

There Is Something About Soil

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Healthy food and drink, cotton and linen clothes, natural cosmetics and medicaments, real fire and birch whisk in the sauna, blooming flowers and green grass, pure air and water—all these benefits are underlined with the unnoticeable role of soil. Over 95% of food in the world is produced thanks to plants growing on soil. The carbon supply in soil is bigger than in the above-ground biomass and atmosphere combined—thus, the soil is more in the centre of attention thanks to the “heating” climate politics as compared to the past. However, it resembles a skillful hide-and-seek game—the soil is visible and not acknowledged because of its value but it because its value becomes visible through something else—be it the climate politics agreements or the Water Act and the Nitrates Directive.

For a farmer, soil is usually an irreplaceable resource. Knowing the soil is the basis for profitable and environmentally friendly production. Soil is visible to the eye—it is mostly covered with plants, and even if a field is cultivated we only see its surface. There is no one and only indicator to characterize the quality and usability of the soil. This makes it complicated to know it and to plan its use consciously. There are some complex indicators characterizing the productivity or usability of the soil, such as site class expressed on a scale of 100 points. The site class of arable land in Estonia is about 40 points. Nevertheless, it does not indicate how well the soil suits for a specific crop and does not directly bear the answer to the fertilizer need of the soil. Therefore, it is almost always necessary to evaluate several different soil indicators simultaneously. The thing is that the details of soil indicators is an incomprehensible language for most land users. Throughout decades, soil science has created a unique language and forgotten that the majority of the people do not understand it. Let's take the high-quality Estonian large-scale soil map. The soil information of every Estonian field or forest can be looked up online in the map server of the Land Board. The trouble is that there you see abbreviations such as “LIS” for instance. Does this mean anything to you? In the language of the soil, it means “loam-integrated soil”. Oh my! This is not much more informative as well. Sure, you can look for information material that explains the “soil language” and to turn it into understandable information for yourself. In today's fast-paced information flow such a concentration time is not found and it is essential to translate the specific soil information for the consumer to understand it. In recent years, we have developed methods to translate the soil language in collaboration with the Soil Observation Agency of the Agricultural Research Centre, and presumably on the 100th birthday of our republic, you can get information of the usability of the soil to cultivate this or that crop for instance in the public map server.

Soil is not just a place where to grow your roots. It is also a vital source of

nutritional elements. If we do not add nutrients with fertilizer, the supply of the nutritional elements of the soil limits the harvest. Nitrogen poses as an exception here. Rhizobia on the roots of legumes can fix it from the air. Soil and balanced fertilization according to crop rotation are needed both to increase the yield and to maintain the quality of the soil. The soil is like a bank in essence, you can have a short-term debt and not return some nutritional elements (such as P and K) without being punished by reducing the yield immediately. Soil is conciliatory and durable with regard to lots of doings or un-doings. It seems that the soil ignores the saying "fool the field once, and it will fool you nine times". Sure, it does fool you, but you do not understand it so quickly, because changes in the soil are slow. Perhaps it would be better to say that if you fool the soil, you'll understand no sooner than in nine years that you did not treat it right when you did not calcimine it on time for instance.

The sustainable use of soil should be treated as a marathon, because its productivity must be carried on to future generations as well. Every soil has a different capability, and a suitable pace must be chosen to use it (meaning the level of production intensity) to complete the marathon. Just like in traffic you should know how to select the speed according to the rules, road conditions and driving skills, the same principle is transferrable to the optimal intensity of crop production. Large yields can be retrieved from soil of mediocre capacity by large fertilizer norms and other top-notch agricultural technology in a year of favourable weather conditions. In an unfavourable year, although, the crop might not digest the nutritional elements from fertilizers sufficiently, and on a sandy soil for example the leaching and concurrent environmental damage is remarkable, not to mention the financial damage. The purpose should be to achieve a long-term stable yield level that matches soil capacities (incl. we can protect the ground water). We have lots of improvement space when it comes to the average yield of arable crop in Estonia. This is indicated by the results of different field tests as well as the record yields of cultivation competitions. However, you should not act the same way without taking into consideration the soil and other factors to receive 10 or more tons of crop per hectare. Such purposes inherent to professional sports are suitable for only the most capable soils, and even for them, the risk of driving off the road on such high speed remains big enough. The cultivation competition organized in Estonia is a sprint, where all means are put to use in the name of a one-year victory. I think that no-one has participated in the cultivation competition with one and the same field many years in a row. It would mean much more if the results are assessed as the average of several years of crop rotation, and the impact on the soil and the environment are evaluated besides the productivity and profitability.