

The urgent need for peat reduction



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On behalf of the Federal Office for the Environment (FOEN), the ZHAW's Institute of Natural Resource Sciences is researching ways to reduce peat use in plant production. Through this research, it supports the involved industries in developing and implementing peat reduction strategies. While ornamental plant production has seen significant advancements in peat-free growing, vegetable seedlings present substantial challenges. The demand for research is high, and solutions can only be found through global collaboration.

Though garden centres have largely phased out peat from their bagged soils, this substrate, which is more than 2,000 years old, is still a staple in growing ornamental plants, vegetable seedlings, and strawberries. Recognising the environmental impact, the Swiss government proactively launched the 'Peat Exit Plan' more than ten years ago. Leading the transition, Jardin Suisse, a key industry association, was among the first to commit to reducing peat, aiming to eliminate its use by 2030, and progress is starting to yield results. Building on this momentum, the Federal Office for the Environment (FOEN), in partnership with the ZHAW and the Swiss Vegetable Producers' Association, also developed a peat reduction strategy last year. Without ongoing



Figure 2: A comparison of peat-reduced small pots (soil press pot system on the left, tray system on the right). Photo: ZHAW

research, however, these goals cannot be achieved. Commissioned by the FOEN, the Institute of Natural Resource Sciences is at the forefront of finding practical solutions, making it easier for the vegetable, culinary herb and berry sectors to commit to reducing their peat use.

A leap forward in peat-free ornamental plant cultivation

Switzerland is leading the charge in reducing peat in ornamental plant cultivation across Europe. Peat in bagged soils for hobbyists is banned in Switzerland and this will also soon be the case in other countries, such as the UK. These strict regulations, however, are currently limited to organic horticulture substrates. Swiss ornamental plant farms are renowned in surrounding countries for producing high-quality, peat-free flowers. This success extends to the ZHAW's culture laboratories, which are used for the Organic Agriculture and Horticulture specialisation. As shown in Figure 1, chrysanthemums can grow healthy roots in entirely peat-free soil.



Figure 1: Chrysanthemums showing healthy root development with 50% peat content (left) and without peat (right). Photo: ZHAW

Whether in ornamental plant, vegetable, berry, or mushroom cultivation, the challenge lies in identifying substrate components that can replace peat in terms of quality and quantity and understanding the financial implications of fully transitioning to peat-free methods.

Call for research in vegetable cultivation

In contrast to the advancements in ornamental and herb cultivation, vegetable farming still relies heavily on small, cubic soil press pots predominantly filled with peat. These require around 120 cm³ of substrate, two-thirds of which consist of peat. Consequently, each head of lettuce we buy translates to the use of approximately 50 cm³ of peat. The cultivation techniques in both Swiss and German vegetable farming rely heavily on this press pot system, which guarantees stable growth and adequate early nutrition. Peat's unique compressibility properties, crucial for these young plant systems, are unmatched by any other natural material. The industry currently depends on this system, though 'speedy' or 'tray' pots (see Figure 2) can reduce substrate use to about a quarter of the volume used in a conventional press pot. However, these alternatives do not suit all professional vegetable crops due to quality concerns and the high risk of crop failure. The ZHAW, together with the Research Institute of Organic Agriculture and Agroscope, is set to research and support the introduction of peat-reduction methods over the next three years. ■

Organised mountain biking at Höhronen



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The forests around Höhronen (canton of Schwyz) have seen a rise in illegal trails due to increased mountain biking activity. To protect the forest and wildlife while also facilitating organised recreational use, forestry operations, game wardens and local mountain biking community representatives have devised and implemented an innovative solution. Since June 2022, mountain bikers are allowed to move along officially marked and attractive trails within predetermined corridors. The region also applies rules of behaviour to foster mutual respect among visitors and towards nature. The initiative aims to ensure that at least 90 % of mountain bikers use the official trails by 2024 to prevent the creation of new paths, and ensure full compliance with the rules of behaviour. On behalf of the canton of Schwyz, the Environmental Planning Research Group has been tasked with providing scientific support for the initiative, conducting thorough monitoring and providing scientific guidance. The effectiveness of these measures will be evaluated over a three-year period by examining trail usage data, surveys and input from local experts, potentially establishing Höhronen's approach as a benchmark and inspiration for other regions. ■



Gamekeeper Matthias Oechsli showcasing the newly designed directional signs for mountain bikers, created especially for this project (Photo: Martin Wytenbach)

Advancing the energy transition with SWEET-EDGE



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As Switzerland rolls out its Energy Strategy 2050, we are seeing a rapid expansion in renewable energy generation across decentralised locations. This push towards greener energy sparks important societal and technical questions about which technologies should be adopted and where they should be placed. The SWEET-EDGE research project, supported by federal funding, investigates the best approach to weaving decentralised energy sources into the fabric of

Swiss cities, the Central Plateau and the Alps. The project is a collaborative effort by 11 leading universities and universities of applied sciences, including the ZHAW Renewable Energy Research Group at the Institute for Environment and Natural Resources. Over the period from 2021 to 2027, the EDGE initiative aims to devise regional scenarios and development strategies, with the goal of realising a completely renewable energy sector in Switzerland. The acronym EDGE represents our mission to 'enable decentralised renewable generation' across diverse Swiss landscapes, focusing on leveraging local solar, wind and biomass energy, complemented by traditional hydroelectric power and innovative power storage technologies.

sweet-edge.ch



The SWEET-EDGE consortium convenes at EPFL, with ZHAW's Renewable Energy Research Group represented by Prof. Jürg Rohrer, Dr. Muriel Siegwart and Nicolas Stocker. Source: EDGE project communication material