Startup Spotlight: Nitricity

Website: www.nitricity.co
Sector: HealthTech

Funding (as of July 2024):

Nitricity has raised a total of $26.9M in funding over 5 rounds. Their latest funding was raised on Nov 2, 2022. They're funded by 9 investors. Elemental Excelerator and Lowercarbon Capital are the most recent investors.

Overview:

Nitricity uses renewable energy to make high-quality, fast-acting, plant-based fertilizer.

Problem/s:

- There are environmental concerns with fertilizer use related to nutrient runoff and greenhouse gas emissions. Nitrogen fertilizer, the most used fertilizer, is responsible for up to 7% of all global greenhouse gas emissions.
- The Russia-Ukraine war has caused fertilizer supply shortages and price increases. In 2020, the most recent year for which fertilizer trade data are available, Russia and Belarus were the world's top fertilizer exporters, accounting for nearly 20% of the three major types traded globally: nitrogen, phosphate, and potash. The United States is one of the main destinations for Russian and Belarusian fertilizer, importing significant amounts of Russian potash.

Solution:

Nitricity is developing a non-thermal plasma reactor that produces nitrogen fertilizer using air, water, and renewable electricity. This technology aims to economically decarbonize fertilizer production, replacing the CO2-intensive Haber-Bosch process. Nitricity addresses two major sources of food system emissions: eliminating fossil fuels in fertilizer production and reducing the need for global fertilizer transportation.

Market:

- The global fertilizer market was valued at $202 billion dollars in 2023 (gminsights).
- The demand for fertilizer grows as the population grows due to the rising demand in food. The world population is projected to reach 8.5 billion in 2030, and to increase further to 9.7 billion in 2050 and 10.4 billion by 2100.
- Developing economies with expanding agricultural sectors will contribute to market expansion.

Team:

- Co-founder and CEO **Nicolas Pinkowski** was a PhD student at Stanford University, was a research assistant in heat transfer at the University of Colorado and focused on heat transfer while working in R&D at IBM.
- Co-founder **Joshua McEnaney** obtained a Bachelor of Science degree in Chemistry from the State University of New York College of Environmental Science and Forestry, and a Doctor of Philosophy degree in Chemistry at Penn State University.
- As a Graduate Student at Stanford University, Co-founder **Jay Schwalbe**, collaborated with researchers from Stanford and the Danish Technical University on new fertilizer production techniques. Their work on electrochemical ammonia synthesis was featured in Nature, and they also published their own paper on the subject.

Progress:

Since launching, Nitricity has done field trials on tomatoes, oats, and corn. All three trials showed that Nitricity's fertilizer was more efficient than the standard UAN (Urea Ammonium Nitrate) fertilizer bought in the market.

Summary:

The demand for innovative fertilizer formulas is increasing as there is an increasing emphasis on nutrient efficiency and environmentally conscious agriculture. Nitricity's plant-based fertilizer is ahead of the game by not only being environmentally friendly; it is already showing higher nutrient efficiency than most brands on the market.

Sources:

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