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Four Times the Timber Volume for a Forest in Central Europe

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The Barvarian Research and Experimental Institute for Forestry, Munich, Germany, 1986.

Summary of the four page German study translated by Christian Campe. The original German version is available in the Forestry Research Packet through mail order.

This report contains information on fertilization with rock dust and its practical application. The widely used term "gesteinsmehl" refers to pulverized silicate rocks.



This photograph was taken during the filming of the documentary **Stopping the Coming Ice Age**. It shows the remineralization of a forest that was dying from acid rain in Tirol in the Austrian Alps near Kitzbuhl, Austria. It was remineralized with BIOLIT rock dust from the Sanvita Company.

Results of the study showed:

- After 24 years the wood volume of the treated area was four times higher than in the untreated area.
- In the case of new pine seedlings remineralized with basalt rock dust, there were gains over the untreated area after the sixth year.
- The advantage only began to taper off after 60 years.

This was traced back to the increasing content of easily accessible potassium, calcium, and phosphorus. The nitrogen was hardly enhanced.

Silicate rock dust is regarded according to the fertilization law of 1977 as a soil amendment. Only rock dusts with a magnesium content of more than 20% can be called fertilizers. The often-used term "urgesteinsmehl" (primary rock dust) refers to it as being a product of metamorphic origin.

Several archaeological sites show that easy weathering rock material was already used in antiquity to improve soils.

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modern times go back to the middle of last century.

Already in 1907 an experiment was started at a site in Poland with basalt rock dust. Only 30-40% of this material was smaller than 1 mm. It was a coarser material and more resistant to weathering than the basalt rock dust available today. The extremely poor soil consisting of glacial sand was deep plowed and then covered with a 1 1/2 to 2 cm thick layer of basalt rock dust. That corresponds to 150 tons/hectare. It was then planted with pine seedlings.

In the case of new pine seedlings the area treated with basalt rock dust showed gains over the untreated area during the sixth year.

A study in 1932 showed that the results were totally successful. After 24 years the wood volume of the treated area was four times higher than in the untreated area. This was traced back to the increasing content of easily accessible potassium, calcium and phosphorus. The nitrogen was hardly enhanced. It was only after sixty years that the advantage tapered off.

Similar results were reported in 1943 concerning the fertilization of two forests in Germany which were fertilized with basalt rock dust in 1936-37. The amounts of rock dust applied were 16, 48, and 96 tons/hectare. The basalt fertilization led mainly to an improvement in the nutrient situation. In 1953 these experiments were reevaluated and it was shown that there was a clear superiority of the basalt areas in contrast to the untreated control area in regard to the tree yield. An additional calcium rock dust application of 2 tons/hectare increased the productivity further.

Some new studies with silicate rock dust confirm the insights from these older studies. Some of these studies have been carried out in Czechoslovakia with diabase, basalt, trachyte, gabbro, and andesite. These studies also cite rock dust experiments with the fertilization of single trees, which achieved good results. The amounts of rock dust on the adverse soil were up to 3 kg per tree. Under normal soil conditions improvement of growth should be achievable with 1.5 kg per tree.

The efficacy of silicate rock dust depends on fineness, chemical composition, and mineral content. More alkaline rock dusts such as basalt and diabase with high contents of K, Ca, P, and Mg are preferred. For application in large areas 5-10 tons/hectare are recommended. For agriculture, 3-10 tons per hectare are recommended. For a single tree, 1/2 - 1 kg per tree.

The report points out that the relatively slow results have a positive side in that there is not a sudden shock for the plant and no single component is oversupplied that might otherwise cause an imbalance.

In horticulture the positive effect of silicate rock dust can be favorable combined with organic components like compost, manure, and with green cover crops. The Research and Experimental Institute for Forestry in Baden-Württemberg has had good results with horticulture plants using rock dust. 10-15% basalt rock dust was added to the soil in their experiments; the soil consisted of 1/3 humus, 1/3 peat and 1/3 compost.