

A Synthesis of Agricultural, Environmental and Technological Innovation

CarbonZero is a pioneer in the field of biochar production. CarbonZero has developed a novel technological approach to transform biomass into ***biochar*** and ***pyroligneous acid*** (PA), using a staged, precise thermal decomposition process. Our innovation adds both environmental and financial value to the production of biochar.

Research has shown that biochar can be used to improve our environment in a *wide* variety of ways, creating a cascade of positive impacts.

Because it is a concentrated form of carbon, biochar is a highly stable way of removing and permanently sequestering excess atmospheric carbon dioxide. This is why we have taken such a strong interest in developing biochar's potential.

Biochar can be used in agriculture to improve soil structure, fertility and mineral retention, or as a compost additive, particularly in vermicompost production facilities to increase productivity.

Biochar can be used to reduce pollution in lakes, rivers, groundwater and soils, such as nitrates and phosphates from agriculture, or micro-pollutants such as pharmaceutical residues, or heavy metals arising from mining or historical industrial activities that require remediation.

Precisely manufactured biochars can be used in a variety of use cases, to increase biogas productivity or in modern building or fabrication materials, for example.

Carbon plays a central role in all life forms, in their biological structure and function. So it makes sense that biochar, as a transformed organic carbon, has many life-beneficial uses. And certainly more may be found in the future.

Pyroligneous acid (PA), an *organic* crop and soil supplement, significantly increases the

rate of photosynthesis in plants - their production of carbohydrates and rate of cell division, which in turn increases plant productivity and resistance to disease and insects.

Plant application of PA causes excess carbohydrates to be excreted out of plant roots, which nourish soil microbiota, and their populations and activity increase. These microbiota in turn dissolve soil minerals, making a rich array of nutrients available to the plant, resulting in healthier plants, and healthier food.

As such, PA has the capacity to make organic farming more productive and cost-effective compared to chemical alternatives. PA may also be an effective organic substitute for the use of glyphosate in grain production, the use of antibiotics in animal feed, and the use of some chemical pesticides. Changes in agricultural practices such as these are essential to create a sustainable, healthy future.

Biochar and PA are good environmental investments, toward a more sustainable future for generations to come. CarbonZero has developed a synthesis of agricultural, environmental and technological innovation so that these investments can scale to better meet the need.

CarbonZero will soon be a legally constituted steward-owned company, one of the first in Switzerland, a hybrid blend of a non-profit foundation and for-profit company. Its share structure and statues will guarantee that profits are invested in promoting its social-environmental purpose.

We need financial support to carry out our research projects, technology development and implementation programs, and would welcome opportunities to collaborate. At present, we are seeking approximately 150,000 CHF to co-finance 3 Innosuisse research projects designed to optimize our technology development and implementation.

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Pyroligneous Acid Trial - Wheat

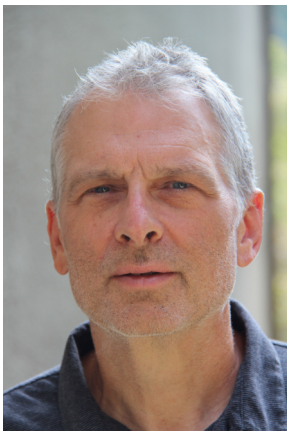


Trial control, standard fertilizer regime

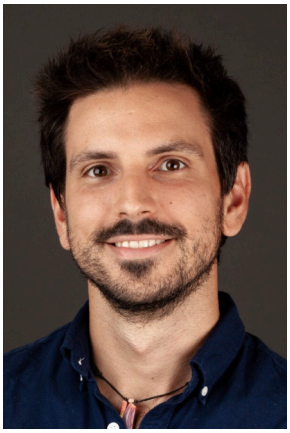


Trial treatment, 2x PA application, no fertilizer, much greater productivity, significantly less cost

Core Team



Nando Breiter is the director of CarbonZero and has been active in this field for the last 15 years, spearheading the development and design of our novel technologies, and our focus on pyroligneous acid as a sustainable alternative to current agricultural practices.



Samuel Unterhofer has a background in chemical engineering and is currently working at CSEM, which is a Swiss center of technological development, and at Aneco, which is an association that develops natural and ecological solutions, particularly using biochar to treat human wastewater.