NovaCropControl

Plant sap analysis add improvements to plant health & quality

Presented by

Sabine Robben

NovaCropControl

2003

HAND METERS
Started in strawberry and open field

2009

ESTABLISHMENT
By Bart Vromans and Sjoerd Smits

2018

TEST LOCATION
1000 M2 independent investigation

2022

NEW OFFICE
Located in Oisterwijk

2023

Research
Research to plant health with using plantsap analysis

Plantsap analysis

- Actual mineral uptake which the plant can use **directly** for growth and development. Results are ready after **one working day** after arriving samples
- **21 parameters** per sample
  - EC, pH, Sugars
  - Macro elements (K, Ca, Mg, Na, NH4, NO3, Total N, P, S, Cl)
  - Trace elements (Si, Fe, Mn, Zn, B, Cu, Mo, Al)
- Reports and Online program to view data

Difference plantsap analysis and dry matter test

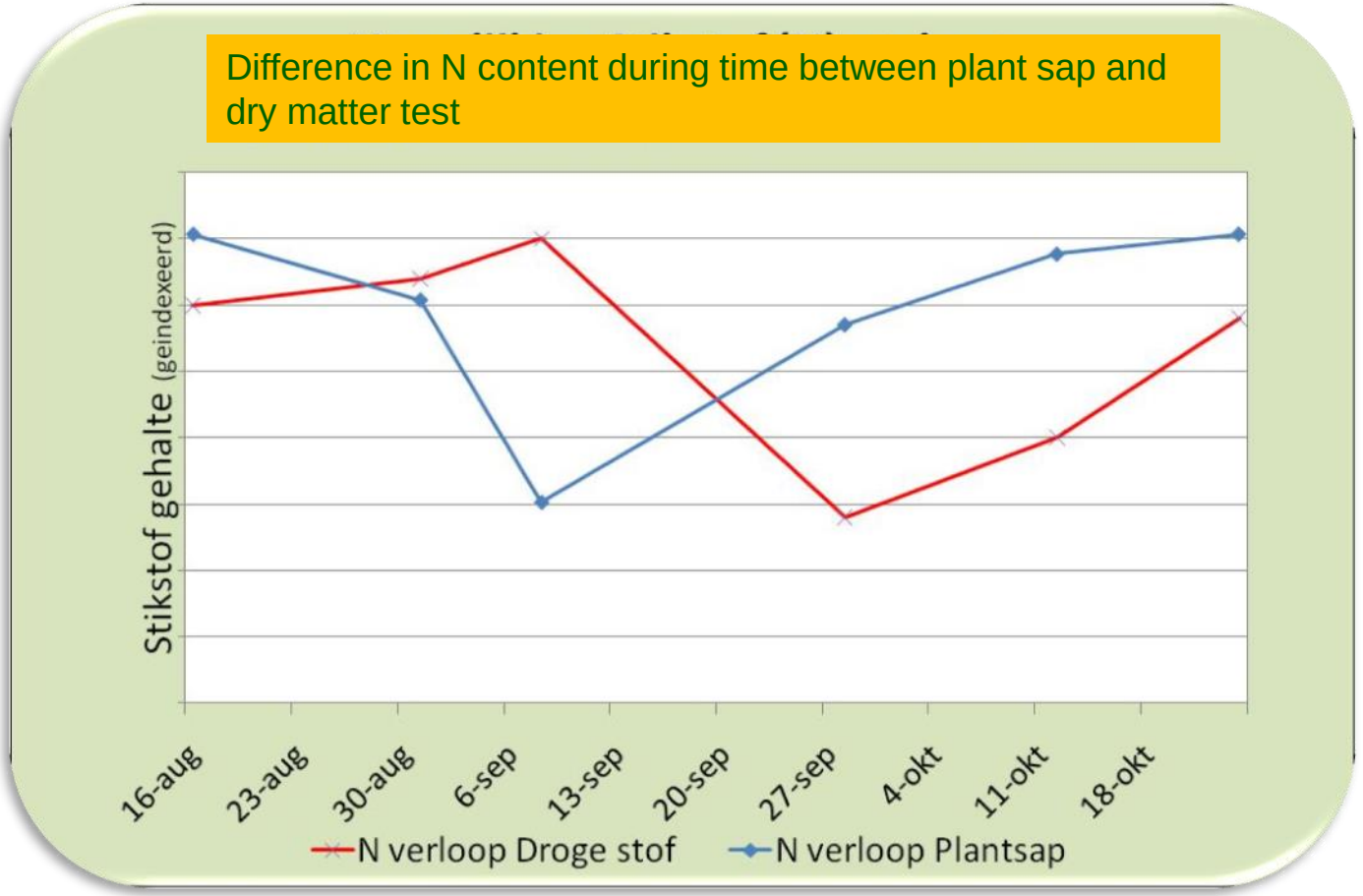
Two types

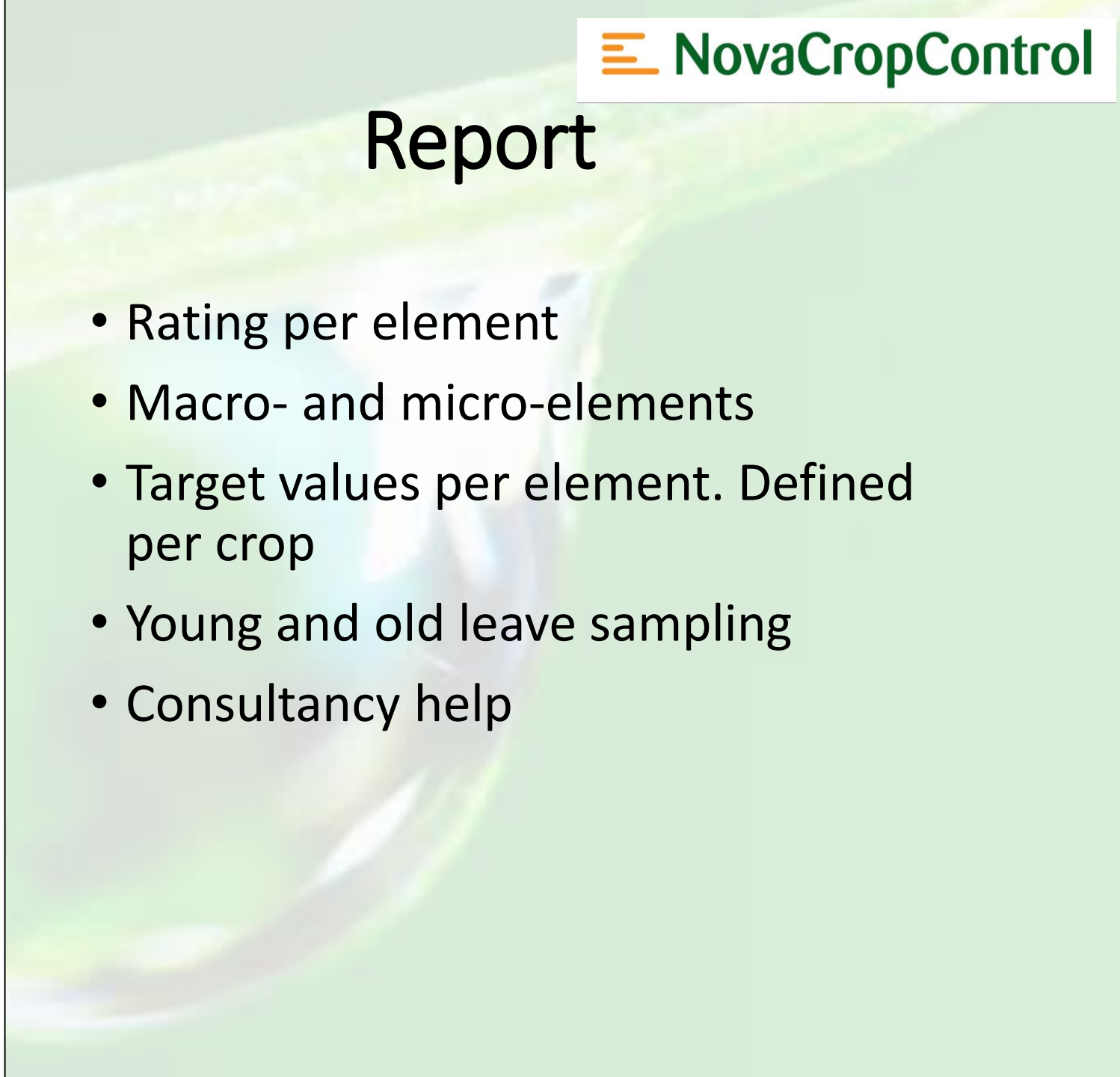
- Mineral/dissolvable salts: current uptake for plant development
- Fixed minerals: organic compounds, hardly available for plant development.

- Plant sap measurement: Measures mostly dissolved salts. The current situation of nutrition the plant can use for growth
- Dry matter test: counts the total of both (total uptake by plant). Deficiency is not directly visual in the analyses.

Difference plantsap analysis and dry matter test

- **Plantsap:** N deficiency in an earlier stage visual.
2/3 weeks later visual in the dry matter.
- **Dry matter test:** it takes longer to determinate lower numbers





NovaCropControl
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www.novacropcontrol.nl

Plantsap-monster	[1] 201107110001	**Monsterdatum:**	10-7-2011	
	[2] 201107110002			
Naam:	Aert v. Aardbeikwekerij bv	**Locatie/perceel:**	Standaard	
Adres:	Rucphenseweg 48	**Teeltnaam:**	Standaard	
	4882 KC Zundert	**Gewas:**	aardbei	
		Plantdeel:	[1] Blad (jong)	[2] Blad (oud)

Opmerkingen:

Mineraal		Huidig niveau	
Suikers	%	3,8	1
	%	3,2	2
pH		5,4	1
		5,5	2
EC	mS/cm	8,9	1
	mS/cm	14,1	2
K - Kalium	ppm	3960	1
	ppm	4777	2
Ca - Calcium	ppm	455	1
	ppm	2245	2
K / Ca		8,71	1
		2,13	2
Mg - Magnesium	ppm	494	1
	ppm	1523	2
Na - Natrium	ppm	9	1
	ppm	9	2
NH4 - Ammonium	ppm	98	1
	ppm	78	2
NO3 - Nitraat	ppm	307	1
	ppm	3149	2
N uit Nitraat	ppm	69	1
	ppm	711	2
N - Stikstof totaal	ppm	672	1
	ppm	1499	2
Cl - Chloor	ppm	165	1
	ppm	705	2
S - Zwavel	ppm	95	1
	ppm	107	2
P - Fosfaat	ppm	698	1
	ppm	341	2
Si - Silicium	ppm	4,3	1
	ppm	5,7	2
Fe - IJzer	ppm	3,95	1
	ppm	1,19	2
Mn - Mangaan	ppm	2,95	1
	ppm	2,92	2
Zn - Zink	ppm	0,93	1
	ppm	0,94	2
B - Borium	ppm	0,63	1
	ppm	2,13	2
Cu - Koper	ppm	0,27	1
	ppm	0,13	2
Mo - Molybdeen	ppm	0,09	1
	ppm	0,05	2
Al - Aluminium	ppm	0,16	1
	ppm	0,57	2

Raadpleeg uw adviseur voor een passend bemestingsadvies.

101.20110622b

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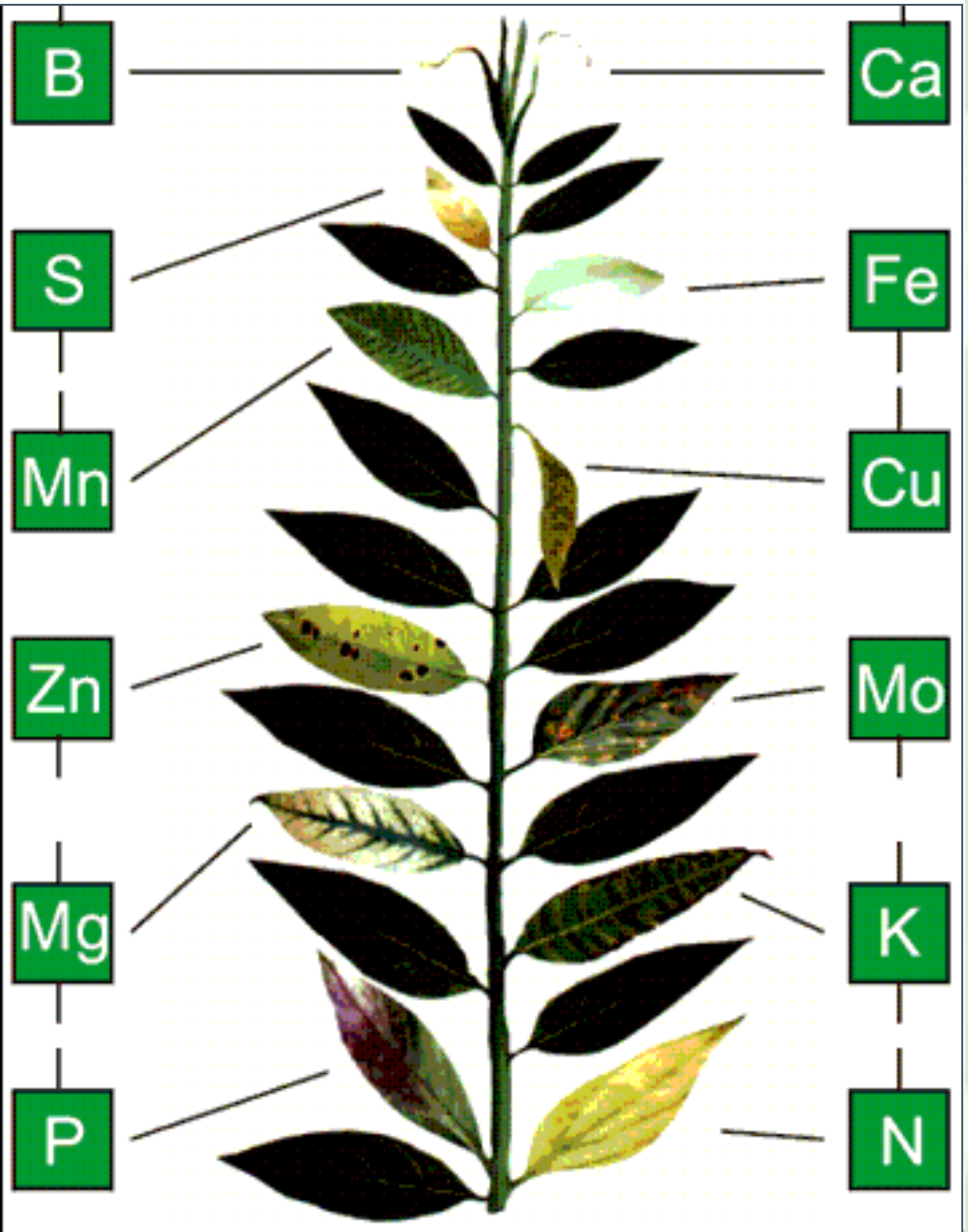
Report

- Rating per element
- Macro- and micro-elements
- Target values per element. Defined per crop
- Young and old leave sampling
- Consultancy help

Elements deficiency



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Mobile elements

Deficiency first visible in <u>old leaves.</u>

- Nitrogen (N)
- Potassium (K)
- Magnesium (Mg)
- Phosphorus (P)

Moderate mobile elements

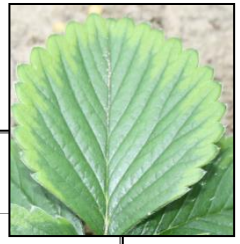
- Sulphur (S)
- Iron (Fe)
- Manganese (Mn)
- Zinc (Zn)
- Copper (Cu)
- Molybdenum (Mo)

Non-mobile elements

Deficiency first visible in <u>young leaves</u>

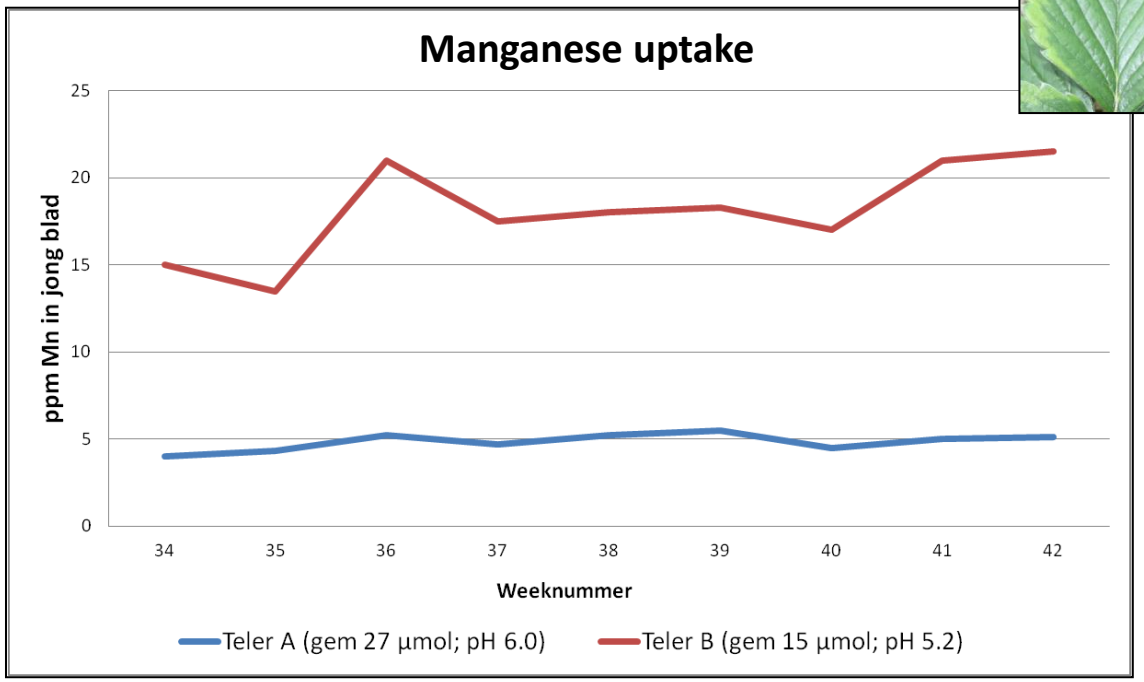
- Calcium (Ca)
- Borium (B)

More nutrition not automatically better uptake



- pH of soil and irrigation water
  - Root problems
  - Less uptake trace elements

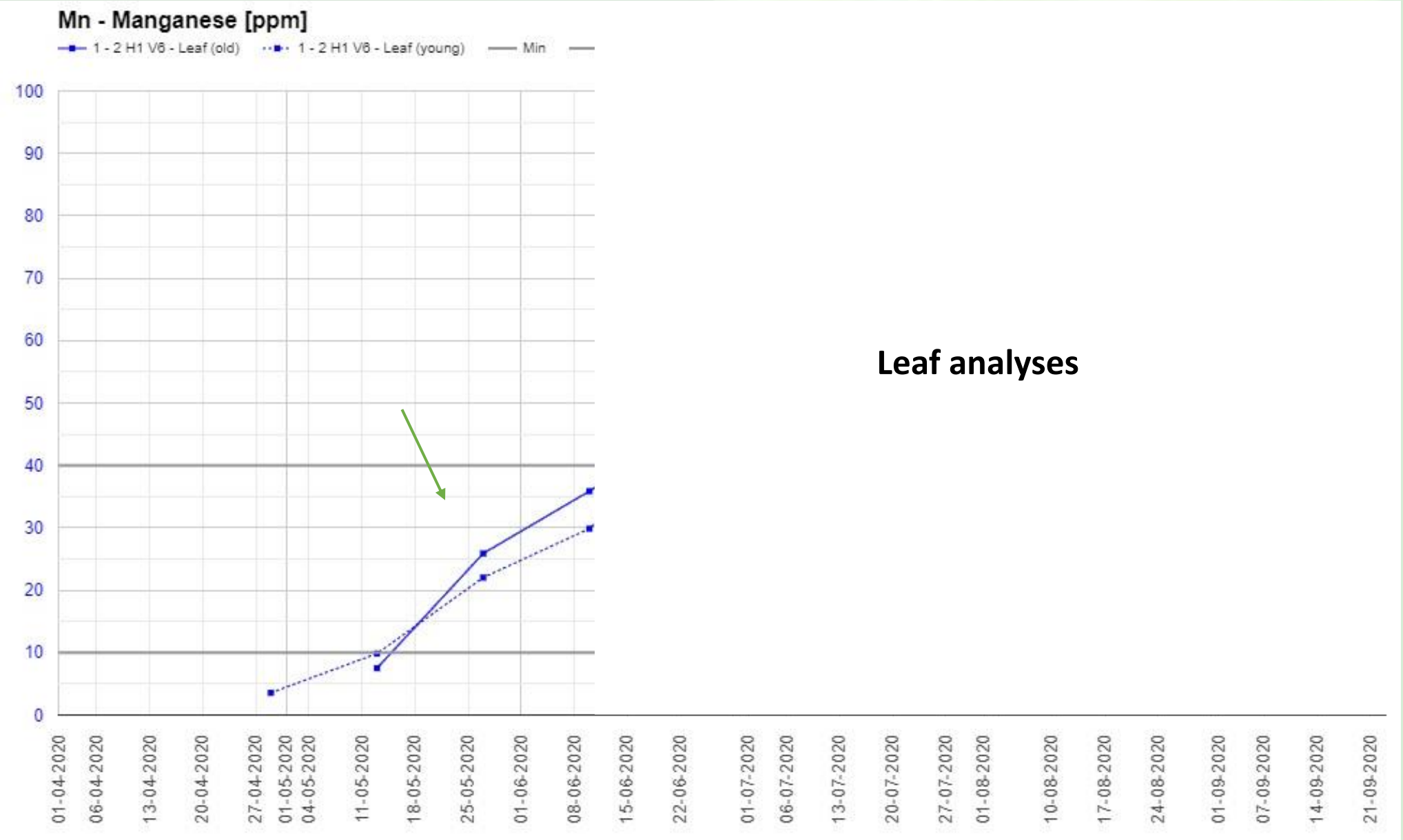
	Manganese irrigation water	pH irrigation water
Grower A	27 umol	6.0
Grower B	15 umol	5.2



- Despite the higher manganese supply, a lower absorption due to too high pH of the irrigation water.

Practical example:

Green arrow: fast uptake manganese



Leaf analyses

Practical example:

Green arrow: Lowered manganese

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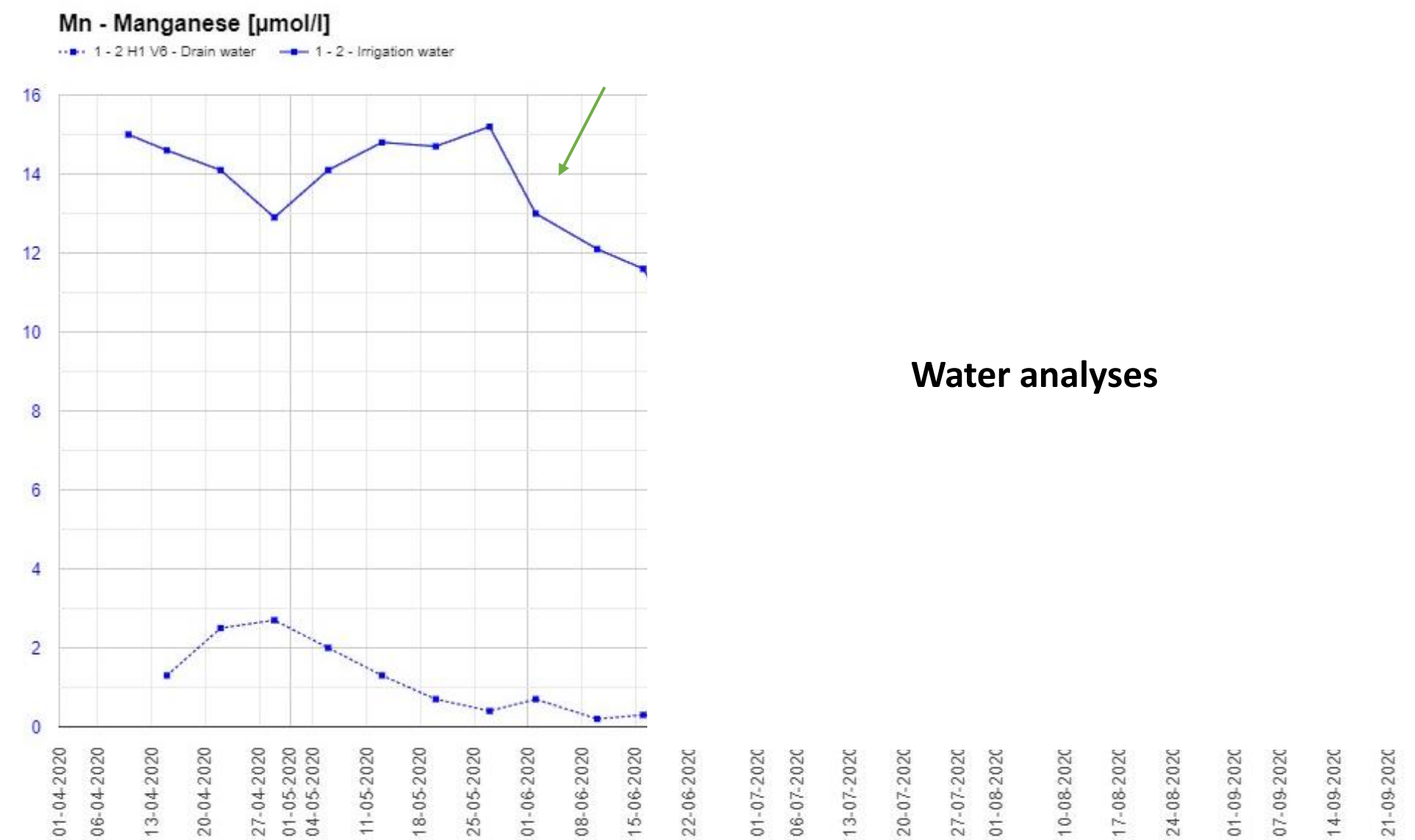

Water analyses

Practical example:

Green arrow: fast uptake manganese
Orange arrow: still fast uptake Mn

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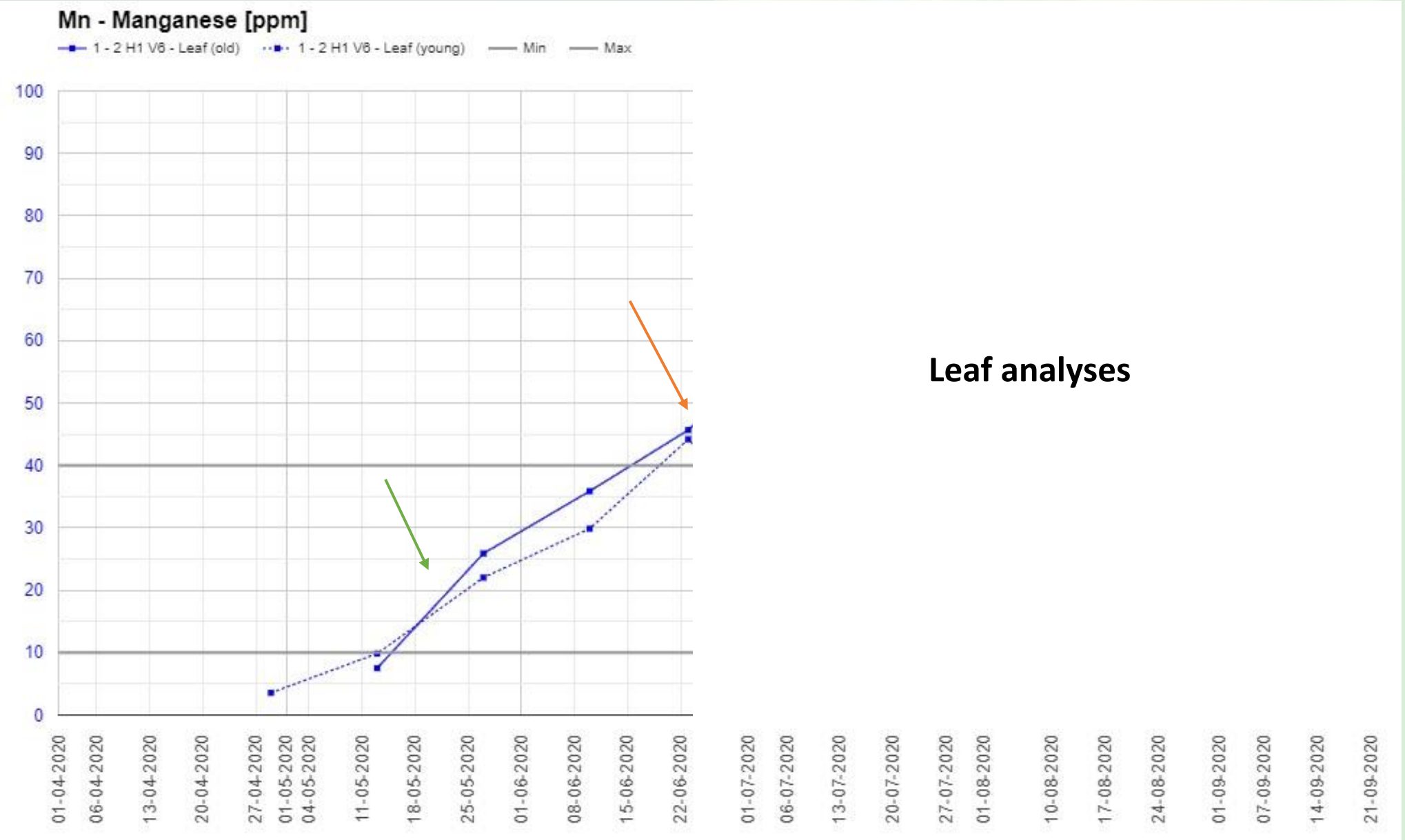

Leaf analyses

Practical example:

Green arrow: Lowered manganese
Orange arrow: Still lowering manganese

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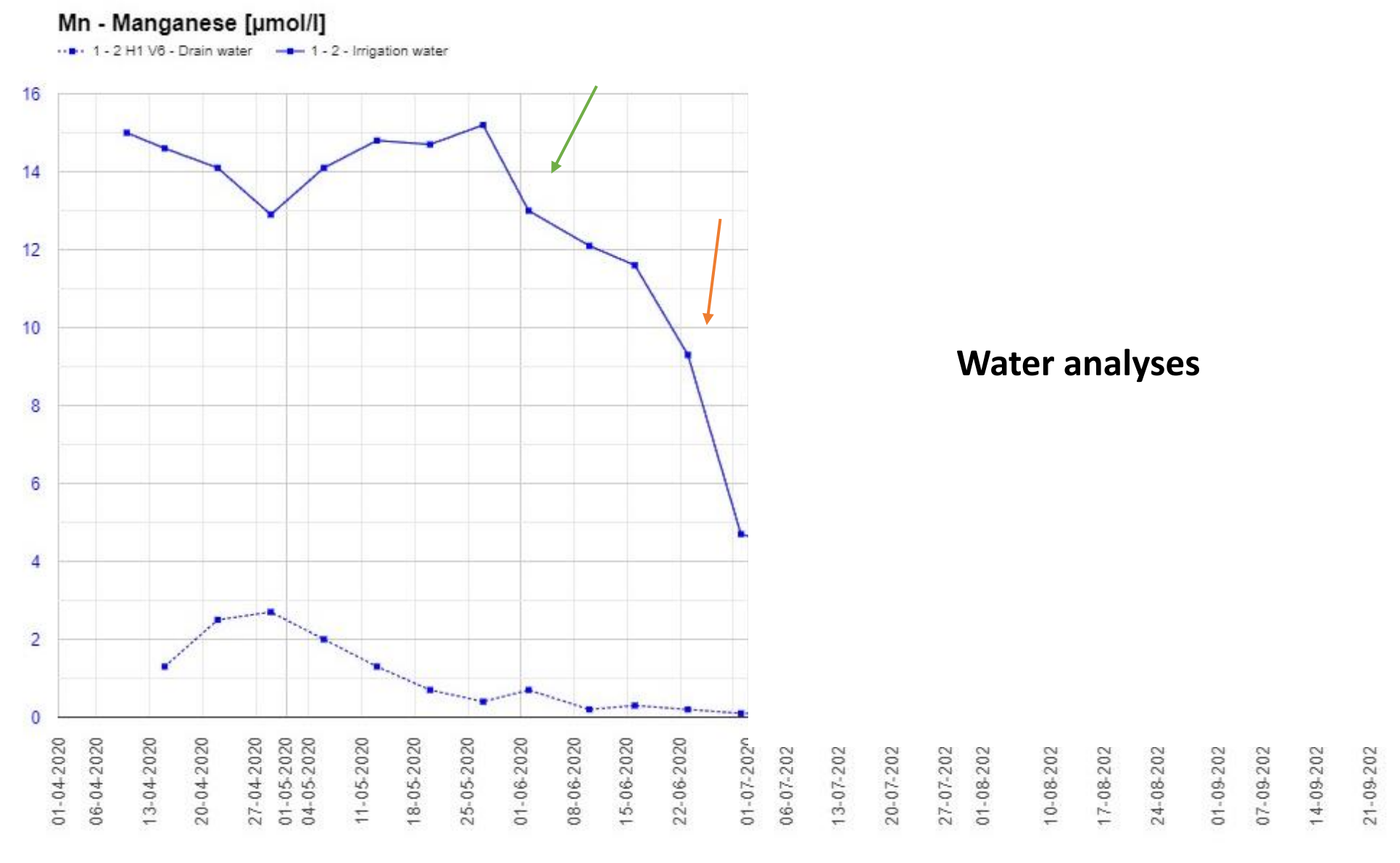

Water analyses

Practical example:

Green arrow: fast uptake manganese
Orange arrow: still fast uptake Mn
Between orange and **black** arrow: stabilizing of manganese in young leaves

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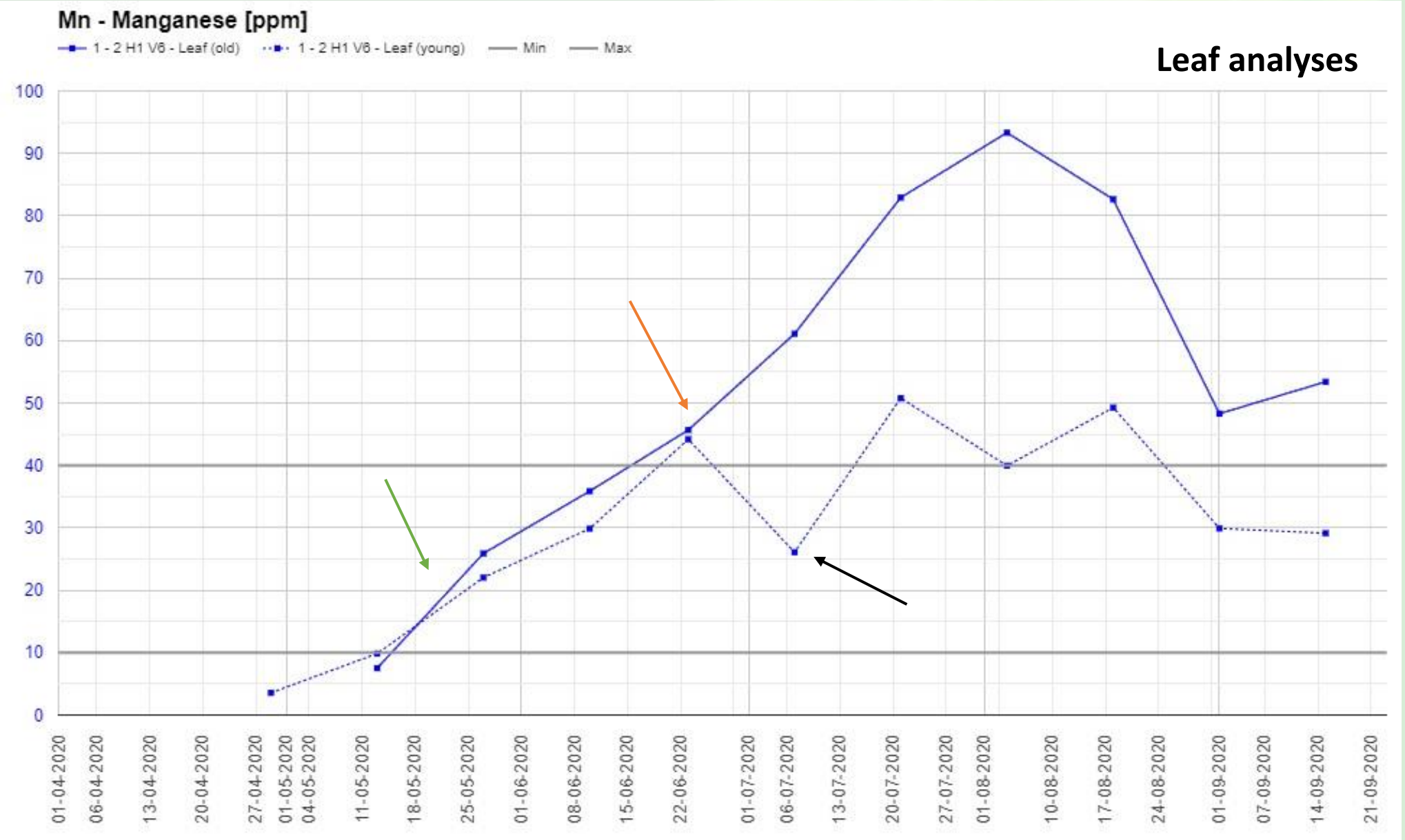

Practical example:

Green arrow: Lowered manganese
Orange arrow: Still lowering manganese
Black arrow: stabilizing of manganese in irrigation water

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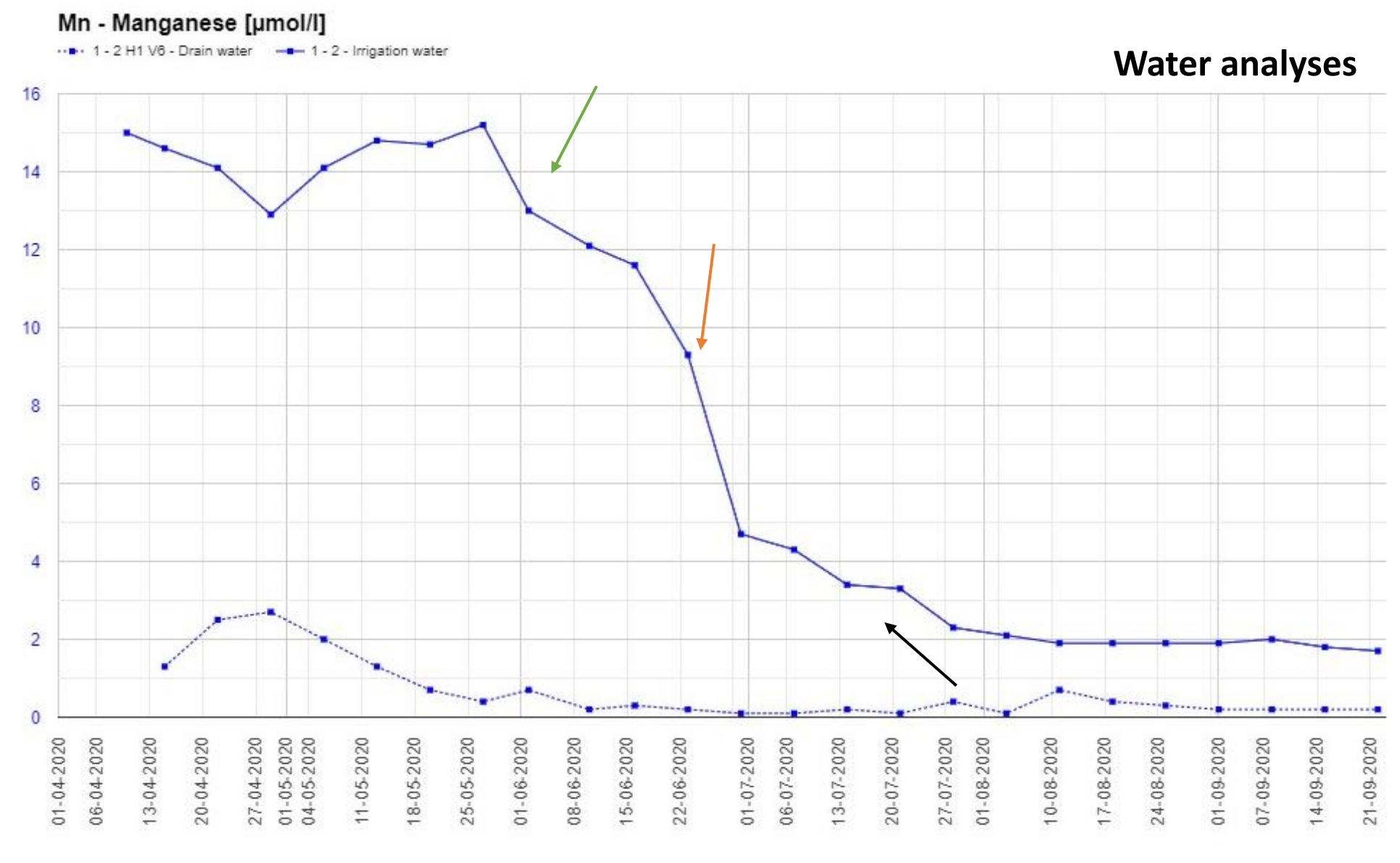
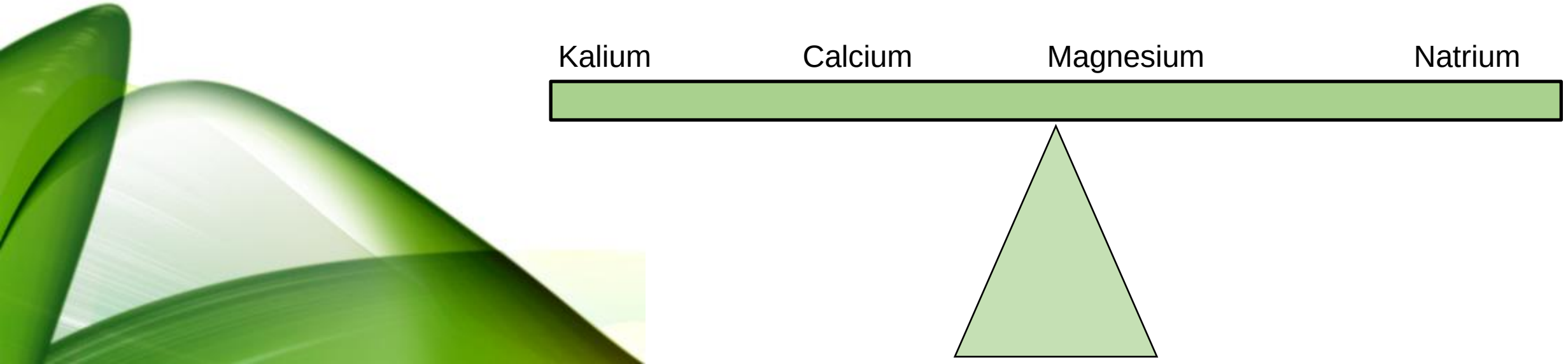


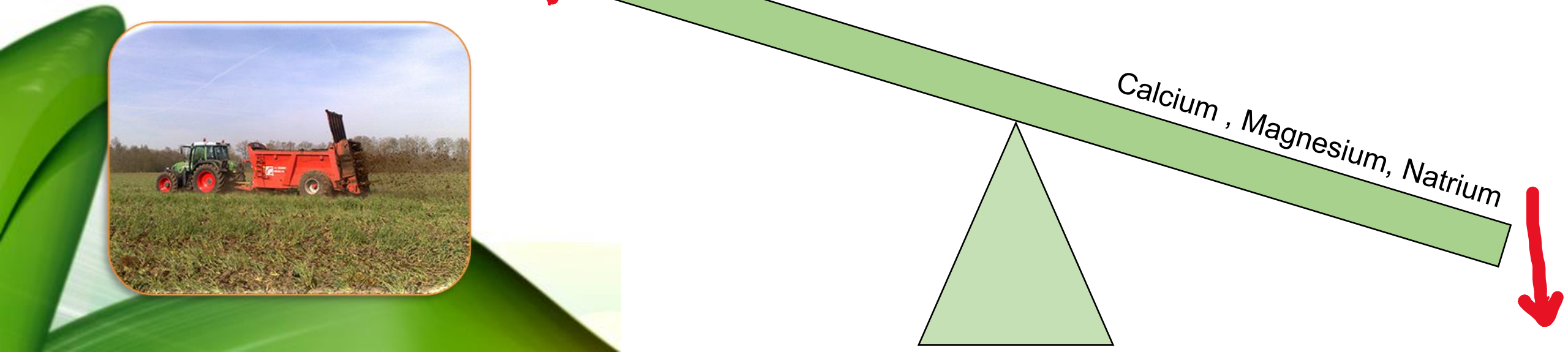
Antagonistic interactions

- Sufficient in the soil, does not guarantee balanced uptake
- The ratio between elements determines the uptake
- One cation too high presented in plant sap, other cation(s) deficient



Antagonistic interactions

- When one cation increases in availability, other cation(s) will decrease in the plant sap
- When one cation decreases in availability, other cation(s) will increase in the plant sap



Practical example: interactions cations

Mineral		Current Level	Optimum	
K - Potassium	ppm	2425	2088 - 2712	1
	ppm	2458		2
Ca - Calcium	ppm	573	1207 - 2193	1
	ppm	1034		2
K / Ca		4,23		1
		2,38		2
Mg - Magnesium	ppm	1771	640 - 960	1
	ppm	1331		2

- High magnesium uptake
- Uptake of other cations are suffering of this
- Balance between elements

Vegetative VS. Generative

Vegetative phase: growth, leaf production

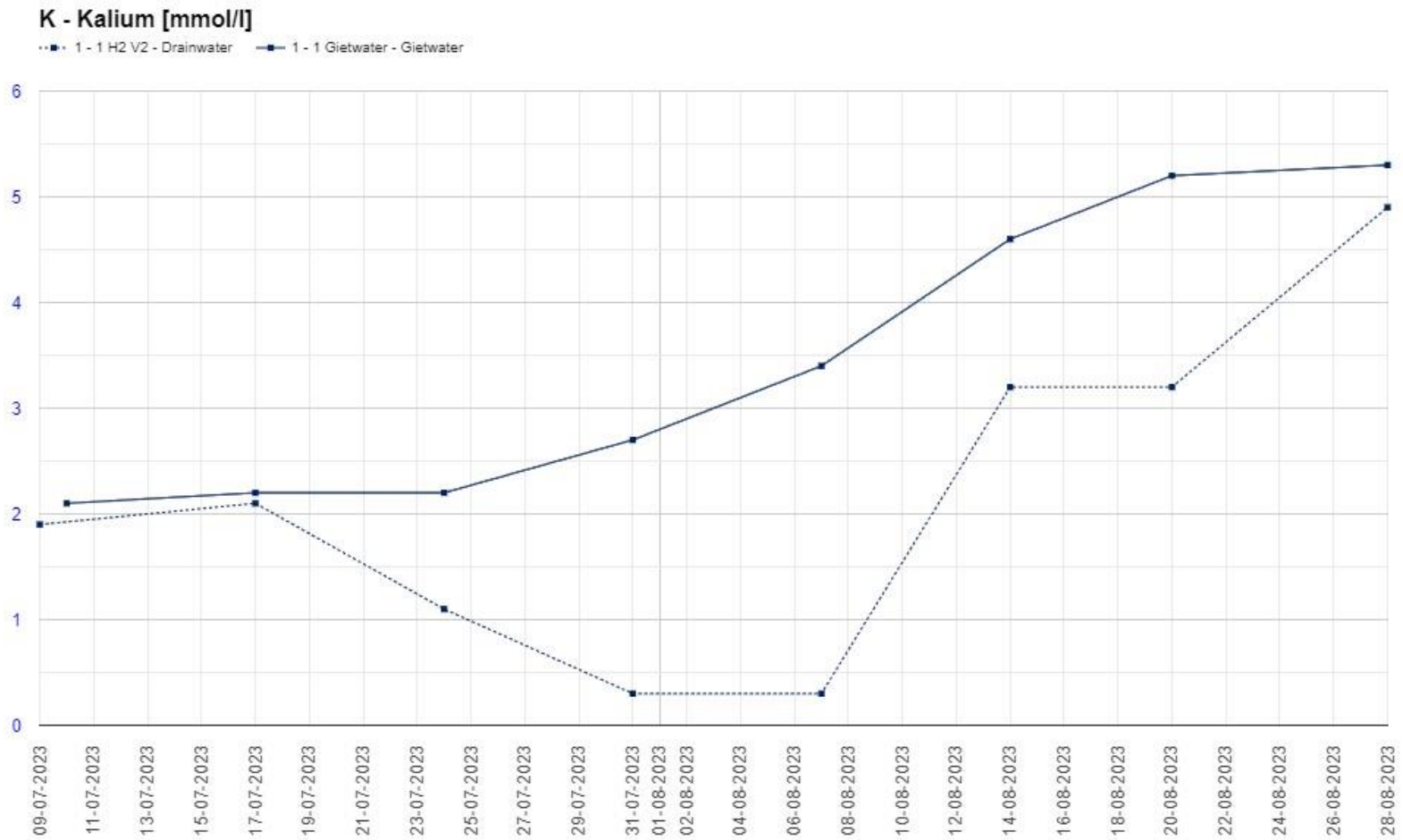
- Higher uptake of calcium, magnesium (strong cells, photosynthesis)
- Lower uptake potassium
- Outer tire

Generative phase: Fruit development

- Higher uptake of potassium
- Inner tire

Need of potassium during harvest period strawberry

- Potassium decreases when flowers/fruits develop
- Keep potassium level in leaves consistent
- Increase potassium in irrigation water



Practical example: Defiency or excess?

- Symptom potassium **deficiency: edges of leaves are brown**

Symptom boron excess: **edges of leaves are brown**

After 8 weeks (beginning of February) Elsanta showed some damage on the old leaf. After analysis this turned out to be a potassium deficiency.

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Thank you for your attention!

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NovaCropControl open avond proeflocatie 2022

53 weergaven • 2 maanden geleden

Introducción al análisis de savia de plantas por Novacropcontrol.

71 weergaven • 4 maanden geleden

NovaCropControl vlog 23 Potassium in tomato

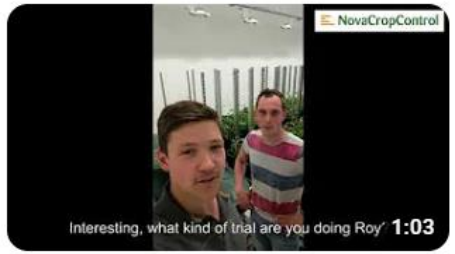
122 weergaven • 4 maanden geleden

NovaCropControl vlog 22 Soil assessment

86 weergaven • 5 maanden geleden

NovaCropControl Vlog 21

158 weergaven • 5 maanden geleden

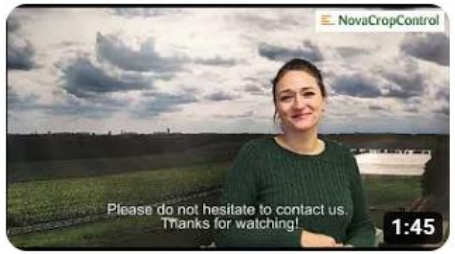


NovaCropControl Vlog 20 Bean Trial

51 weergaven • 7 maanden geleden

NovaCropControl Vlog 19 Data Roses trial

149 weergaven • 10 maanden geleden



NovaCropControl Vlog 18 Sampling leaf or petiole?

130 weergaven • 1 jaar geleden