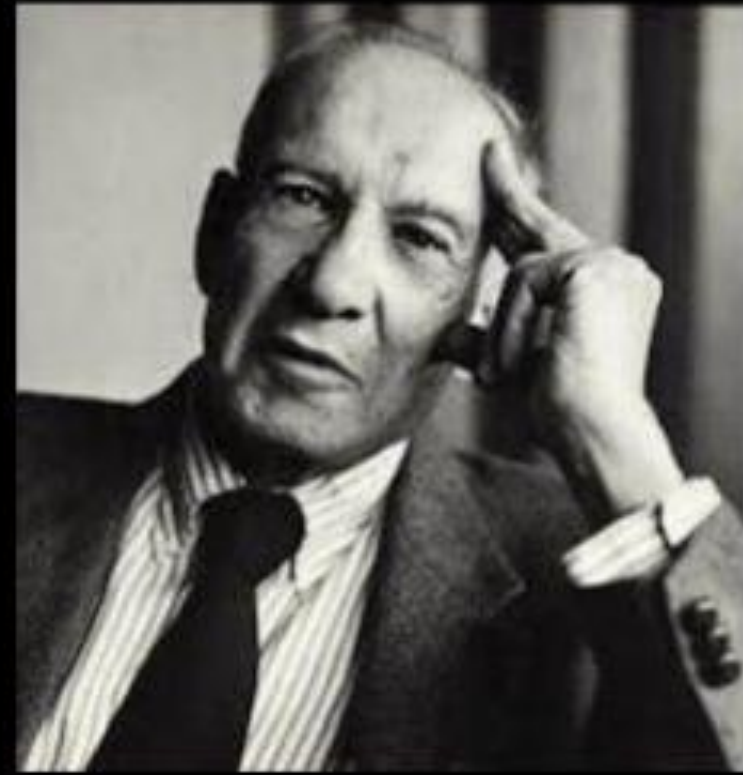


KATSEET SÄÄKARTOILTA MAAN ALLE

MUUTTUVASSA ILMASTOSSA MITTAUSTIETO KORVAA KOKEMUKSEN



mv., MMT, dos. Johannes Tiusanen
Tieteellinen johtaja, Soil Scout



**“If you can’t
measure it,
you can’t
manage it”**

Peter Drucker

**“FOR A FARMER, EVERY FIELD
IS A PROBLEM”**

Johannes Tiusanen



Service Providers ▾

Systems Management ▾

Specialty Crops ▾

Regions ▾

Tatge: Farm Data Has the Power to ‘Decomm Other 2019 Predictions

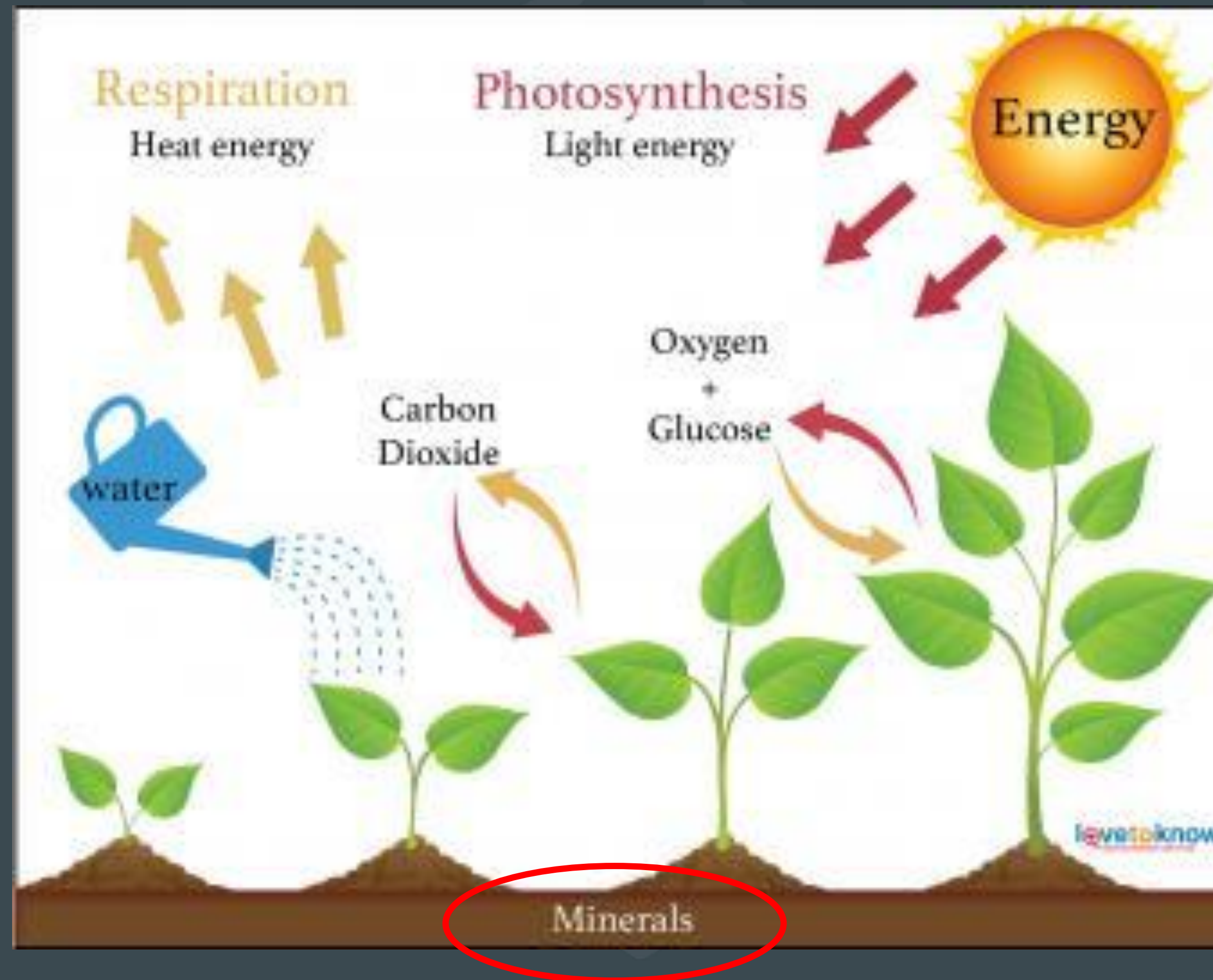


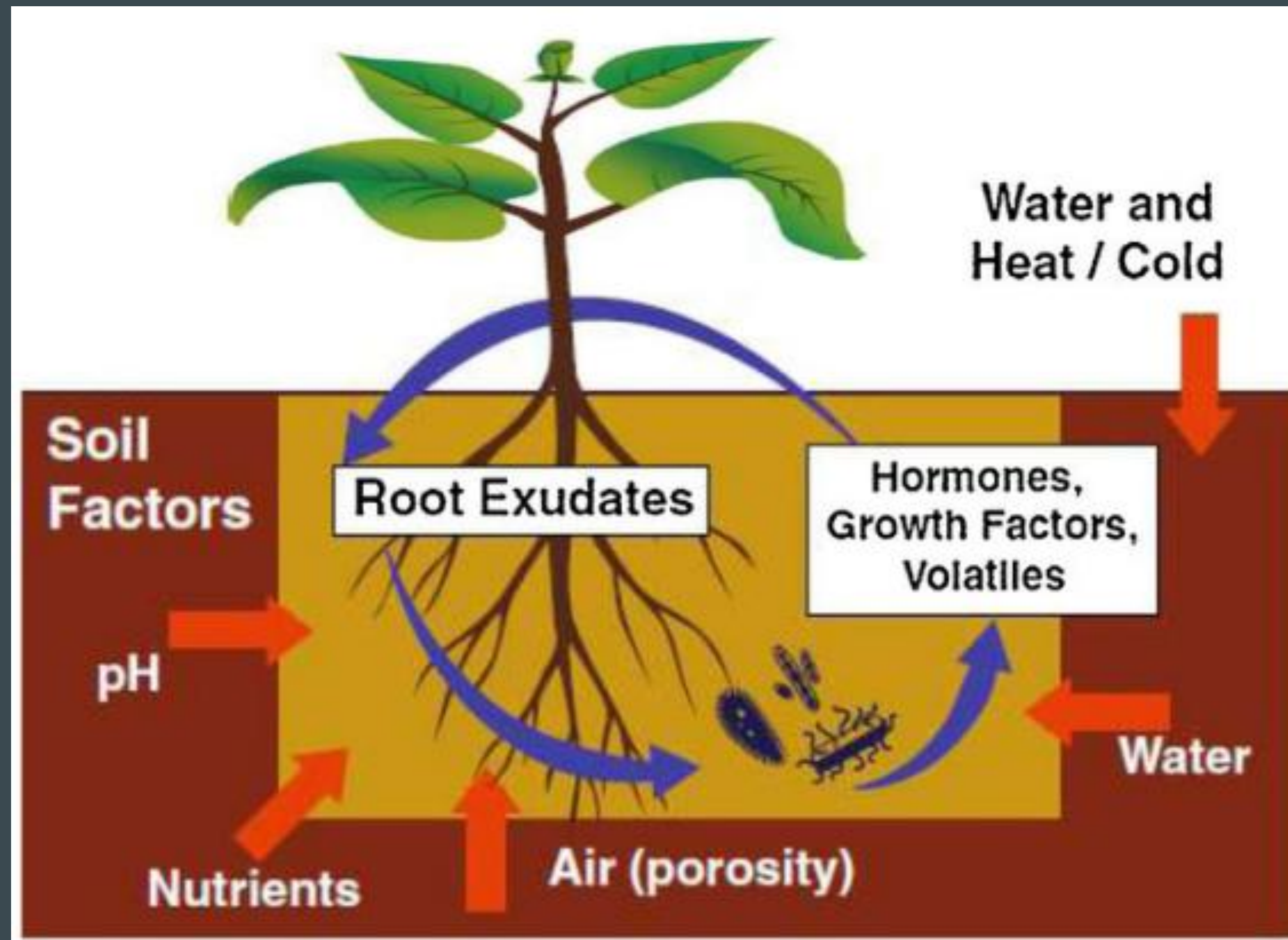
By PrecisionAg.com Staff | November 30, 2018



2. Every field will become a research plot

Right now, the agriculture industry conducts





RUSKEA VALLANKUMOUS!

The Brown Revolution: Why Healthy Soil Means Healthy People



October 13, 2015

[National Geographic](#)

by Mary Beth Albright

[Environmer](#)

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The Brown Revolution is happening. If the last time you talked about soil was to call something as boring as dirt, heed what Leonardo da Vinci said: "We know more about the movement of celestial bodies than we know about the soil underfoot." That was 500 years ago and soil experts agree that it's still true today.



What we do know is that soil is complicated. One teaspoon of soil has [more microorganisms](#) than there are humans on earth, according to [George Siemon](#), a founding farmer of the Organic Valley Cooperative. He spoke last week in Washington, D.C. at [Save Our Soils](#), a celebration of organic farming's healthy impact on soil. And soil deserves to be celebrated for its foundational role in creating the food—both crops and animals—that makes people healthy.

The Brown Revolution

No longer number two.

Norman Spinrad

Your Majesty; members of the Swedish Academy; fellow Nobel laureates; ladies, gentlemen and others, including former sceptics and tormentors — while convention and politesse would have me falsely protest my unworthiness to receive these two Nobel prizes for the same so-called discovery, receiving the Nobels for biology and for peace at the same time is hardly conducive to false modesty. Nor, after what I have had to endure in ridicule to finally stand here before you, am I in a particularly polite mood.

After all, even after the Brown Revolution has rescued the world economy from its energy crisis and the biosphere from the global warming crisis, that which has saved global civilization and indeed life on Earth itself, still cannot fly the public banner of its own true name. And I, who championed its cause, am still a victim of ridicule in odious cartoons and toilet graffiti, and will no doubt be even now denigrated as the winner of the Nobel Prize for Scatology in the popular yellow press.

Very well then! Let my twin Nobels combine under that glorious Brown Banner that I have borne to this victory! Stand and salute the saviour of the planet! The noble brown substance that has replaced petroleum and coal to become the basic

hydrogen fuel cells, cars and trucks; to power our industry, light our homes and our cities!

And this methane, not burned in the open air, poisoning it with photochemical smog and raising the temperature of the planet with greenhouse gases, but confined to sealed, closed-loop generators, recycling the carbon dioxide from its combustion into carbohydrates to feed the hungry via sunlight, water and artificial photosynthesis; as the biomass of this

Yet we flushed it down our toilets; we dumped it into the seas; we let it pour into our rivers and pile up in feed-lot lagoons to spread disease and stink; we burned it in the open air and held our noses; we spent billions and billions throwing it away, or trying to; and all the while we were wasting the eternally renewable resource that has now, at last, become the energy source of global civilization, and allowed us to halt the greenhouse warming and feed the starving on People Chow.

Two hundred and fifty trillion kilos of it each year!

The energy equivalent of a peak year's oil consumption!

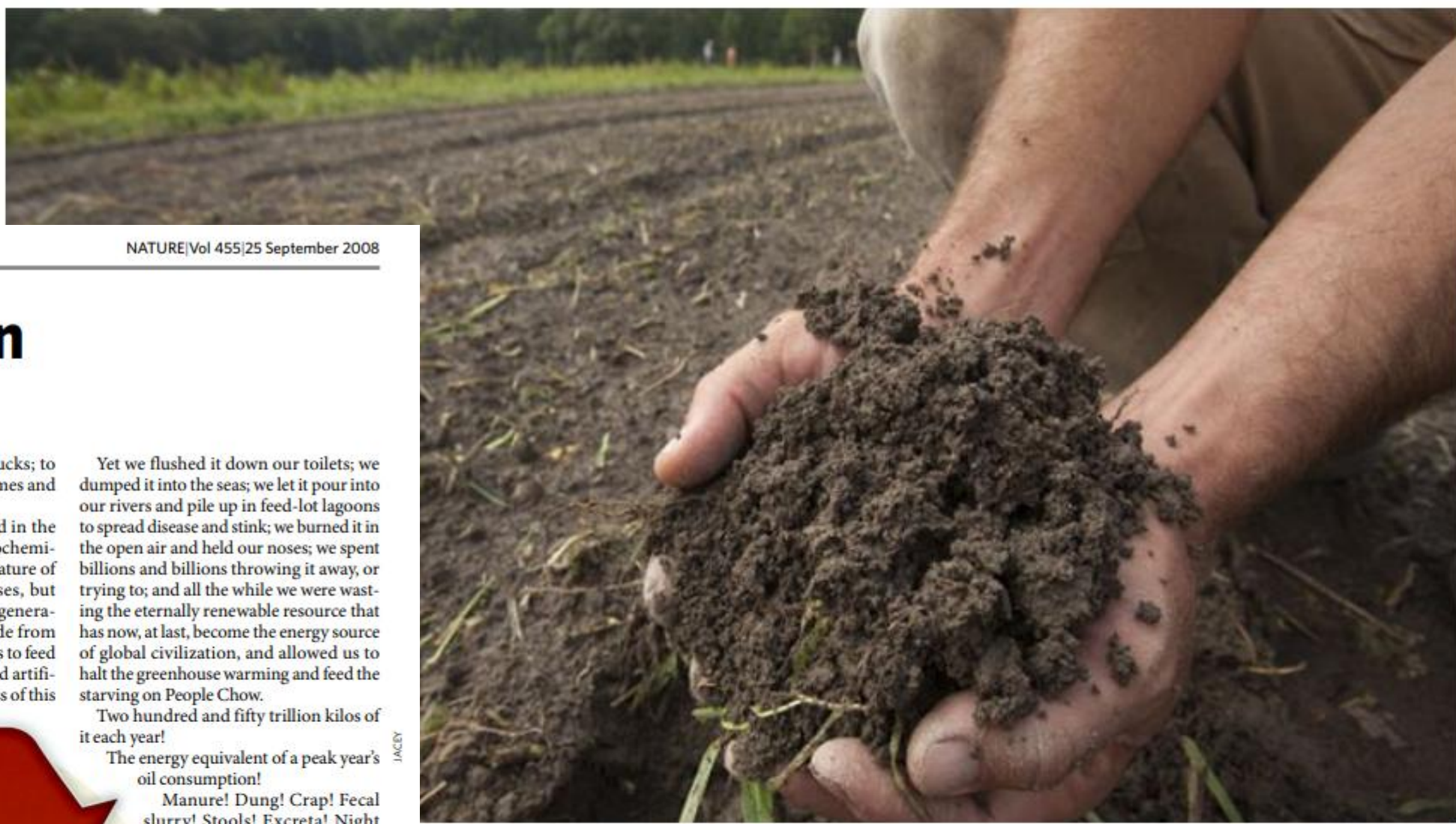
Manure! Dung! Crap! Fecal slurry! Stools! Excreta! Night soil! Meadow-muffins! Doody! Pool!

Call it by its hundreds of pallid euphemistic aliases, but call it also what it truly is, the long-despised, mocked, disdained substance we all produce each and every day of our lives, along with every animal we feed upon and many that we don't, that has become that which fuels the transformational machineries of the first human civilization to have freed itself from burning non-renewable fossil fuels.

The sovereign substance of our glorious post-petroleum age!

Here in this most hallowed hall of the disadvantages faced by adopting the measures of green revolution. Brown revolution is based on the regeneration of covered, organically rich, biologically thriving soil and brought to fructification by humans returning to the land and produce food.

Soil becomes an important factor for the growth of a plant. A fertile rich soil is high in basic nutrients like phosphorus, nitrogen,



NATURE|Vol 455|25 September 2008

R A HEALTHY LIVING THROUGH BROWN REVOLUTION

nent

igned drastically over a decade after the 'Green Revolution movement' which increased the higher-yielding strains of plants and chemical fertilizers. However it brought a huge impact on racteristic of a good soil became vicious. We humans started eating unhealthy since the mid

are trying to go back following the traditional practices of farming thus creating a new era of n the field of agriculture. Though the productivity is comparatively less, this practice overcomes

Categories

Animals

Children

Culture

Education

Elderly

Employment

Environment

Factual

General

Health

Natural Disaster

Archives

April 2020 (1)

March 2020 (1)

February 2020 (1)

October 2019 (1)

September 2019 (1)

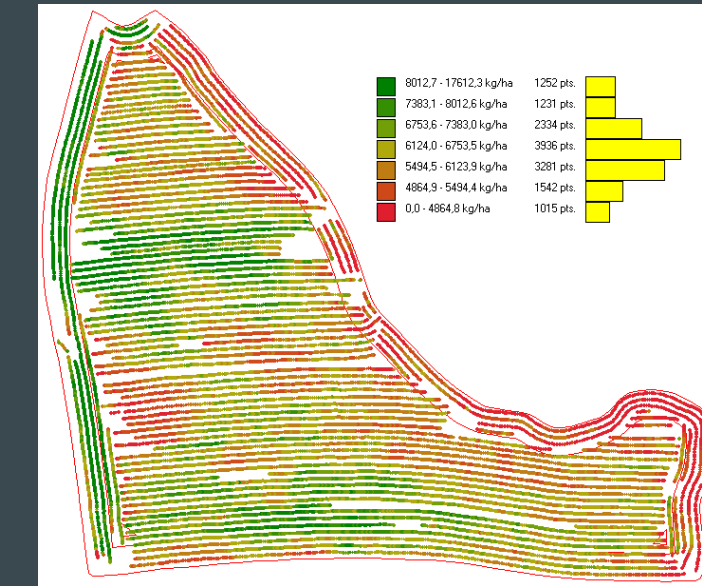
July 2019 (5)

KASVUSTO PALJASTAA VAIN OIREET

Satovaihtelun syy on aina maan alla

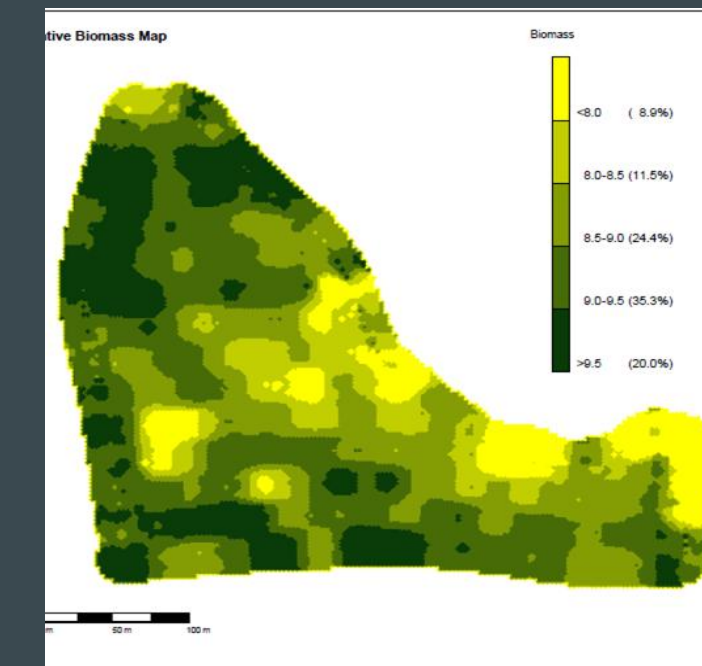
1. Satokartoitus

Osoittaa kg/ha paikkakohtaisesti



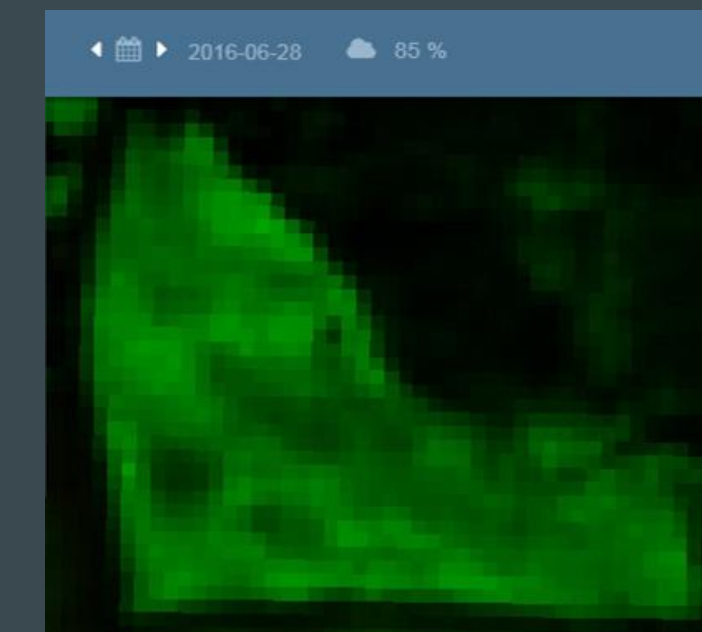
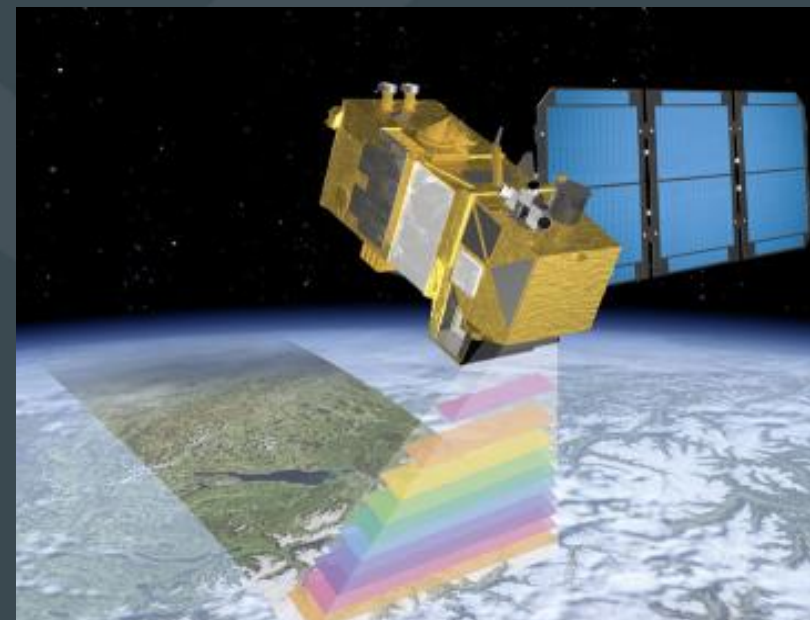
2. Optiset NDVI kasvustoanturit

Antaa hyvän *suhteellisen* kartan

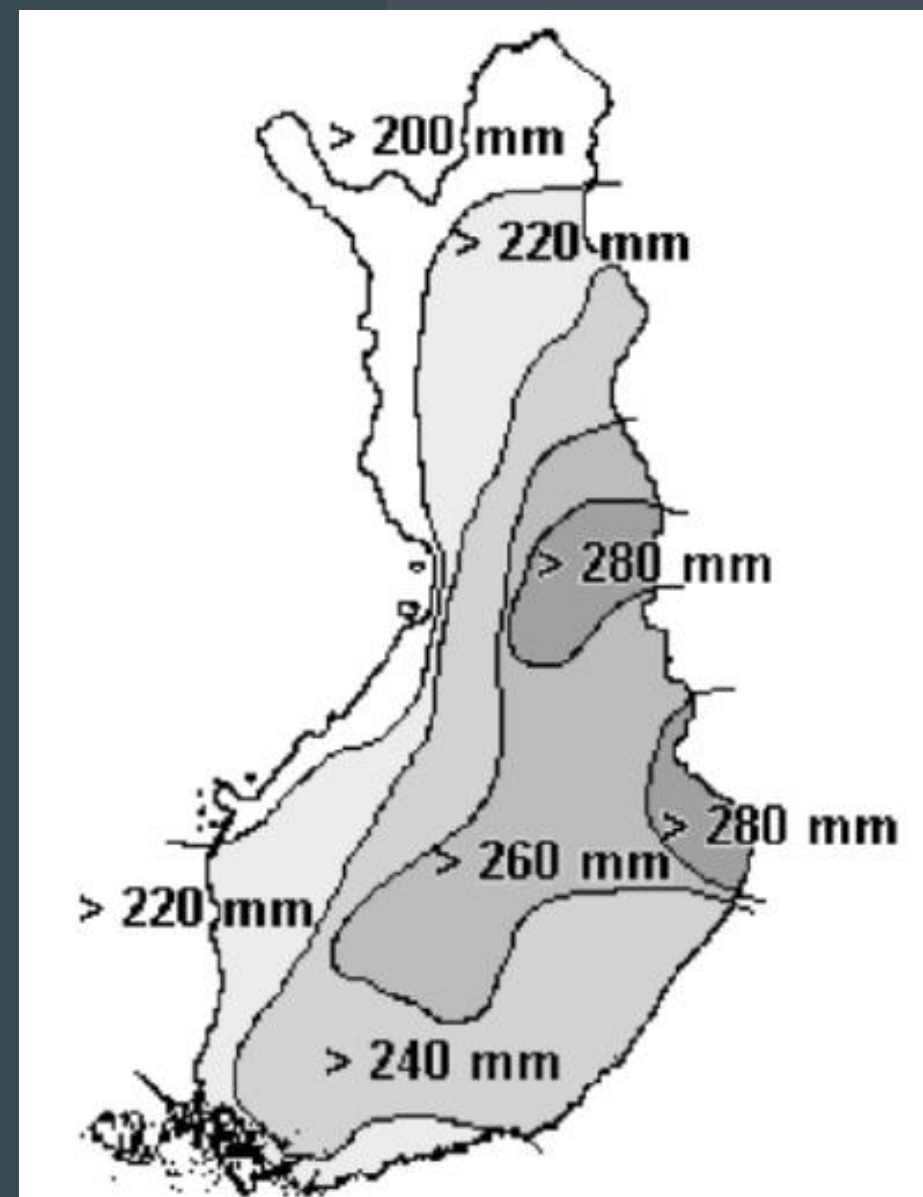
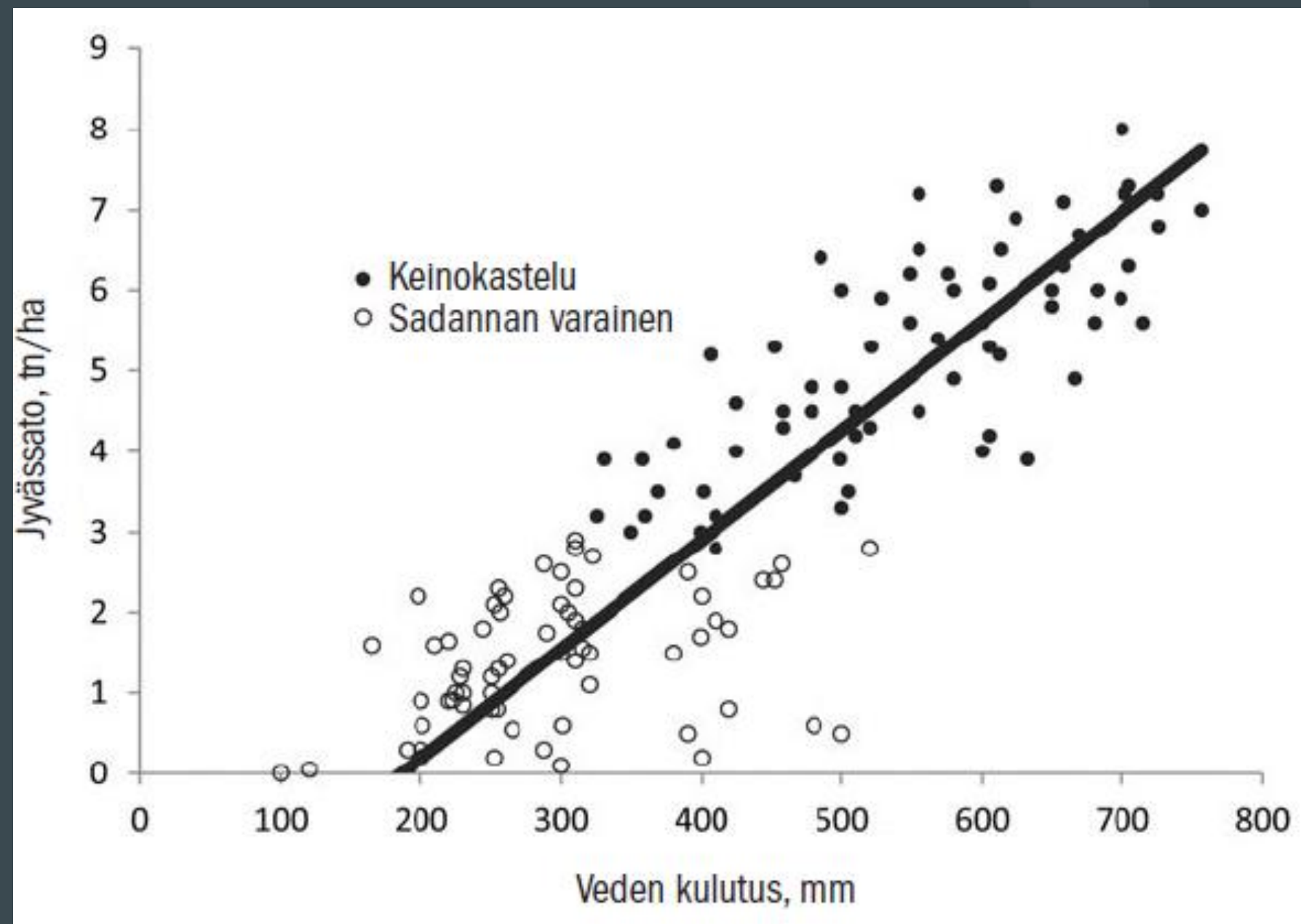


3. Telemetria ja satelliitit

Karkeaa mutta ilmaista dataa

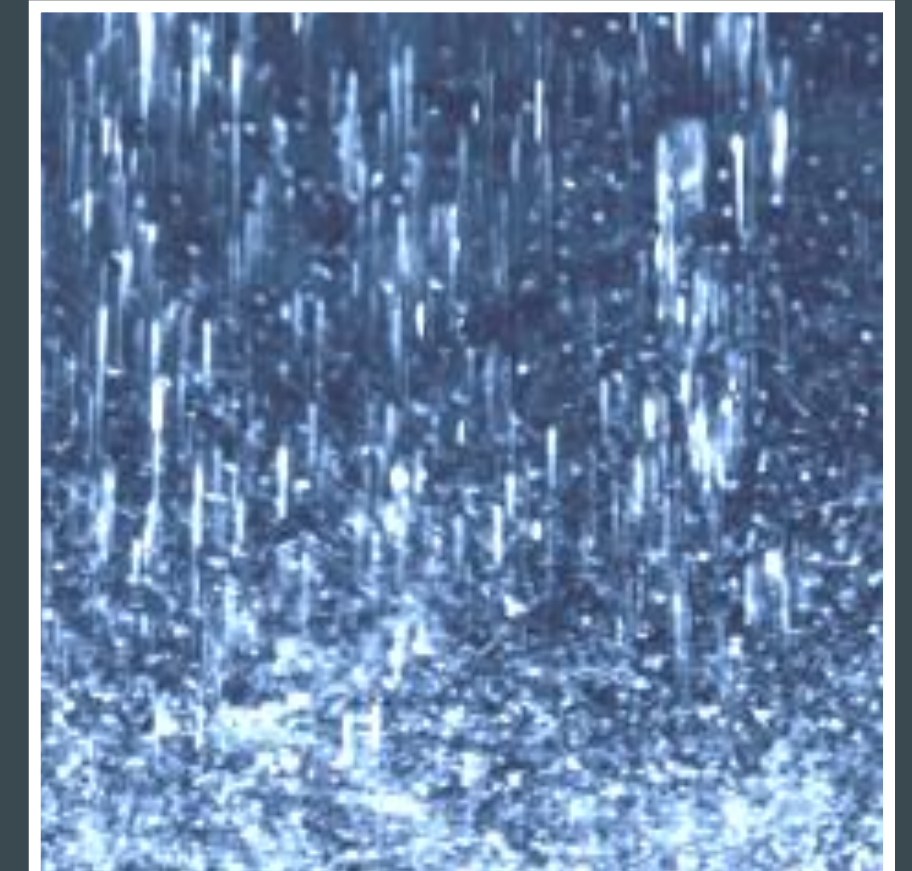


VILJA KULUTTAA 100 mm / 1 tn



Touko-syyskuun keskimääräinen sadanta Ilmatieteenlaitoksen pitkän ajan tilastojen mukaan vaihtelee Suomessa 200–300 mm välillä, vaikka runsas viljasato vaatii yli 500 mm sadantaa vastaavan vesimäärän kasvaakseen.

500 mm



300 mm



100 mm

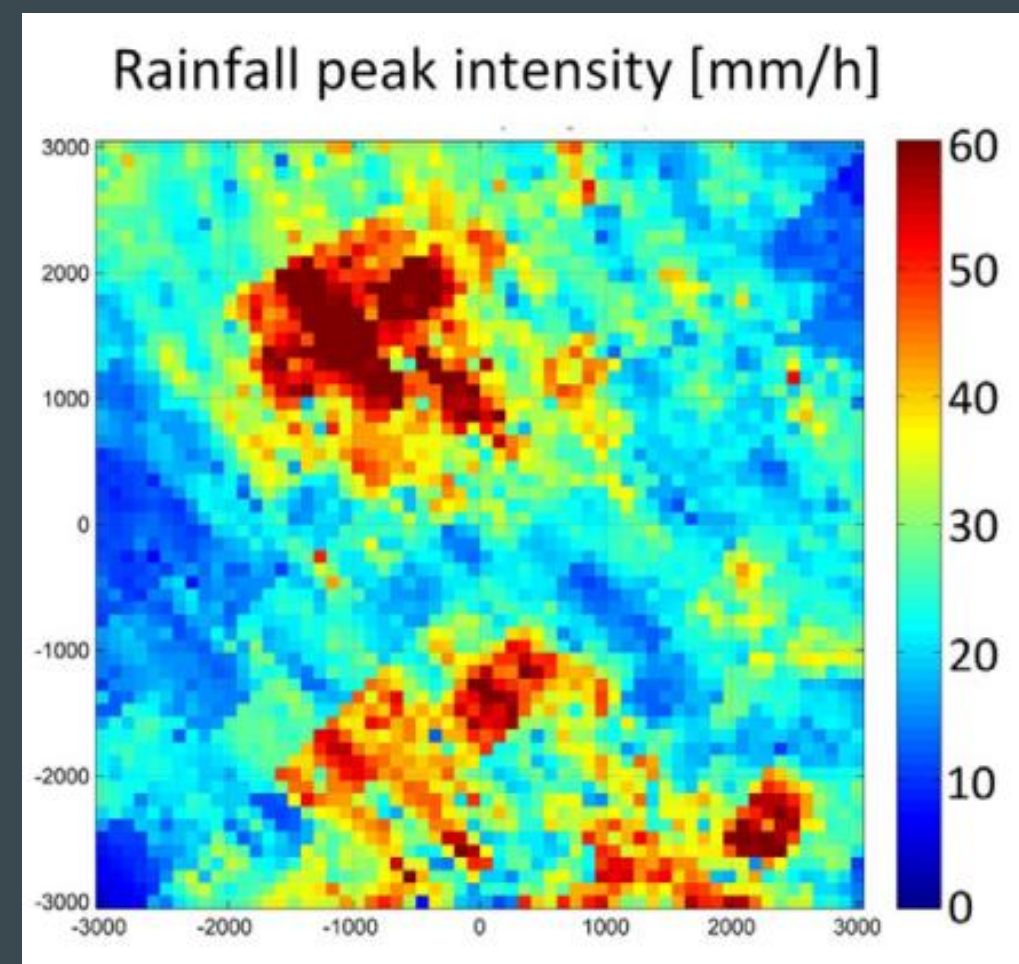


0 mm

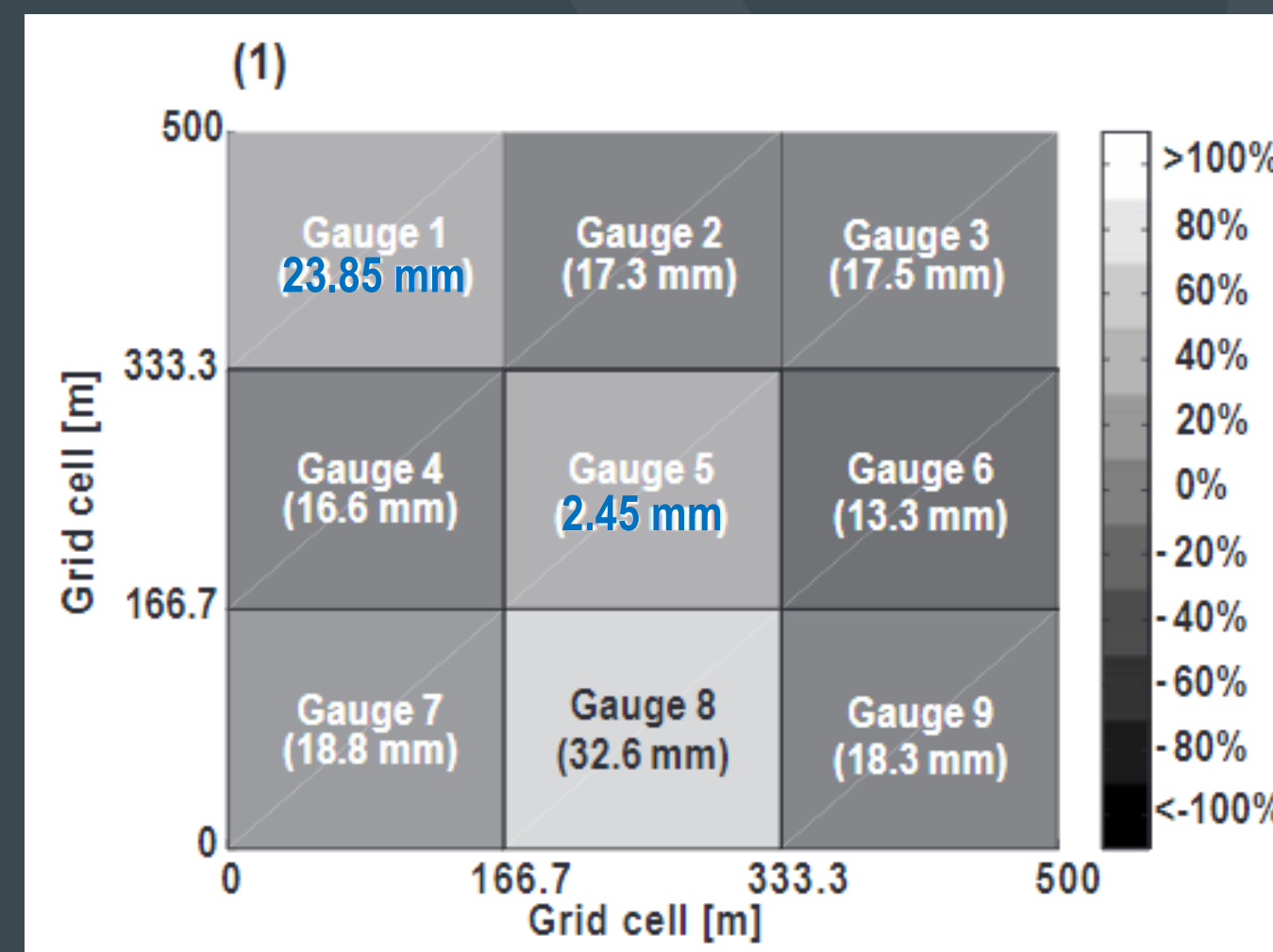
	kuivurissa esipuhdistaja: <input type="checkbox"/> kyllä <input type="checkbox"/> ei
	puhdistajan tyyppi: <input type="checkbox"/> seula <input type="checkbox"/> ilma
Kosteus (%) kuivatuksen jälkeen:	
Puinnin ja kuivauksen välinen aika (vrk):	
Lisätiedot:	Onko lohkolla viljellyissä viljakasveissa havaittu hometoksiiniongelmia edellisenä 2-3 vuotena? <input type="checkbox"/> kyllä <input type="checkbox"/> ei <input type="checkbox"/> ei tietoa
Sademäärä (mm): touko <input type="text"/> kesä <input type="text"/> heinä <input type="text"/> elo <input type="text"/> syys <input type="text"/>	
Näytteenottopäivämäärä:	

Lähetä täytetty lomake oheisessa postituskuoressa yhdessä noin 2 litran
viljenäytteen kanssa (lomake ei muovinussin sisällä)

SADANTA VAIHTELEE 50% / 500 m



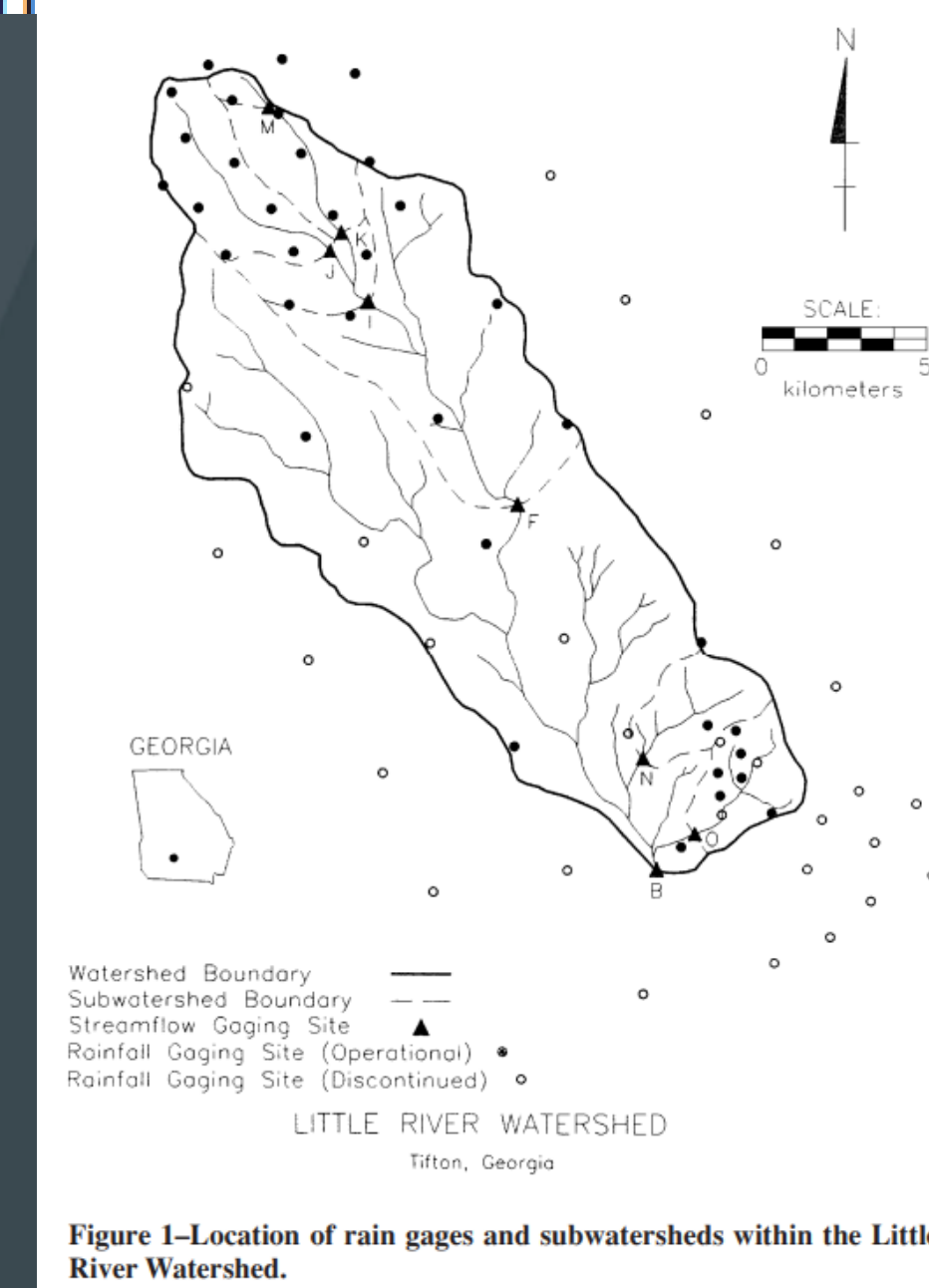
SOchoa-Rodriguez et al./Journal of Hydrology 531 (2015) 389–407



Jensen & Pedersen/ Atmospheric Research 77 (2005) 269–277

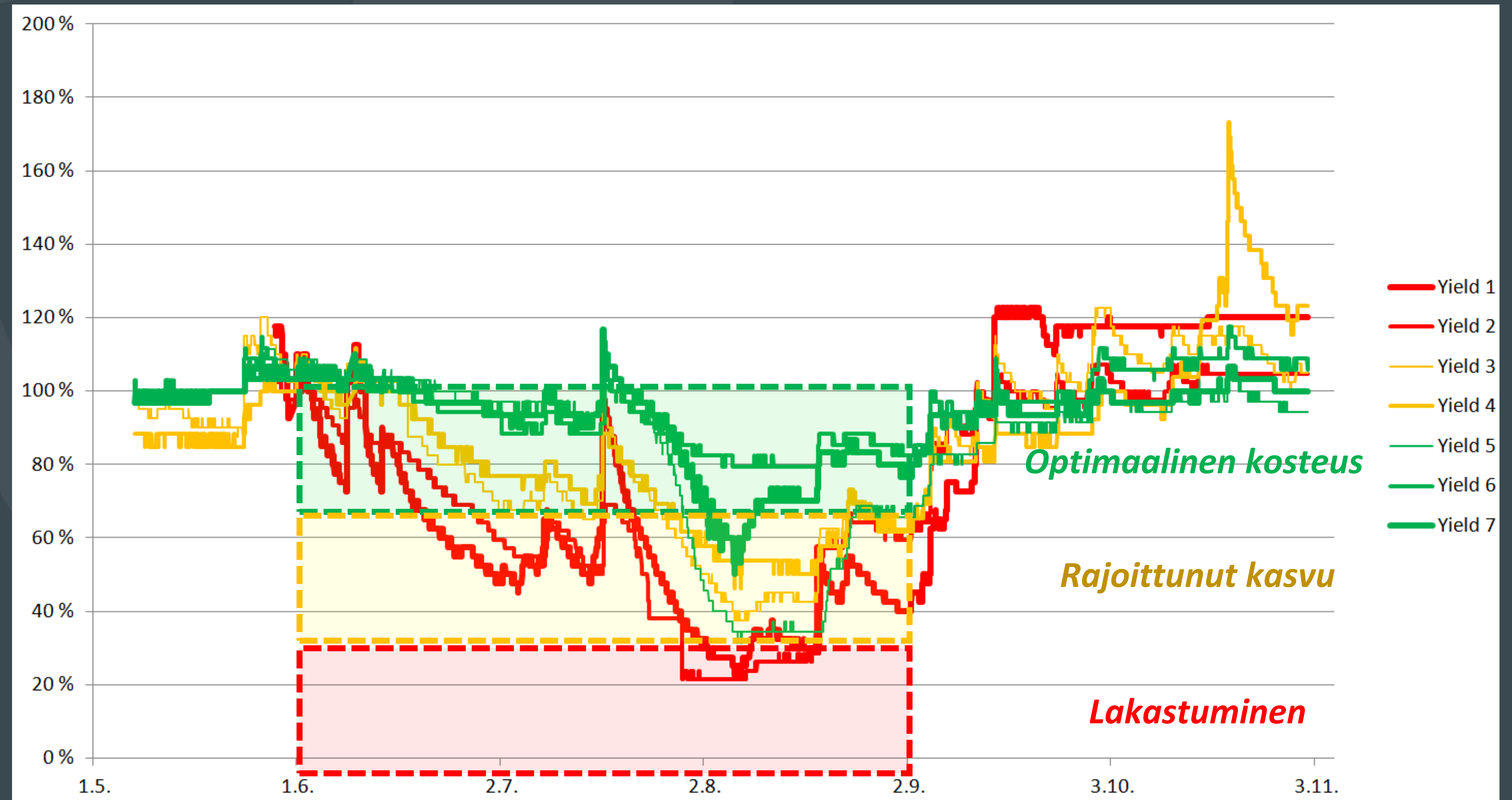
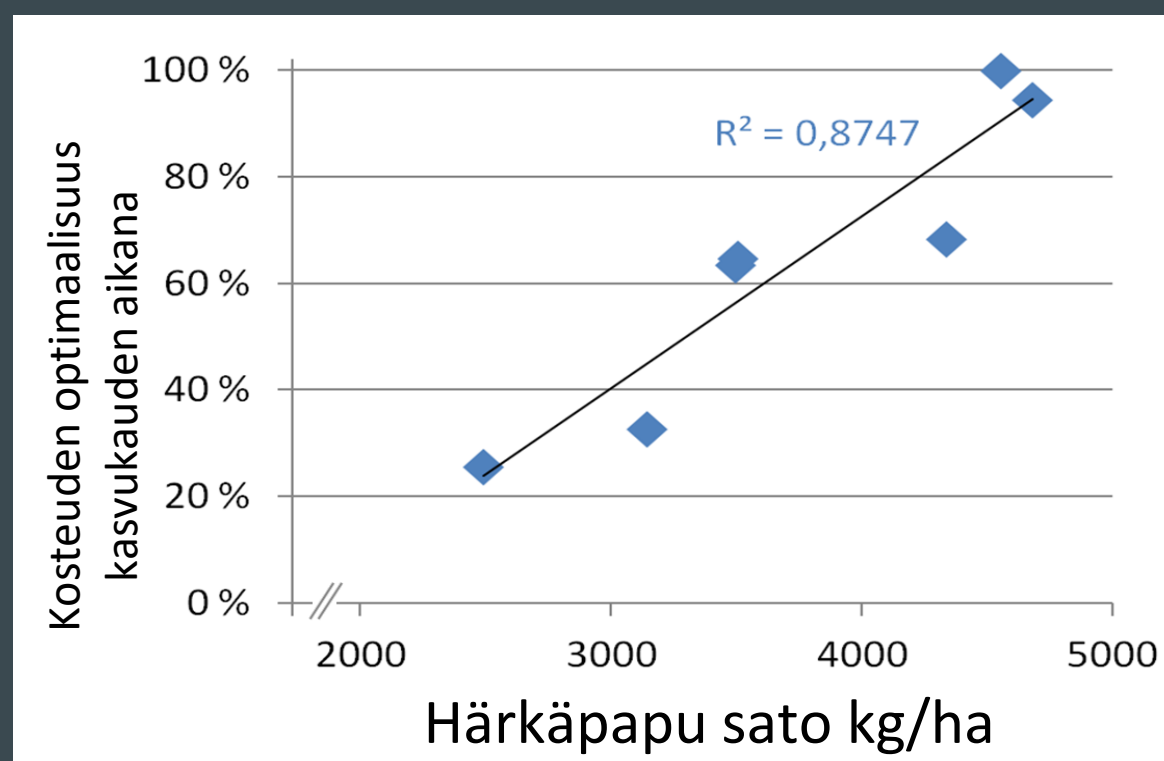
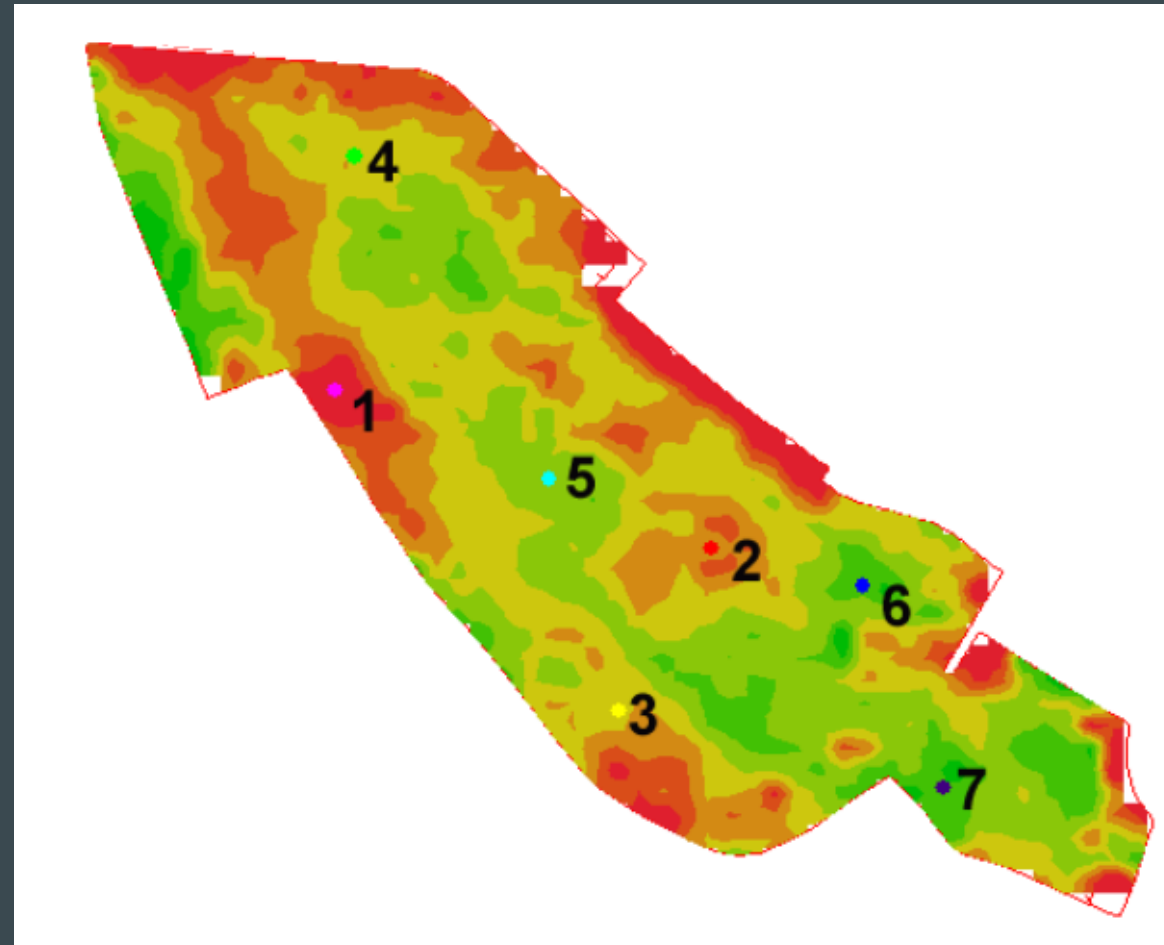
during summer.

Rain gages are currently spaced too far apart to provide reliable point estimates for missing storm data during the summer. Beyond 1.9 km, the predictive capacity of the rain gage data for the summer is poor. However, because the original rain gage network was installed along diagonals parallel to the primary direction of thunderstorm travel, the



Robert, Rust and Larson / Precision Agriculture (1999), p. 535-546

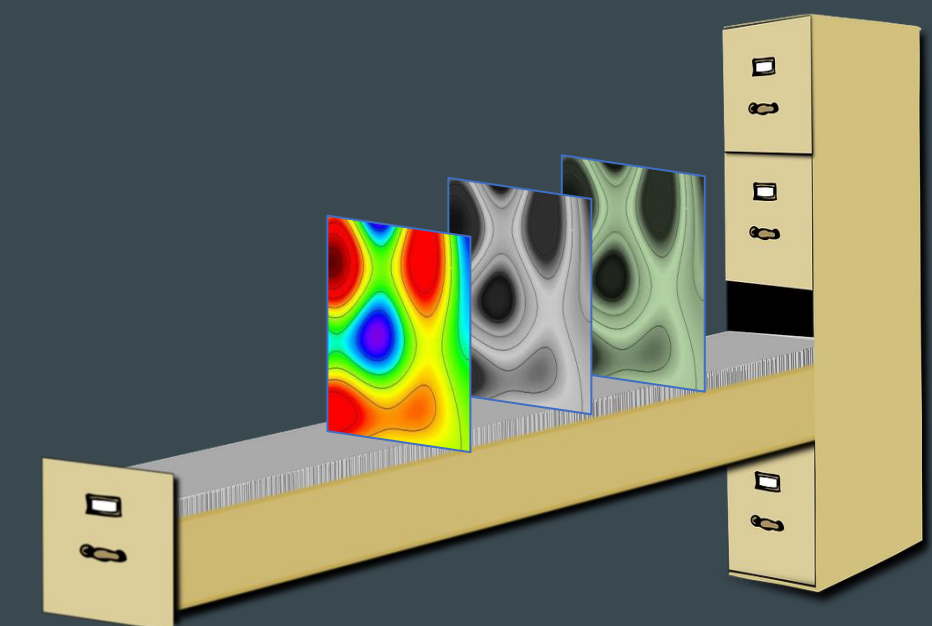
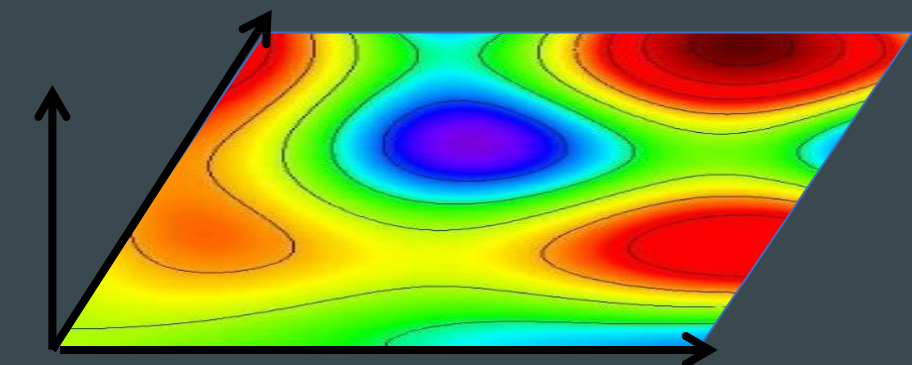
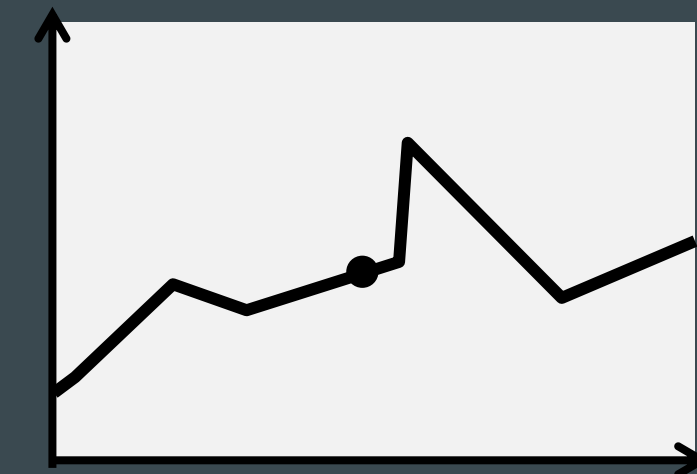
LOHKON SISÄINEN KOSTEUSVAIHTELU RATKAISEE SADON



NUMEROISTA NÄKEMYKSEKSI

1. Mittauslukema on aina parempi kuin arvio
2. Jatkuvan mittauksen dynamiikka näyttää käytöksen
3. Paikkakohtainen vertailu paljastaa erot
4. Kasvukausien vertailu mahdollistaa kehittämisen

32 %

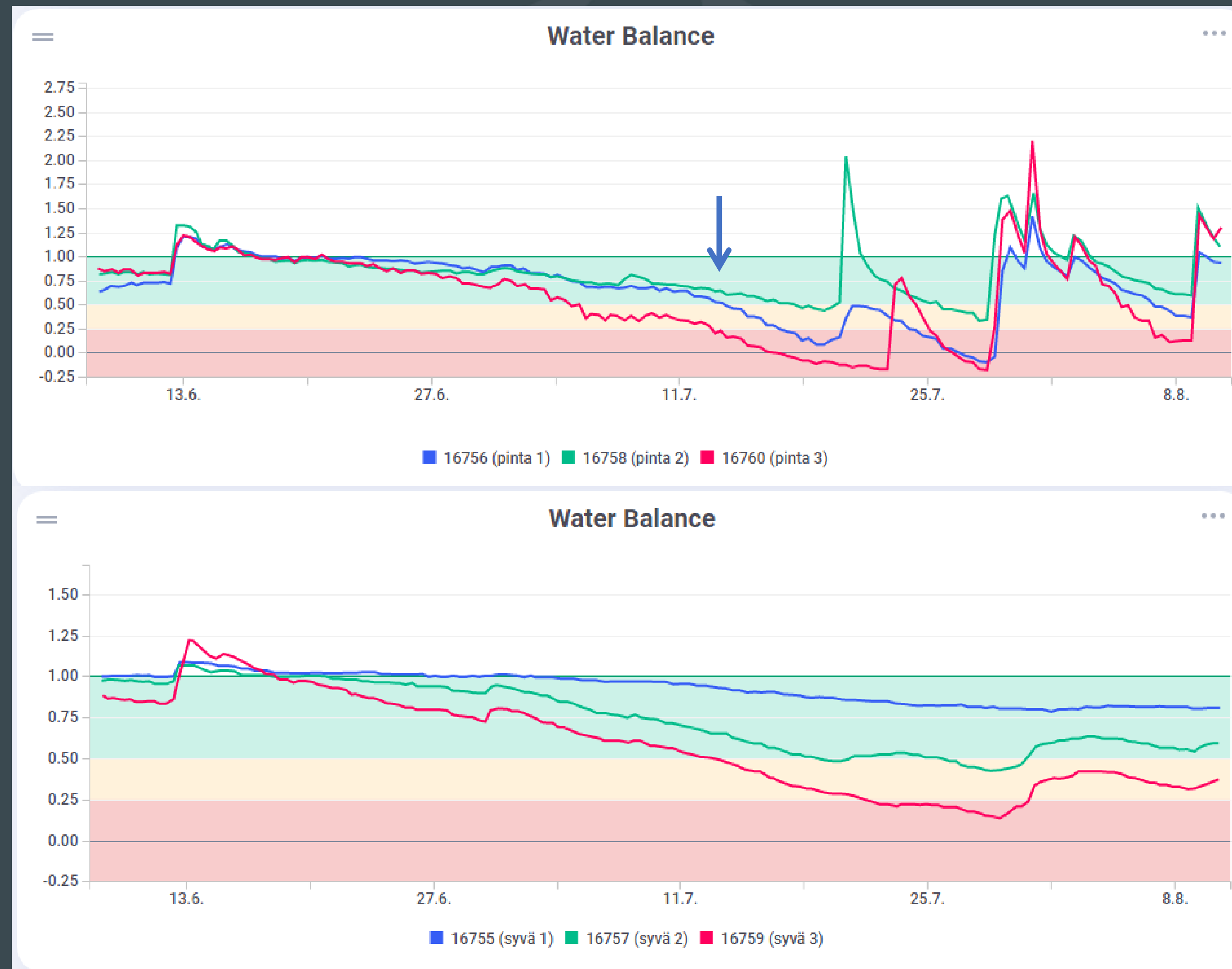


KOSTEUDEN HALLINNAN PARADIGMAN MUUTOS

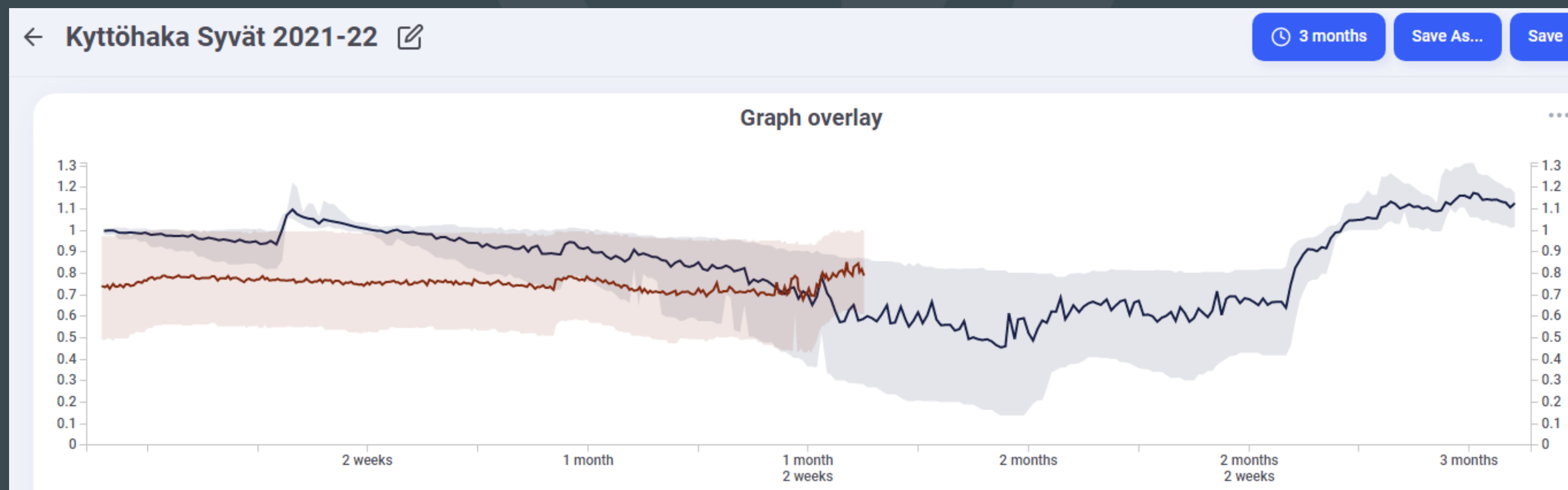
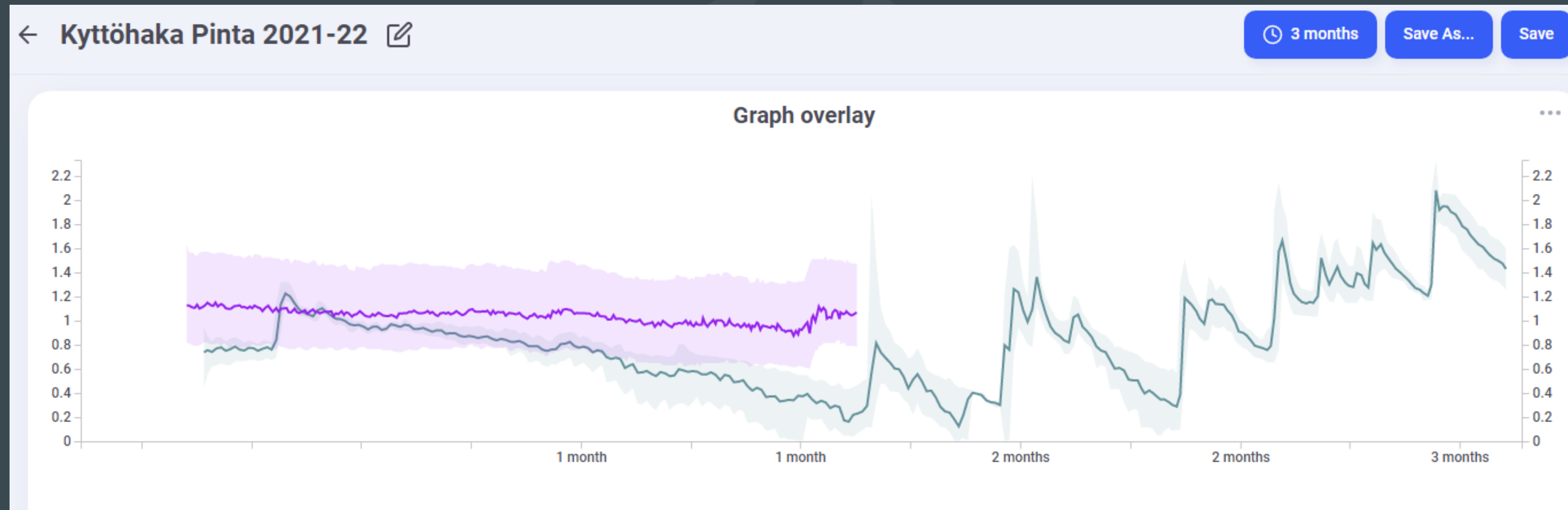
- Koska pitäisi kastella?
 - Mistä pitäisi aloittaa?
 - Kuinka monta mm pitäisi antaa?
 - Menikö se hyvin?
-
- Koska pitäisi kastella uudestaan?

- Koska maan kosteus alkaa rajoittaa kasvua?
- Mikä lohkon osa on kuivunut eniten?
- Mikä on maan kosteus-% ennen kastelua?
- Paljonko kosteus nousi, painuiko vesi syvälle?
- Montako % maa kuivuu per päivä?

PERUNAPELTO 2021



PERUNAPELTO 2021 VS. 2022



YHTEENVETO



Kokemuksella on päästy pitkälle, mutta kun sekä tavoitteet että toimintaympäristö muuttuvat, tarvitaan jotain muuta



Kaikki peltolohkon sisäinen vaihtelu johtuu tapahtumista maan alla



Mittausaineiston tulkinta on aina yksinkertaisempaa, kun lohkolla on monta mittauspistettä ja niitä voi vertailla



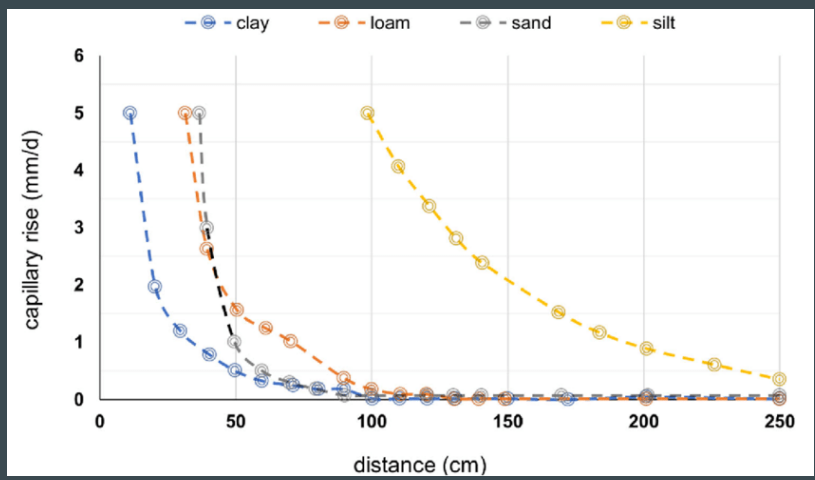
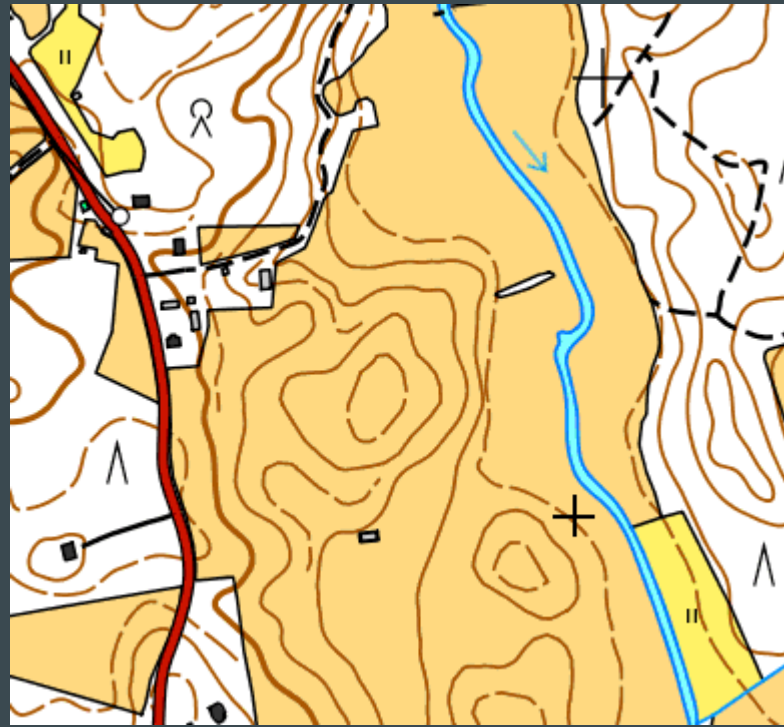
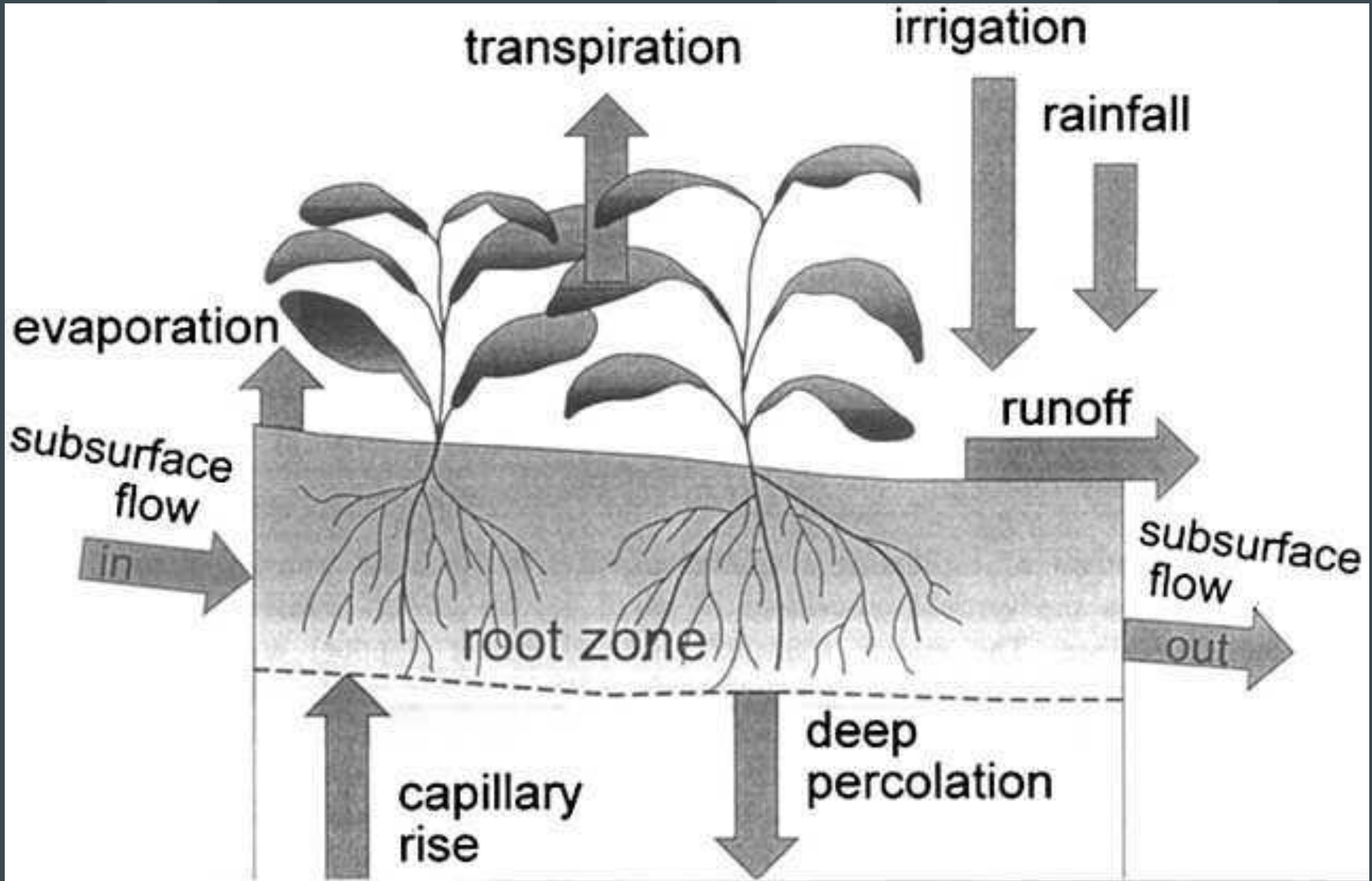
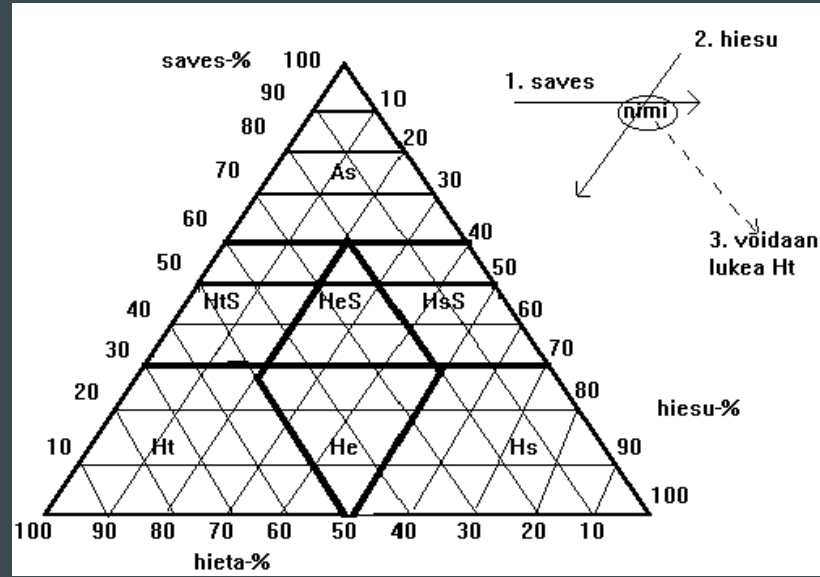
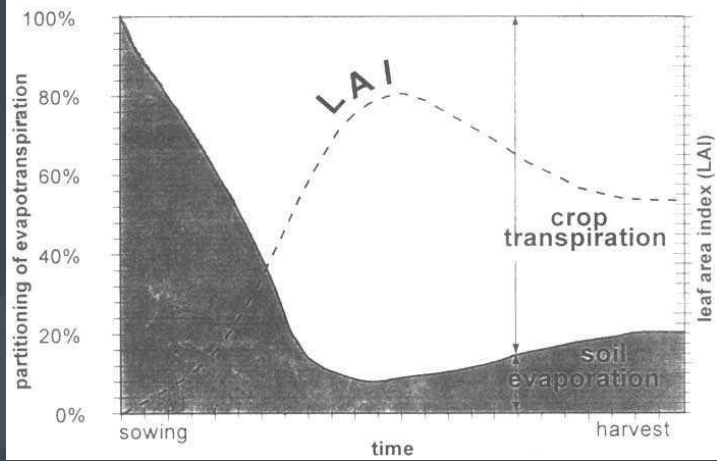
Hienot datan kokonaishallintajärjestelmät puuttuvat vielä, mutta nyt on aika aloittaa jostain

The background features a large, faint, light-blue shield-shaped logo, which is the emblem of the University of Helsinki. It is centered on the slide and serves as a subtle backdrop for the text.

Kiitos!

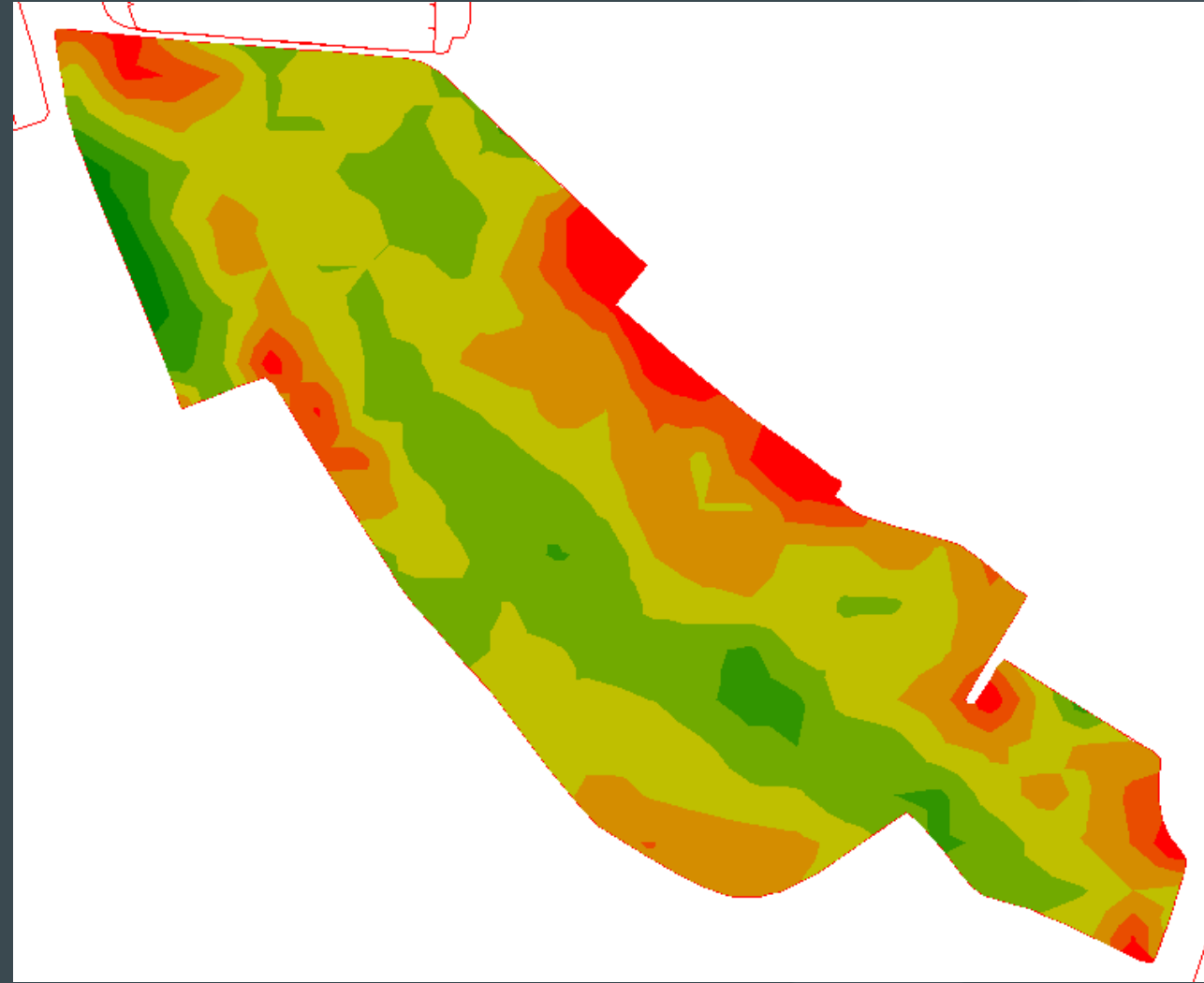
johannes.tiusanen@helsinki.fi

+358 40 7449 263 (FIN)

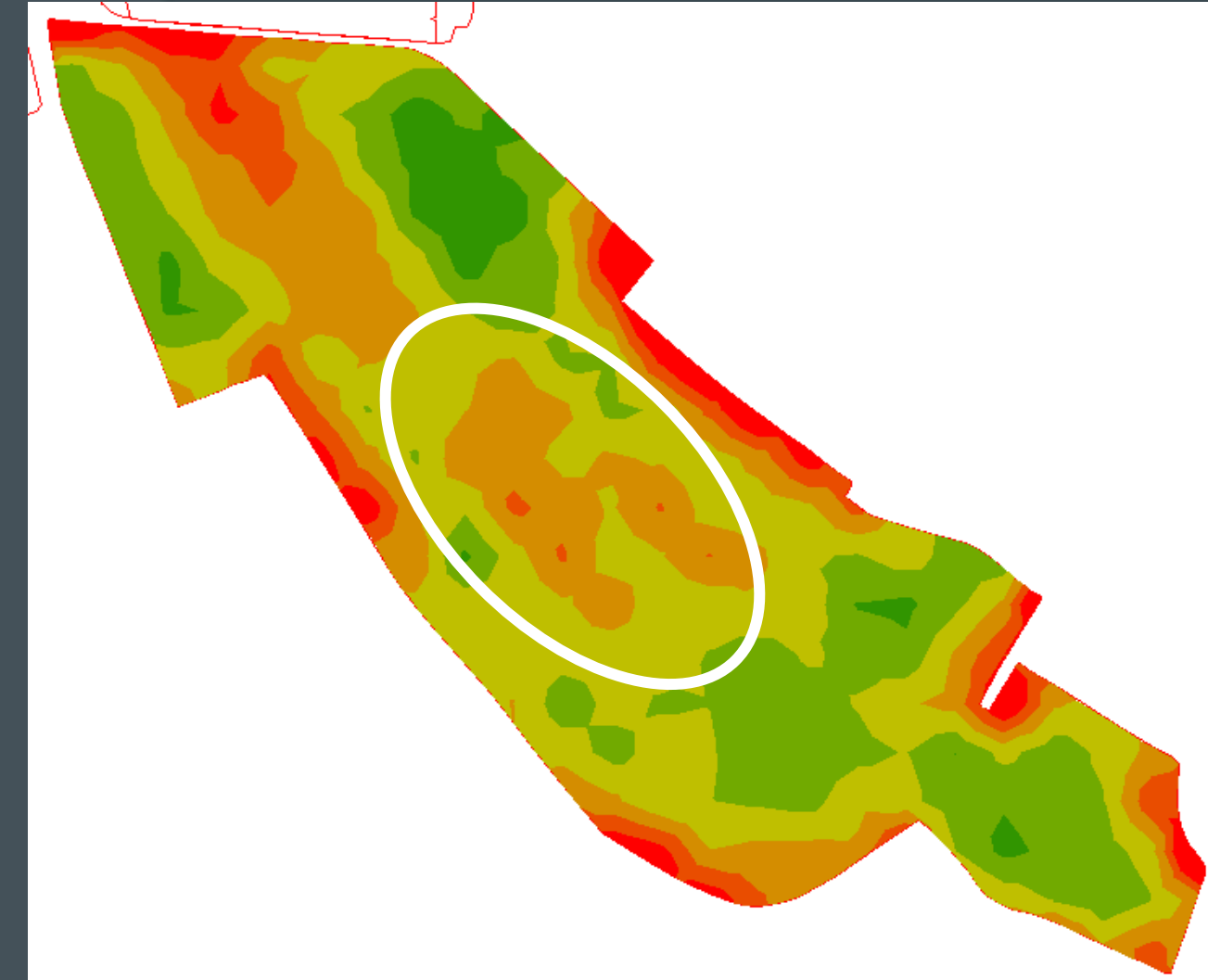


KEVÄTVILJA - SYYSVILJA

2022



2021



2016

