



Slovensko
partnerstvo
za tla

Ohranimo tla živa

VARUJMO NJIHOVO BIOTSKO PESTROST



Univerza v Ljubljani

Biotehniška fakulteta

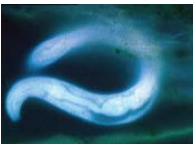
Marjetka
SUHADOLC



Svetovni dan tal, 4.12.2020

Živa tla = Zdrava tla

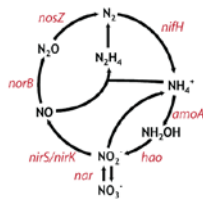
Obilje vrst omogoča stabilnost ekosistemov



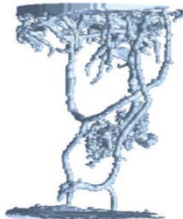
- Razgradnja organske snovi



- Kroženje hranil



- Oblikovanje strukture



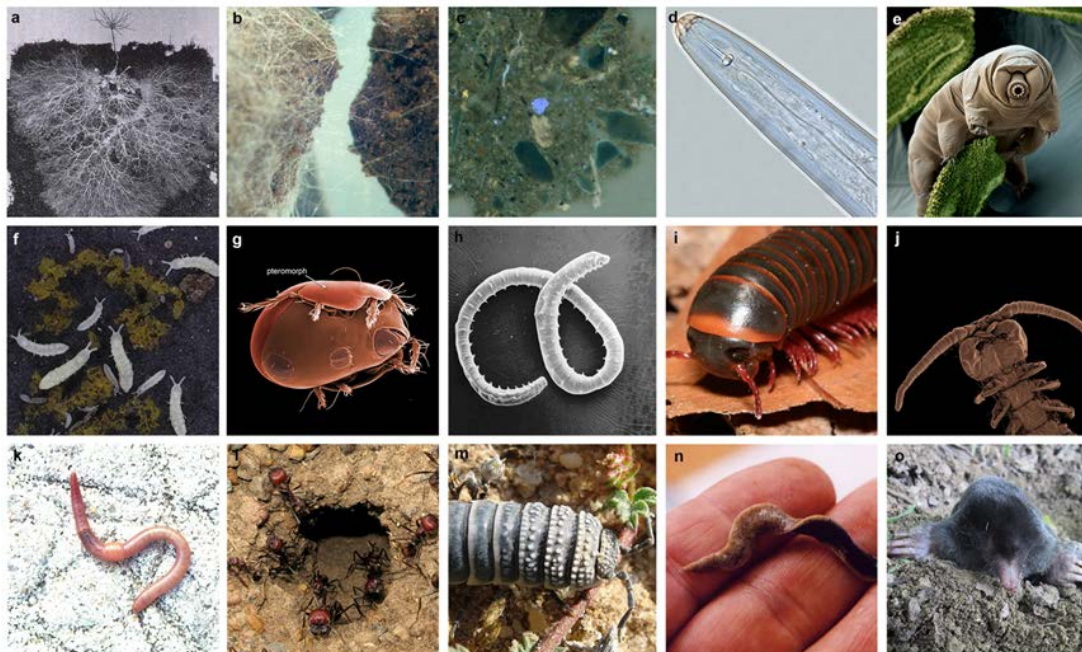
- Razgradnja onesnažil

- Pridelava hrane in krme
- Regulacija emisij toplogrednih plinov
- Regulacija vode
- Samočistilna sposobnost
- Regulacija patogenov in škodljivcev

ZDRAVA TLA

zdrava **hrana** - zdravo **okolje** - zdravi **ljudje** - zdravo **življenje**





Bardgett, Nature 2014

ALI POZNAMO BIOTSKO PESTROST NAŠIH TAL?

Biotske pestrosti tal v RS ne spremljamo.

Monitoring kakovosti tal v RS ne vključuje nobenega biotskega kazalca!

Pregled monitoring programov EU, ki vključujejo biotske kazalce kakovosti tal

Römbke in sod., 2016

Country	Program	Start	Biological parameter
Albania	Map of soils	1993	Nitrogen mineralization
Austria	Land Salzburg; others?	1987	Microbial biomass, earthworms, enchytraeids
Czech Republic	Basal soil monitoring scheme	1992	Nitrogen mineralization, Enzyme activity, mesofauna
England	Countryside survey (SQUID)	1978	Various microbial structural and activity endpoints, microarthropods, nematodes
Estonia	Environmental monitoring programme	1996	Microbial structural and functional diversity, earthworm diversity
France	Soil quality observatory (RMQS)	1986	Nitrogen and carbon mineralization, enzyme activity, mesofauna
France	Soil quality observatory – biodiversity (Bretagne)	2006	Microbiology, meso- and macrofauna, genotypes
France	ECOMIC-RMQS	2006	Microbiology (genotypes)
France	RENECOFOR (forest)	2008	Macrofauna
Germany	Soil monitoring sites (BDF); in ca. 5 Länder	1986	Microbial respiration/ biomass, enchytraeids, microarthropods, myriapods, earthworms
Hungary	National basic monitoring, forest observation	1992	Microbiology (mainly soil respiration)
Hungary	Forestry observation points	1992	Microbiology (mainly soil respiration)
Ireland	Cre-Bio survey	2006	Micro-arthropods, nematodes, earthworms
Italy	MoSYSS project and five regional programs	2010	Microbial biomass and activity (e.g. soil respiration), microarthropods, ciliated protozoa
Latvia	Natl. agricultural land monitoring program	1992	Mesofauna
Lithuania	Natl. environmental monitoring program	1999	Nitrogen mineralization, enzyme activity
Netherlands	Natl. soil quality monitoring program	1993	Various microbial structural and functional parameters, micro-, meso- and macrofauna
Romania	National?	1992	Microbiology
Switzerland	National soil observation	2004	Microbial biomass, fungal and bacterial TRFLp and other microbial parameters

Večina EU držav ima dolgoletne sete podatkov

biodiverzitete tal zbranih v okviru nacionalnih monitoringov.



- ❑ Evropska zbirka talnih bioloških podatkov za varstvo tal
EUropean Soil-Biology Data Warehouse for Soil Protection
- ❑ Meta-podatki, znanje in analitična orodja za razumevanje in trajnostno **upravljanje s tlemi**
 - spremljanje in **vrednotenje** biodiverzitete tal;
 - pogled v **funkcionalne** povezave v tleh za oceno stanja **ekosistemskih storitev**;
 - **napovedovanje** sprememb biodiverzitete tal;
 - ekološke **presoje**.



Biodiverzитета tal – za potrebe politike

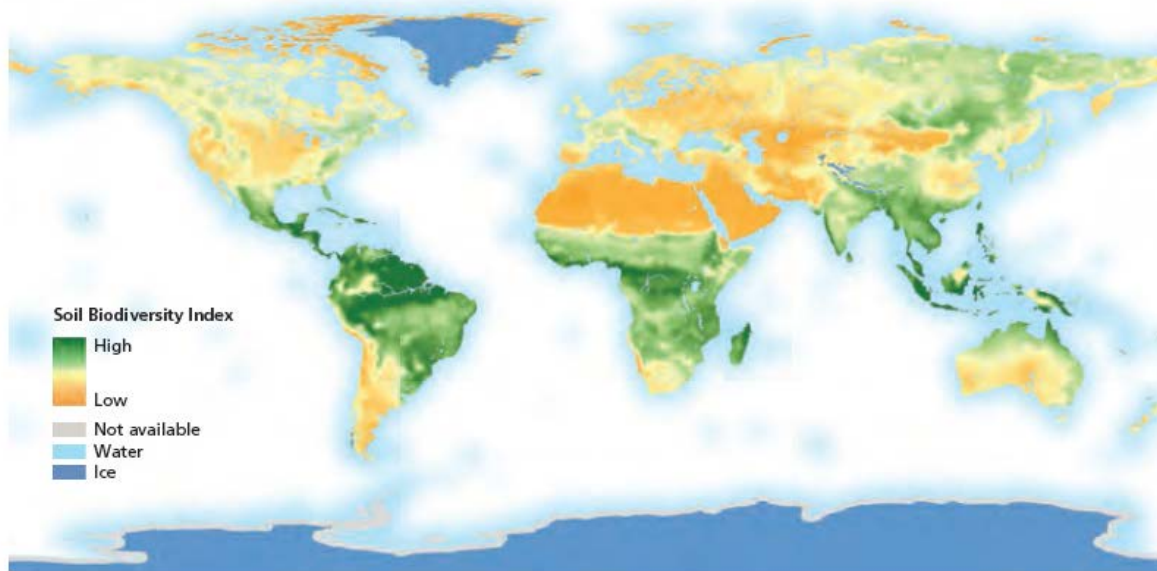
	KMETIJSKA						INDUSTRIJSKA						OKOLJSKA					
	CAP	Plant Protect. Products Direct.	Pesticide Use Directive	Biocidal Products Regulation	Nitrates Directive	GMO Directive	Industrial Emissions Directive	Mining Waste Directive	Landfill Directive	Waste Directive	Sewage Sludge Directive	Carbon Storage Directive	Renewable Energy Directive	Environmental Liability Direct.	Biodiversity Strategy	Forest Action Plan	Habitat Directive	Water Framework Directive
Okolje, Ekosistem	X		X	X			X	X	X	X		X	X	X			X	
Tla, Kakovost tal	X			X	X	X	X	X	X	X	X	X	X		X	X		X
Biodiverzитета/Favna/Vrste	X		X	X		X		X		X	X	X	X	X	X	X		
Prehranjevalna veriga						X												
Genetska pestrost	X														X			
Tujerodne/Invazivne vrste	X												X		X			
Ekosistemske storitve / Funkcionalnost tal (splošna)	X					X							X		X			
Funkcije tal / Ekosistemske storitve (specifične)	X				X	X										X		
Odpornost ekosistema	X															X		
Ekotoksikologija/Ocena Tveganj		X																
Monitoring	X						X				X		X		X			
Baze podatkov	X													X				

Biodiverziteteta tal – za potrebe politike

	KMETIJSKA				INDUSTRIJSKA				OKOLJSKA				
Definiranje, ki temelji na bazi podatkov:													
→ (lokacijsko specifičnih) naravnih ozadij, mejnih vrednosti													
→ časovne dinamike													
→ (lokacijsko specifičnih) vplivnih dejavnikov													
<u>prisotnosti</u> talne biote													
<u>sprememb/izgub</u> biotske pestrosti tal													
→ Funkcij talne biodiverzitetete													
Baze podatkov	X										X		

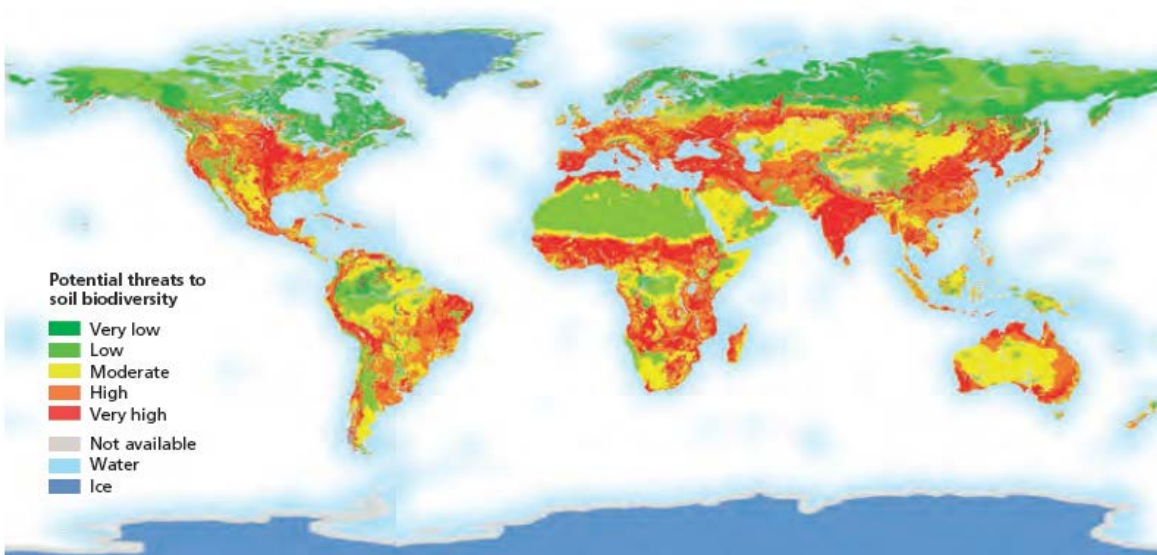
<https://eudaphobase.eu>
<https://portal.edaphobase.org>

Map of the Soil Biodiversity Index



Source: Orgiazzi et al., eds., 2016. © European Union, 2016.

Map of potential threats to soil biodiversity

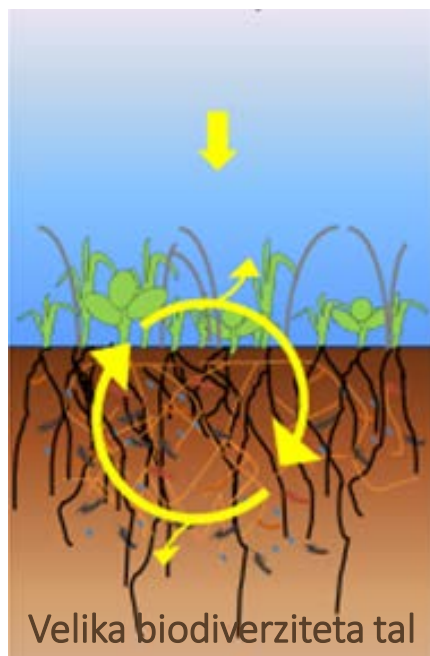


Source: Orgiazzi et al., eds., 2016. © European Union, 2016.

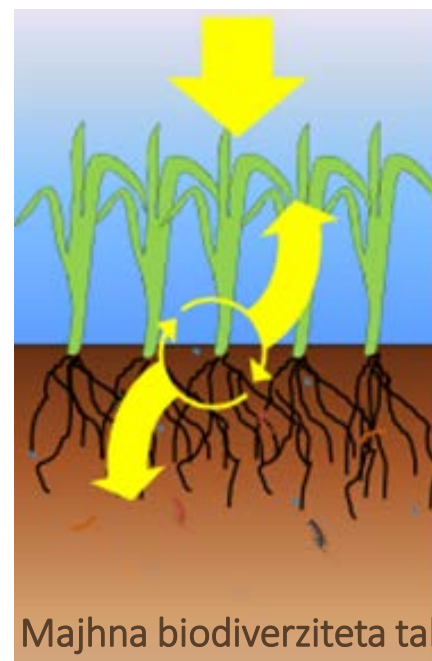
- Talni organizmi v agroekosistemih posebno ogroženi!

Koncept **ekološke** intenzifikacije v kmetijstvu

Ekstenzivni sistem



Intenzivni sistem



Trajnostni sistem



ekološka paradigma

Ohranimo tla živa!

- Tla so živa, izvajajo številne funkcije, ki so **vitalnega** pomena za **preživetje človeka** in **ekosistemov**.
- **Monitoringi** - poznavanje stanja biodiverzitete tal omogoča **usmerjanje** ukrepov za varovanje talne biote in njene pestrosti.
- Nujna **ekološka intenzifikacija** kmetijstva.

