

One thing we have learnt this week – food from air

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George Monbiot wrote an article on a weird sounding idea "food from air" in the Guardian this week. All bacteria need an energy source (a source of electrons). Most bacteria also need a carbon source (usually the same molecule e.g. glucose) to make proteins and DNA etc. However, bacteria that are photosynthetic (and there are many) use light as the source of electrons and CO₂ as the carbon source. There are other slightly more unusual bacteria that do not photosynthesis but can still use CO₂ as the carbon source. It is this group that [solar foods](#) are using. The energy source is hydrogen produced by electrolysis using solar powered electricity. The idea is the bacteria are harvested for their protein which we then eat. The diagram below swiped from the pdf file they sent me when I registered on their website outlines the process. [food from air.jpeg](#) The advantages claimed are ones relating to land area and soil use (there is no soil involved). Its also not weather dependent (a big advantage going forward). Nor does it need light. The question is is food from air more efficient in terms of land area than conventional farming? Also would it have public acceptability? Looking at acceptability the answer is almost certainly yes. After we eat Quorn which is fungi based. I would add making the bacteria suitable flavour wise will involve continue to involve stuff grown in fields. Nutritionally they claim it contains all the essential aminoacids (we cannot make them all ourselves). The big question is how much of contribution doe we want it to make? Should it as George seems to think replace conventional agriculture? I am a bit suspicious of the land area claims made over artificial meat and the same with this. There are a lot of us and replacing conventional food with biotechnological products will not be easy. This is despite the fact you could carry out the process underground. In addition I'm not a big fan of hydrogen. The reason its been used is to avoid the necessity of using light as an energy source (which gives its own problems as we looked at with Algae in our [book](#)) in addition from the biology point of view hydrogen is a high potential energy source of electrons. From the electrolysis point of view thanks to thermodynamics its not terribly efficient and of course the land area ceded by growing stuff is required by solar PV to power the splitting of water. Can this make a contribution to cutting our meat consumption? Certainly. Is it the answer to all our problems no. I'd rather eat this than insects though*. Neil * I quite happily eat Quorn.

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