



Dynamics of nitrate accumulation in soil as a function of inorganic and organic fertilization



Attila Dunai, Zoltan Toth

University of Pannonia Georgikon Faculty, 16 Deak Ferenc Str, Keszthely, Hungary, H-8360,
www.georgikon.hu, dunai@georgikon.hu

7th International Nitrogen initiative Conference (INI2016)
4-8 December 2016
Melbourne Cricket Ground, Victoria Australia

IOSDV Keszthely

- Established: 1983 (first harvest: 1984)
 - Location: Keszthely, Hungary, 46°44' N, 17°13' E, 112 m above sea level
 - Design: bifactorial, striped-plot
 - Replications: 3
 - Factors: - increasing rate of mineral N fert. (N0, N1, N2 N3, N4)
- complementary application of organic fert. (no organic fertilizer application (control); organic manure (OM) application 35 t ha⁻¹ in every third year before maize; Straw/Stalk (SM) incorporation (completed with 10 kg mineral N for each t straw/stalk ha⁻¹)
 - Crop rotation: maize – w. wheat – w. barley
- Soil samples were collected continuously (biweekly, altogether 10 times) in the vegetation period of maize (depth: 1m, 5x20 cm)
- NO₃⁻ content measuring with UV-photometry (Kaneko et al. 2010)

Table 3. NO_3^- content of soil as a function of N rate and sampling dates at the NPK-NPK-NP plot of Alakseti in a column (with the exception of “Means” line) followed by the difference letters as significant differences based on Duncan post-hoc test at $p < 0.05$. In the “Means” line, the significant differences are indicated by the letters in line only.

	Sampling date								
dd/mm	20/05	15/07	23/09	20/05	15/07	23/09	20/05	15/07	23/09
Depth (cm)	Control (0 kg/ha N)			140 kg/ha N			280 kg/ha N		
0-20	9.91 ^{bc}	5.96 ^a	2.18 ^a	36.51 ^{ab}	5.65 ^a	2.21 ^a	79.21 ^a	22.25 ^b	3.27 ^a
20-40	17.39 ^a	2.59 ^a	3.75 ^a	50.84 ^a	15.98 ^a	1.75 ^a	69.40 ^a	66.81 ^a	3.72 ^a
40-60	12.23 ^{ab}	1.84 ^a	3.51 ^a	22.48 ^{bc}	19.64 ^a	1.96 ^a	21.01 ^b	12.89 ^b	2.46 ^a
060-80	8.30 ^{bc}	1.30 ^a	3.92 ^a	9.98 ^c	2.78 ^a	1.41 ^a	8.84 ^b	3.65 ^b	2.37 ^a
80-100	5.63 ^c	1.07 ^a	3.78 ^a	4.60 ^c	1.33 ^a	0.37 ^a	8.01 ^b	4.84 ^b	1.55 ^a
Means	10.69 ^{cd}	2.55 ^d	3.43 ^d	24.88 ^{ab}	9.08 ^{cd}	1.54 ^d	37.29 ^a	22.09 ^{bc}	2.67 ^d

Thank you for your attention!