

# Creating 'green' protein from the air

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Increasing environmental challenges have led scientists to rethink how protein can be produced. Traditional processes require a lot of space on land or sea, resulting in a high carbon footprint and reduced resources. A new article in *Chemical & Engineering News*, the weekly newsmagazine of the American Chemical Society, details how some start-ups are

revolutionizing protein production by using bacteria to ferment gases.

The consumption of meat-free proteins are gaining popularity around the world, particularly those made from soy and pea crops. Companies are now taking this trend even further with fermentation processes that cultivate protein from starches, sugars or gases, resulting in foods that are more environmentally friendly than meat but contain the same [protein content](#), which could lead to "a paradigm shift in agriculture," writes Senior Editor Alex Scott. Early reports claim that gas-to-protein processes will require much less time, land and water compared to conventional protein from animals or plants. Experts also say that biomass made with gas fermentation, which contains up to 70% protein, has the potential to reduce greenhouse gas emissions substantially.

Gas-to-protein technology is on the cusp of being commercialized, with several companies working to perfect the processes, which tend to be inefficient and costly. Although the goal is to make healthy, environmentally friendly protein for [human consumption](#), companies are currently testing their approaches by creating animal feed from gases, which could also reduce agricultural [greenhouse gas emissions](#) and land use. While cost and efficiency remain a barrier to widespread use of hydrogen and [carbon dioxide](#) from the air to make protein, experts believe overcoming those factors could lead to a new era in food production.

**More information:** "Can start-ups succeed in making food from the air?," [cen.acs.org/food/food-ingredient-making-food/98/i36](https://cen.acs.org/food/food-ingredient-making-food/98/i36)

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