Vahekultuuride ja teenuskultuuride roll teraviljakasvatuses

Sander Hiire / Mäemõisa OÜ

03.12.2024 / Tartu

MÄEMÕISA MULLAELU

Taastava põllumajanduse põhimõtted
(Rick Clark'i sõnastuses):

1. Vähenda häiringuid (keemilisi ja füüsikalisi) (*minimize disturbance*)
2. Suurenda mitmekesisust (*maximize diversity*)
3. Elavad juured! (*living roots*)
4. Kaitse mulda (*armor the soil*)
5. Kontekst (*context*) – "see sõltub"
6. Loomad (*livestock*) – nii maa peal kui mullas
7. Pühendumine (*commitment*)

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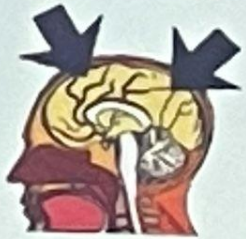
When do we need to do tillage?

- A south American study measured farmers decisions about soil compaction versus reality
- The result was 72% of Compaction is inside our heads© not in the soil
- When you plough/deep cultivate you also compact back to the depth of ploughing, it's a cycle of tillage that needs tillage
- I am not here to say tillage is not necessary but with such rgy intensive work that the wider environment, e to be smarter!

Plantio Direto

Zona de Descompactação



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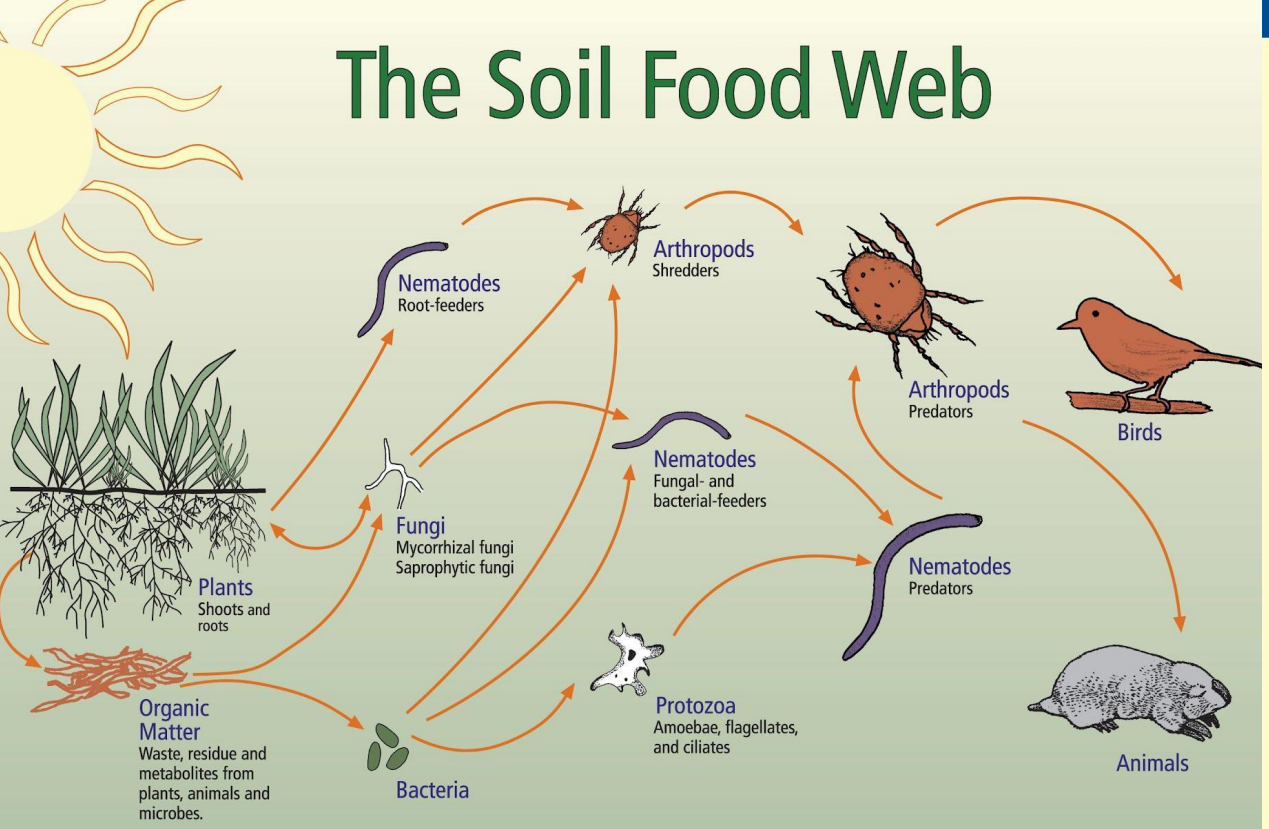
The Soil Food Web



A Soil Food Web Glossary

Arthropods Invertebrate animals with jointed legs. They include insects, crustaceans, sowbugs, arachnids (spiders), and others.

Bacteria Microscopic, single-celled organisms that are mostly non-photosynthetic. They include the photosynthetic cyanobacteria (formerly called blue-green algae) and actinomycetes (filamentous bacteria that give healthy soil its characteristic smell).

Fungi Multi-celled, non-photosynthetic organisms that are neither plants nor animals. Fungal cells form long chains called hyphae and may form fruiting bodies such as mold or mushrooms to disperse spores. Some fungi, such as yeast, are single-celled.

Saprophytic fungi: Fungi that decompose dead organic matter.

Mycorrhizal fungi: Fungi that form associations with plant roots. These fungi get energy from the plant and help supply nutrients to the plant.

Grazers Organisms, such as protozoa, nematodes, and microarthropods, that feed on bacteria and fungi.

Microbes An imprecise term referring to any microscopic organism. Generally, "microbes" includes bacteria, fungi, and sometimes protozoa.

Mutualists Two organisms living in an association that is beneficial to both, such as the association of roots with mycorrhizal fungi or with nitrogen-fixing bacteria.

Nematodes Tiny, usually microscopic, unsegmented worms. Most live free in the soil. Some are parasites of animals or plants.

Protozoa Tiny, single-celled animals, including amoebas, ciliates, and flagellates.

Trophic levels Levels of the food chain. The first trophic level includes photosynthesizers that get energy from the sun. Organisms that eat photosynthesizers make up the second trophic level. Third trophic level organisms eat those in the second level, and so on. It is a simplified way of thinking about the food web. In reality, some organisms eat members of several trophic levels.

First trophic level:
Photosynthesizers

Second trophic level:
Decomposers
Mutualists
Pathogens, Parasites
Root-feeders

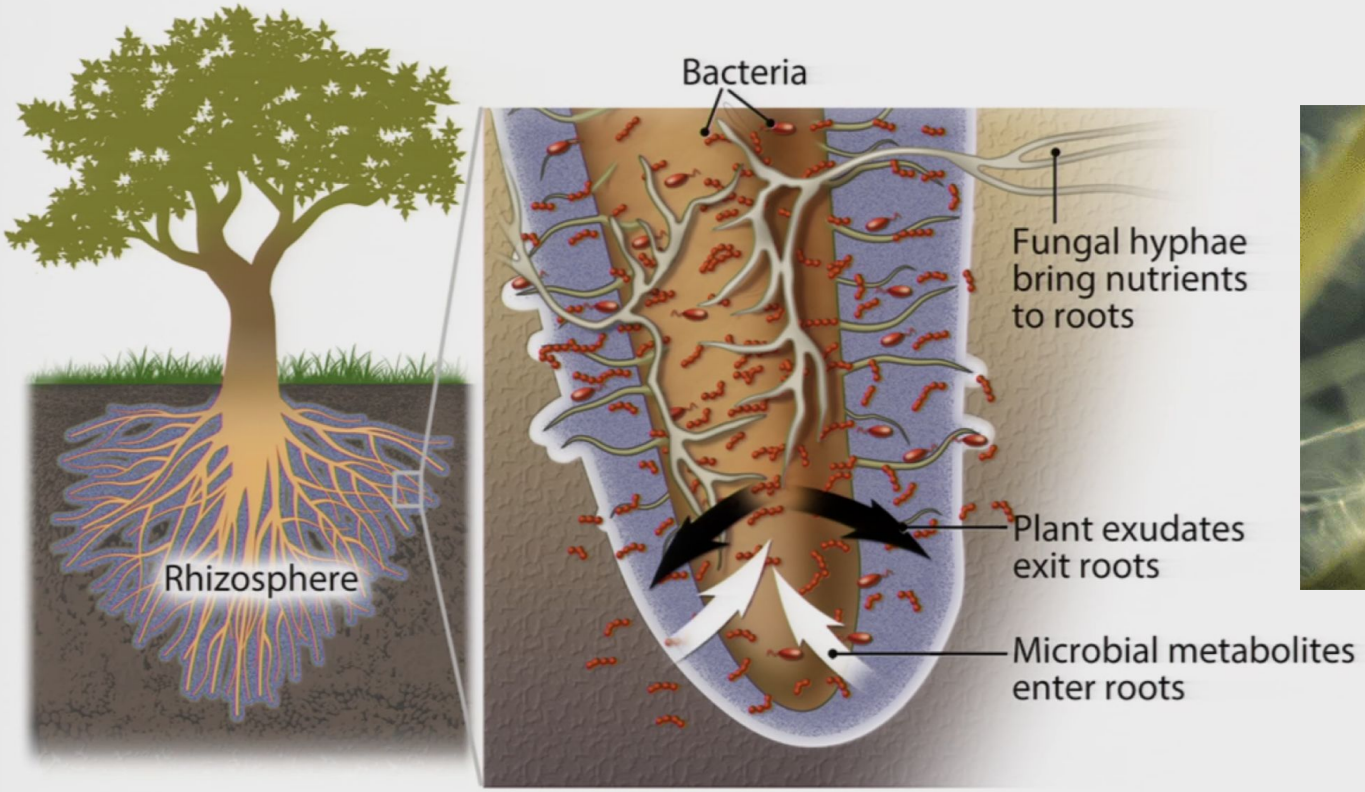
Third trophic level:
Shredders
Predators
Grazers

Fourth trophic level:
Higher level predators

Fifth and higher trophic levels:
Higher level predators

https://www.nrcs.usda.gov/Internet/FSE_MEDIA/nrcs142p2_049822.jpg

The rhizosphere is a biological bazaar where microbes and plants trade nutrients, metabolites, and exudates



35-50%

Toidab taim mulda

Close-up of arbuscular mycorrhizal fungi connecting roots of plant hosts. Photo credit: Yoshihiro Kobae

Nurture Nature with System Synergies

No Tillage

Minimum carbon loss

Cover Crops

Maximum carbon input

Carbon management

Sustainability

Dr. Don Reicosky
ARS, Morris, MN

South Dakota
Soil Health Coalition

Managing Soil Compaction for Better Strip-Till Outcomes

Cover Crops Improve Trafficability

Due to either reduced moisture and/or better structure

Shannon Osborne, USDA-ARS, Brookings, SD

9th Annual NATIONAL STRIP-TILLAGE CONFERENCE July 28-29, 2022 Iowa City, Iowa

Jodi DeJong-Hughes
Regional Extension Educator
University of Minnesota Extension

THE 2022 NATIONAL STRIP-TILLAGE CONFERENCE IS SPONSORED BY LAFORGE:

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Managing Soil Compaction for Better Strip-Till Outcomes

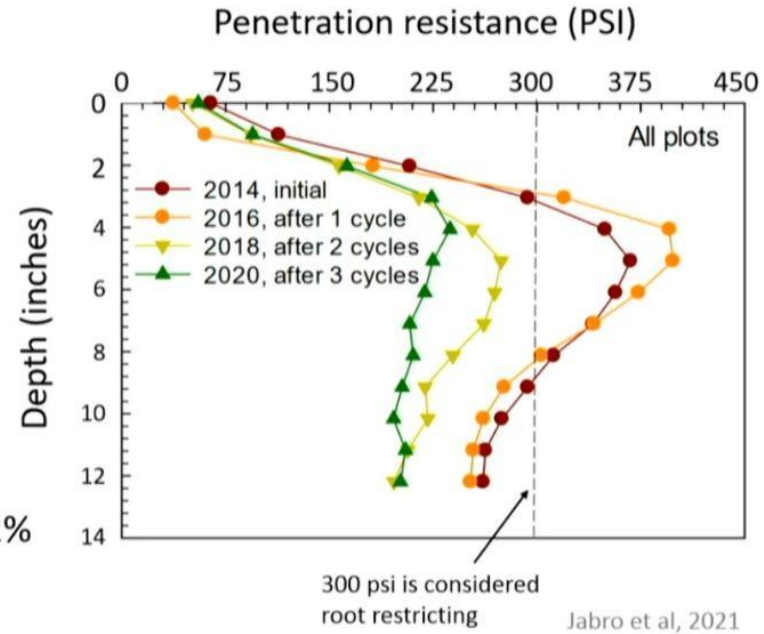
Cover Crops and Plow Pans

After 2 cycles

- bd in plow pan ↓ 25%

After 3 cycles

- bd in plow pan ↓ again by 32%



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CROP Concept & Soil Compaction - Groundswell 2024

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CROP Concept & Soil Compaction - Groundswell 2024

CROP Concept & Soil Compaction - Groundswell 2024

Cover Crops / the WHY

- Improve soil structure
- Control weeds
- Optimise soil bearing capacity
- Maintain living roots
- Maximize total biomass
- Increase soil organic matter
- Increase biodiversity

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Loodusrikas Eesti

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Loodusrikas Eesti

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Valge ristik
taliodraga.
Ristik rajatud
Oa allakülvina

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Valge ristik talinisuga.
Ristik rajatud
Oa allakülvina

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20.09.24


30.11.24

Talirapsi sortide
Segu +
Kaaskultuurid

Tatar
Aleksandria ristik

Talivikk

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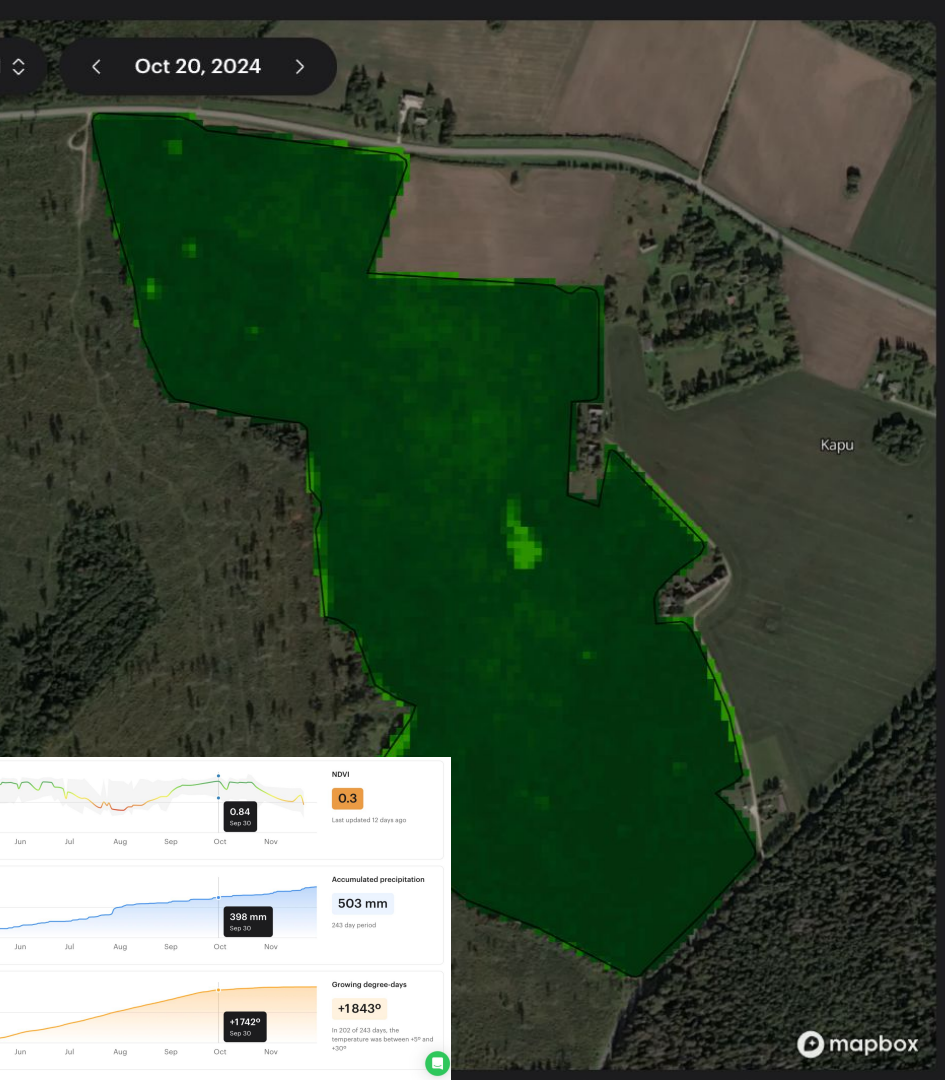
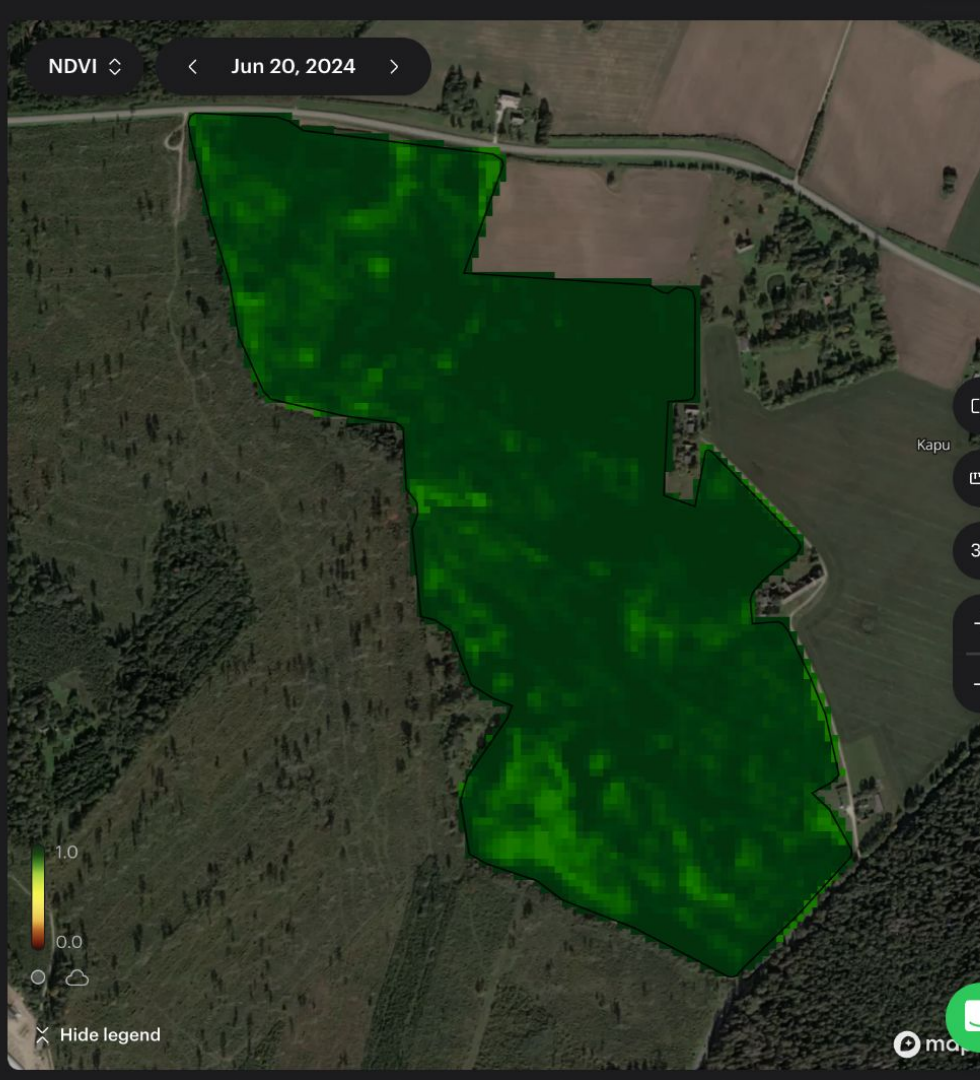

Oct 20, 2024
Kapu
NDVI
0.3
Last updated 12 days ago
0.84
Sep 30
Jun
Jul
Aug
Sep
Oct
Nov
Accumulated precipitation
503 mm
243 day period
398 mm
Sep 30
Growing degree-days
+1843°
In 202 of 243 days, the temperature was between +5° and +30°
+1742°
Sep 30
mapbox


NDVI
Jun 20, 2024
Kapu
1.0
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Hide legend


HORIZON
DSX 40-16
GRAINTECH
YouTube Google Photos video player

Kevadisse

vahekultuuri

Talinisu otsekülv

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VESS - Visual Evaluation of Soil Structure - Mullastruktuuri visuaalne hindamine

Kuidas hinnata mulla olukorda? - videojuhis Šotimaalt

“Muld on ühiskonna suurim vara, seda tuleb hoida ja kasvatada. Nagu inimeste puhul, võib ka mulla kohta öelda: terves mullas terve taim.”

Üllar Hiire

„**Muld on see väärtus ja varandus, mida maaharijatena peame üha tõsisemalt silmas pidama**,“ rõhutas mees. Sest viljakasvataja töö tulemus tuleb üksnes läbi mullaviljakuse.

Mäemõisa osaühingus liigutakse mullasõbralikumate harimistehnoloogiate suunas. Põldudel rakendatakse peamiselt **otsekülvi** Kanada tehnoloogia abil, kasvatatakse **vahekultuuride segusid** nii kevadel kui ka sügisel, kogu **põhk jäetakse põllule**, katses on **kaaskultuurid**.

https://maaleht.delfi.ee/artikkel/120079914/ullar-hiire-taastab-ja-hoiab-mullaviljakust
https://maaleht.delfi.ee/artikkel/120066338/ullar-hiire-pollumajanduses-kehtib-tode-terves-mullas-terve-taim

Northern Roots 2024 -25

Hea seltskond ja
Uued lahendused!

Fb: Mäemõisa mullaelu

MÄEMÕISA MULLAELU

Aitäh!
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