



SKÖVDE GOLFKLUBB

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Automower



Overview automower

1. Husqvarna 550 on the north course
1. Husqvarna 550 epos and bigmow at the driving range
1. Husqvarna cerora on the south course

Husqvarna 550 at the North course

1. Start 2020
1. Cutting tee, fairway ,rough and foregreen.
1. Pay and play course with mostly poa , no fert on fairway

Husqvarna 550 at the North course

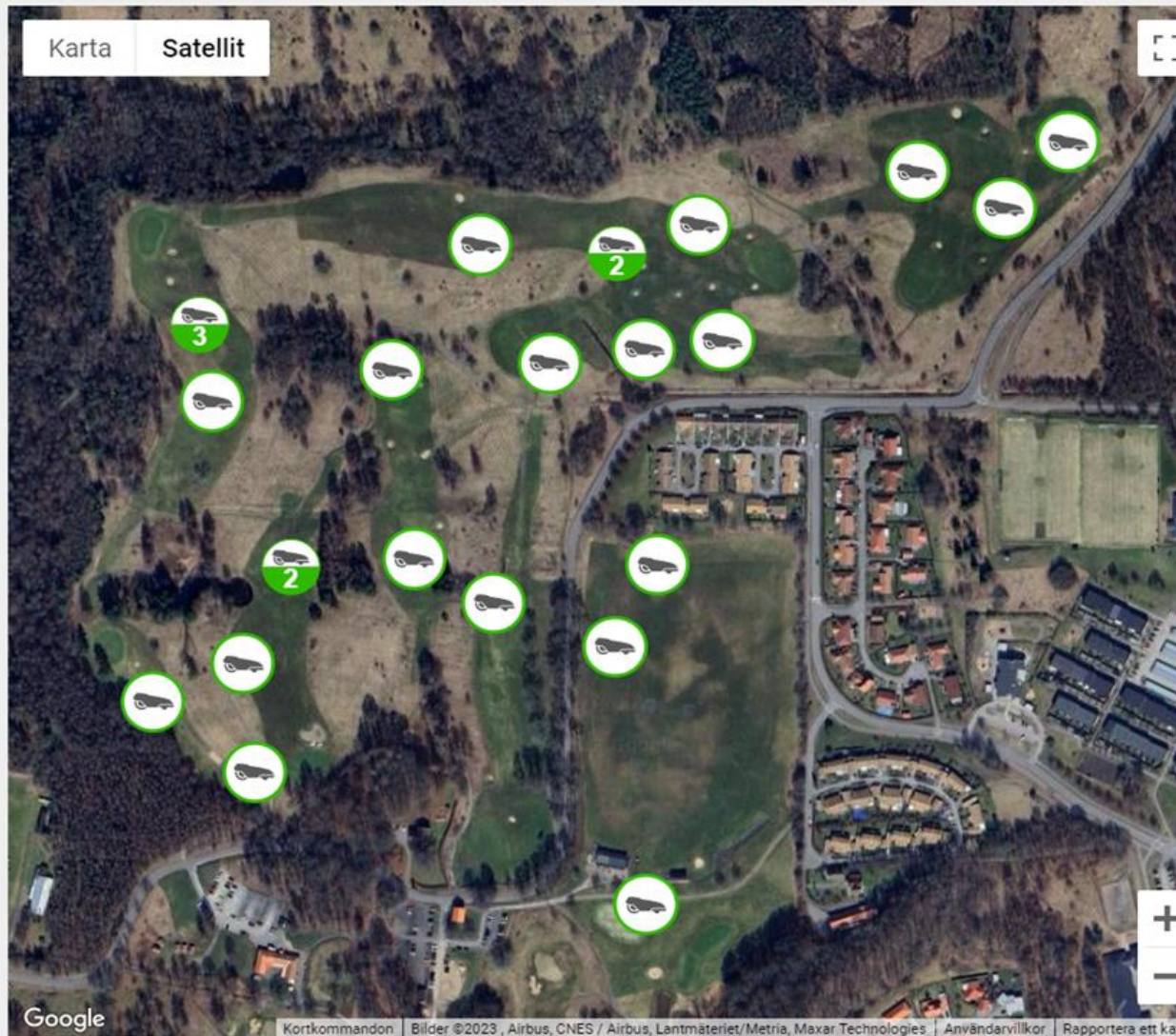
1. 26 automower cutting 10 hectar fairway and 5 hectar rough
1. Wired robots with low voltage cables from powerstations.

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Typ av resurs: Robotgräsklippare Status för robotgräsklippare: Klippning Rensa alla

<input type="checkbox"/>		Åtta Fw 1	● Klippning	-	30
<input type="checkbox"/>		Åtta Fw 2	● Klippning	-	30 ✖
<input type="checkbox"/>		Åtta Sr V	● Klippning	-	45
<input type="checkbox"/>		Ett Fw 1	● Klippning	-	35 ✖
<input type="checkbox"/>		Ett SR H	● Klippning	-	45 ✖
<input type="checkbox"/>		Fem Fw 1	● Klippning	-	30
<input type="checkbox"/>		Fyra Fairway 1	● Klippning	-	30
<input type="checkbox"/>		Fyra Fw 2	● Klippning	-	30
<input type="checkbox"/>		Nio FW 1	● Klippning	-	35 ✖
<input type="checkbox"/>		Nio FW 2	● Klippning	-	30 ✖





Husqvarna 550 at the north course

- 1. 50 % reduction in cost compared to mowing two time a week on fairway
- 1. Higher quality on all areas when operating smoothly
- 1. First 2 year alot of errors
- 1. This year almost no errors and a big increase in quality

Husqvarna 550 at the north course

1. Members experience , expectations and interactions

Drivingrange

- 1. Start 2022
- 1. Cutting 7 hectar with epos and bigmow
- 1. No downtime for cutting
- 1. Requires oversight and maintenance



Husqvarnas ceora South course

- 1. Start 2023
- 1. Cutting fescue fairways
- 1. Aim for top 10 Golfcourse in Sweden
- 1. Less room for error
- 1. High demands on aesthetics

Husqvarnas ceora South course



Husqvarnas ceora South course



First impressions of cerora

1. Amazing quality of cut

1. Perfect for fescue

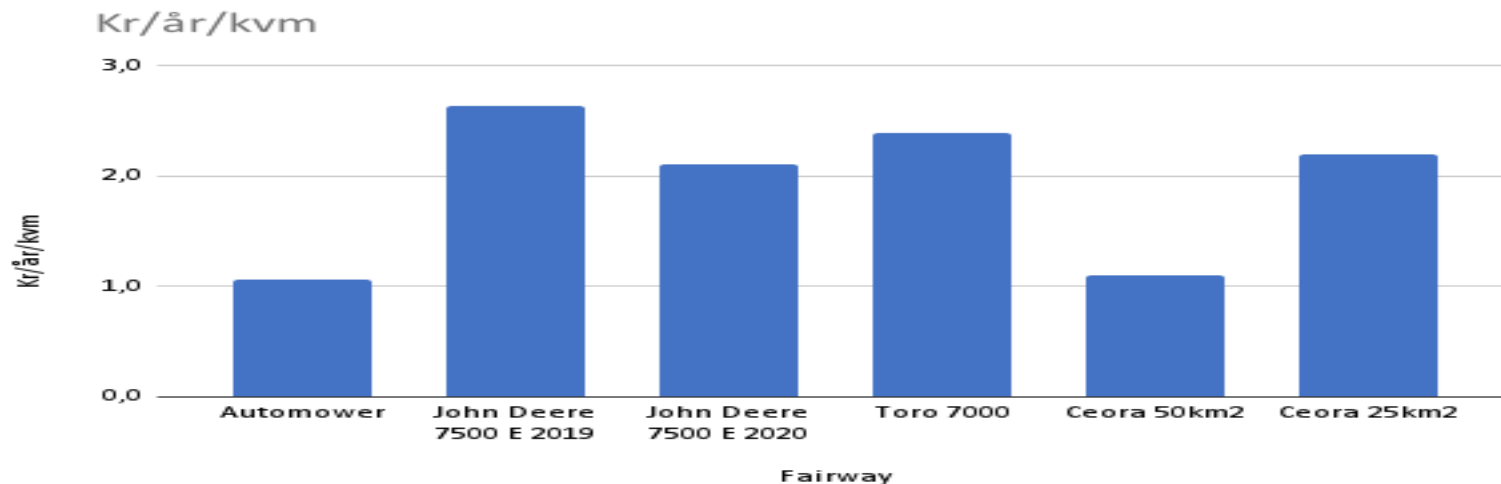
1. 3-5 hectare per cerora

1. Big quality increase

1. Wormcastings

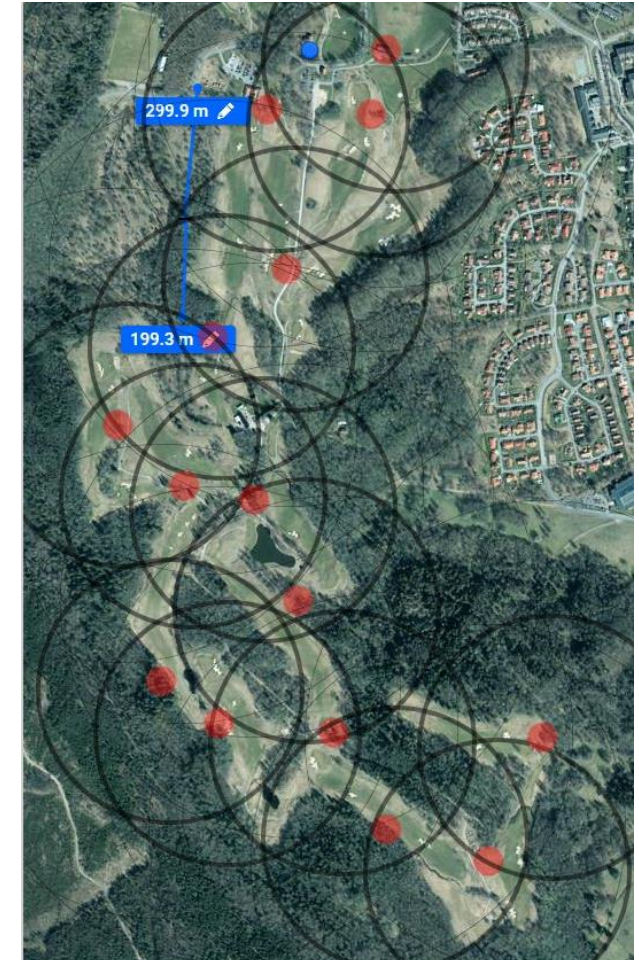
“Vad kostar det då” / “what's the damage”

1. Price / m²
2. Ceora matches or lower the cost of cutting fairway **FOR US**
3. Normal mowing is 2 times a week with lower than average labour and machine cost in sweden.
4. Ceoras price will vary alot



Upcoming plans for us

1. Build a mesh network for stations
2. Expand in the next 1-2 year to cut all fairways
3. Cut 15 hours a day
4. Mix of ceora and epos



Challenges

1. Cost : Repair costs , lifetime and downtime all big question marks
1. Getting the most value of ceora maximizing efficiency
1. Building a mesh network that is “hidden”.
1. Different requirements from staff.
1. Topdressing



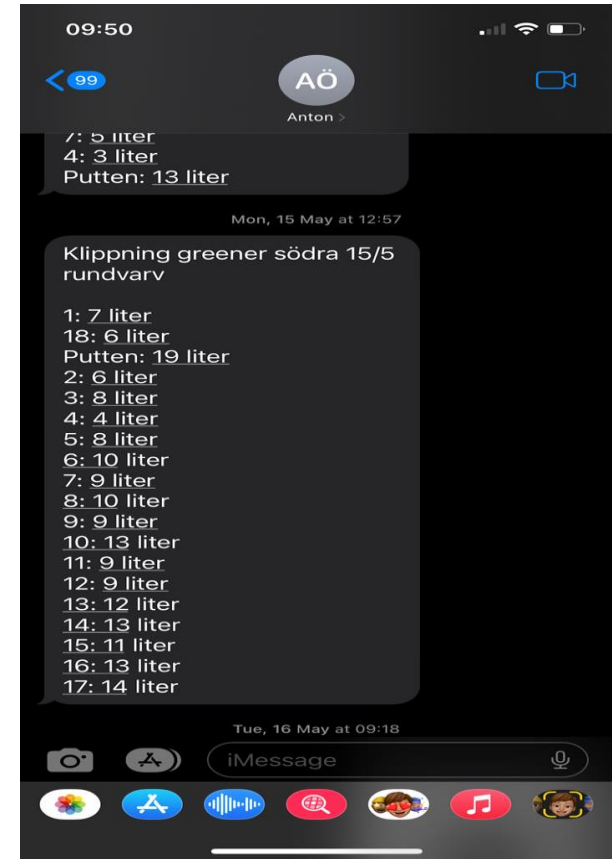
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MLSN and clipvol



Clipvol in practice



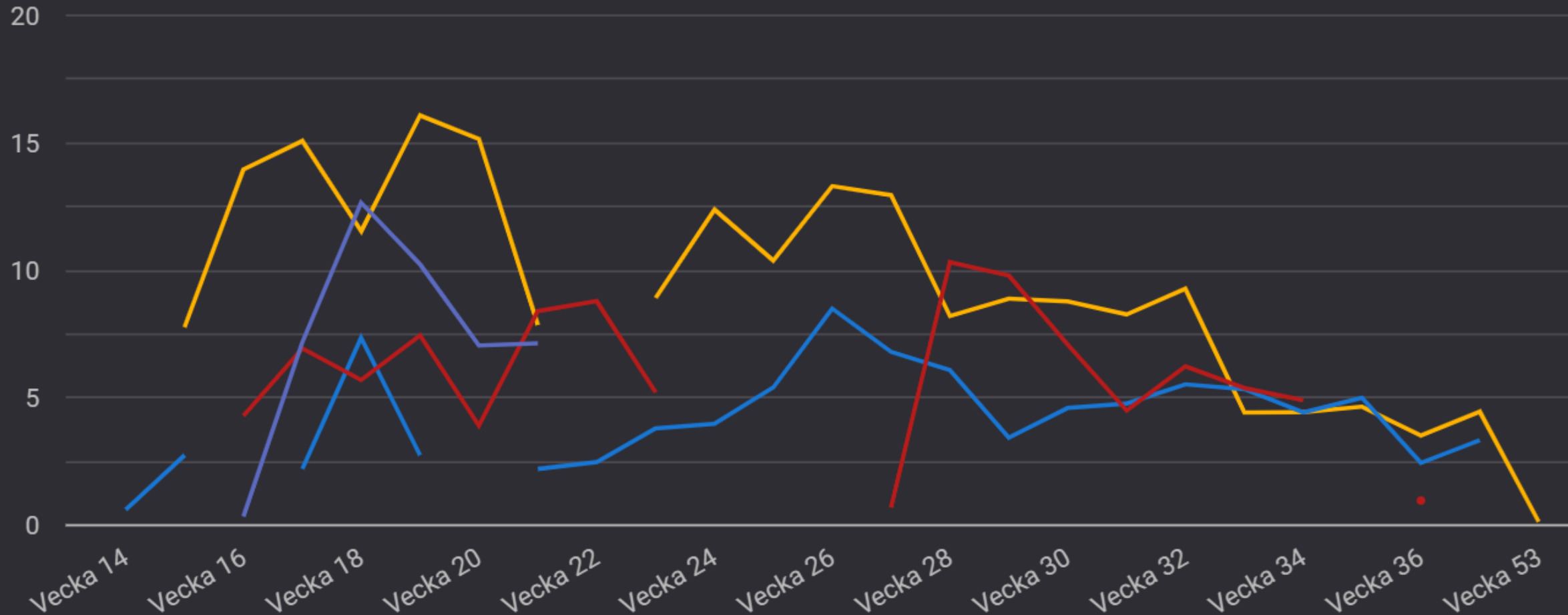
Why use Clipvol?

1. Learning!
2. Spot issues ahead of time
3. Tracking from year to year
4. Calculate amount of topdress
5. Modify amount of N
6. Spot difference between different mowers
7. We all do it already.
8. What clipvol produces best and most sustainable playing surfaces?
9. Compare between sites in the future

[Link](#)

Clipping Volume all holes (ml/sqm/day)

2020 2021 2022 2023



MLSN in practice

1. Mehlich 3 soil sample
2. Interpreting results
3. How much does the grass use?
4. Growth potential
5. How i use it in practice

Mehlich 3 soil sample

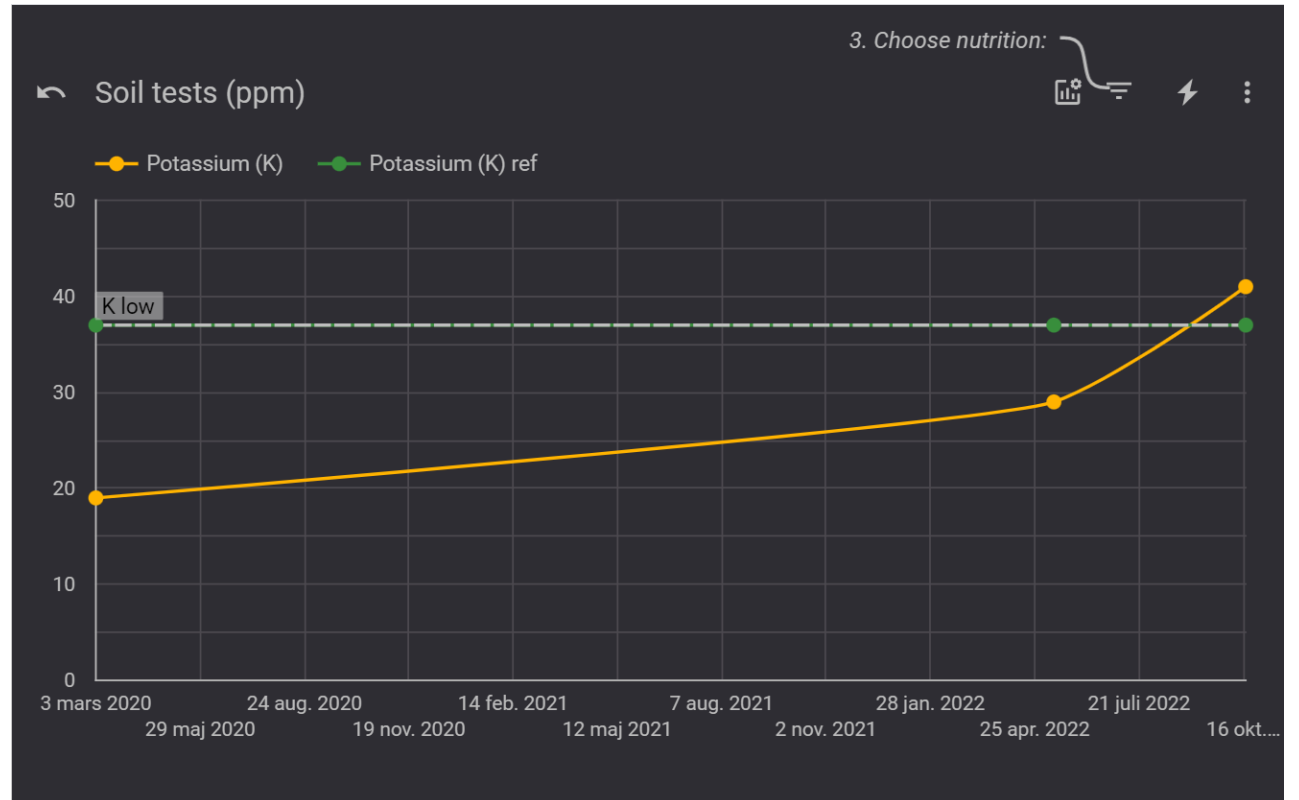
1. 5-10 cores per area
2. 5 greens 3 tees 3 fairways
3. <https://www.waypointanalytical.com/>



Interpreting results

at Proximate Laboratories, New Bremen, OH

	MLSN Soil Guideline
pH	>5.5
Potassium (K ppm)	37
Phosphorus (P ppm)	21
Calcium (Ca ppm)	331
Magnesium (Mg ppm)	47
Sulfur as sulfate (S ppm)	7



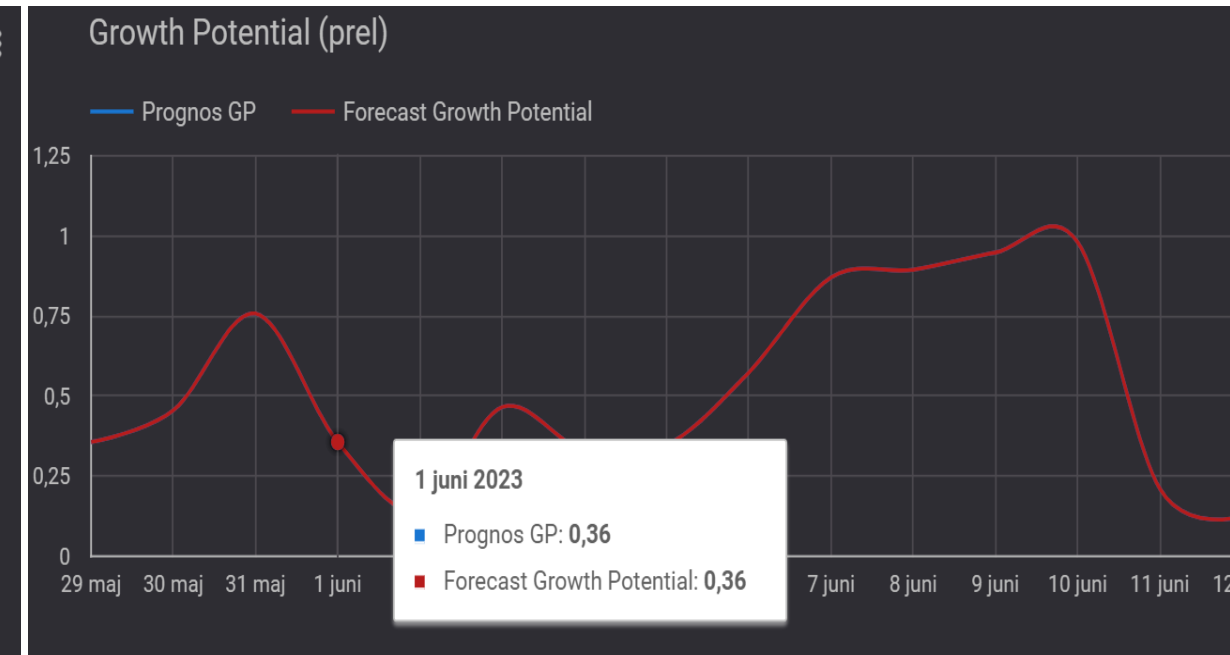
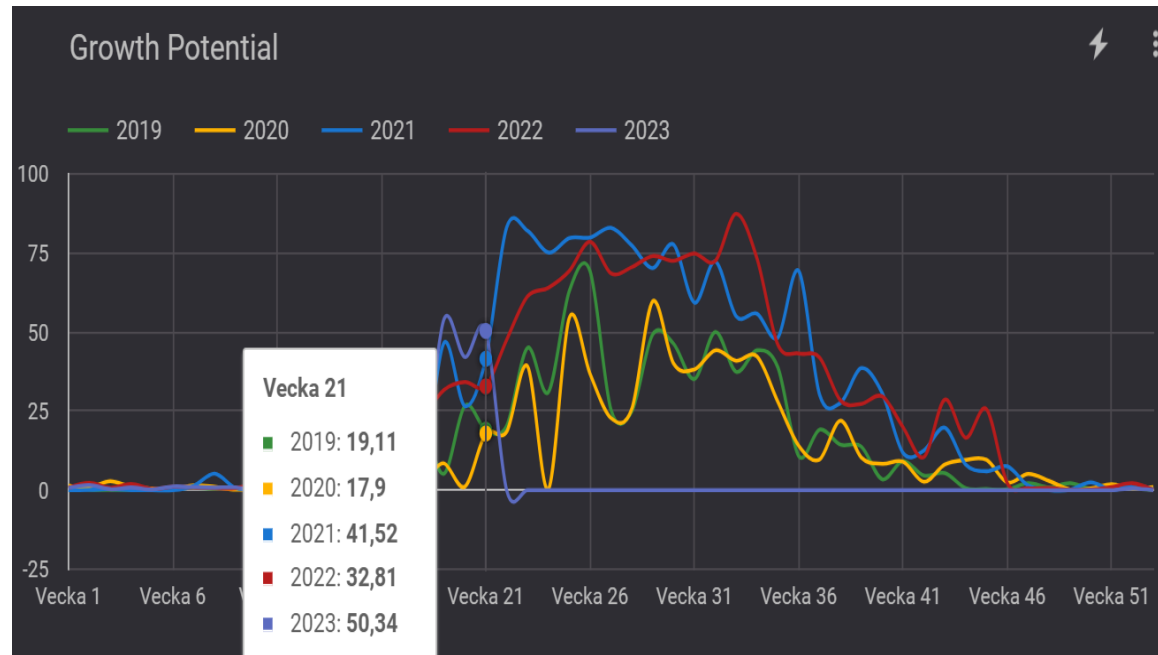
How much does the grass use?

1. If unsure use the ratios
2. Build a buffer if low
3. Don't worry about micronutrients

Element	Tissue ppm	Ratio:N
N	40000	1
K	20000	0.5
P	5000	0.13
Ca	4000	0.08
Mg	2500	0.05
S	3000	0.06
Fe	200	0.004
Mn	75	0.0015

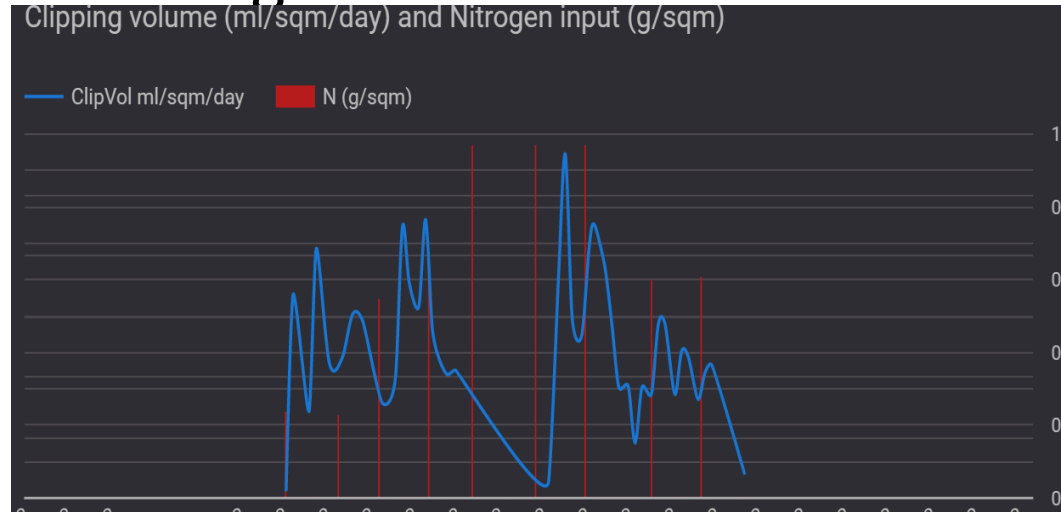
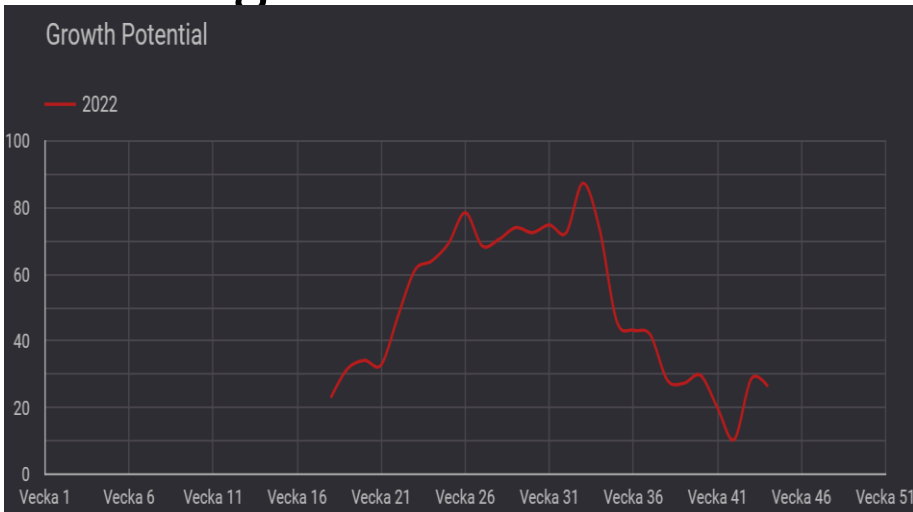
Growth potential

1. Same ide as GDD
2. GP is a based on avg temp and holding moisture and fert constant.



How i use it in practice

1. Basing my fertilization on GP
2. Using the ratio 1 N: 0 P: 0.5 K ratio on greens based on mlsn



Thanks for listening

