

## DESERT BIO-FARMS

Desert Bio-farms Use Sunshine to Convert Algae & Seawater into a Wide Range of Profitable Products



### Algae Farming in Desert Bio-Farms: A Sustainable Solution

Algae in the oceans convert vast amounts of carbon dioxide to produce half of the oxygen that we all breathe. Like plants on earth, they do this with photosynthesis and sunlight.

Hundreds of small companies grow algae to make many natural products. Algal biomass is used to make natural food supplements, such as, omega 3 oil and a wide range of vitamins. There is a wide range of food colourants and food additives that are made from algae. Algal ingredients are used for many cosmetic and skin care products, replacing synthetic components and are increasingly being incorporated into pharmaceuticals.

Global markets for natural algae products are surging because they are being used to replace synthetic alternatives. However, producers are limited to small scale production, because their traditional production methods, require prohibitive amounts of land.

Currently, 95% of biomass producers use open ponds, but this legacy technology has been around for over 100 years and production rates are small in comparison with later innovations such as bio-farms.

In the sun-drenched desert, bio-farms are harnessing the power of algae cultivation in seawater tanks to yield a variety of profitable products including fish feed and bio-fertilizer. These innovative farms not only contribute to our food supply but also play a crucial role in mitigating climate change.

A bio-farm is made up of many bio reactors. The algae mass in sea water is fed in. Air including carbon dioxide is sucked into the base of the photo bioreactor and then it is bubbled through the algae. The Algae digests the carbon dioxide to grow in the presence of sunlight. The increased algal biomass is harvested and goes through fractionation and refining to extract pure products. There are 50,000 species which

produce many different products. Many different products such as omega 3 oil and fish feed can be grown from different species of algae and made for many different markets.

These farms can absorb up to 10 times more CO<sub>2</sub> per acre than traditional tree plantations. While millions of trees are planted worldwide, they take years to mature and absorb significant CO<sub>2</sub>. Factors like tree age, soil quality, water availability, and climate influence their effectiveness.

For further information: <https://innovo-network.com/desert-bio-farms>

## Taking Flight on a Greener Path: Sustainable Aviation Fuel

Soaring through the skies is a marvel of modern travel, but aircraft come with a hefty carbon footprint. Sustainable Aviation Fuel (SAF) offers a promising solution, allowing planes to fly without guilt. But what makes it sustainable and how is it produced?

Unlike traditional jet fuel derived from fossil fuels, SAF is a biofuel made from renewable or waste-based sources. If you think of used cooking oil, agricultural waste, even municipal solid waste these are processed into fuels with similar chemical properties to conventional jet fuel, but with a significantly lower carbon footprint. Studies show SAF can reduce lifecycle greenhouse gas emissions by up to 80% compared with its fossil fuel counterpart.

So, how do we turn used cooking oil into aviation fuel? There are a few different pathways for SAF production:

**Feedstock Processing:** One method involves converting fats and oils into jet fuel through a process called hydrocracking. This breaks down the complex molecules in the feedstock into simpler hydrocarbon chains suitable for aviation fuel.

**Biomass to Liquids:** Another approach utilizes biomass, like non-food crops or wood waste. Through a thermochemical process called gasification, the biomass is converted into a synthetic gas. This gas can then be refined into SAF.

**Power-to-Liquids:** This method uses renewable electricity to generate hydrogen. The hydrogen is then combined with captured carbon dioxide to create synthetic hydrocarbons that can be processed into SAF.

SAF is still in its initial stages, but it is gaining traction. Airlines are starting to incorporate SAF blends into their flights, and governments and industry leaders are working together to increase production and affordability. Widespread adoption of SAF holds the key to a more sustainable future for aviation, allowing us to explore the skies with a lighter environmental impact.

At INNOVO Net Zero we are partnering with several Clean Tech providers that can produce directly or indirectly SAF profitably using waste, Heat recovery, CO<sub>2</sub>, Hydrogen, or a combination.

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