

Summary

déplacer vers la barre latérale

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Electroculture

Electroculture refers to various practices aimed at stimulating the growth of plants by subjecting them to **electric** or electromagnetic fields or directly to electric currents .

The research carried out in this field experienced a craze at the turn of the 19TH century and the ^{20th} CENTURY , before disappearing with the progress of electrophysiology , on the one hand, and ^{agrochemistry} (phytosanitary products and fertilizers), on the other hand. In the 21ST century , these experiments are again brought to light with the revival of organic farming , in the hope of obtaining, more or less empirically, more vigorous plants without chemicals. Many scientists consider this practice to be pseudoscience.



Electroculture experimentation in 1927 in a suburb of Brisbane (Australia).

History

In the middle of the 18TH century, observations suggested the influence of storms on the growth of plants and led to the idea of carrying out experiments with electricity to stimulate vegetation . Thus the positive results obtained in Edinburgh by Doctor Maimbray on myrtle branches were presented in 1746 to the *Royal Society* of London ¹ . Although the process of electrification is not specified, it closely follows the development of electrostatic machines . The idea was quickly taken up in France, Switzerland and Germany.

In France, in 1749, Abbé Nollet carried out research on the effects of electricity generated by these electrostatic machines and noted its positive effects on plants ² .

In 1783, Abbé Pierre Bertholon de Saint-Lazare, who was more interested in the electricity of the atmosphere, such as lightning , abandoned electrostatic generators and invented the "electrovegetometer", a device aimed at collecting electricity atmospheric to distribute it in the ground ^{3, 4} .

In the following century, the chemical industry, phytosanitary products and fertilizers gave more profitable and more constant results; the field of electroculture is neglected, but nevertheless active ¹, ³. Jules-François Dupuis-Delcourt perfected the electrovegetometer before abandoning his research in the face of the lack of success encountered. The International Electricity Exhibition in 1881 revived public interest in the subject. Fernand Basty distinguished himself by creating a journal devoted to electroculture, in which he published the positive results of his experiments ⁵, obtained using an electric generator ⁶.

In 1899, the chemist Marcellin Berthelot studied the links between plant growth and electricity: Using electric generators, he demonstrated the fixation of atmospheric nitrogen by soil microbes ⁷, ⁸.

In 1912, an international congress on electroculture was organized in Reims ⁹.

From 1918 to 1936, in England, the British Ministry of Agriculture and Fisheries commissioned the Electro-Culture Committee to study the subject. In France, Jules-Louis Breton and Lucien Plantefol studied electroculture within the Office of Inventions, from 1918 to 1925, and obtained positive results with a transformer connected to the electrical network ⁵.

Inventor Justin Christofleau, during the first half of the 20TH century, also conducted several experiments in his own garden.

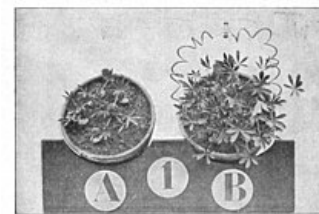


Photo from 1906 intended to demonstrate the influence of electricity on plant growth (A: without electric current, B: with electric current).

Renewed interest

Geobiological approach

At the end of the 1980s, the concept found a renewed interest in Europe with followers of organic farming and permaculture, who nevertheless engaged in more or less empirical practices ¹⁰, ³, ¹¹.

At the beginning of the 21ST CENTURY, VIDEOS, BOOKS, CONFERENCES OR COURSES ON THE SUBJECT MULTIPLIED, in which the promoters of electroculture asserted that it had proven itself and had been abandoned under pressure from the chemical industry. They are based on the theories of geobiology and have recourse to light devices, antennas or magnets intended to act on the cosmo-telluric electromagnetic fields of the universe ¹², as in dowsing.

Although there are positive results, in particular on germination, the current experimental results are not sufficient to conclude on a generalizable effect. The studies also do not make it possible to discern whether the observed effects are due to a possible alteration of the ambient electromagnetic field or to other properties of the devices tested ¹³, ¹⁴. This justifies for some “the opening of a serious and independent research program” ¹³. »

In the absence of convincing experience, this practice is considered as a pseudo-science ¹⁵. This judgment is accentuated by the lack of scientific theoretical foundation, because the theories on which these practices are based are essentially made up of a succession of unproven hypotheses ¹³.

Physical approach

China, for its part, has been experimenting for more than 30 years, in greenhouses, and announced in 2018 yields increased by 20% to 30%, with 70% to 100% less pesticides and 20% less fertilizer. , thanks to a high-voltage electrical device, which can go up to 50,000 volts. A possible development of electrified farms would however remain a very marginal mode of cultivation, due to the high cost of installation ³, ¹⁶.

Still in China, experiments using devices creating an electric field at lower cost see a 20% increase in the yield of a greenhouse pea crop ¹⁷, even if this remains unexplained ¹⁸. In the absence of a rigorous double-blind scientific protocol, such experiments are however not conclusive ¹⁷.

Reviews

According to an article by Sébastien Point published in the journal *Science et pseudo-sciences* published by the French Association for Scientific Information (AFIS), electroculture, when it does not use an artificial electrical source, is a pseudoscience and “is not part of any plausible scientific mechanism” ¹⁹.

This is also the position of the National Horticultural Society of France^{z0}.

In literature


- In *The Helix Island*, Jules Verne imagines a city, Milliard City, surrounded by artificial countryside and vegetation based on electroculture^{z1}.
- In *Death on Credit*, Bardamu works for a "mad scientist" who tries to profit from electroculture, without success.


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See also

On other Wikimedia projects:

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