



Carbon Farming Austria

Conservation Farming & Climate Smart Agriculture
by **Technik-Plus**

The benefits of using HC+CO₂

Exhaust emissions in agriculture

Agronomists have known about the benefits of **HC+CO₂** in the soil for about 100 years. The use of CO₂ in green houses has even become common practice.

- ✓ Due to the use of **HC+CO₂** during cultivation, farmers may experience enormous rise of yields in all crops while reducing expenses up to 50% in agrochemicals and fertilizers.
- ✓ Agriculture is the only sector, which may even highly benefit from the rise of CO₂ emissions in the atmosphere, through the so-called



“CO₂-fertilising effect”. Increased yields of up to 20% are possible only with an optimized consumption of atmospheric CO₂. This also results in an increased quality of the harvested products.

<https://bildungsserver.hamburg.de/klimawandel-und-landwirtschaft-nav/2203496/kohlendioxid>



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More CO₂ in the atmosphere also requires lesser stomata in order to absorb CO₂ emissions, which is highly beneficial under drought conditions, because in this way lesser water evaporates.

The activity of photosynthesis of most crops, which is at a current level of 0,04% CO₂ (400 ppm) in the atmosphere, is indeed suboptimal¹.

Better effects with C3-plants (90% of all terrestrial plants, including wheat, rice, potatoes and soy) can be reached at 3-5 times higher levels instead. In other words, higher levels of CO₂ help the plant's metabolism and also take up an important part of the photosynthesis process. Improved water utilisation is also a positive consequence.



The result is visible in dry and hot periods, when the crop is unable to absorb CO₂ which often causes its dieback.

During summer time, the level of CO₂ in the atmosphere is lesser than during winter time. Thus, lesser CO₂ is available for absorption.

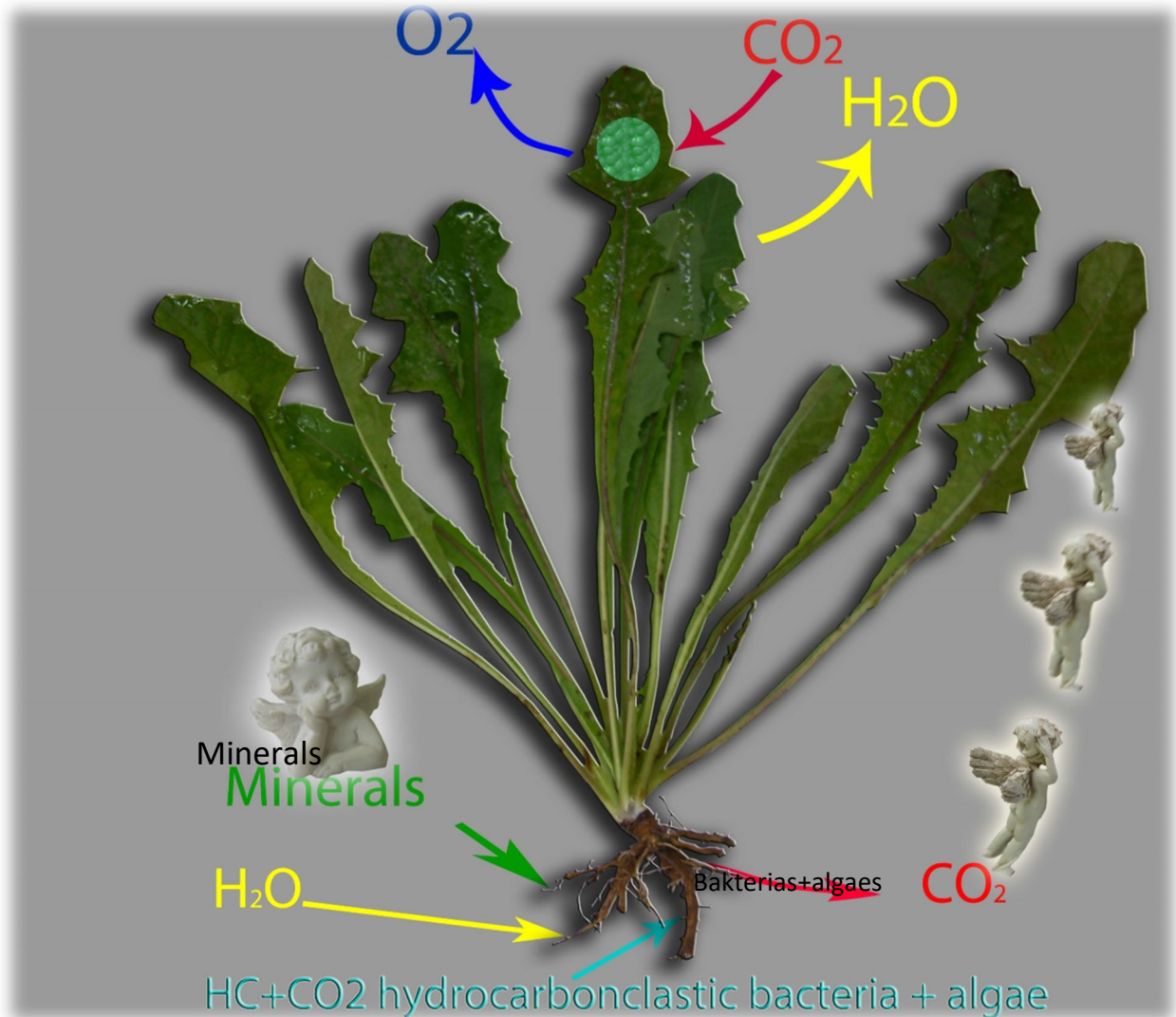
Hence, CO₂ turns out to be at this period a limiting factor, which will also reduce the activity of photosynthesis and, as a result, the plant growth.



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Fact: During hot days, more water evaporates from the stomata which are not able to absorb great amount of CO_2 from the atmosphere.

It follows from the foregoing that a higher level of CO_2 in the atmosphere requires fewer open stomata in the epidermis, which also causes lesser evaporation of H_2O → reduced drought stress!

A growth at higher levels of CO_2 in the atmosphere – with up to 0,07%



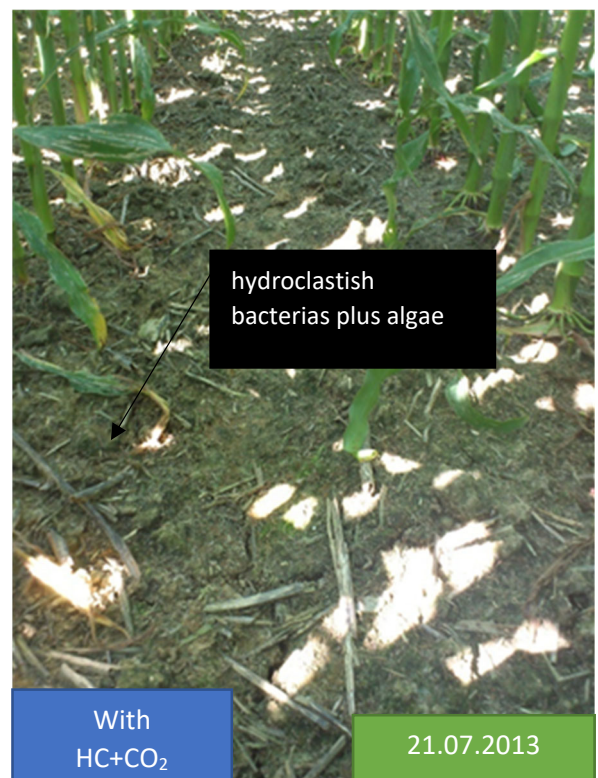
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CO₂ (700 ppm) leads to 20-30% more biomass. Due to increased CO₂ – emissions, a faster growth of plants is possible with a consequent reduction of fungal infections.

On the other hand, the HC coming from the tractor exhaust emissions feed the ubiquitous **hydrocarbonoclastic bacteria**, which activate their metabolism and subsequently lead to a higher availability of necessary minerals from the soil.

Tractor exhaust emissions get embedded in the soil. The “recycle” of HC+CO₂ exhaust emissions in agriculture subsequently increases a healthy crop development → **Carbon Farming**.



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Mit freundlichen Grüßen / yours sincerely / cordialement,

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