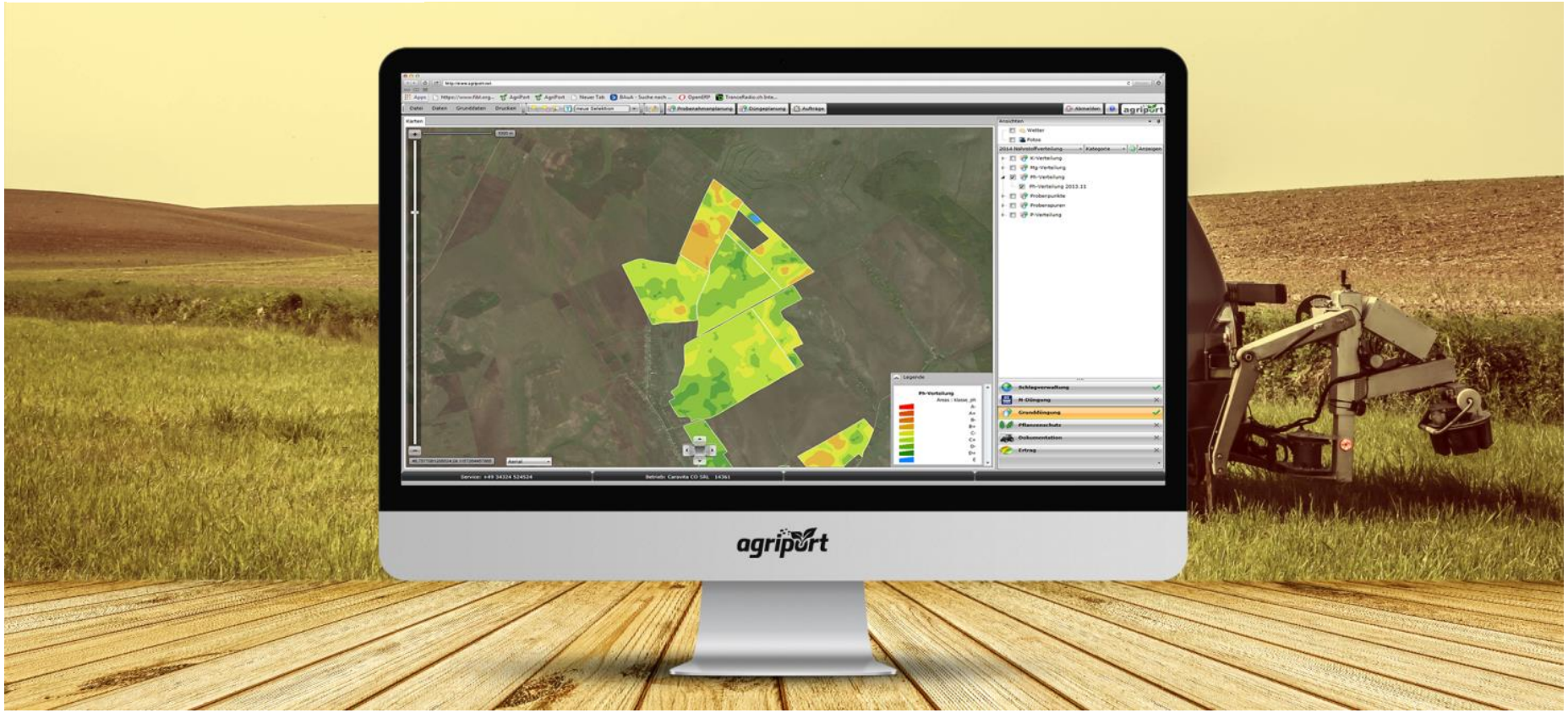
Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse



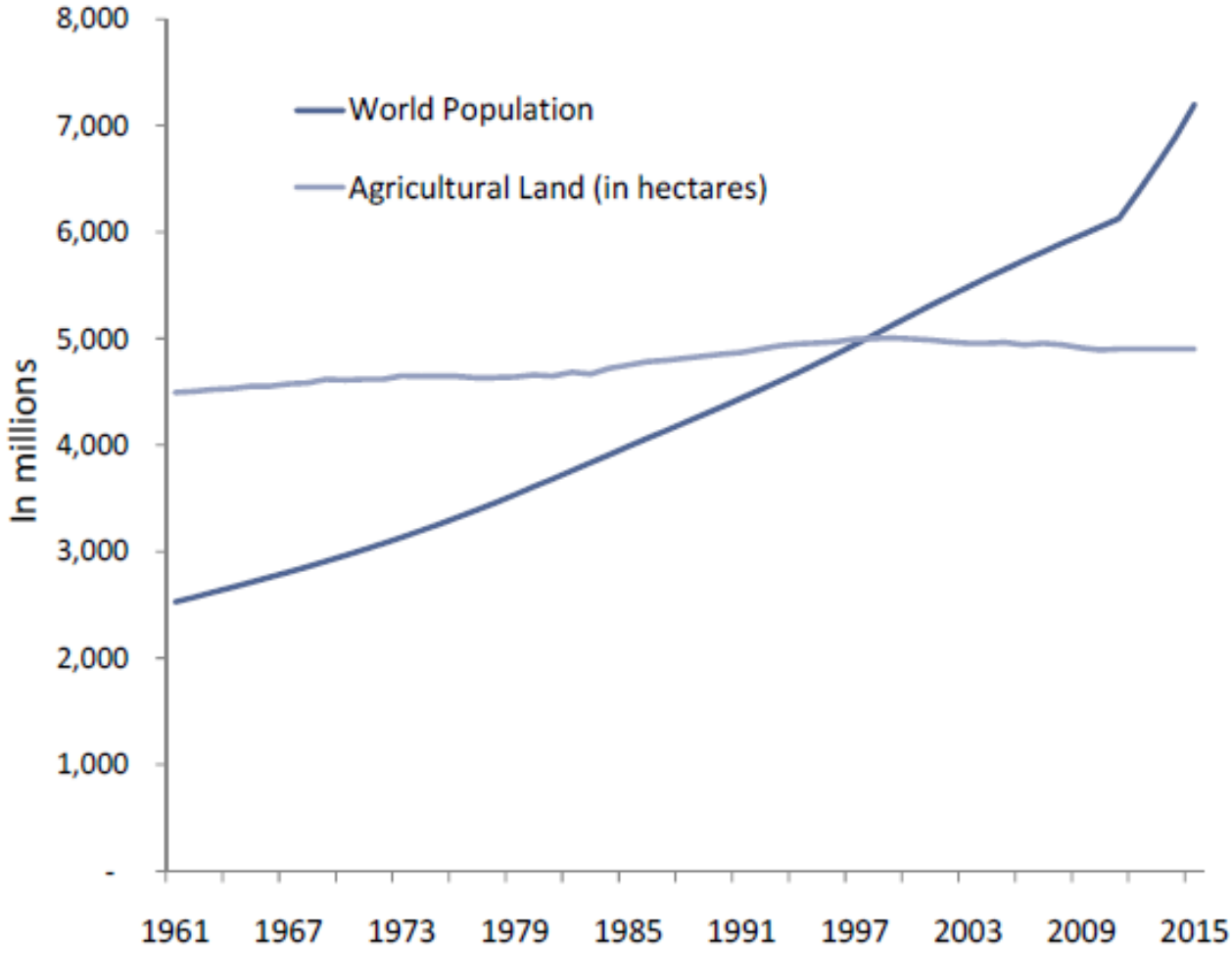
Agricon – digitaalne põllumajandus

M.Sc.Agr. Meit Jürgens
AgriCon Estonia
07.12.2017

Agricon | in Europe

Exhibit 1: Farm productivity improvement is critical as available land per capita declines

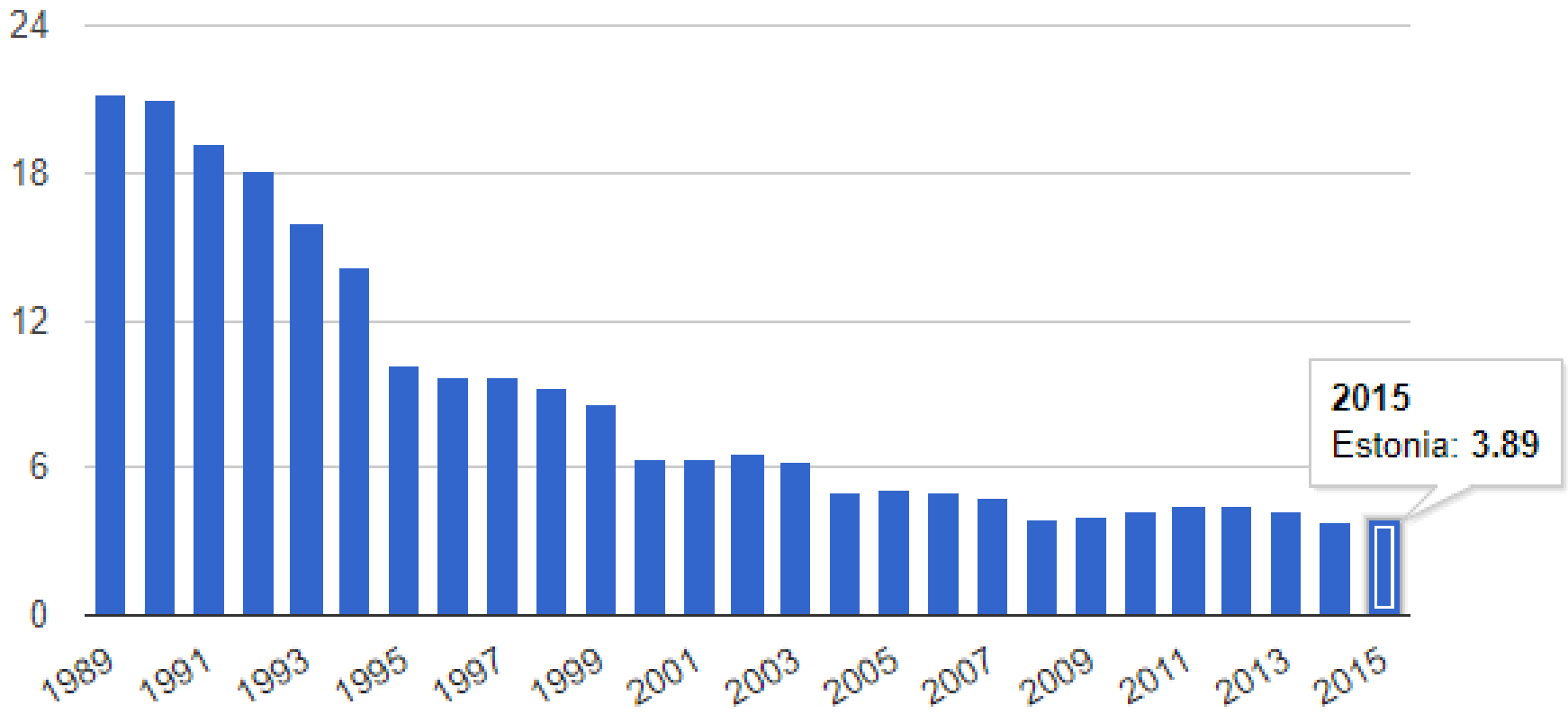
Global arable land acreage vs. population



Source: Goldman Sachs Global Investment Research, FAO.

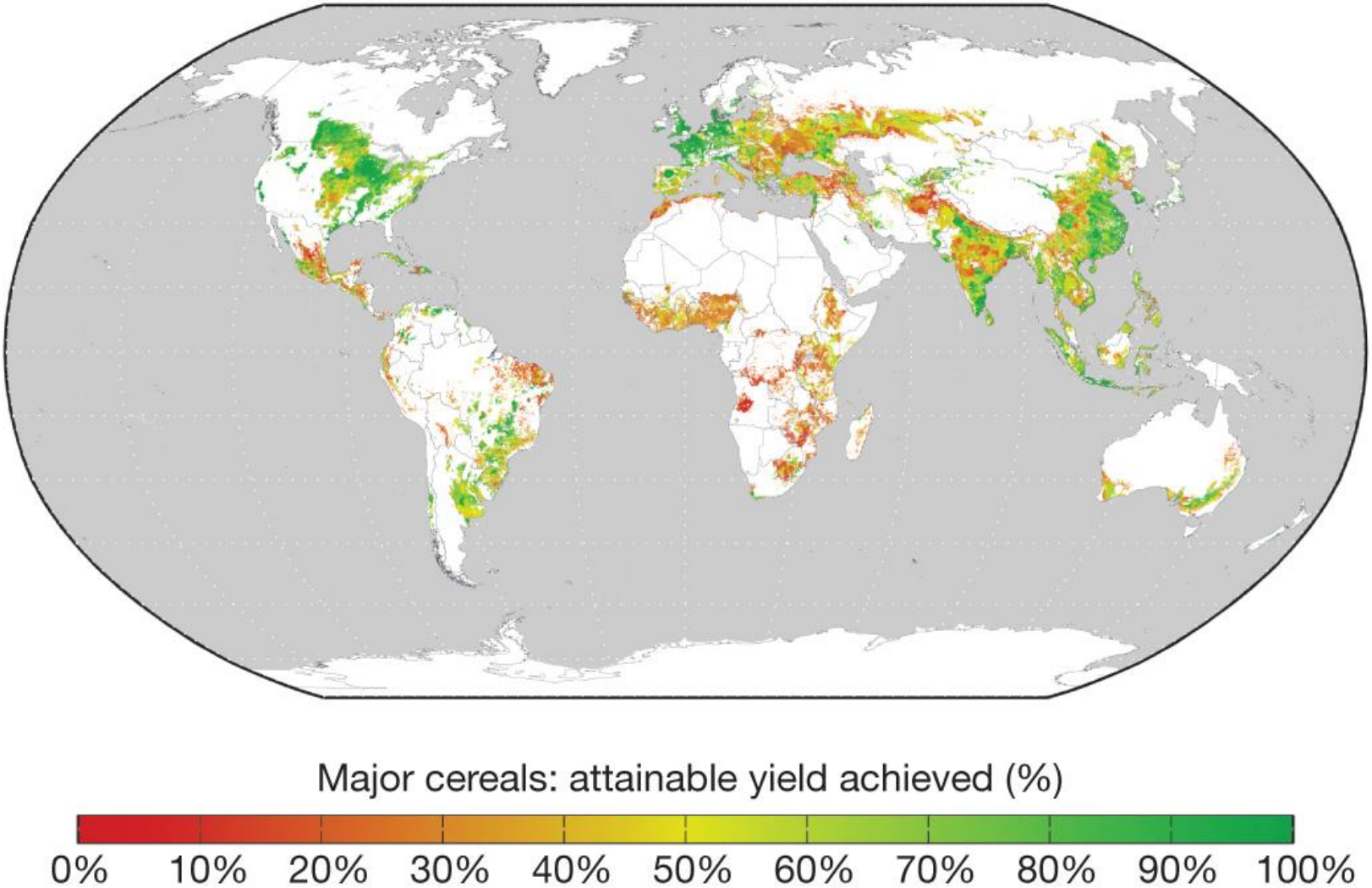

Latvia prices for Feed Wheat €/t
250
200
150
100
50
0
2008/02
2008/10
2009/06
2010/02
2010/10
2011/06
2012/02
2012/10
2013/06
2014/02
2014/10
2015/06
2016/02
2016/10
2017/06
Latvia prices for Feed Wheat €/t

Estonia: Employment in agriculture, % of total employment

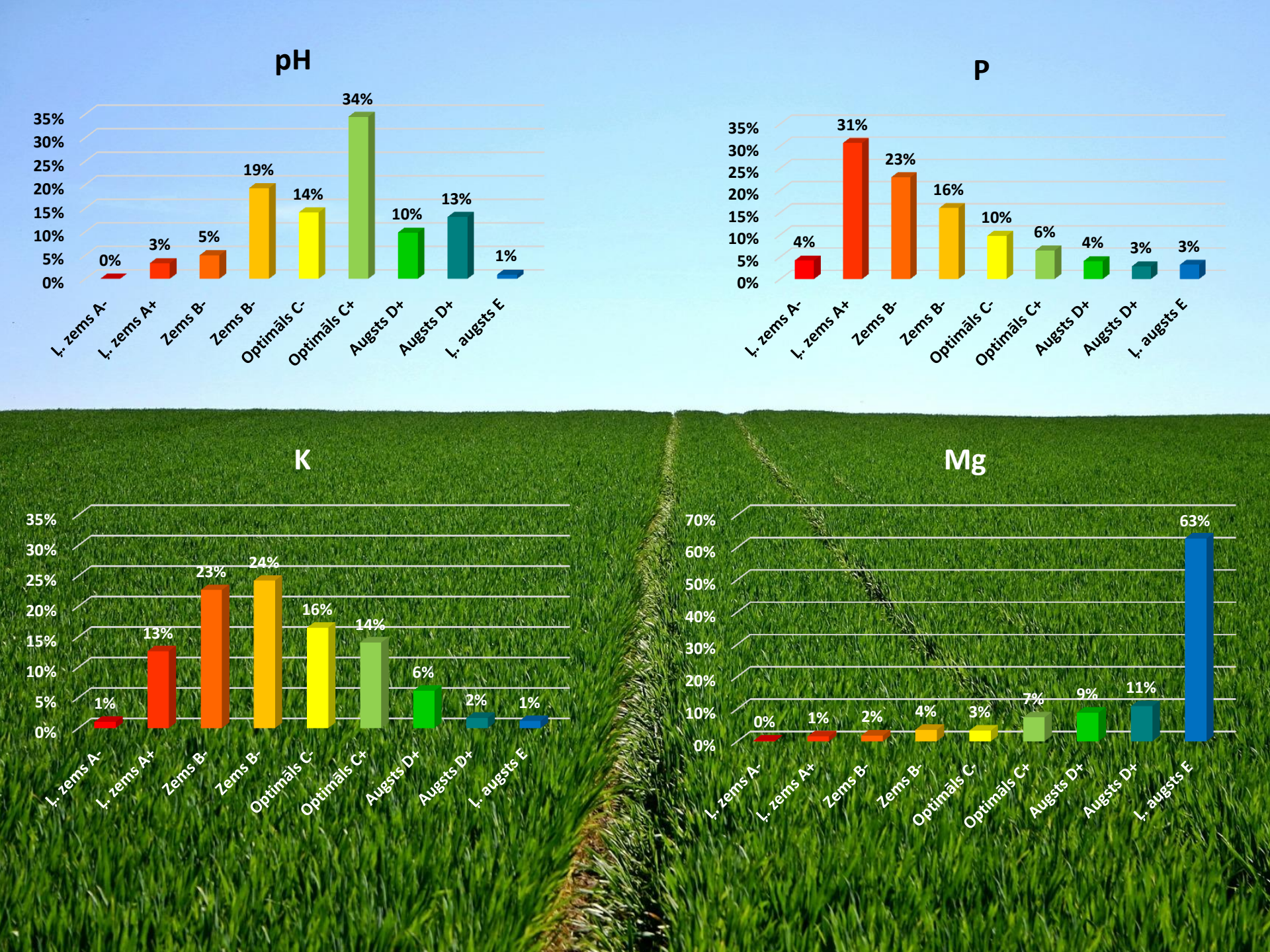


Source: TheGlobalEconomy.com, The World Bank

Average yield gaps for maize, wheat and rice.



ND Mueller *et al. Nature* **490**, 254-257 (2013) doi:10.1038/nature11420


pH
35%
30%
25%
20%
15%
10%
5%
0%
0%
3%
5%
19%
14%
34%
10%
13%
1%
Ļ. zems A-
Ļ. zems A+
Zems B-
Zems B-
Optimāls C-
Optimāls C+
Augsts D+
Augsts D+
Ļ. augsts E
P
35%
30%
25%
20%
15%
10%
5%
0%
4%
31%
23%
16%
10%
6%
4%
3%
3%
Ļ. zems A-
Ļ. zems A+
Zems B-
Zems B-
Optimāls C-
Optimāls C+
Augsts D+
Augsts D+
Ļ. augsts E
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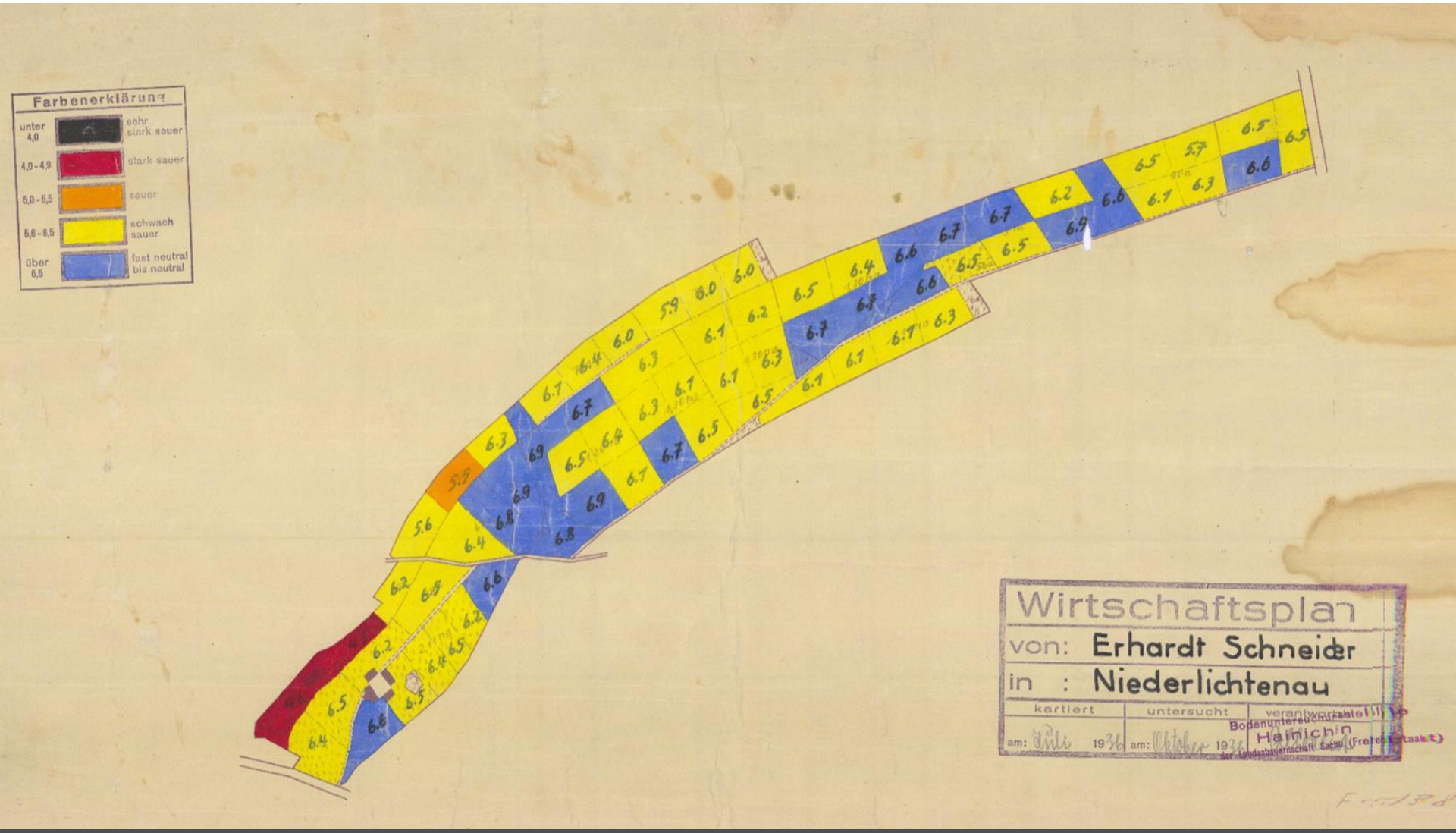
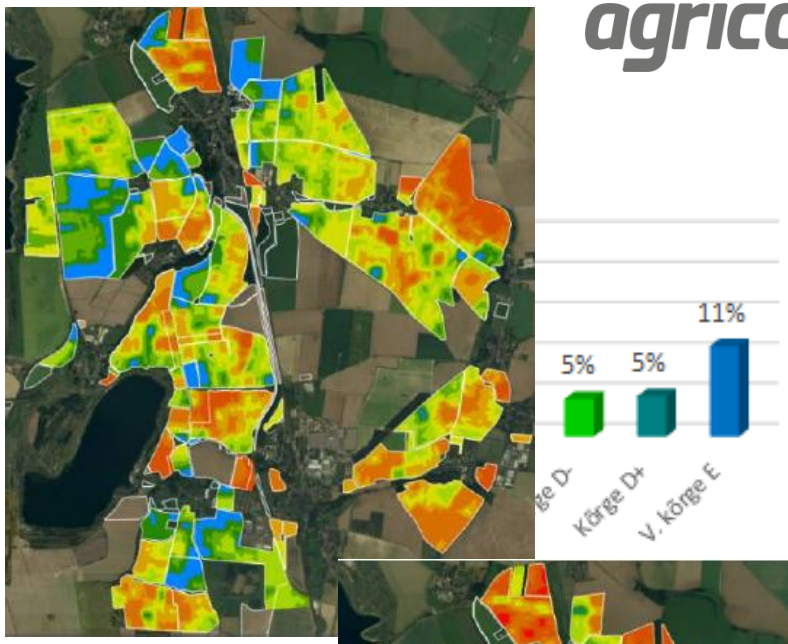
30%
25%
20%
15%
10%
5%
0%
1%
13%
23%
24%
16%
14%
6%
2%
1%
Ļ. zems A-
Ļ. zems A+
Zems B-
Zems B-
Optimāls C-
Optimāls C+
Augsts D+
Augsts D+
Ļ. augsts E
Mg
70%
60%
50%
40%
30%
20%
10%
0%
0%
1%
2%
4%
3%
7%
9%
11%
63%
Ļ. zems A-
Ļ. zems A+
Zems B-
Zems B-
Optimāls C-
Optimāls C+
Augsts D+
Augsts D+
Ļ. augsts E

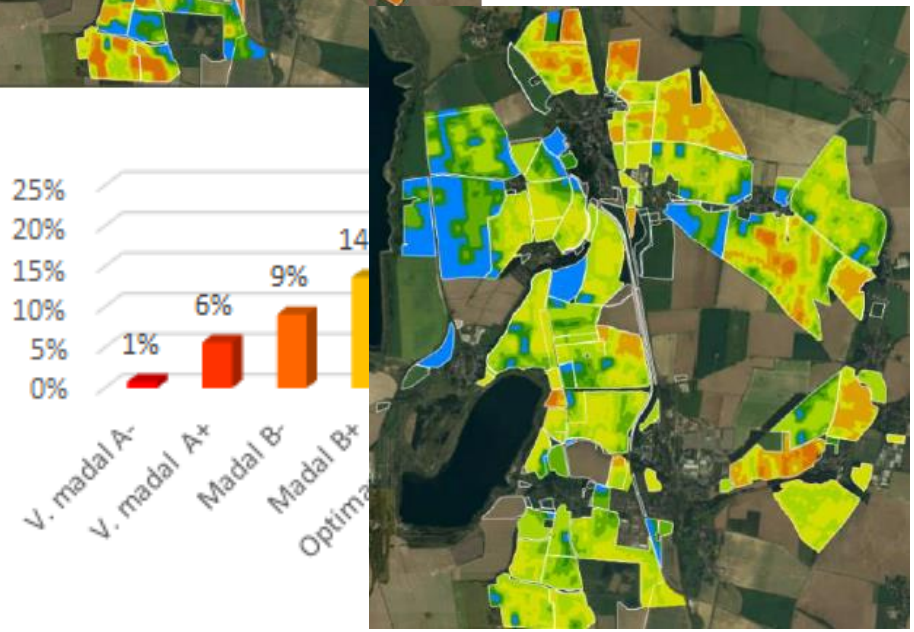
Precision farming 80 years ago

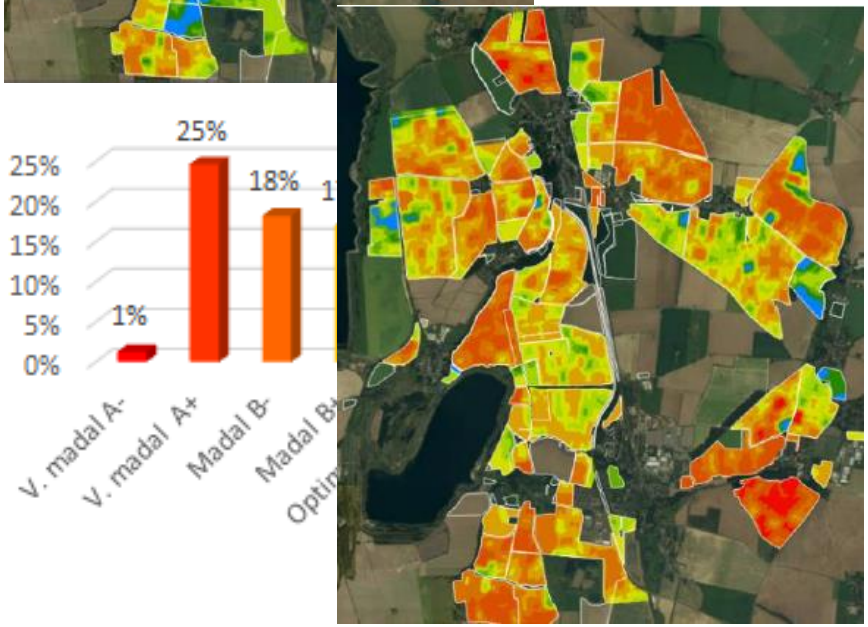



Vinni Vald
Kesk
Viru-Jaagupi
Allika
Allika
Vinni Vald
Võhu
Küti
Triigi Metskond
14' 53.68" N 26° 35' 34.88" E
Field list
Maps
Legend
Mg-Verteilung
Areas : klasse_mg
A-
A+
B-
B+
C-
C+
D-
D+
E

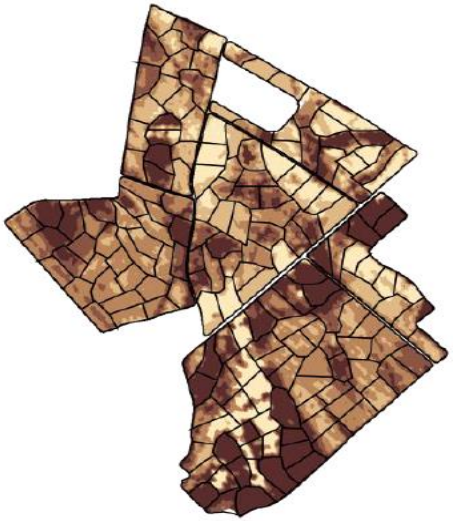
Agrokeemilised näitajad | Eestis

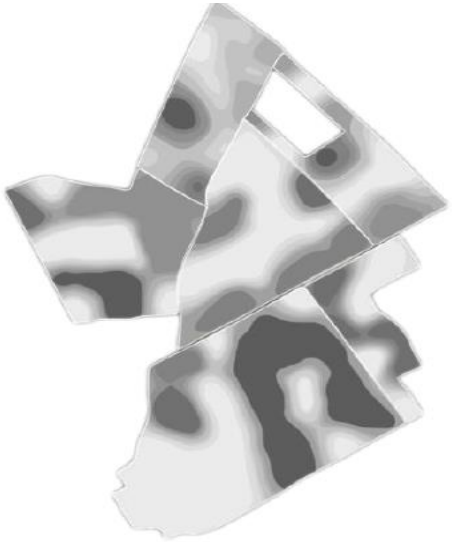






Base fertilisation | solution





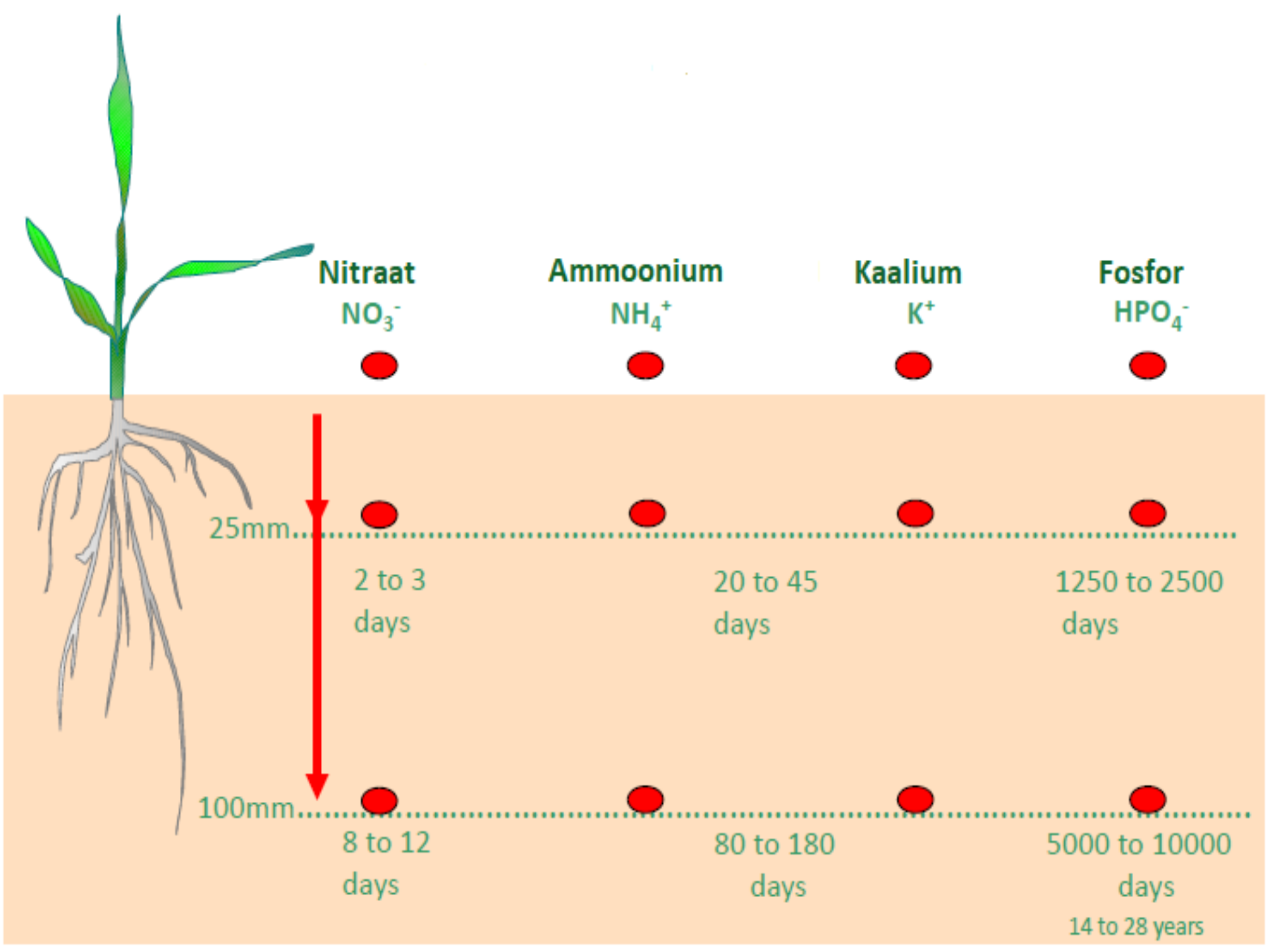
Information	Agronomic software	Application

Video

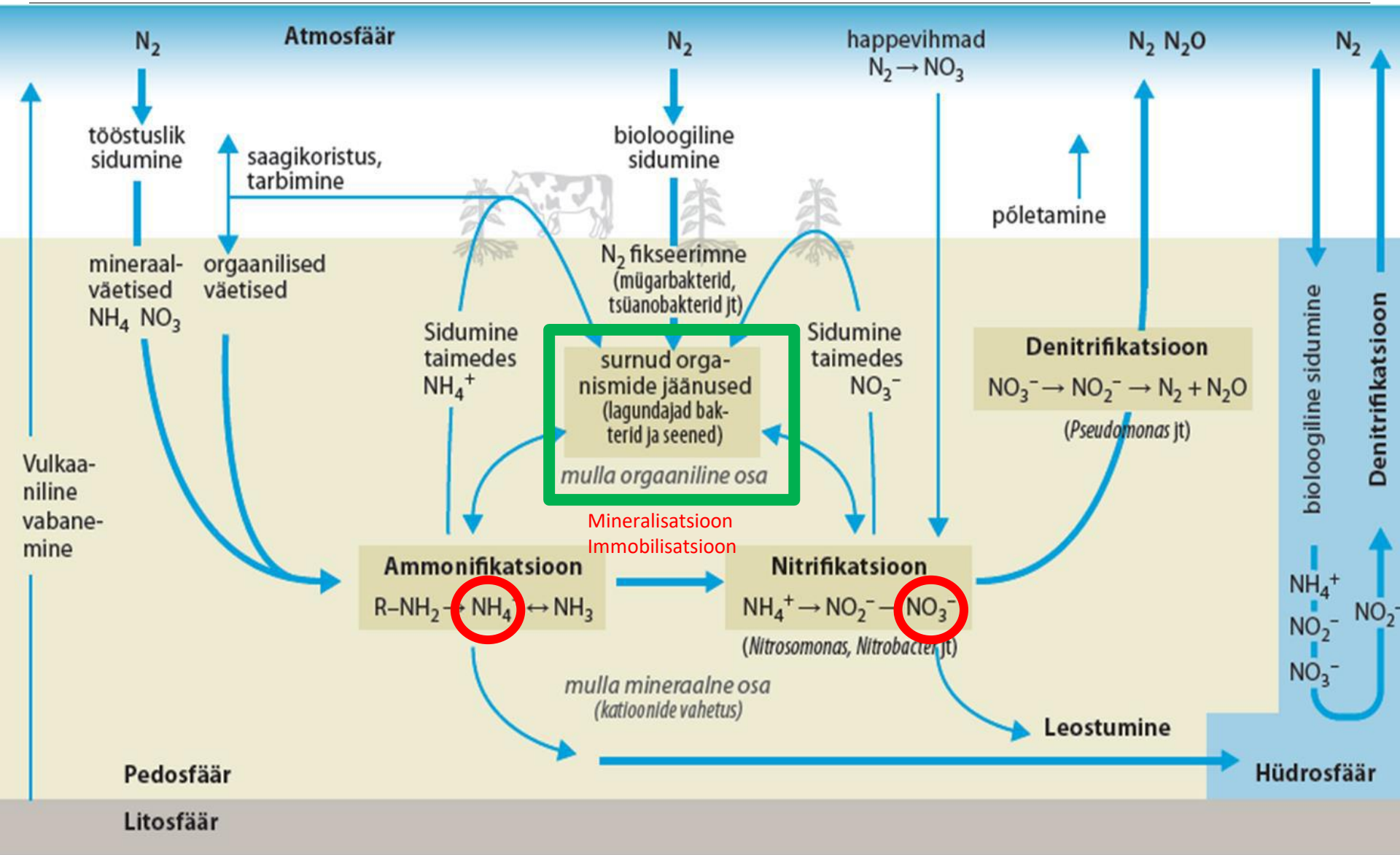
https://www.youtube.com/watch?v=L1Z4t5QKTpg&t

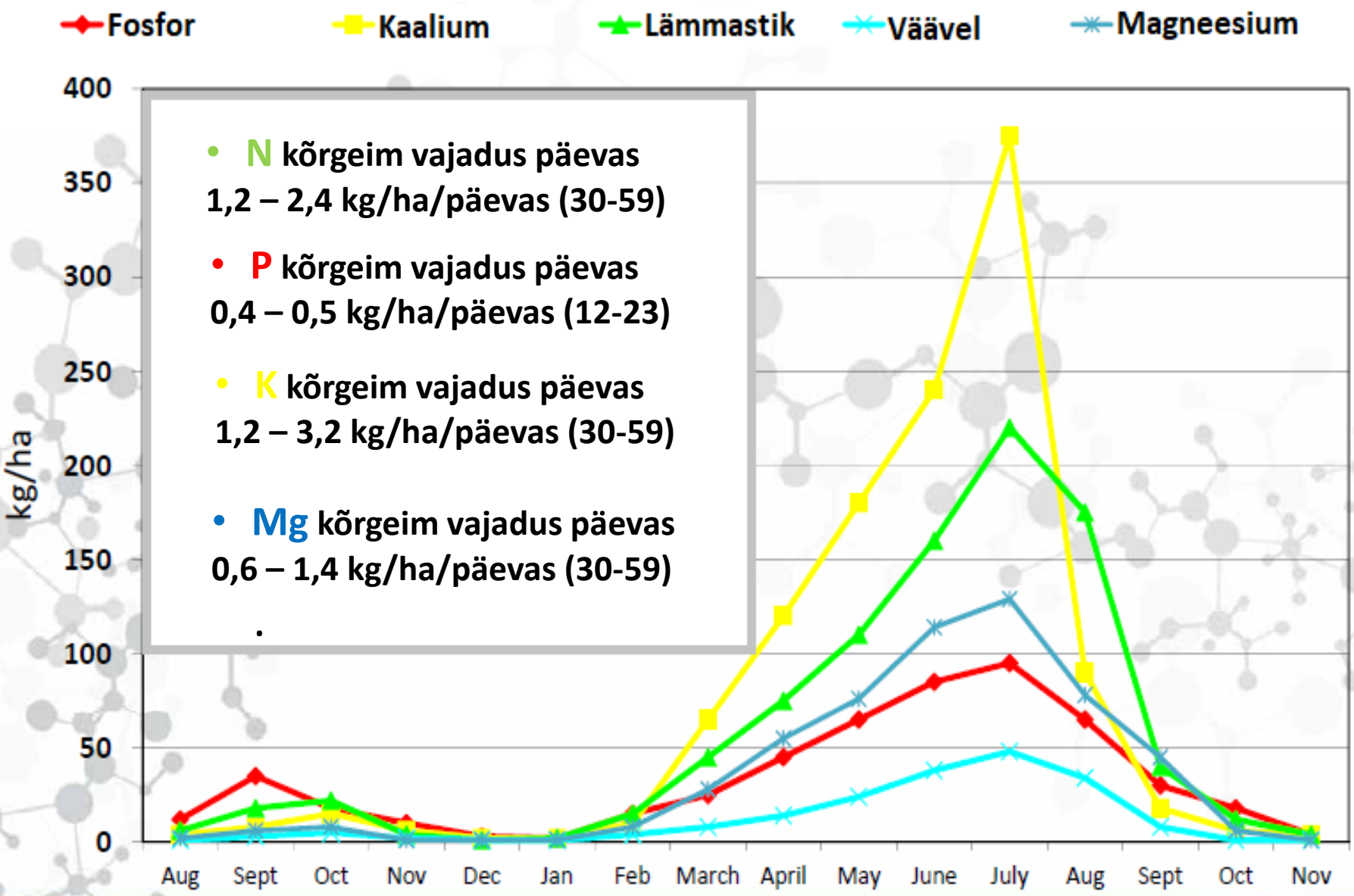
N Fertilisation concept

Crop nutrition for the modern farm


Nitraat
NO_3^-
Ammoonium
NH_4^+
Kaalium
K^+
Fosfor
HPO_4^-
25mm
2 to 3 days
20 to 45 days
1250 to 2500 days
100mm
8 to 12 days
80 to 180 days
5000 to 10000 days
14 to 28 years

Lämmastiku ringe mullas





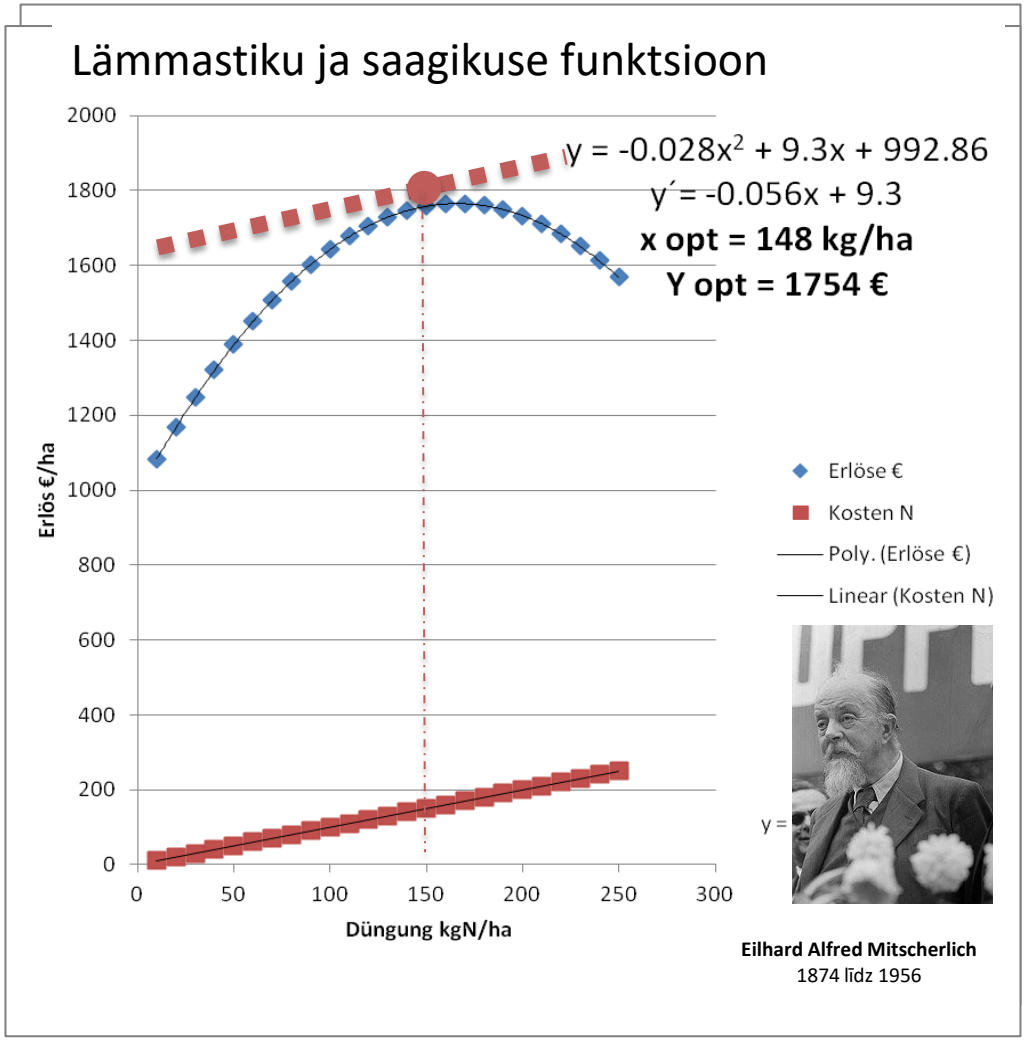
- N kõrgeim vajadus päevas
1,2 – 2,4 kg/ha/päevas (30-59)
- P kõrgeim vajadus päevas
0,4 – 0,5 kg/ha/päevas (12-23)
- K kõrgeim vajadus päevas
1,2 – 3,2 kg/ha/päevas (30-59)
- Mg kõrgeim vajadus päevas
0,6 – 1,4 kg/ha/päevas (30-59)

.

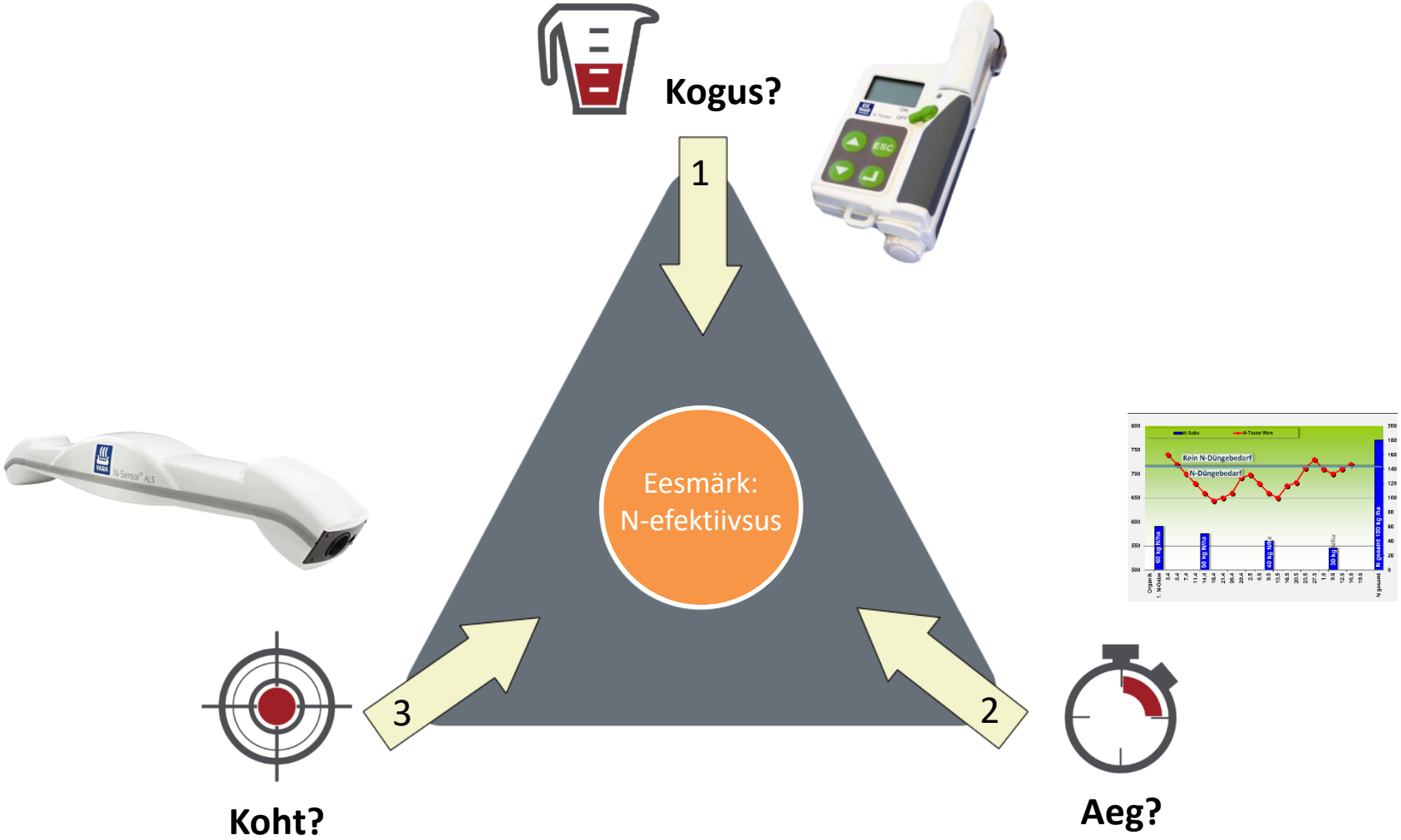
Optimaalne lämmastikväetise kogus?

Aasta	Optimaalne N kg/ha	Saak t/ha
1994	133	8,28
1995	115	8,34
1996	159	9,54
1997	194	8,32
1998	60	8,5
1999	159	8,63
2000	151	9,57
2001	191	8,74
2002	81	8,46
2003	158	6,52
2004	153	10,55
2005	213	10,55
2006	173	8,35
2007	166	10,43
2008	141	10,36
2009	203	10,26
2010	202	9,78
keskmine	156	9,1

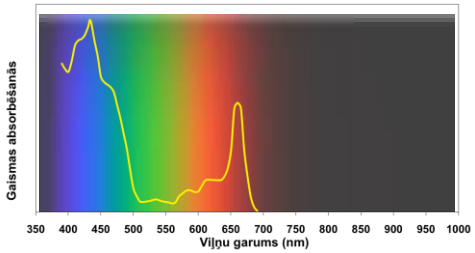
Optimumiseadus

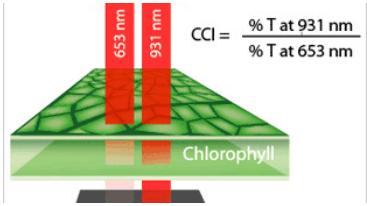


N väetamine praktikas



Lämmastiku sisalduse mõõtmine N-Testeriga

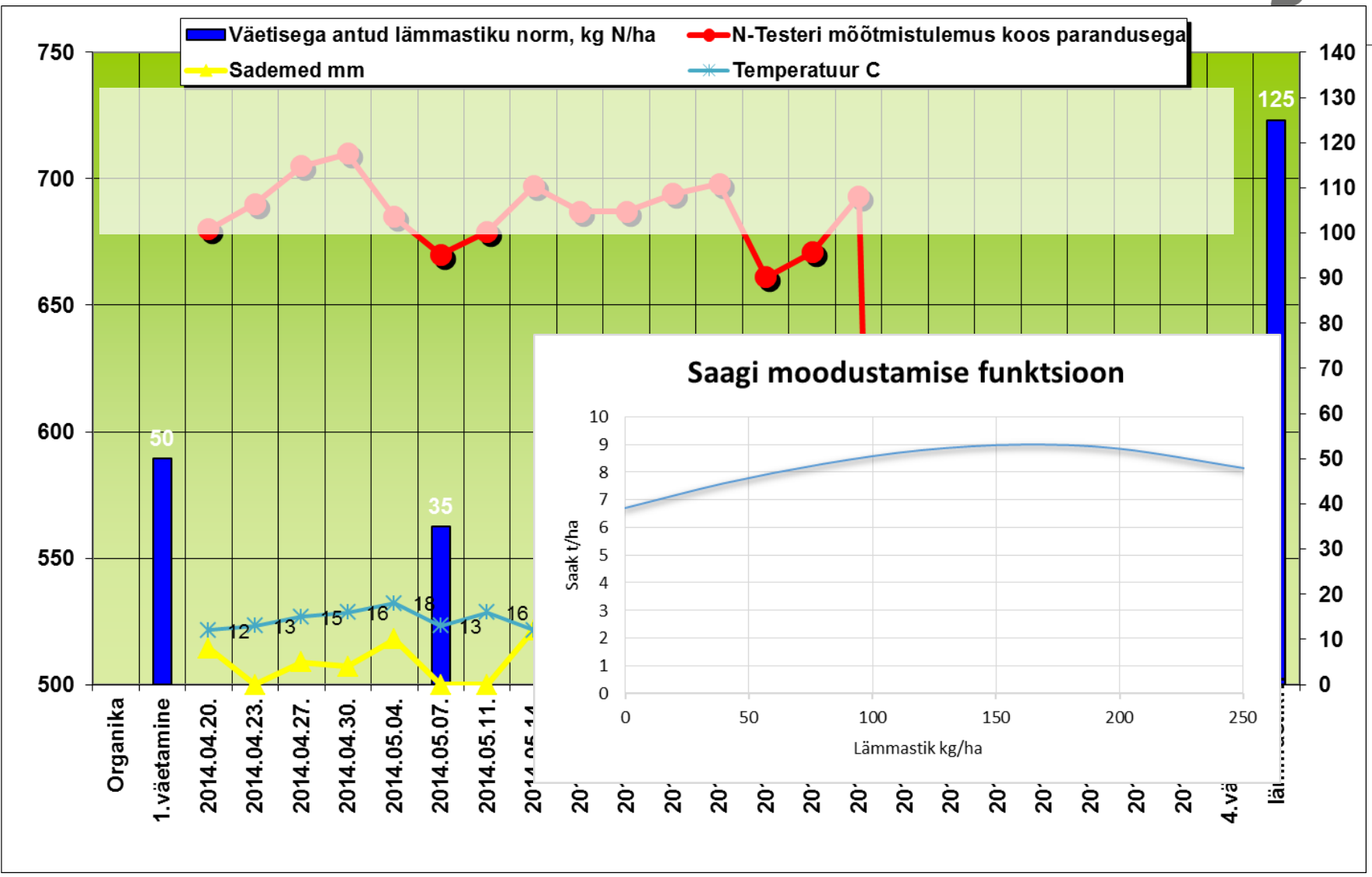




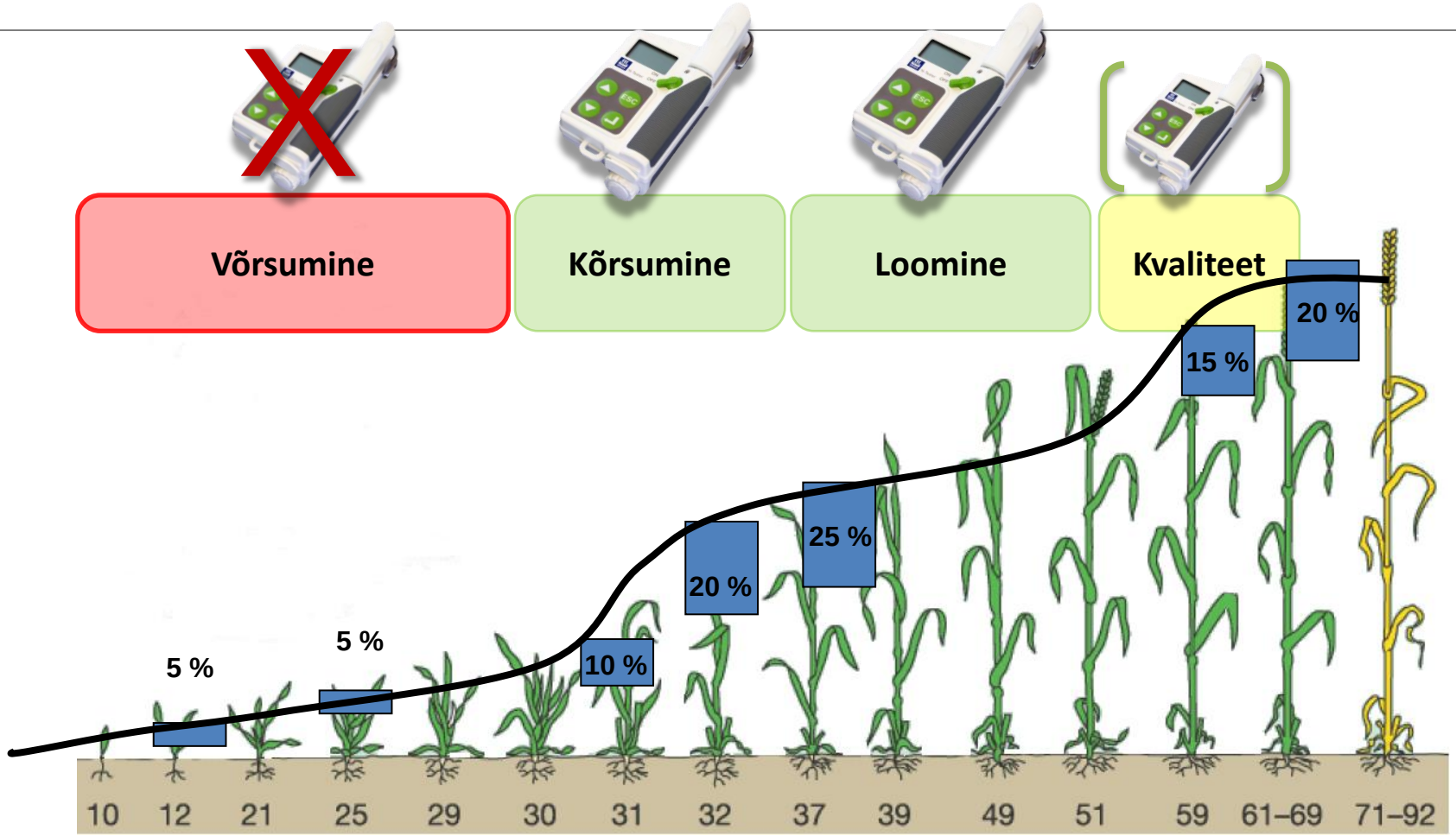
YARA N-Tester mõõdab punase värvuse neeldumist ja infrapunakiirguse läbimist taime lehes. Sellega määratakse fotosünteesi intensiivsus ja lehe paksus. Nende andmete põhjal on võimalik määrata lämmastiku sisaldus taimes.

Sordiparandused vastavalt katsetele

N-Testeriga monitooring 1.

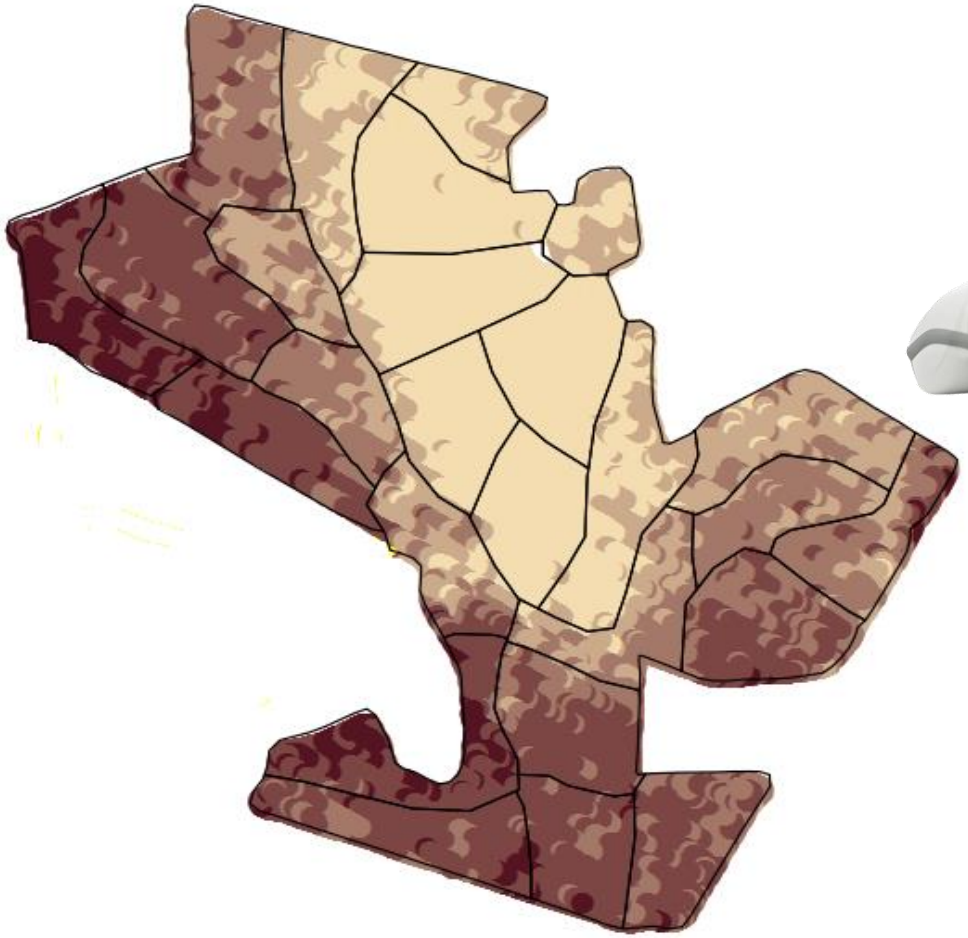


N vajaduse määramine N-Testeriga



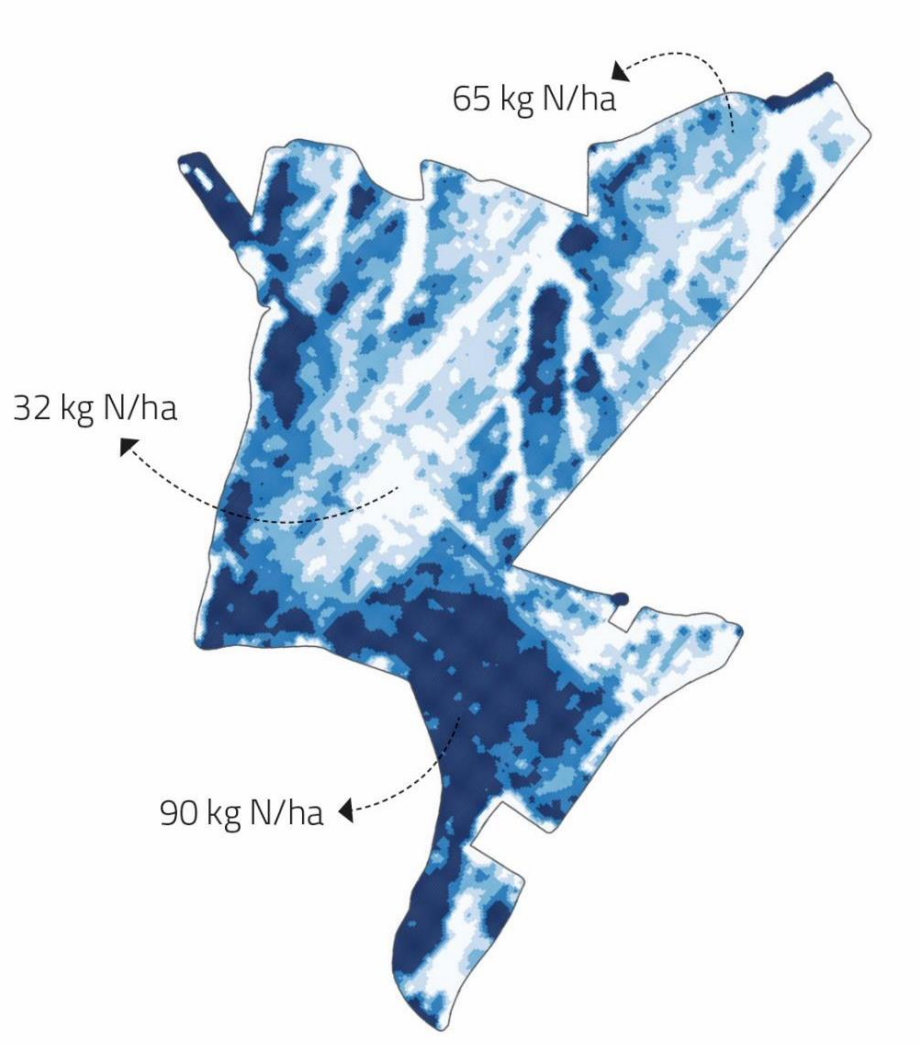
- 30 mõõtmist annavad konkreetse soovituse
- Mõõdetakse kõige nooremat täielikult välja arenenud lehte

Tegutse vastavalt olukorrale



Õige koguse määramine automaatselt

Optimum level of nitrogen | not too much, not too less



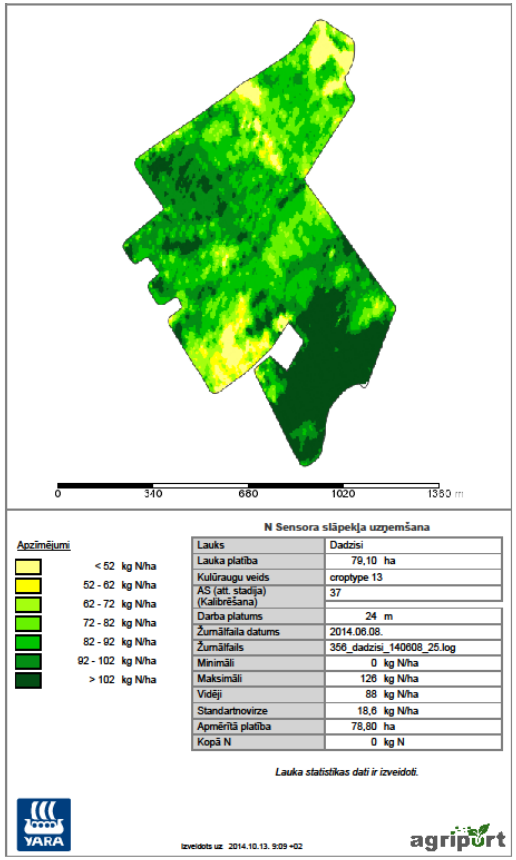
N-application map (KAS)

Avarage: 55 kg N/ha

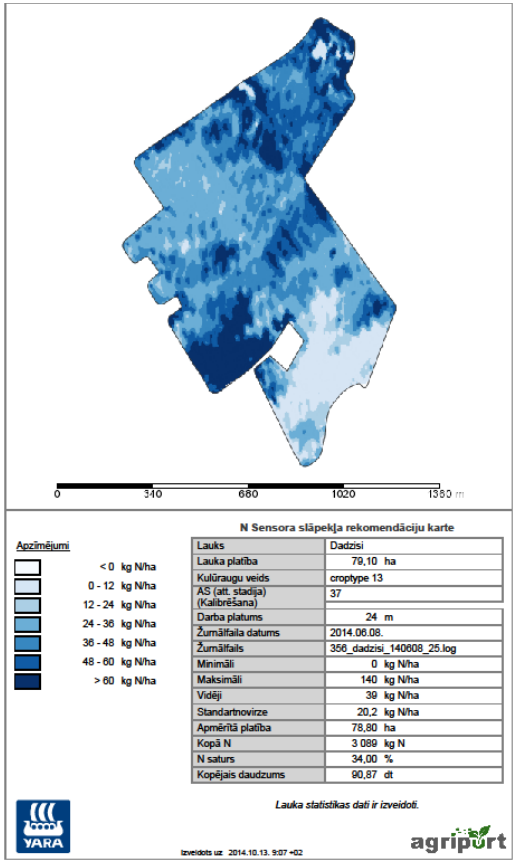
Minimum: 0 kg N/ha

Maximum: 105 kg/ha

Intelligentne N-väetamine talinisul



N-sisaldus talinisul



N-soovitus

Sensors | Agronomy - Data - Technology - Consulting

agricon

Source of information
N-Sensors
PP-Sensors
Internet

Information processing
Online
Mobile

Device controll
Spreader
Sprayer
Seeding..

agripur
Modernes Datenm
für den PFL

Information	Agronomic software	Application

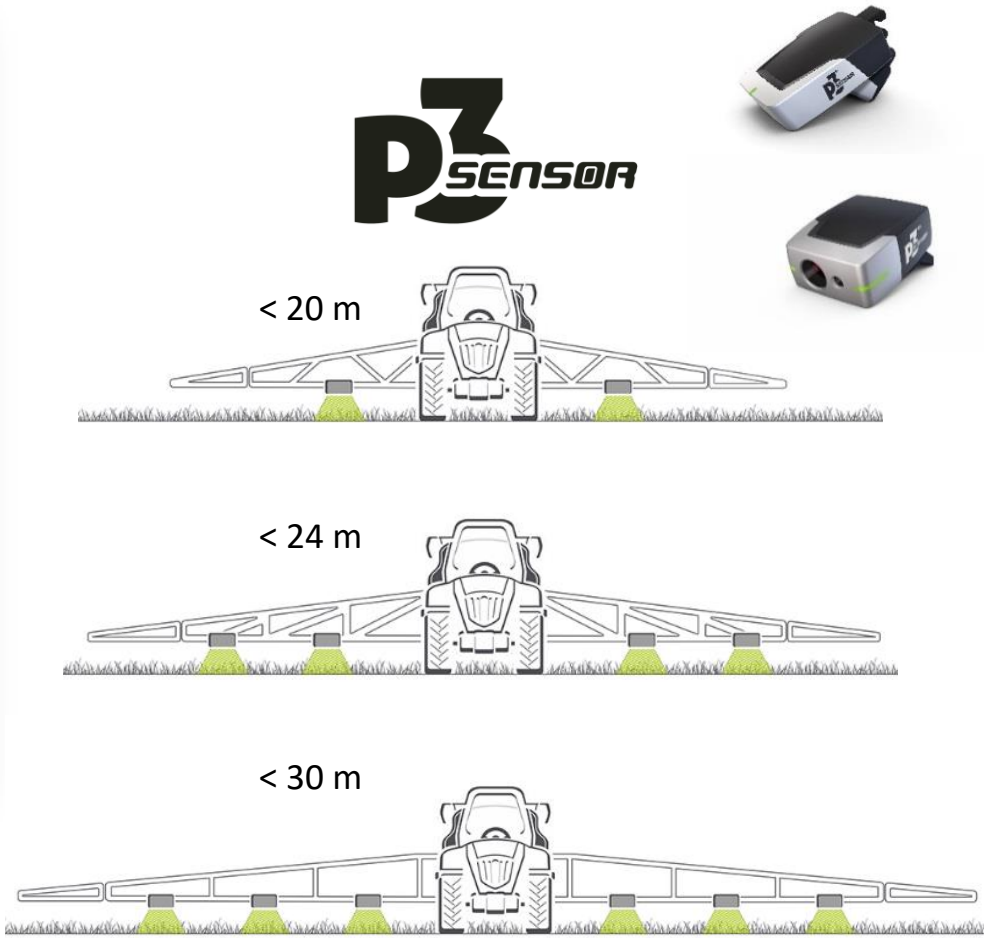
Video Agricon N-väetamine

https://www.youtube.com/watch?v=iPqkcIfG8X0

Plant Protection

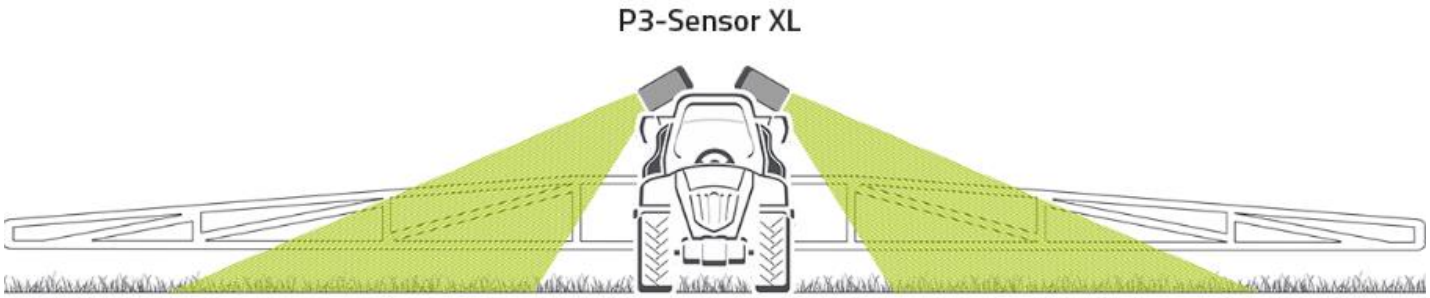
Plant protection for the modern farm

Plant Protection Concept



Taimekaitse Sensorid

- **Mõõtmisparameetrid:** biomass (N-sisladus taimes)
- **Mõõtmisala:** 24m. kuni 3440 m^2



2 sensorgalvas uz smidzinātāja korpusa | līdz max. 40 m darba platumam

Varieeruva normiga taimekaitse | Kasvuregulaator

Video Agricon taimekaitse

https://www.youtube.com/watch?v=sBOBciX7qLY

Video Agricon Agriport

https://www.youtube.com/watch?v=niBfIdO0T3Q&t

Agriculture 4.0 | advantages

Save on inputs

Increased yields

Optimised work processes

Environmental protection

Automatic documentation

Increased profits

Digitalization enables us **to hear more**, **to see more** and thereby to recognize, to know and **understand more** in plant cultivation. We can **make decisions faster and exacter than earlier** in the analogue world. We **can manage bigger units** in considerably higher quality and at the same time make sure each square meter is cultivated **to the optimum.**

Peer Leithold
CEO, Agricon

Meit Jürgens
Agricon Estonia
meit.jurgens@agricon-baltic.com

Euroopa Maaelu Arengu Põllumajandusfond: Euroopa investeeringud maapiirkondadesse