

PLANT TISSUE ANALYSIS FOR CANNABIS

Nutrition. Plant Health.

Read the nutrient status of every genetic straight from its leaves, while the crop is still standing. Eight nutrients in one scan, so fertilisation is decided on data, not on guesswork. Includes a real case with data and results.

INSTRUMENT

Valenveras Portable Lab

MODEL

Plant Tissue



Contents

How leaf analysis turns fertilisation into a measured decision: why it matters, what the Plant Tissue model reads, how to take the sample, the reference targets, and a complete real case.

01	Why leaf nutrition matters	3
	Yield, potency, resilience and the problem of hidden hunger	
02	Every plant, its own requirements	4
	From one recipe for the room to a decision per genetic	
03	What the Plant Tissue model reads	5
	Eight nutrients, one scan · compared with ICP-MS	
04	Sampling protocol	6
	When, which leaf, how many plants, how to prepare it	
05	Reference target values	7
	Growth and flowering targets provided by Sostanza	
06	Case study · Agricultural Technical Report	8
	Real data: results, corrections, charts and recommendations	

8

nutrients per scan: N, P, K,
Ca, Mg, Fe, Mn, Zn

Week 6+

when leaf sampling starts in
the cultivation cycle

≥ 5

plants sampled per genetic,
pooled into one sample

On site

no sample sent anywhere,
results in the app



01 Why leaf nutrition matters

Fertilisation decides yield, potency and resilience. The leaf tells you whether it is working.

Proper fertilisation is one of the strongest levers a cannabis grower controls: it drives yield, supports plant health and strengthens the plant against pests. The Plant Tissue model gives growers a framework for optimising nutrient delivery based on what the plant has actually taken up, not on what went into the tank.

Managing nutrition from leaf data leads to:

- **Higher production and potency of cannabinoids and terpenes.**
- **Stronger, more resilient plants.**
- **Better natural defence against pests.**

The result: healthier, more productive plants with higher levels of the cannabinoids and terpenes the grower is aiming for.



THE VALENVERAS PORTABLE LAB

Increased production

Correct fertilisation supports optimal growth and improves both the yield and the quality of cannabinoids and terpenes. Getting nutrition right is a precondition for each genetic to reach the potency it is capable of.

Plant health

A balanced nutrient supply prevents the deficiencies that weaken plants and make them more susceptible to disease and pests, and sustains vigour under abiotic stress such as water stress and extreme temperatures.

Pest prevention

Well-nourished plants keep their natural defences working, including the aromatic compounds, the terpenes, that help repel insects and pathogens.

HIDDEN HUNGER

A plant can be short of a nutrient long before it shows a symptom. Periodic leaf tissue analysis detects this "hidden hunger" and lets the grower correct it before symptoms appear and before it costs yield.

Reference: Alabama Cooperative Extension System, Leaf Tissue Testing for Hemp (ANR-2683, rev. 2021).



02 Every plant, its own requirements

From one recipe for the whole room to a decision per genetic, per room and per stage.

Plant nutrition has traditionally been a one-size-fits-all programme: a broad-spectrum fertiliser chosen by plant type or by soil analysis, applied the same way across the crop.

Valenveras changes this by **revealing the individual nutritional requirements of each plant**. It goes beyond generic needs and shows what each genetic, each room and each growth stage within the crop is actually asking for.



DRIED, FINELY GROUND LEAF, READY TO SCAN

The traditional approach

- Fertiliser chosen by plant type or by soil analysis.
- The same programme across genetics, rooms and stages.
- Deficiencies and excesses remain invisible until the plant shows them.

With the Valenveras Portable Lab

- Nutrient status read from the leaf, on site.
- Requirements per genetic, per room and per stage.
- Corrections made while the crop is still standing.

Revealing the individual nutritional requirements of each plant is a game-changer: it enables precision cultivation, optimises plant growth, maximises yield and promotes sustainable fertilisation practices.

FROM LEAF TO DECISION

STEP 1

Sample

Leaves from the third internode, at least 5 plants per genetic.
Section 04

STEP 2

Scan

Dried, ground leaf in the powder dish. Eight nutrients in the app.
Section 03

STEP 3

Compare

Results against growth and flowering targets.
Section 05

STEP 4

Correct

Adjust the fertilisation plan per genetic and room. Section 06



03 What the Plant Tissue model reads

Eight nutrients from one scan of dried, ground leaf.

Nutrients & plant health

Macro and micro-nutrients read directly from leaf tissue. Results come back in the same units used by laboratory leaf analysis and by the reference targets in Section 05.

MACRO · %

Nitrogen N

Phosphorus P

Potassium K

Calcium Ca

Magnesium Mg

MICRO · PPM

Iron Fe

Manganese Mn

Zinc Zn

Scan Result

N	4.01 %
P	0.81 %
K	2.12 %
Ca	2.76 %
Mg	0.88 %
Fe	98.02 ppm
Mn	92.32 ppm
Zn	40.71 ppm

SCAN RESULT IN THE APP

LABORATORY REFERENCE VS. ON-SITE ANALYSIS

ICP-MS vs. Valenveras

FACTOR	ICP-MS	VALENVERAS
Initial Equipment Cost	High	Low ✓
Operational Costs	High	Low ✓
Cost per Analysis	Medium-High	Low ✓
Analysis Time	Fast	Very Fast ✓
Accuracy and Sensitivity	High	High =
Ease of Use	Medium	Very easy ✓
Size	Big	Very light ✓

ICP-MS: inductively coupled plasma mass spectrometry, the laboratory technique commonly used for elemental analysis of plant tissue.



04 Sampling protocol

A consistent sample is what makes results comparable, week after week.

1**WHEN**

From week six onwards.

2**WHICH LEAF**

Take the newest fully formed leaves from the third internode from the top of the plant.

3**LEAF AND PETIOLE**

Collect the leaves together with the petiole, the "stem" of the leaf.

4**HOW MANY PLANTS**

Select at least 5 plants from each genetic and collect their leaves together.

5**PREPARE**

Dry the leaves and grind them as finely as possible.

6**SCAN**

Perform the scan as you would with flower samples: ground material in the powder sample dish, weight on top.



SCANNED LIKE FLOWER, IN THE POWDER DISH

WHY THIS LEAF

Leaf analysis is interpreted on the most recently mature leaf, which reflects what the plant is taking up now. Sampling a different position can misread the plant's status.

Reference: NC State Extension, Hemp Leaf Tissue Nutrient Ranges; NCDA&CS Plant Tissue Analysis Guide (2023).

KEEP IT CONSISTENT

Same leaf position, same number of plants, same preparation every time. Then a change in the numbers reflects the plant, not the sampling.



05 Target Values for Growth & Flowering

This information is provided by Sostanza.

Target Values for Growth

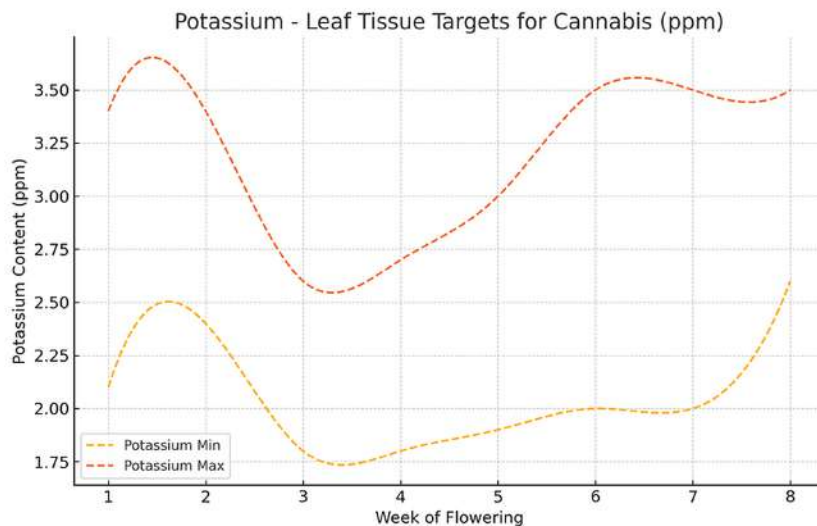
Parameter	Minimum	Maximum	Average
N (%)	2.8	6.0	4.4
P (%)	0.3	0.7	0.5
K (%)	1.5	3.5	2.5
Ca (%)	1.8	6.0	3.9
Mg (%)	0.3	1.5	0.9
Fe (ppm)	80	250	165
Mn (ppm)	80	250	165
Zn (ppm)	20	70	45

Target Values for Flowering

Parameter	Minimum	Maximum	Average
N (%)	3.0	4.3	3.7
P (%)	0.5	0.9	0.7
K (%)	2.1	3.2	2.7
Ca (%)	5.1	7.4	6.2
Mg (%)	0.8	1.2	1.0
Fe (ppm)	89	199	144
Mn (ppm)	113	226	170
Zn (ppm)	40	67	54

Potassium Tissue Ranges

Data represents recommended potassium ranges for weeks 1-8 of flowering



POTASSIUM • LEAF TISSUE TARGETS FOR CANNABIS, WEEKS 1-8 OF FLOWERING



For detailed guidelines and personalized support, contact [Sostanza](https://sostanza.global.com) · [sostanzaglobal.com](https://sostanza.global.com)



06

Agricultural Technical Report CannaTest*

Case study · real data, real recommendations.

ANALYSIS DATE
May 24th 2024

CONDUCTED BY
Ruben Valenzuela Moreno

Objective: This report aims to provide technical recommendations for correcting fertilization in the cultivation rooms and varieties produced by CannaTest*. Leaf nutrient analyses were carried out to identify deficiencies and excesses of nutrients in the plants.

Nutrient Analysis Results

Sample Name	N (%)	P (%)	K (%)	Ca (%)	Mg (%)	Fe (ppm)	Mn (ppm)	Zn (ppm)
DF flower 4w	2.84	1.15	1.87	1.35	1.07	73.98	36.79	0.51
ZB flower 4w	3.41	1.72	1.98	2.62	2.02	49.34	52.25	0.00
FG 2 flower 4w	2.91	0.62	1.47	3.85	0.80	98.02	90.89	35.08
FG 1 flower 4w	2.94	0.70	1.43	3.37	0.81	85.77	101.06	29.95
DF 2 mother	4.47	1.15	1.87	3.71	1.14	90.00	123.17	2.99
DF mother SC	4.44	1.22	1.88	3.29	1.18	81.05	105.58	0.00
2 mother UM	3.97	0.44	1.99	4.89	0.82	157.89	137.50	58.63
flower SC	2.91	1.69	1.93	3.25	2.31	49.17	50.77	0.00
flower 4w	2.35	1.34	1.66	2.77	1.82	67.61	46.97	0.00

Correction Needed:

Sample Name	N (%)	P (%)	K (%)	Ca (%)	Mg (%)	Fe (ppm)	Mn (ppm)	Zn (ppm)
DF flower 4w	1.91	-0.75	2.13	2.65	-0.47	51.02	28.21	36.99
ZB flower 4w	1.34	-1.32	2.02	1.38	-1.42	75.66	12.75	37.50
FG 2 flower 4w	1.84	-0.22	2.53	0.15	-0.20	26.98	-25.89	2.42
FG flower 4w	1.81	-0.30	2.57	0.63	-0.21	39.23	-36.06	7.55
DF 2 mother DF	0.28	-0.75	2.13	0.29	-0.54	35.00	-58.17	34.51
mother SC 2	0.31	-0.82	2.12	0.71	-0.58	43.95	-40.58	37.50
mother UM	0.78	-0.04	2.01	-0.89	-0.22	-32.89	-72.50	-21.13
flower SC	1.84	-1.29	2.07	0.75	-1.71	75.83	14.23	37.50
flower 4w	2.40	-0.94	2.34	1.23	-1.22	57.39	18.03	37.50

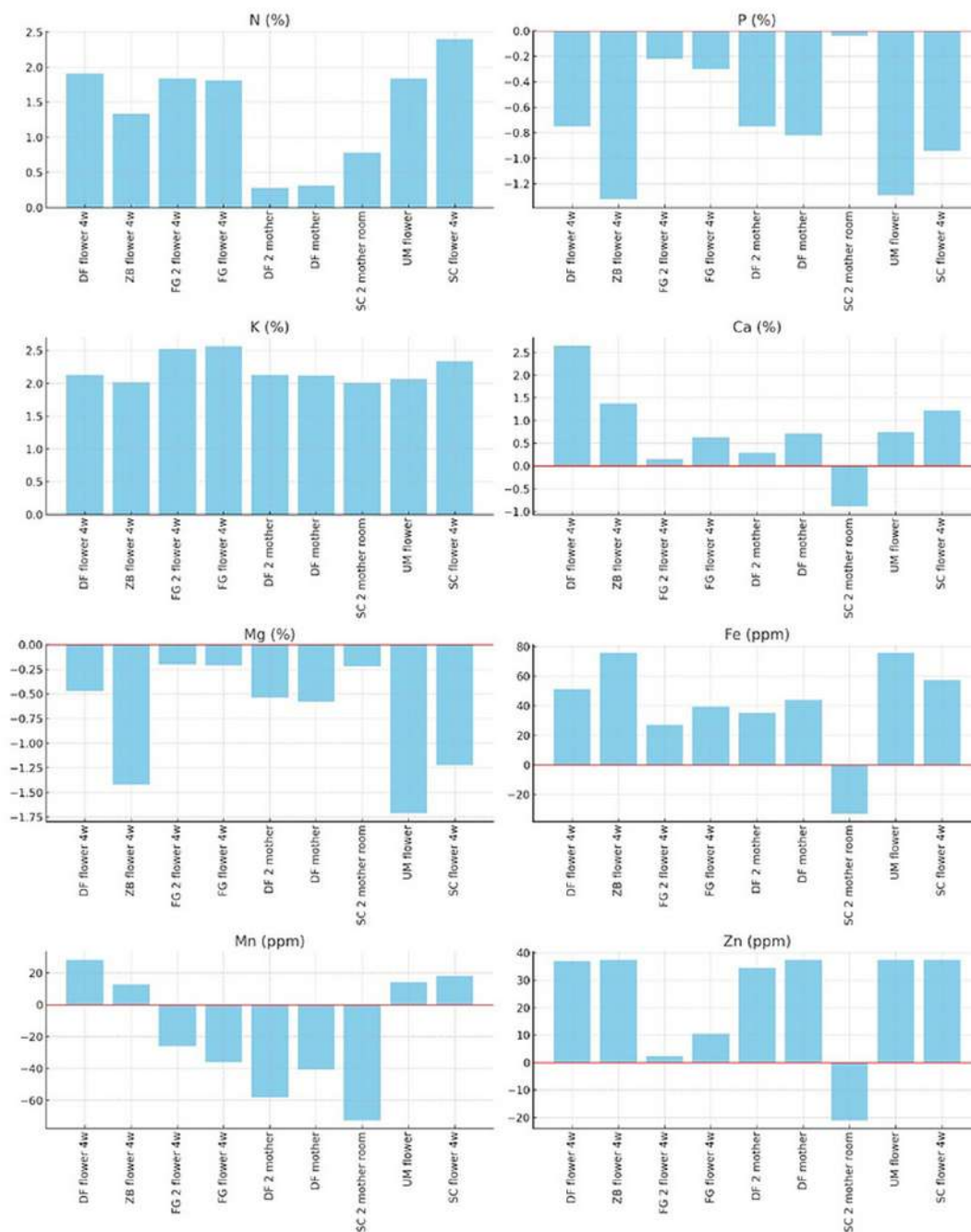
*"To protect the identity of the source, this example utilizes data from a real company under the alias CannaTest. The data itself is genuine."



CASE STUDY · CANNATEST*

Nutrient Correction Needed

Nutrient Correction Needed





CASE STUDY · CANNATEST*

Interpretation of Results and Recommendations

- **Nitrogen (N):** Most samples need an increase in nitrogen levels.
Recommendation: Increase the application of nitrogen fertilizers in all samples except DF 2 mother and DF mother where a slight reduction is needed.
- **Phosphorus (P):** All samples indicate a need to decrease phosphorus levels.
Recommendation: Reduce the application of phosphorus fertilizers across all samples.
- **Potassium (K):** All samples show a need to increase potassium levels.
Recommendation: Increase the application of potassium fertilizers in all samples.
- **Calcium (Ca):** Mixed results with some samples needing an increase and others a decrease.
Recommendation: Increase calcium in SC 2 mother room. Decrease calcium in DF flower 4w, FG 2 flower 4w, and FG flower 4w.
- **Magnesium (Mg):** Most samples indicate a need to decrease magnesium levels.
Recommendation: Decrease magnesium fertilization in all samples except UM flower and ZB flower 4w where a reduction is needed.
- **Iron (Fe):** Mixed results with some samples needing an increase and others a decrease.
Recommendation: Increase iron in DF flower 4w, FG flower 4w, and SC flower 4w. Decrease iron in SC 2 mother room.
- **Manganese (Mn):** Most samples indicate a need to decrease manganese levels.
Recommendation: Decrease manganese fertilization in all samples except SC flower 4w where a slight increase is needed.
- **Zinc (Zn):** Mixed results with some samples needing an increase and others a decrease.
Recommendation: Increase zinc in DF flower 4w and ZB flower 4w. Decrease zinc in FG 2 flower 4w and SC 2 mother room.

Conclusion

CannaTest should review and adjust its current fertilization plan according to the above recommendations to ensure optimal nutrient levels for all samples. These changes will improve plant health, increase yield, and promote more sustainable and efficient fertilization practices.



VALENVERAS PORTABLE LAB

Nutrition you can measure.

Research and development in cannabis: NIR technology for nutrition, potency, terpenes and quality control at every stage of the crop.

**SCAN TO LEARN MORE**cutt.ly/valenveras**ONLINE**

www.valenveras.com
info@valenveras.com
support@valenveras.com

ADDRESS

Sant Andreu de Llavaneres
Barcelona, Spain

INSTRUMENT

Valenveras Portable Lab
Powered by BUCHI