

# ABSTRACT

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VATTNET I SGOGSMARKEN  
(Das Wasser des Waldbodens)

av  
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Bulletin No. 20 (1955) of the Royal School of Forestry, Stockholm, Sweden, deals with the water in forest soils. The main text is in Swedish with a German summary. The paper deals with water movements in the forest soil and is mainly concerned with discovering what happens to the precipitation that reaches the forest-floor as rain, snow or dew. How much of the precipitation reaches the ground-water and how much mineral plant food is lost in the percolating waters?

A detailed study of the surface water, bound water and ground water was carried out in several localities in Sweden and involved many intricate and novel procedures in the collection of water samples from various depths and expressing apparatus for dealing with the bound (imbibed) water. The paper contains descriptions of apparatus and water collecting methods, gives numerous chemical analyses and is fully documented. A complete bibliography is provided running to several pages.

The following points abstracted from the German summary are of significance:

1. The quality of the ground water as indicated by the concentration of Ions is influenced more by local geology than by soil type.
2. The Ion concentration in ground water is scarcely influenced by weather factors—snow, rain, drought, etc.
3. The cation content of drainage water varies little from that of the ground water.
4. Very little difference was found in general between the chemical content of surface water and of ground water.
5. Investigations with the Lysimeter showed that very little of the water of precipitation percolated on a broad front to the water-table below.
6. The bound (imbibed) water contained a much higher cation concentration than either the surface water or the ground water.
7. Experiments in fertilization and water movements indicated only a very slow leaching of water-soluble plant food into the ground water below.

It appears from these experiments that there is no general downward movement of water through the soil and no general leaching of Ions as has been generally accepted. The usual channels through which rainfall reaches the water-table are apparently rock outcrops, wet areas where the water content of the soil is high, root channels, impervious underground layers on sloping ground. Rocky ground which induces deep penetration of water is often very productive for that reason.

Since there is very little loss of mineral plant food by downward movement of percolating waters it appears that, theoretically, the manuring of forest soils takes on a very attractive appearance. The author of this valuable paper is of the opinion that on normal mineral soils on level ground a dressing of fertilizers will be effective throughout the whole rotation with little loss by leaching. The importance of waters percolating as ground water on slopes is discussed. These flushing or irrigation waters, are of immense importance to timber production under such conditions. Contour drainage on such ground and the intensive drainage of the flats on sloping terrain may be very wrong and one should be very careful not to overdo this work. The draining of a small marsh or wet hollow on sloping ground may improve the plantability of that portion of the slope, but the leading off of the irrigation water may lower the productivity of more extensive areas.