

Mehlich3 / MLSN

**Applying nutrients in a
more controlled manner**

Agenda

1. Review
2. Mehlich3
3. The basics MLSN
4. Results from MLSN
5. Guidelines for nutrient application MLSN
6. The benefits MLSN
7. Mehlich3 Laboratory now available in Germany
8. Further Informationen

Review

- In the past, the nutrient requirement for our turfgrasses was often set equal to that of the grasses used to feed animals in agriculture - but this was and is not very practical for high quality turfgrass application.

Conventional testing method LUFA

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Prüfbericht

Kunden-Nr.: 50184645
Auftrags-Nr.: 2129571
Beginn der Prüfung: 26.05.2020
Ende der Prüfung: 29.05.2020
Probenehmer: 599

Datum: 29.05.2020

Seite 1 von 1

Probenart: Boden
Anzahl Proben: 5
BUD-Kundennr.: 501691

Berichts-Version: 1

Nutzungsarten:

A = Acker
W = Grünland
G = Garten
F = Forst
O = Obstbau
X = Sonstige

Gehaltsklassen:

A = sehr niedrig
B = niedrig
C = anzustreben
D = hoch
E = sehr hoch
F = extrem hoch

Proben-Nr.	Schlagbezeichnung	Nutzungsart	Bodenart (Gruppe)	Kalk pH-Wert		Phosphor (P) mg in 100g, bei Moor in 100 ml Boden	Kalium (K) mg in 100g, bei Moor in 100 ml Boden	Magnesium (Mg) mg in 100g, bei Moor in 100 ml Boden	Weitere Untersuchungen	
				anzustreben CaCl ₂	festgestellt CaCl ₂ Gehaltsklasse					
20BX059439	1 16er Tennis (1)	R	(h) S	4,7-5,2	6,9 E	10,7 -	5,3 -	4,1 -	Kalkbedarf (CaO)	0 kg/100m ²
20BX059440	2 Mitte Tennis (2)	R	(h) S	4,7-5,2	6,0 E	9,3 -	6,6 -	3,7 -	Kalkbedarf (CaO)	0 kg/100m ²
20BX059441	3 Mittelkreis (3)	R	(h) S	4,7-5,2	7,0 E	13,7 -	5,4 -	3,0 -	Kalkbedarf (CaO)	0 kg/100m ²
20BX059442	4 Mitte Redde (4)	R	h S	4,7-5,2	5,3 D	8,4 -	4,8 -	2,5 -	Kalkbedarf (CaO)	0 kg/100m ²
20BX059443	5 16er Redde (5)	R	(h) S	4,7-5,2	6,2 E	6,2 -	3,4 -	2,2 -	Kalkbedarf (CaO)	0 kg/100m ²

Durchsicht an:

Rechnungsempfänger:

Dr. Christina Neuhaus

Laborleiterin

Dieser Prüfbericht wurde maschinell erstellt und ist ohne Unterschrift gültig.

Bemerkungen: Der Kalkbedarf wurde für 3 Jahre berechnet.

Review

- Larry Stowell and Micah Woods presented MLSN / Mehlich3 based on Agrostis Stolonifera in May 2012.
- Since then, MLSN has been successfully used thousands of times worldwide.
- So far, however, not so widespread in Germany and Europe.
- There are still only a few Mehlich3 Laboratories in Europe.

Mehlich 3 procedure

- Based on Mehlich 2
- Analysis methods from the USA, in use since 1984.
- Weakly acidic extraction process.
- Higher nutrient values detectable - mainly affects phosphorus
- Based on this, MLSN was developed

MLSN

- Minimum level of sustainable available nutrients
- A large number of samples (16,163 Mehlich3 soil test results) were taken from performing turf plots (*Agrostis Stolonifera*).
- A subset ($n = 3,683$) of these results was modeled as a logarithmic 2-parameter distribution, especially from soils with low nutrient storage capacities.

Results of MLSN

- High-performance grasses can now be produced for all soils by utilising MLSN .
- These MLSN guidelines are sufficient as minimum values for all turf sites, as to prevent the possibility, that element cannot fall under the MLSN guideline.

Results Mehlich3 / MLSN

- Nutrient values should not fall under MLSN guidelines
- Due to Mehlich 3, phosphorus in particular can be detected in higher quantities.
- Above all, this means that smaller amounts of phosphorus can also be fertilized.
- An N-P-K ratio of 1 - 0.5 - 0.8 is recommend.

MLSN guideline, the 5 most important Macro nutrients

_K K	mg/l	37	ppm = 3,7
_P P	mg/l	21	ppm = 2,1
_M Mg	mg/l	47	ppm = 4,7
_S S	mg/l	7	ppm = 0,7
_C Ca	mg/l	331	ppm = 33,1
			PPM stands for the number 10^{-6} and is comparable to the percent for the number 10^{-2} and the per mil for the number 10^{-3} ..

The advantages of MLSN / Mehlich3

Economical and ecological use through:

- Simple and really practical application.
- Even more targeted fertilization of nutrients.
- Avoidance / reduction of leaching.
- Saving of fertilizer costs.
- Help reduce poa annua
- Reduction of costs and time through laboratory location in Germany

Summery !!!!!

- With the optimization by MLSN in conjunction with Mehlich 3, offers a more **sustainable** use of nutrients.
- **Finally** a Mehlich 3 laboratory in Germany.

Mehlich 3 testing now in Germany since September 1st, 2021.

- Agrolab has been offering Mehlich3 since September 1st, 2021 throughout Europe. www.agrolab.de 0049 5066 / 90193-0
- Fast turnaround by calling to get barcode and analysis bag / results in a timely manner
- Results enable quick and easy comparison with MLSN guidelines

Examination packages Agrolab

- Mehlich-3-Basis P, K, Mg, pH-value CaCl
- Mehlich-3-**Basis** + organische Substanz
- Mehlich-3-Super P, K, Mg, pH-value CaCl, + Cu, Mn, B, Fe, Ca, S,
- Mehlich-3-**Super** + includes organic matter testing.

MLSN **not only** for *Agrostis stolonifera*.

- MLSN guidelines for *Festuca*, *Lolium Perenne*, *Poa Pratensis*, among others..

Further Informationen

<https://www.asianturfgrass.com/post/new-mlsn-cheat-sheet/>

- Translated with kind permission by Micah Woods