

SHORTER CONTRIBUTION

Content of some nutrition components in precipitation in Poland in the Pulawy region

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Since 1960 systematic studies of the content of nutrient elements in precipitation have been carried out in the Pulawy region (south-east Poland). The center of this region is situated at 51°21' N and 21°58' E and at 137 m.s.l.

The samples investigated were collected from three points characteristic of the microclimatic differentiation of this region. The difference in altitude between these three points was 33 m. The samples of water were collected in special rain-gauges. In order to prevent contamination of water by birds the rain-gauge was placed on a palisade with sharp needles, as in the Rothamsted Experimental Station. Samples of water were taken after each rainfall. The following quantities were determined: (1) ammonium nitrogen, by the colorimetric method with sodium phenoxide and sodium hypochlorite (CROWTHER and LARGE, 1956; SCHILLAK, 1958); (2) nitrate nitrogen, by the colorimetric method with phenoldisulphonic acid (SCHILLAK, 1958; TURCHIN, 1960); (3) Phosphorus, by the colorimetric method with ammonium molybdate (TURCHIN, 1960; HUMPHRIE, 1956); (4) potassium and calcium, by flame photometry.

The quantities of the nutrient components established in our laboratory (Table 1) are similar to those obtained in Dahlem near Berlin. (KRZYSCH, 1958).

The quantities of nitrogen and calcium and to a lesser degree also potassium from the rainfalls are of significant importance in agriculture if we consider that on an average per year and hectare (during 1960–1961) the following amounts of nutrients were applied: N, 17.9 kg; P₂O₅, 13.7

TABLE 1. *The average quantities of the components in precipitation.*

Nitrogen from three years, 1960–1962, and the other components from two years, 1961–1962.

Month	Precipitation in mm	Quantities of nutrient components in kg/ha					
		N	N _{NH₄}	N _{NO₃}	P ₂ O ₅	K ₂ O	CaO
January	25.6	0.35	0.30	0.05	0.004	0.15	1.52
February	22.5	0.40	0.28	0.12	0.011	0.20	1.29
March	26.7	0.51	0.30	0.21	0.012	0.36	1.85
April	30.4	0.68	0.43	0.25	0.012	0.15	0.88
May	98.6	1.63	1.07	0.56	0.015	0.29	1.34
June	77.6	1.27	0.55	0.72	0.032	0.28	0.88
July	116.7	1.58	0.99	0.59	0.035	0.22	1.58
August	54.7	1.26	0.81	0.45	0.010	0.19	0.93
September	44.8	0.73	0.51	0.22	0.015	0.41	1.26
October	27.6	0.22	0.12	0.10	0.001	0.26	0.90
November	48.0	0.87	0.59	0.28	0.003	0.19	1.59
December	32.6	0.29	0.15	0.14	0.026	0.14	1.44
Total yearly	605.8	9.79	6.10	3.69	0.176	2.84	15.46

kg; K₂O, 20.3 kg; CaO, 30.3 kg. On an average per year there was more ammonia nitrogen than nitrate nitrogen in the precipitation.

The fluctuations for the respective years are rather large for nitrogen, ranging from 7.20 to 11.84 kg/ha yearly. The quantities of the other components do not show such large fluctuations: K₂O, 2.70–2.77 kg/ha; P₂O₅, 0.14–0.18 kg/ha; CaO, 14.38–14; 56 kg/ha. In the summer months nitrogen occurred in larger amounts than in the winter. No relationship of this kind was evident for the other components. The report by some authors (MEYER and PAMPTER,

1959) that there are greater concentrations of nitrogen during smaller quantities of precipitation has been confirmed in some cases, but not always.

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