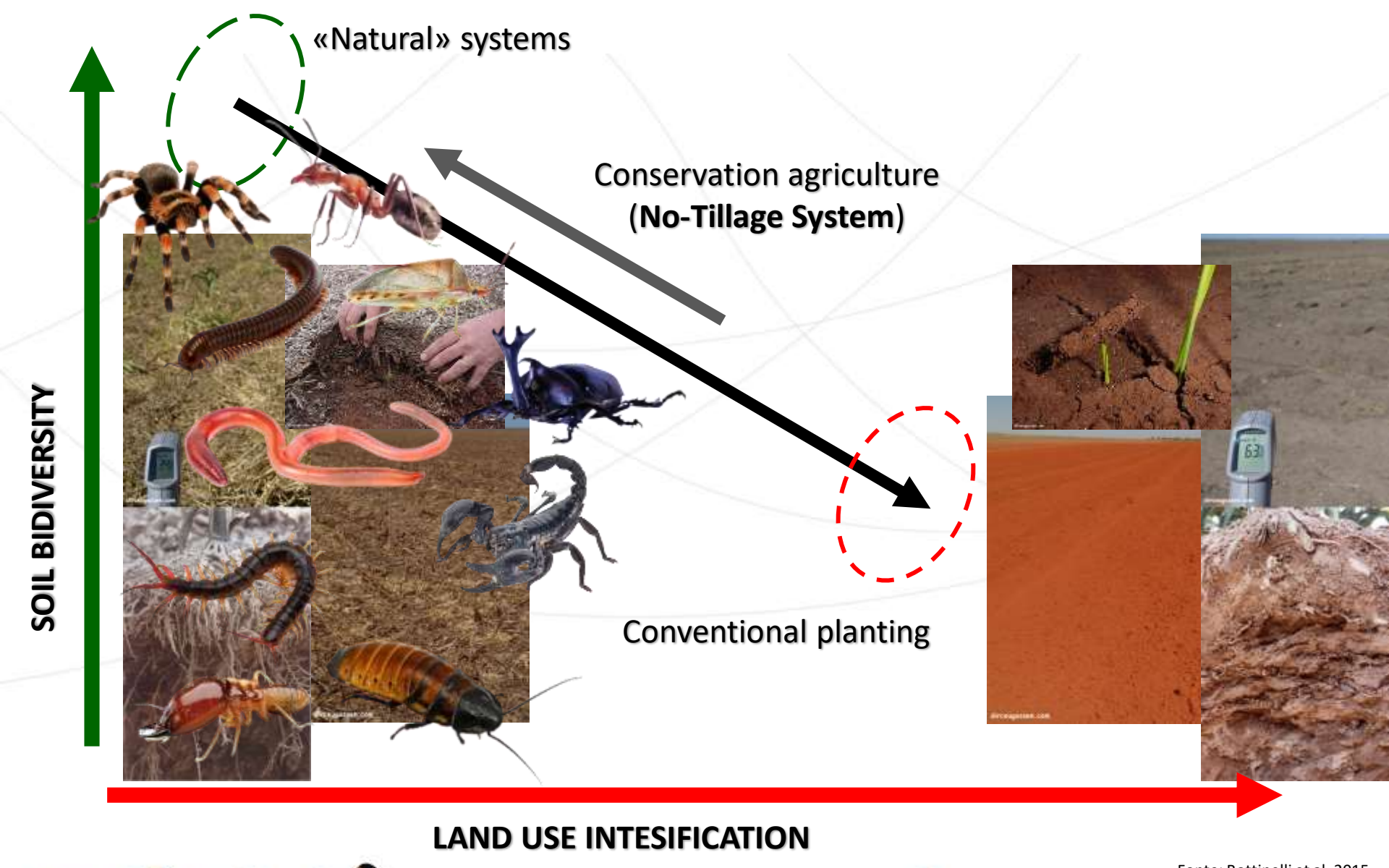
GLOBAL SYMPOSIUM ON SOIL BIODIVERSITY | 2-5 February 2021

AN UNIVERSE UNDER OUR FEET!



Fonte: Bottinelli et al, 2015

Aim

To evaluate the social perceptions concerning soil macrofauna among farmers and other stakeholders working in an agricultural context, mainly in Brazil.

Methodology

- ✓Two events: 11th & 16th National No-Tillage Meeting
- ✓Years: 2008 & 2018
- ✓Questionnaire application
  - 12 questions
  - Questions: interviewees profile, soil organisms and soil management

RESULTS:
Profile of the interviewees

Region of Origin

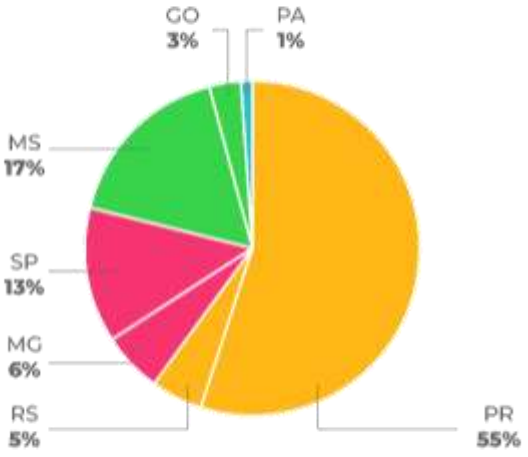
- 2008 & 2018:100% South America

- 2008

Region of Origin

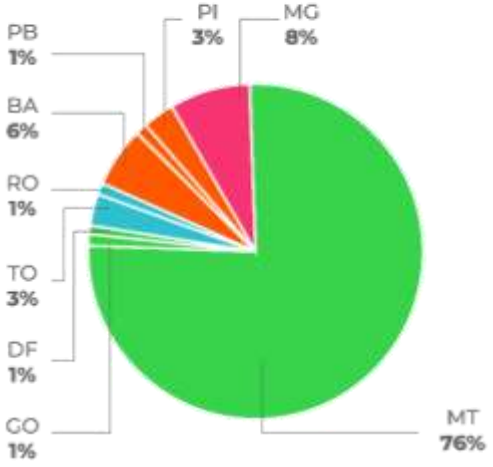
REGIONS OF ORIGIN IN BRAZIL:

2008



- SOUTH (60%)
- SOUTHEAST (19%)
- MIDWEST (20%)
- NORTH (1%)
- NORTHEAST (0%)

2018



- SOUTH (0%)
- SOUTHEAST (8%)
- MIDWEST (78%)
- NORTH (10%)
- NORTHEAST (4%)

Profession

	2008	2018
FARMER	**33%**	**31%**
RESEARCHER	14%	11%
PROFESSOR	2%	8%
AUTONOMOUS/ CONSULTANT	4%	11%
EXTENSIONIST	9%	0%
TECHNICAL ASSISTANCE	20%	14%
OTHER	18%	24%

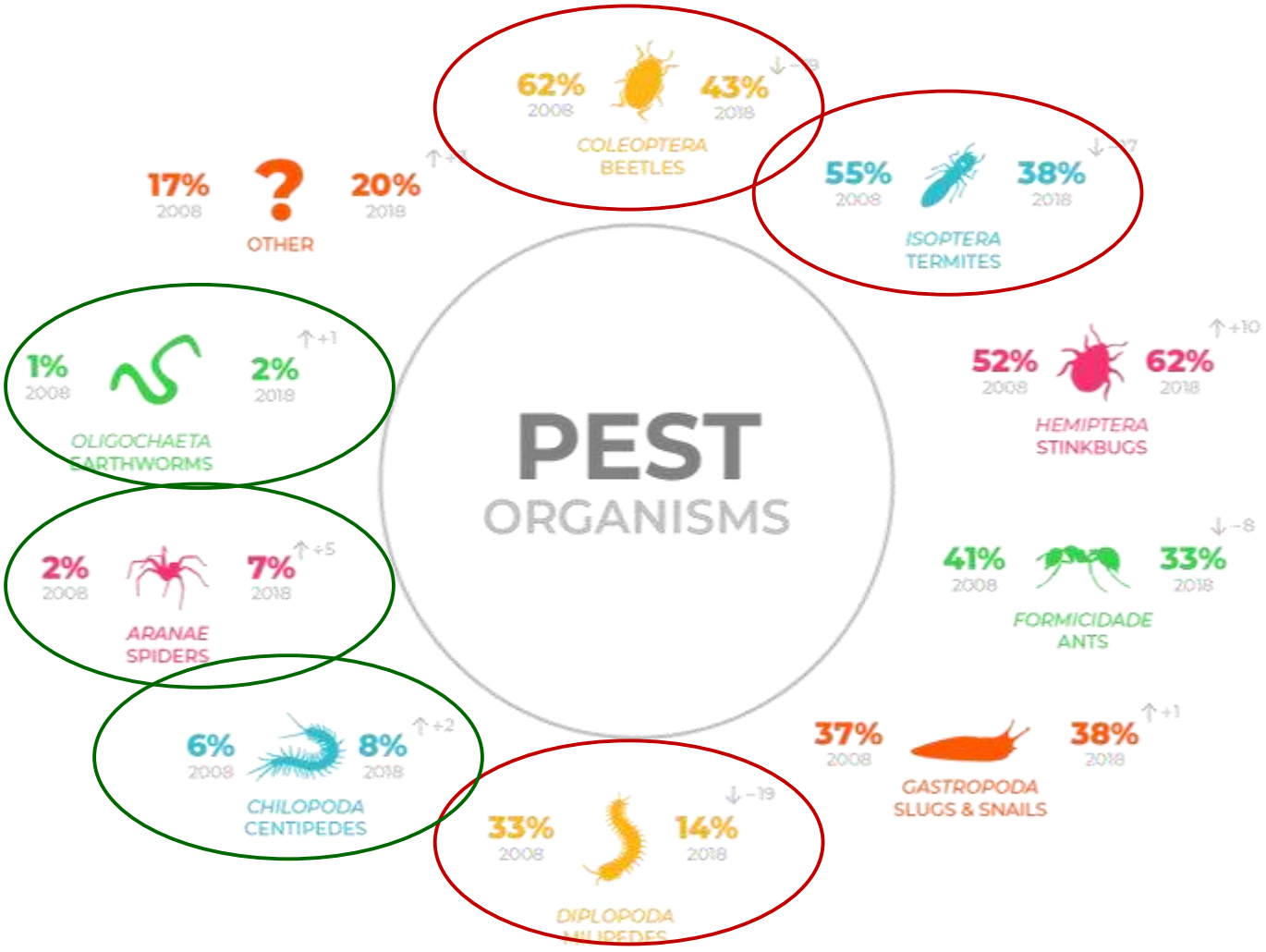
Size of the farm/land managened

	2008	2018
< 20 ha	13%	8%
21 to 50 ha	9%	0%
51 to 100 ha	5%	4%
101 to 500 ha	28%	10%
501 to 1000 ha	6%	10%
1001 to 2000 ha	3%	7%
> 2001 ha	36%	61%

RESULTS:

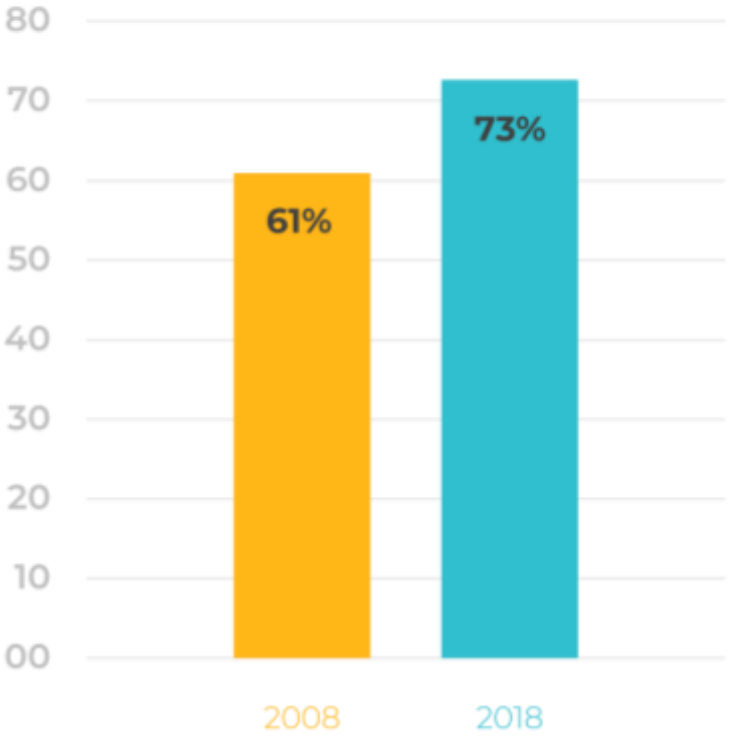
Organisms considered to be pests, their control and management practices

Organisms


62%
2008
43%
2018
COLEOPTERA
BEETLES
55%
2008
38%
2018
ISOPTERA
TERMITES
17%
2008
?
20%
2018
OTHER
1%
2008
2%
2018
OLIGOCHAETA
EARTHWORMS
PEST
ORGANISMS
52%
2008
62%
2018
HEMIPTERA
STINKBUGS
2%
2008
7%
2018
ARANAE
SPIDERS
41%
2008
33%
2018
FORMICIDADE
ANTS
6%
2008
8%
2018
CHILOPODA
CENTIPEDES
37%
2008
38%
2018
GASTROPODA
SLUGS & SNAILS
33%
2008
14%
2018
DIPLOPODA

Pest

OBSERVED AN INCREASE IN PESTS



REASON FOR THE PEST INCREASE

	2008	2018
PESTICIDES EXCESSIVE USE	25%	31%
MONOCULTURE	38%	52%
PEST RESISTENCE	21%	13%
OTHER	16%	3%

Management

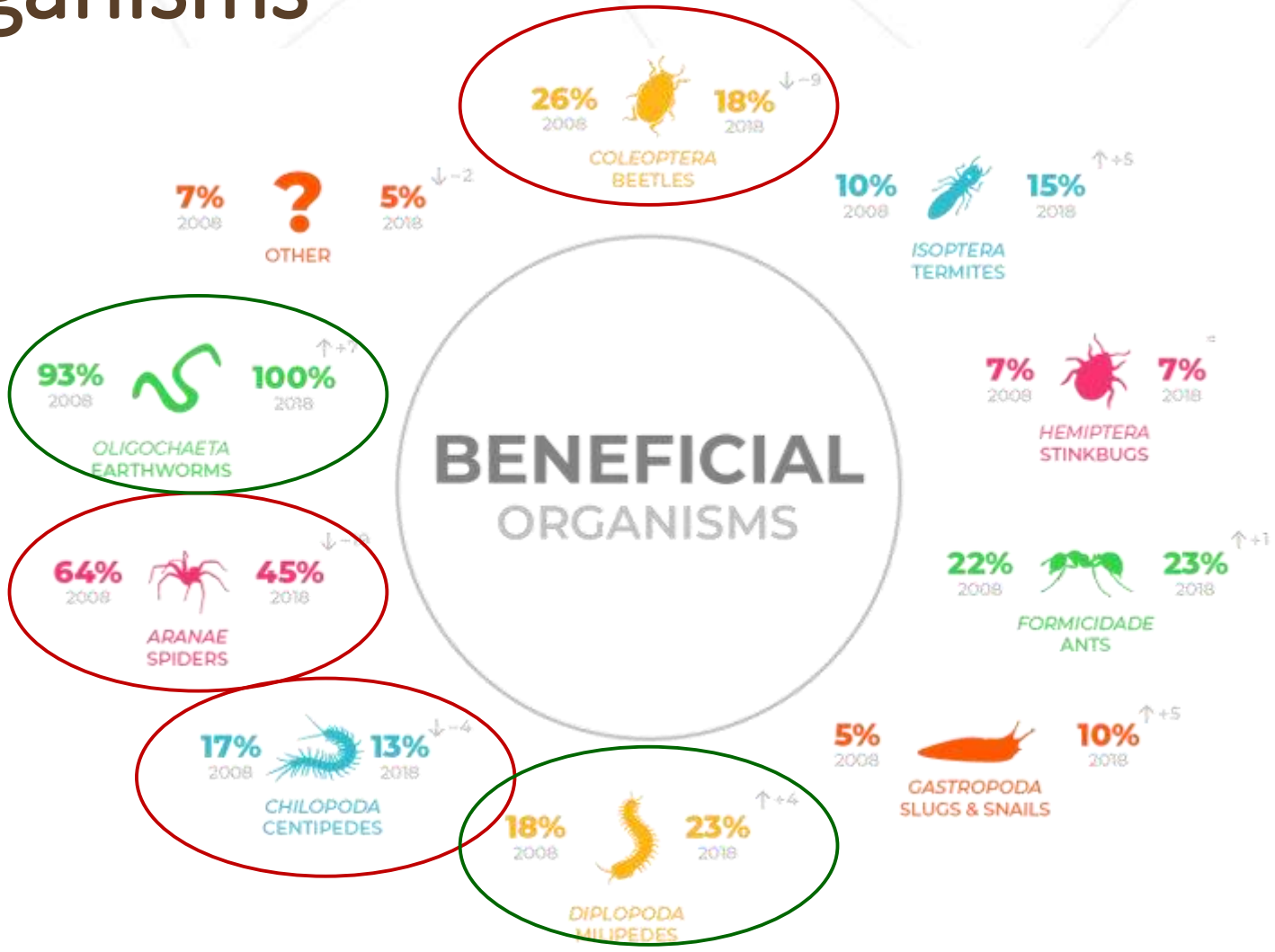
MANAGEMENT USED FOR PEST CONTROL

	2008	2018	
FALLOW	94%	48%	↓ -47
CHEMICAL	40%	49%	↑ +9
MECHANICAL	33%	39%	↑ +6
ALTERNATIVE	3%	17%	↑ +13
INTEGRATED PEST MANAGEMENT	3%	32%	↑ +29
BIOLOGICAL	0%	17%	↑ +17
NONE	3%	4%	↑ +1

RESULTS:

Organisms considered beneficial, good management practices and soil health

Organisms


26%
2008
18%
2018
↓−9
COLEOPTERA
BEETLES
7%
2008
5%
2018
↓−2
OTHER
10%
2008
15%
2018
↑+5
ISOPTERA
TERMITES
93%
2008
100%
2018
↑+7
OLIGOCHAETA
EARTHWORMS
BENEFICIAL
ORGANISMS
7%
2008
7%
2018
=
HEMIPTERA
STINKBUGS
64%
2008
45%
2018
↓−19
ARANAE
SPIDERS
22%
2008
23%
2018
↑+1
FORMICIDAE
ANTS
17%
2008
13%
2018
↓−4
CHILOPODA
CENTIPEDES
5%
2008
10%
2018
↑+5
GASTROPODA
SLUGS & SNAILS
18%
2008
23%
2018
↑+4
DIPLOPODA
MILIPEDES

Management

MANAGEMENT THAT FAVORS SOIL BIODIVERSITY

	2008	2018
GREEN MANURE	90%	77%
INTEGRATED PEST MANAGEMENT	15%	65%
TERRACING	22%	19%
CROP ROTATION	91%	89%
NO-TILLAGE SYSTEM	90%	82%
SUBSOILING	5%	6%
NATIVE FOREST FRAGMENTS	40%	29%
MINIMUM TILLAGE	11%	17%
OTHER	3%	0%

Soil health

HOW TO ASSESS SOIL HEALTH

	2008	2018
MANY ORGANISMS	80%	85%
MANY EARTHWORMS	51%	45%
SOIL COLOR	20%	37%
TEXTURE	15%	45%
SOIL AGGREGATION	51%	45%
INDICATOR PLANTS	21%	0%
OTHER	22%	0%

Conclusions

- ✓ Most soil macrofauna were not perceived as beneficial
- ✓ Increase in pest
- ✓ Decreasing trend in the application of good practices after 10 years is worrisome
- ✓ Highlights the need to foster capacity building and to stimulate dissemination of evidence regarding the importance and function of soil biodiversity to society

Thank you for your attention!

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