Climate Change

Farmers' Solutions

Renewable Energy

Sugar Beet Ethanol

Energy produced in a sustainable way

EU Beet Growers adapt to Climate Change

The EU agriculture has cut its greenhouse gas (GHG) emissions by 20% between 1990 and 2006. Emissions from agriculture represent 9% of total emissions (European Environment Agency).

EU beet growers regularly adapt their management decisions and operations to changing local climate conditions.
A key element of this adaptation process is the continuous research on new varieties and cultivation strategies, which is carried out by the EU beet and sugar sector with the intention of minimising the adverse effects of climate change and also maximising the opportunities given by the changing environment.

Socio-economic benefits

EU beet growers and the Industry are working together to improve the environmental sustainability of the EU beet and sugar sector. They jointly aim to respect biodiversity, improve soil conservation and water management and to develop the best solutions for adapting to and mitigating climate change.

The proved expertise of the EU beet and sugar sector puts it in a strong position to deal with the challenges that climate change will present in the future. Commitment and expertise are the keys to our sustainable future.

Climate change mitigation strategies

In line with EU and international targets, EU beet growers are committed to actively contributing to climate change mitigation through the development of two main strategies:

1. reducing net GHG emissions and energy use in beet growing
2. the sustainable production of renewable energy and materials from beet

This initiative is provided by **The International Confederation of European Beet Growers, (CIBE).**

Further resources
www.cibe-europe.eu

The **European Union beet growers** are committed to actively develop renewable energies (bioethanol and biogas) and materials (e.g. surfactants and polymers) in a sustainable way to replace more polluting and energy intensive products in order to reduce GHG emissions.

Their commitment and expertise enable EU beet growers to deal efficiently with the challenges pose by climate change.

EU Beet Growers: Act and Adapt!

Here are some concrete examples of how EU beet growers are already adapting to climate change:

1. To combat spreading diseases such as Rhizomania, Nematodes, Rhizoctonia and Cercospora, EU beet growers turn to varieties which are either **tolerant** or **resistant** to one or more of these **diseases** and which have a higher sugar content.

2. EU beet growers optimize their **cropping management** to **produce more on less land** to benefit from higher temperatures.

As a result, in the last 10 years, the EU sugar yield has risen by over 40%, while the sugar beet area has practically halved.

Growing Sugar Beet
– Environmental Benefits

As a **key rotational** and a deep-rooting crop, the cultivation of sugar beet

- enhances soil fertility,
- improves soil structure, reduce the risk of soil compaction,
- reduces soil acidity,
- helps to avoid soil erosion, and soil tare,
- captures N and other nutrients efficiently, thus preventing ground water pollution
- reduces the need for fertiliser
- reduces the level of weeds, diseases and pests and therefore reduces the amount of pesticides applied.

EU Beets Growers' strategies to reduce GHG emissions

In addition to the benefits related to crop rotation, EU beet growers are committed to reduce the use and improve the efficiency of agricultural inputs in beet cultivation. The results achieved so far include:

- **Substantial reduction of mineral nitrogen fertiliser (N) applications** in EU beet growing over the past 10 years: in major EU producing countries, a 30 % reduction has been achieved.
- **Substantial reduction in the use of plant protection products (PPPs)** in EU beet growing over the past 10 years. For example, in the Netherlands, the environmental impact of PPPs used for sugar beet has decreased by more than 50 % between 2002 and 2007.

A reduction in use means not only a relative reduction in production costs, but also a reduction in the use of energy and in GHGs emitted.

EU beet ethanol

is one of the most sustainable available sources of energy

- emits at least **60% less** GHGs than fossil fuel

has a high efficient energy balance

- one unit of energy is used to produce more than 2.5 units of renewable energy

has a high land use efficiency

- has the highest bioethanol yield in Europe: on average 8000 litres of bioethanol are produced from 1 hectare of beet – compared to 2800 for wheat, 3700 for maize
- by-products such as vinasse and pulp can be used as animal feed, fertiliser, and to produce biogas

does not compete with food

- based on the 10% target of renewables in transport set for 2020 by the EU, the production of ethanol from beet would require a surface representing only 30% of the total beet area

has the lowest water footprint

- sugar beet is the most efficient bio-energy crop in terms of the volume of freshwater used for production, requiring 50% less water than sugar cane

complies with good agricultural and environmental standards

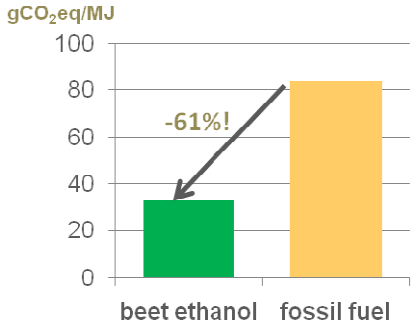
- as defined by the EU Renewable Energy directive for the protection of animals, plants and public health, animal welfare and the environment

Reducing GHG Emissions & Improving Energy balance

EU beet ethanol emits 60% less GHG than fossil fuel and thus goes beyond the sustainability target by 35% as set by the EU renewable Energy Directive (graph on the right).

When compared to other crops, EU sugar beet has the best performance in terms of low GHG emissions, especially in the cultivation phase.

Life-cycle GHG emissions
(beet ethanol production vs fossil fuel)



Source: EU Renewable Energy Directive (2009/28/EC)

EU Beet Growers' Recommendations to Policy Makers on the UN Framework Convention on Climate Change (UNFCCC)

The achievements and commitments of EU beet growers in adapting to and mitigating climate change, in particular through the provision of sustainably produced feedstock for renewable energy production, show the important role of farmers in finding solutions to the challenges arising from climate change.

The EU and international policy-makers need to recognise farmers' efforts and contributions, and to support further development of sustainable practices. These include improvements in efficiency and productivity in EU sugar beet growing, its adaptation to climate change, and the sustainable production of beet ethanol. Access to funding for farmers, stable investments in agriculture, and fair competition for the emerging beet ethanol sector in the EU are essential in order to achieve this.

Following the adoption of the EU Climate & Energy Package, the international negotiations on climate change within the UNFCCC constitute an excellent opportunity for the further development of an appropriate policy framework, and its effective implementation.

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