Plants do not emit methane

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A recent study in *Nature* suggested that terrestrial plants may be a global source of the potent greenhouse gas methane, making plants substantial contributors to the annual global methane budget. This controversial finding and the resulting commotion triggered a consortium of Dutch scientists to re-examine this in an independent study.

Reporting in *New Phytologist*, Tom Dueck and colleagues present their results and conclude that methane emissions from plants are negligible and do not contribute to global climate change.

The consortium brings together a unique combination of expertise and facilities enabling the design and execution of a novel experiment. Plants were grown in a facility containing atmospheric carbon dioxide almost exclusively with a heavy form of carbon (^{13}C).

This makes the carbon released from the plants relatively easy to detect. Thus, if plants are able to emit methane, it will contain the heavy carbon isotope and can be detected against the background of lighter carbon molecules in the air.

Six plant species were grown in a 13C-carbon dioxide atmosphere, saturating the plants with heavy carbon. 13C-Methane emission was measured under controlled, but natural conditions with a photo-acoustic laser technique. This technique is so sensitive that the scientists are able to measure the carbon dioxide in the breath of small insects like ants. Even with this state-of-the-art technique, the measured emission rates were so close to the detection limit that they did not statistically differ

from zero. To our knowledge this is the first independent test which has been published since the controversy last year.

Conscious of the fact that a small amount of plant material might only result in small amounts of methane, the researchers sampled the 'heavy' methane in the air in which a large amount of plants were growing. Again, the measured methane emissions were neglible. Thus these plant specialists conclude that there is no reason to reassess the mitigation potential of plants. The researchers stress that questions still remain and that the gap in the global methane budget needs to be properly addressed.

Citation: 'Methane emissons from terrestrial plants under aerobic conditions' by Keppler F, Hamilton JTG, Braâ M, Rockmann T. *Nature* 439: 187–191

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