

**Prof.dr.sc. KISIĆ IVICA, dipl.ing.agr.**

# **Odnos plodnosti tla i prinosa uzgajanih usjeva**

## **RJEŠENJE ZA PRIJELAZ NA AGROEKOLOGIJU U HRVATSKOJ**

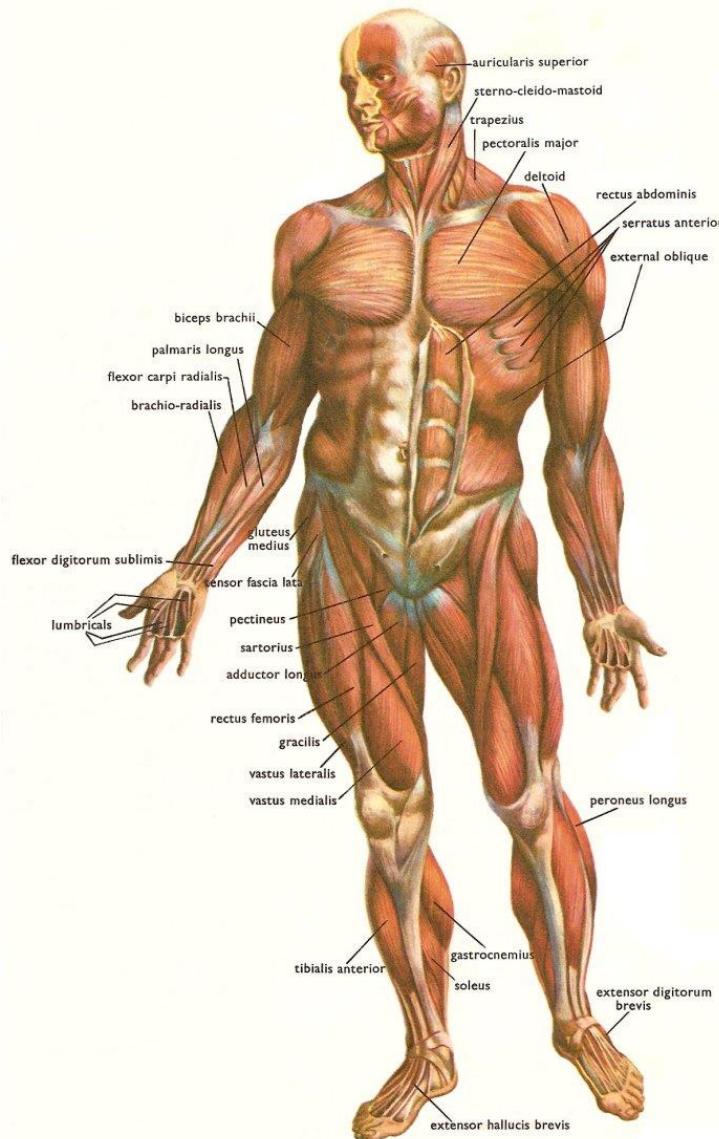
**Smanjenje upotrebe pesticida povećanjem primjene  
integrirane kontrole nametnika uz biokontrolu**



**SVEUČILIŠTE U  
ZAGREBU**



Zagreb, 28. 10. 2022.



## Soil – The Living Skin of Planet Earth



The soil forms the outer skin of the land masses of Planet Earth. This thin veneer of living material is sometimes only a few centimetres thick and rarely thicker than two or three metres, but it has critical influence on what happens on the surface of the Earth. Soil is our life-support system. It provides anchorage for roots; holds water long enough for plants to make use of it; and holds nutrients, making them accessible to support life. It's home to myriad micro-organisms, that accomplish suites of biochemical transformations from fixing atmospheric nitrogen to the decomposition of organic matter, and to armies of microscopic animals - as well as earthworms, ants and termites that graze upon roots, other organisms and organic matter. Most biodiversity is in the soil, not above ground.

### Different places – different soils

Soils vary from place to place – not randomly but in a systematic way: soils of the tundras are very different from those in the tropics, those of steeplands are very different from those of the plain, and they vary over short distances. As you move from hill crest to valley bottom you will often find soils which look different and, also, behave differently, for instance when we try to grow crops or build a road or house. This variability reflects the soil's unique position in relation to the other components of planet earth – at the interface between the atmosphere, lithosphere, hydrosphere, and biosphere.

- Different places – different soils
- Soil – a vulnerable resource
- Soil – the need for reliable information

**Nazivi za zemljište su sljedeći: na francuskom – terre, engleskom – land (landscape), ruskom – земля, talijanskom – terreno, nizozemskom – landen, poljskom – kralina ili parcela i njemačkom – erde. Treba reći da se u srpskom jeziku izraz zemljište koristi kao naziv za tlo, a zemlja je naziv za zemljište.**



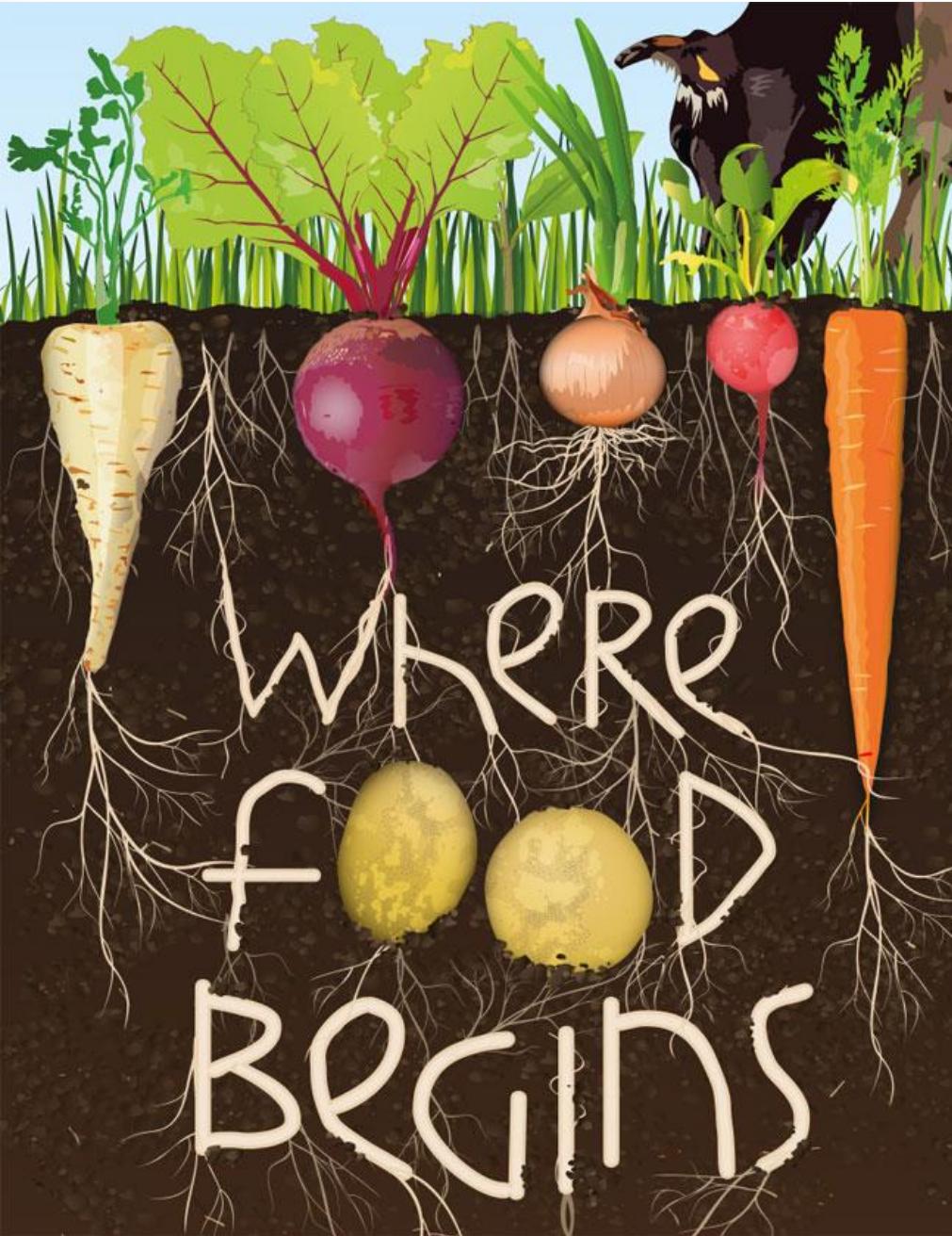
Zagreb, 28. 10. 2022.

Kisić, 2014.

Nazivi za tlo u stranim jezicima: počv (bugarski), tlo (bosanski), púda (češki), Εδαφος (grčki), jord (danski, norveški i finski), boden (njemački), soil (engleski), grundo (esperanto), suelo (španjolski), sol (francuski), talaj (mađarski), suolo (talijanski), počva (ruski i makedonski), bodem (nizozemski), gleba (poljski i bjeloruski) solo (portugalski), sol (rumunjski), poda (slovački), prst (slovenski), zemljište (srpski), toprak (turski) i grunt (ukrajinski).



2007 3 27



WHERE  
FOOD  
BEGINS

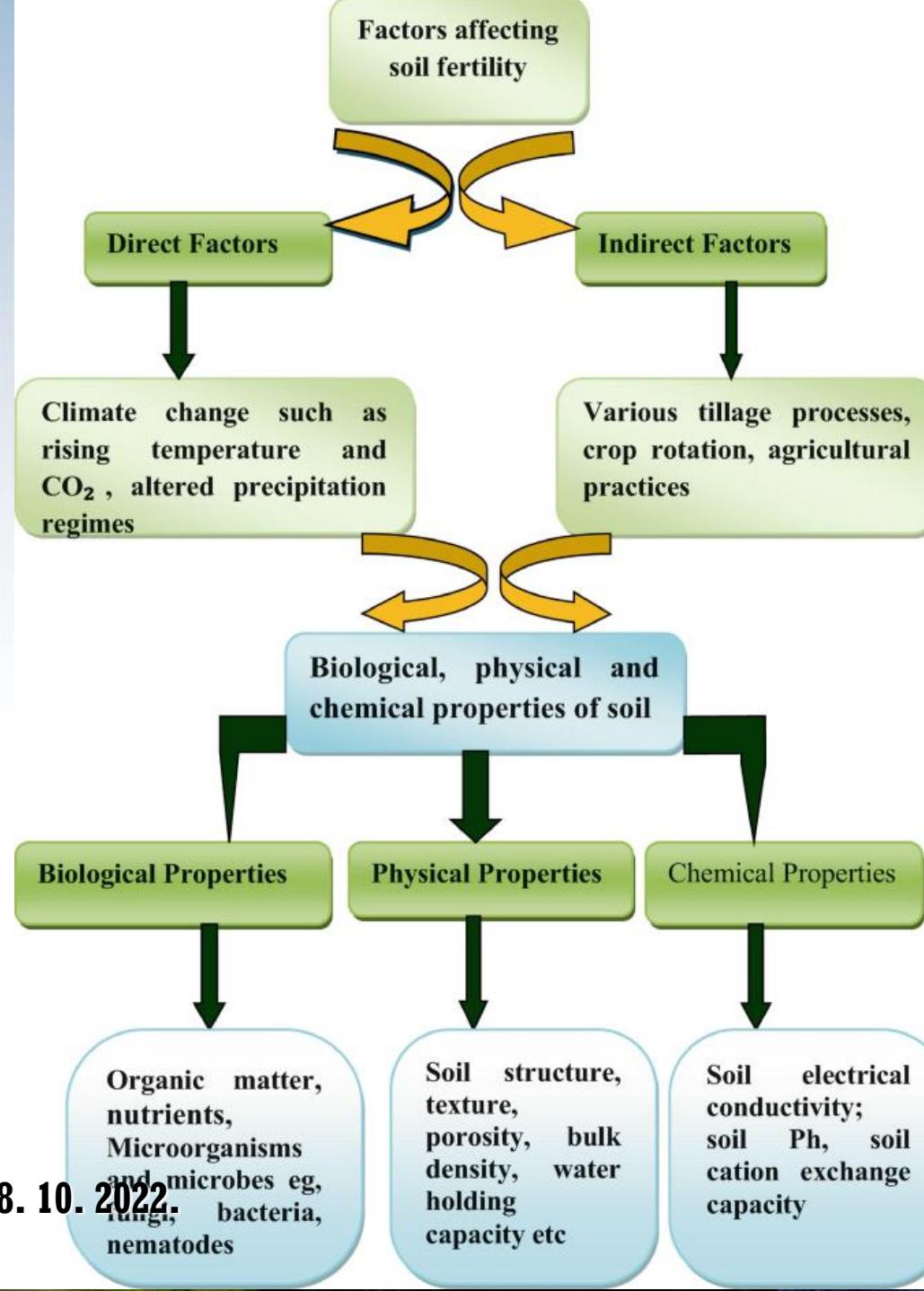
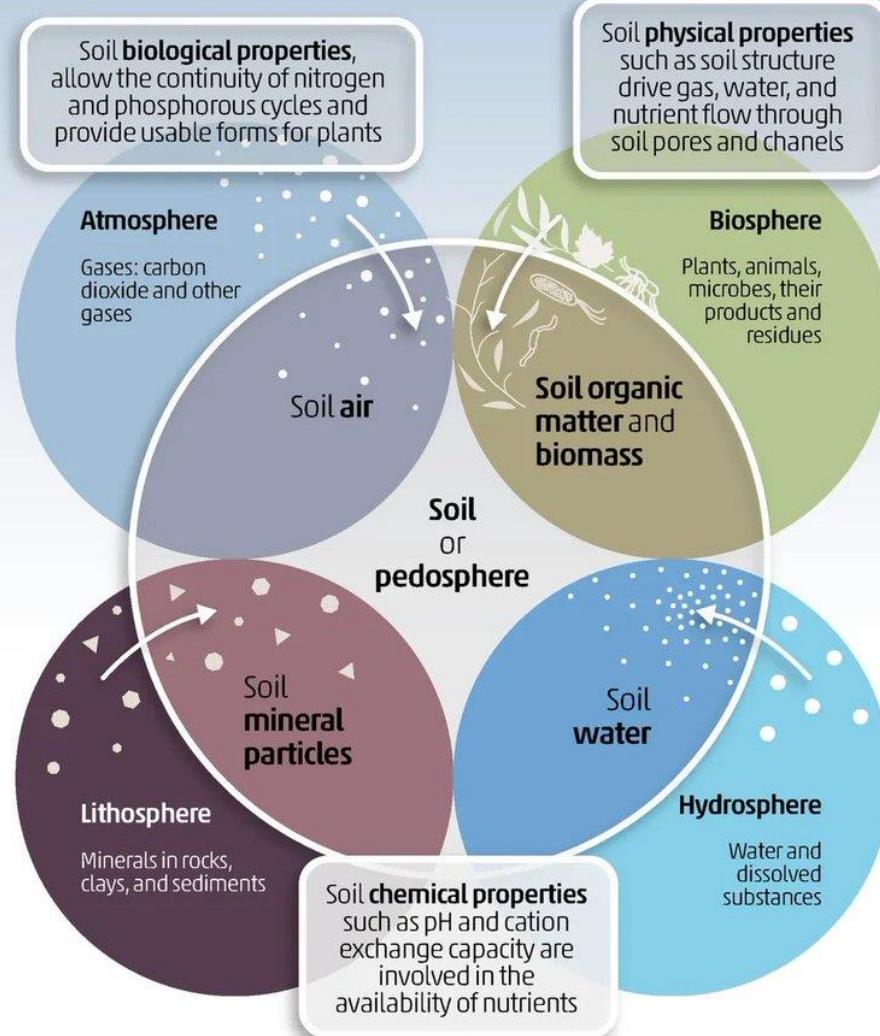
# SOILS, A FOUNDATION FOR FAMILY FARMING

DISCOVER SOIL'S FUNCTIONS AND  
THE RISKS IT'S RUNNING RIGHT NOW!



OF OUR FOOD COMES FROM OUR SOIL

# Integral concept of soil fertility

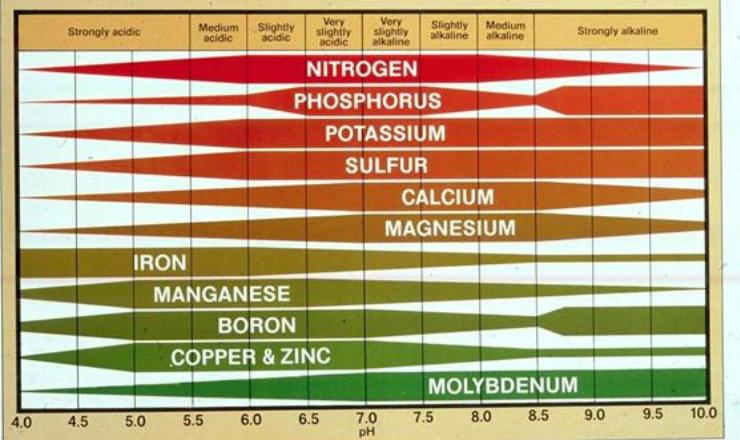


Food and Agriculture Organization of the United Nations



Zagreb, 28. 10. 2022

THE INFLUENCE OF SOIL pH ON THE  
AVAILABILITY OF 12 PLANT NUTRIENTS



Zagreb, 28. 10. 2022.

Mesić i sur., 2008.

# pH tla, CaCl<sub>2</sub> – Ozima pšenica - 23. 06. 2008.

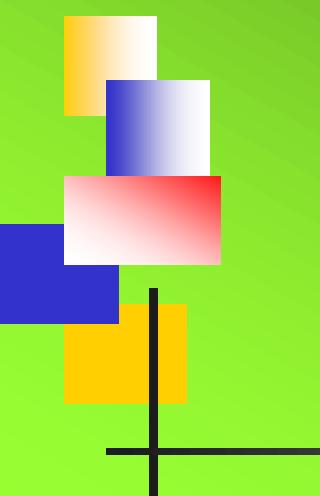
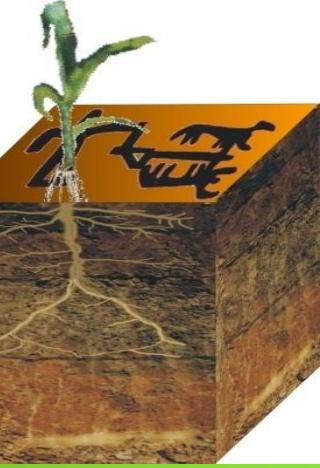
5,72

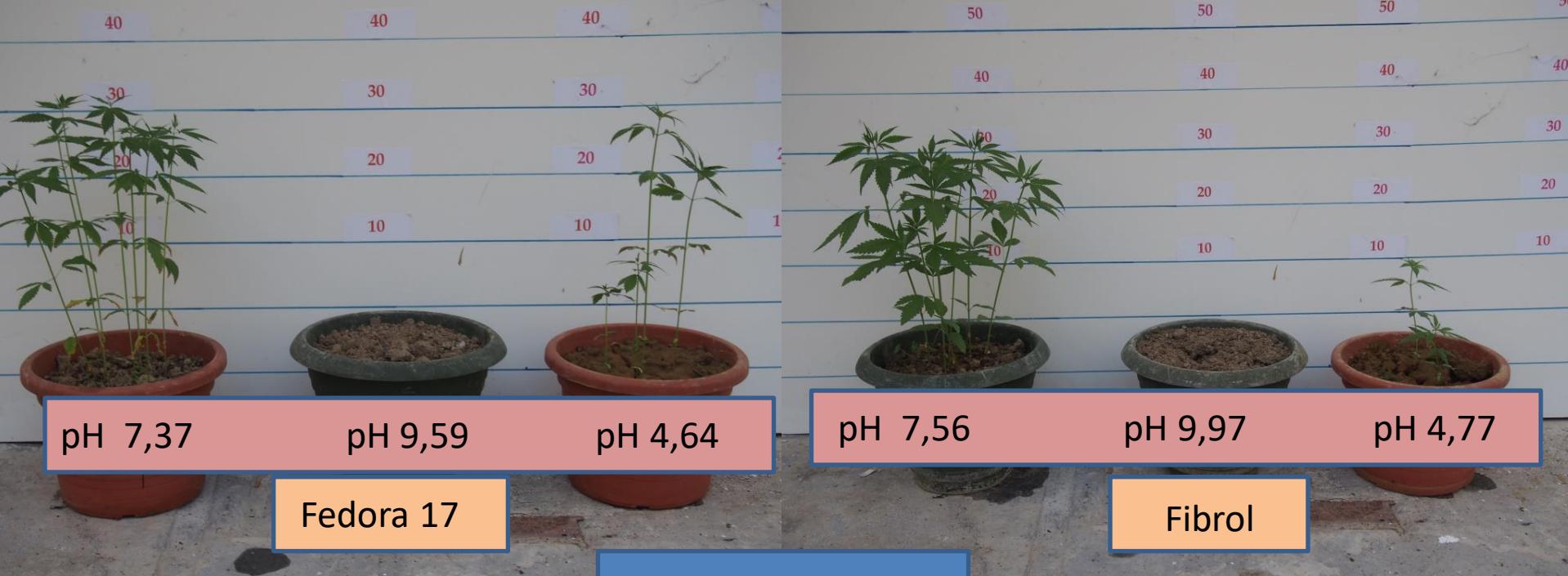
10,61

9,14

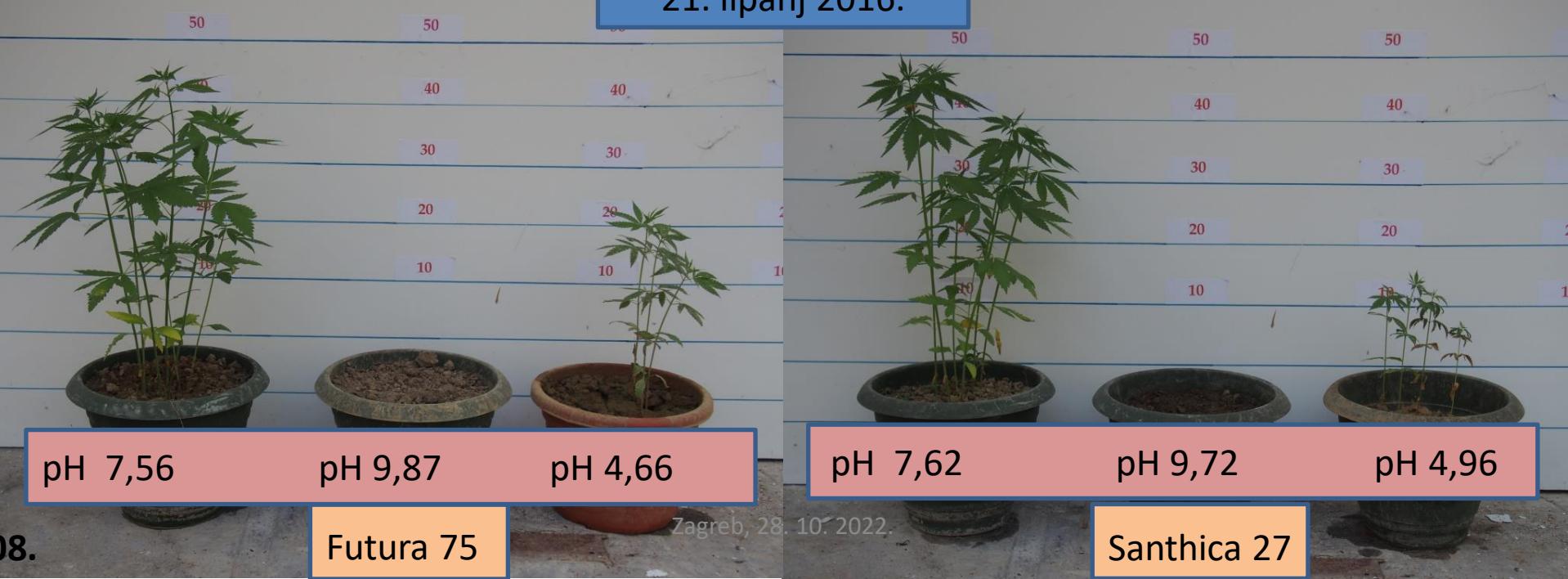
8,39

8,09





21. lipanj 2016.





Kisić, 2014.



Zagreb, 28. 10. 2022.



Kisic i sur., 2018.



Zagreb, 28. 10. 2022.

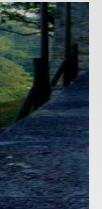


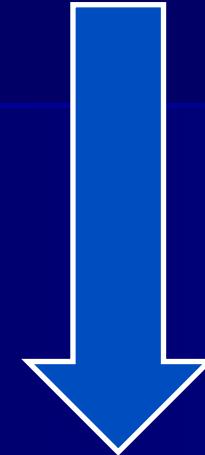




Photo by Kisić, 2008.

Zagreb, 28. 10. 2022.

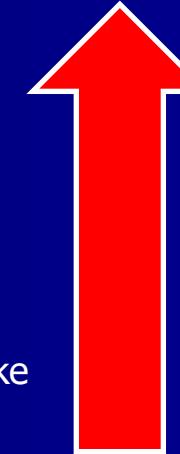
# Umjesto zaključka: Bilanca hranjiva u tlu



- Mineralna gnojiva
- Organska gnojiva
- Zelena gnojidba
- Podzemni i nadzemni biljni ostaci
- Mikrobiološka aktivnost tla
- Sjemenski/sadni materijal
- Suho i mokro zračno taloženje
- Sedimentacija ili premještanje tla
- Kapilarni uspon podzemne vode



- Žetva
- Odnošenje nadzemne biljne mase
- Spaljivanje biljnih ostataka
- Ispaša stokom
- Ispiranje u podzemne slojeve
- Mikrobiološka aktivnost tla
- Imobilizacija u tlu u biljci nepristupačne oblike
- Volatizacija/denitrifikacija
- Erozija vodom i vjetrom



Hvala na pažnji,  
za više informacija

[ikisic@agr.hr](mailto:ikisic@agr.hr)