

# Storing mowing residues under the ground turns out to be a new revenue model: 'I thought it was a very crazy idea'

Making new peat from mowing residues, combating soil subsidence, helping the climate and making money. Too good to be true? In the Weerribben-Wieden it may become reality. Here, a groundbreaking technique is being tested, which turns clippings into a CO<sub>2</sub> locker underground.

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Mowing residues that have been brought underground in the Wieden in an area of 100 square meters. © Gidion Kok

In a nutshell, this is the idea: plants absorb CO<sub>2</sub> and produce oxygen. In the Wieden nature reserve and surrounding areas, a lot of mowing is done to maintain the open character. But what happens to those mowing residues?

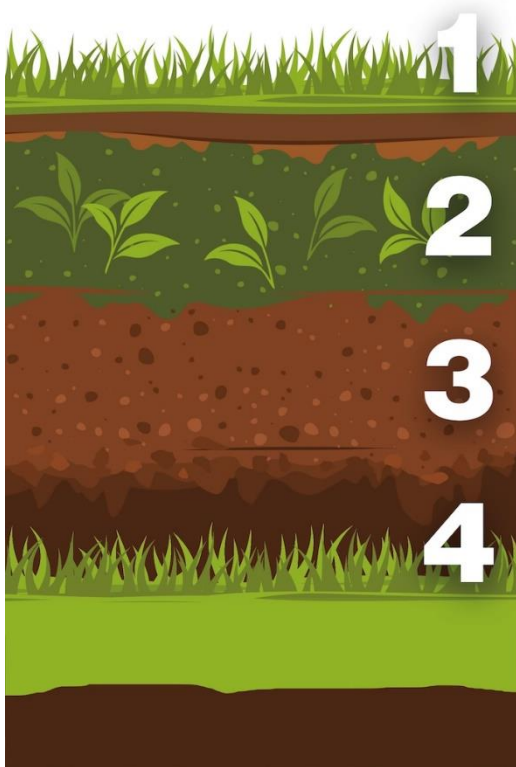
De Veenmakers, a company from Amsterdam, wants to do something about this. "When clippings decompose, the absorbed CO<sub>2</sub> is released again," explains Paul Smits. "Our technique prevents this: we press the remains into oxygen-free soil under the peat, so that the CO<sub>2</sub> is retained."

## Why here?

Peat soils consist of layers of decayed plant remains, which are perfect for this experiment. Smits: "Peat hardly allows oxygen to pass through. Think of bog bodies, which remain intact for thousands of years."

After a small-scale trial in South Holland, where wood chips were successfully stored, the question arose: where can we test this on a larger scale, with mowing residues?

Natuurmonumenten pointed to the Wieden, one of the largest peat bogs in Europe. Gidion Kok, area manager of Natuurmonumenten, initially thought it was a crazy idea. "But after explanation, I saw potential and we decided to start the experiment."



1. Plants and mosses absorb CO<sub>2</sub> from the air.
2. In a swampy soil, the plant remains do not decompose.
3. The plant material accumulates and eventually forms a compact mass, known as peat.
4. By mowing the top layer (layer 1) and putting it under the peat, CO<sub>2</sub> is stored and new peat is created.

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### **Innovative technology**

Smits does not want to say much about the exact method. "That is part of a patent that we want to record. In essence, we press the clippings through small openings under the peat."

Frans de Graaf of the municipality of Steenwijkerland received the application for this pilot and wanted to give it a chance. Agriculture Minister Wiersma talks a lot about innovations that can help farmers, according to De Graaf this can be such an innovation. "We are happy to support sustainable innovations that help farmers and the climate. This project has both."

The municipality not only gave permission, but also provided a subsidy. That is why 40 tons of clippings have now been put underground in an area of 10 by 10 meters. Not in the nature reserve itself, but in the meadows that border it.



With the help of a contract and a new technique, the mowed grass is put under the peat here. © Gidion Kok

### **What is the revenue model?**

Although the Veenmakers runs on subsidies, a revenue model is on the horizon: CO<sub>2</sub> compensation. Smits: "Companies can buy certificates to compensate for their emissions. We invest that money in projects like this, where we make new peat."

Kok emphasizes that not every company can just buy compensation certificates. "It is not intended for Shell or Tata Steel, we focus on companies that are already working sustainability, but cannot yet solve that last bit. It is not intended for polluters who simply want to buy off their emissions."

Smits: "Companies can also adopt a project, so that they not only get the credits, but can actually show what they are doing to store CO<sub>2</sub>."

### **More than carbon storage**

In addition to storage, the technique has another advantage: it strengthens the soil. This ensures that cows and tractors are less likely to sink into the peat, so that the water board has to pump out less water. The hope is also that this will result in less peat oxidation. This occurs when peat soil becomes drier.

Then the stored carbon is released again through contact with oxygen. Peat oxidation in the Netherlands releases 4.2 megatons of CO<sub>2</sub> every year, comparable to the annual emissions of the Shell refinery in Rotterdam. This can counteract some of that.

Due to years of pumping out water around the Weerribben-Wieden, the soil has settled considerably. "You can't always continue to make the soil drier. Due to the subsidence, the

nature reserve will be higher than the surrounding land. That brings new problems," says Kok. This technique may be able to reduce or prevent future subsidence.

### **Future plans**

The pilot is still in full swing. In the coming period, it will be investigated how much CO<sub>2</sub> is actually stored and what the effect is on the soil. Smits is optimistic. "The test in South Holland was already promising. If we succeed in implementing this on a larger scale, we can make an important contribution to climate and agriculture." It is expected that 15 to 20 tons of CO<sub>2</sub> are already stored in this 10 by 10 meter section.

Talks are already underway between the Veenmakers, Natuurmonumenten, the municipality of Steenwijkerland and the province of Overijssel. Smits: "We really like the cooperation with the authorities here and Natuurmonumenten, which is why we are looking at whether we can make new peat in an even larger area."