

The Humus-Program of the Ökoregion Kaindorf

Result-based contract solution - farmers follow recommended measures to build up humus (=soil organic matter) in soil, sequester CO₂ and receive a fee per ton of stored CO₂. Companies finance humus build-up and soil carbon storage by buying CO₂ certificates.



Summary

The Humus-Program of the "Ökoregion Kaindorf" is a contract solution developed for voluntary trading of CO₂ certificates: Based on an initial soil sampling at the start of the contract (by a certified civil engineer and accredited national laboratory), farmers set own measures to increase the humus content in their soils. After a period of three to seven years (according to the farmers needs), humus content is determined again by a second soil sampling. An increase in humus content is converted into additional tons of CO₂ stored in soil. Farmers receive a success fee of 30€ per additional ton of CO₂ stored, which is financed by companies who voluntarily compensate their unavoidable CO₂ emissions. The amount of CO₂ purchased by the companies cannot be traded. After the payment, farmers must guarantee that the increased humus content remains in place for at least five years. This requirement is verified by a third soil sampling taken five years after the payment. Decreases in humus levels lead to partial or complete refunding of the success fee. Contracts and the carbon verification is organized and managed by the association "Verein Ökoregion Kaindorf" while emission trading is managed by an own Ltd.

Objectives

- Main objective: humus (soil organic matter) accumulation and soil carbon sequestration
- Higher soil fertility – soil organic matter supports life in the soil, which is the basis for vital crops and reduces the need for mineral fertilizers and pesticides
- More reliable harvests through resilient crops – living soil supports resistant plants in the face of global climate change
- Keeping the soil in place – humus-rich soils rich are more resistant against erosion by heavy rainfalls, flooding or wind
- Humus-rich soils store lots of water, which helps to maintain stable yields during droughts
- Keeping the groundwater clean – soils rich in humus can fix more nitrate and prevent groundwater pollution
- Climate change mitigation through CO₂ fixation – soil organic matter contains about 60% carbon, hence building up soil humus removes CO₂ from the atmosphere and helps to mitigate global overheating

RESULT-BASED



The payment depends on a defined result (stored CO₂ as humus per hectare, measured)

PUBLIC GOODS



Climate regulation-carbon storage



Soil quality (and health)

LOCATION

AUSTRIA



Participation in the contract solution is open to all farmers across Austria.



(A) Humus-farmers receive their success fees in a public ceremony each January.



(B)



(C)

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The result-based contract is concluded between individual farmers and the association Ökoregion Kaindorf (The sales contract for emission trading is concluded between companies or private people and an own Ltd.).

Contract conclusion:

Written agreement



Payment mechanism:

non-tradable emission certifications



Funding/Payments:

- The humus farmer receives a success fee of currently **30 € per ton of CO₂** sequestered in humus (i.e. two thirds of the certificate price, for legal reasons the absolute price per ton is not guaranteed).
- Companies pay **45 € per ton of CO₂**. The difference of 15 € (before taxes) remains with the Ltd. for administration of the contract solution.
- As of 2020, the association paid **373.000 €** to participating farmers.

Participation:

- Number of farms: approx. 300 farmers (Jan 2020)
- Area of implementation: 3.600 ha (Jan 2020)

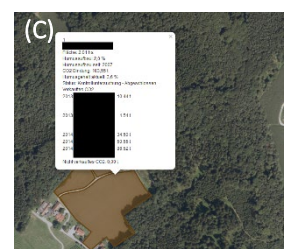
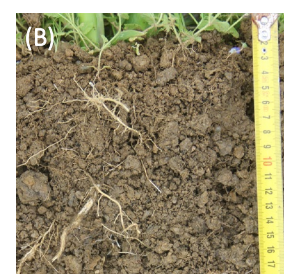
Involved parties:

- Ökoregion Kaindorf. The non-profit association is initiator and coordinator of the contract solution. It has implemented more than 300 sustainability-related projects since 2007, covering agriculture, mobility, energy, housing, circular economy, and waste management.
- Limited company: The Ltd. organizes the process of humus certificate trading.
- Farmers: The humus program started in 2007 with three farmers. As of 2020, 300 farmers are participating in the program. Farmers participation is now the restraining factor, as demand is higher than provision and certificates are constantly sold out.
- Companies and private persons: Humus certificates are bought by companies and private persons who aim to compensate their unavoidable CO₂ emissions.

Management requirements for farmers: The Humus-Program provides practical principles for humus accumulation in soil and suggests best-practices including use of cover crops, no-till practices, intercropping and compost application. However, there are no obligatory requirements such as mandatory management measures. This means that the farmers are free in their choice how the increase of humus content on their fields is achieved.



(A) GPS-located soil sampling. (B) Crumbly soil structure after 3 years of humus build-up. (C) Traceable CO₂ storage is visualized via online field maps.



Controls/monitoring: The participating farmer commits himself only to pay for the first soil sampling. He/she can leave the program at any time, except in case a success fee has been paid after the second sampling. Then, the third sampling becomes mandatory. Each field registered for the Program is thus subject to minimum one soil sampling, which is carried out by a certified civil engineer. Soil samples are analysed for soil organic carbon, total nitrogen, pH_{CaCl2}, CAL-extractable phosphorus and potassium by the Department for Soil Health and Plant Nutrition, Austrian Agency for Health and Food Safety (AGES). In addition, samples are analysed according to the method of Albrecht/Kinsey for exchangeable cations, total sulphur, available and total phosphorus as well as a range of trace elements.

The first soil sampling determines baseline humus levels (25 GPS-located samples per field, mixed and analysed as a compound sample). A second sampling (success sampling) is conducted within three to seven years after the initial sampling in the same manner to quantify changes in humus content. From the increase in humus, the total amount of CO₂ sequestered is calculated. The farmer can then claim a success fee of 30 € per ton of CO₂ sequestered (i.e. two thirds of the certificate price, for legal reasons the absolute price per ton is not guaranteed). After receiving the fee, the humus farmer has to guarantee the level of build-up humus for five years. This is controlled by a third sampling (control sampling). In case an increase in humus above levels from the success sampling is measured, farmers can claim further success fees and the program is prolonged for another five years. Decreases in humus content can lead to partial or complete refunding of the success fee. All soil samples are paid for by the farmers.

CONTRACT



Length of contract:

Initially three to seven years; depending on the farmer's decision. If humus-build up is measured at the second sampling, the contract runs for additional five years when a third soil sampling takes place. Total length: eight to twelve years.

Length of participation in contract solution:

In general, participation is open end. If there is a further increase in humus measured at the third sampling, the farmer can voluntarily renew/extend the contract and apply for a further success fee for the additional increase of humus content.

Start of the program:

The Humus-Program started in 2007.

End of the program:

The program is still running.

Renewal / termination:

• **Renewal of the contract:** The option of renewal is foreseen and regulated in the contract solution, the contract can be renewed easily.

• **Termination:** Termination is always possible, except in case a success fee has been paid after the second sampling. Then, the third sampling becomes mandatory.

Conditions of participation: Farmers can take part with one or more fields, each between 1 and 5 ha in size. The farmers have to pay the initial soil sampling. Besides this, the farmers do not agree to any liabilities.

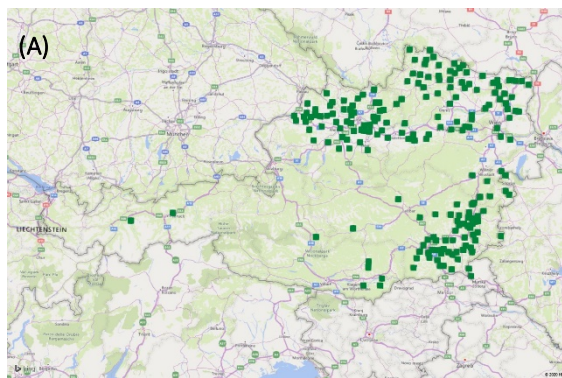
Risk/uncertainties of participants: The main risk for farmers is to not building up humus and therefore not receiving the success fee, even if there might have been investments and changes in management style. Another risk might arise from reduced demand in CO₂ certificates. However, this is not seen as a substantial obstacle as demand has by far exceeded supply for years. In any case, the farmer is guaranteed two thirds of the certificate price as a success fee.

Links to other contractual relationships: There is no direct link with other contractual solutions, and farmers are free to participate in other agro-ecological programs (e.g. GAP, ÖPUL, AMA, ...). The farmers are bound to the Humus-Program though, meaning they cannot take part in a similar, privately organized program of humus build-up and emission certificate trading.

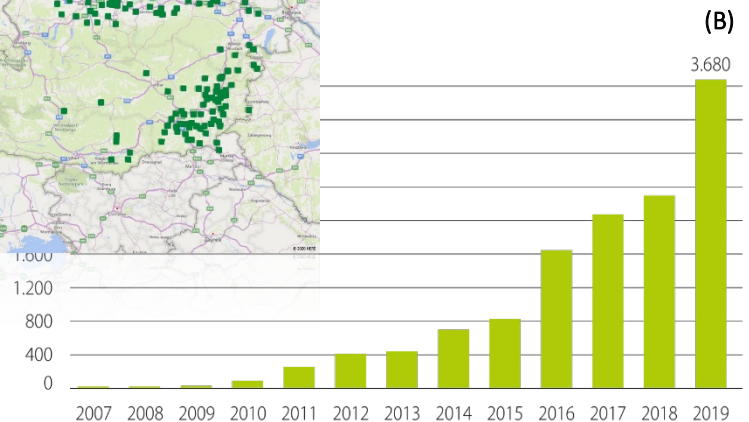
Context features

Landscape and climate: The Humus-Program is not restricted to a special region in Austria, all farmers throughout Austria can participate.

Farm structure: In general, the Humus-Program is free for any agricultural management, however up to now most of the farmers are arable farmers. There is no specific business type taking part as regards intensity, size, age of farmers, etc.



(A) Map of participating humus-farmers all over Austria. (B) The total area enrolled in the Humus-Program has risen to over 3600 ha up to end of 2019.



Problem description

The initiator of the contract solution is the association "Ökoregion Kaindorf". The association, which consists of three municipalities, has set itself the goal of significantly reducing its CO₂ emissions to achieve net CO₂ neutrality as soon as possible. Human-induced climate change was the reason to act. By reducing the consumption of energy and raw materials and supplying them with renewable energy, as well as by humus formation, the way to CO₂ neutrality is sought. The most far-reaching project in the "Ökoregion" is the Humus-Program, in which around 300 farmers throughout Austria are now participating.

SUCCESS OR FAILURE?



The Humus-Program of the “Ökoregion Kaindorf” represents a successful contract solution. The number of participants clearly increased since its initiation in 2007 and is still increasing. On the demand side, the demand for certificates at the moment exceeds the provision by the farmers. Except for the payment for the initial sampling, there are no obligations for the farmer in the program. Via the Humus-Program, farmers moreover get access to educational events and network meetings to exchange with other farmers on the subject of sustainable soil management. There is huge potential for climate-regulation via soil carbon storage. Measurements from over 100 agricultural fields in Austria show that humus accumulation and carbon sequestration removes CO₂ from the atmosphere in relevant quantities (on average 9 tons CO₂ per hectare and year). Through the result-based character of the payment, only the measured environmental success (CO₂ stored as humus) is paid.

Reasons for success:

- Farmers are free in their management decisions, the program only provides best-practice suggestions
- No liabilities for the farmer, except payment for the initial soil sampling
- Program is accompanied by educational measures and helps to network farmers into a humus community
- Payment for the farmers comes from the private sector. Demand for certificates has greatly exceeded provision by the farmers for the last years.
- In addition to CO₂ sequestration, humus formation has further benefits for the farmer (soil fertility, etc.)

SWOT analysis

