A better way to fertilize

Agriculture is responsible for around one-quarter of all greenhouse gas emissions. One of the biggest polluters in agriculture is fertilizer. We need fertilizer to grow enough food to meet the needs of the world's growing population, but making and using fertilizer causes pollution. We need to support companies that are developing clean replacements to reduce greenhouse emissions in the agricultural sector. This video explains how we can find better, cleaner ways to fertilize our crops so we can grow enough food to feed the world while also avoiding a climate crisis.

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Video clip of agriculture.

Agriculture is responsible for about one quarter of all greenhouse gas emissions. So, to stop the planet from getting substantially warmer, we need breakthroughs in many sectors of our economy, including how we grow food. Pivot Bio has a clean alternative to chemical fertilizer that could help transform farming and reduce climate change.

Pivot Bio CEO Karsten Temme speaking over video clips of agriculture.

It takes four things to grow a plant: sun, water, carbon dioxide, and nitrogen. A plant is really good at getting the first three of those. But it can't make its own nitrogen. Fertilizer is primarily nitrogen. And it's really what fuels and makes our food system possible. It's because nitrogen is ultimately a building block of life. Fertilizer's done all these great things, but it also has a lot of negative side effects. Making fertilizer creates a lot of pollution and using fertilizer creates a lot of pollution as well.

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Video clips of fertilization.

One of those forms of pollution is nitrous oxide, a gas that's 300 times more potent as a greenhouse gas than carbon dioxide. If we stopped using fertilizer tomorrow, we wouldn't be able to produce half of the world's food supply. But there's a possible replacement and it lies in the soil beneath our feet. Microbes in the soil can also produce nitrogen for the crop.

Video clips of fertilizer production.

Before we had fertilizer, microbes played that role. So, when we started breeding plants so that every harvest would produce more yield, we needed more nitrogen than the microbe in the soil could provide. And so, we invented fertilizer and we've caused those microbes in the soil to go into hibernation. We founded Pivot Bio with one mission in mind: how do we reinvent what it means to provide nitrogen to our crops? So, if you pull a seedling out of the ground, attached to the roots are thousands and thousands of microbes.

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We can extract the microbes off the roots, sequence their DNA and understand which ones have baked into their genome this ability to produce nitrogen for the plant. We know how to turn those genes back on and these microbes can start making nitrogen again. If we can start drawing down fertilizer use, little by little we'll make an entire switch away from fertilizer. And that's just the kind of new solution we need in the face of a changing climate.