

# Agroficient

## 1. Public Description

Agroficient is developing a biodegradable hydrogel designed to assist farmers in regions with limited or no access to irrigation. This innovative hydrogel absorbs up to 300 ml of water per gram, reduces water and fertilizer usage, and increases crop productivity by 20%. Over time, the hydrogel breaks down into minerals, making it a sustainable solution for enhancing yields and promoting eco-friendly agriculture. Our solution has been validated through a laboratory testing in Azerbaijan.

## 2. Problem We Are Addressing

We are tackling the critical issue of agricultural losses caused by water scarcity and drought. In Azerbaijan alone, 68,000 hectares of farmland remained uncultivated 2 years ago due to insufficient irrigation, leading to a significant decline in crop productivity. Water scarcity affects farmers worldwide, threatening food security and sustainable farming practices.

## 3. Solution We Are Offering

Agroficient offers a biodegradable hydrogel capable of absorbing up to 300 ml of water per gram. By mixing the hydrogel with soil during the seeding process, it improves water retention and nutrient delivery, leading to enhanced plant growth and higher yields. The hydrogel gradually releases absorbed nutrients and water to crops, decreasing water usage by 20% and fertilizer usage by 15%, and increasing crop productivity by 20%. After one year, the hydrogel degrades into a natural fertilizer, ensuring a positive environmental impact.

## 4. How to Use the Hydrogel

The hydrogel is simple to use. It is mixed with soil at the seeding stage, with an optimal application rate of 40 kg per hectare. Once applied, it absorbs water and nutrients, gradually releasing them to support plant growth throughout the cultivation cycle. This ensures that crops receive adequate water and nutrients, even in low-irrigation areas.

## 5. Who Are Our Customers?

Our primary customers are farmers, particularly those facing the challenges of drought and limited irrigation resources. Agroficient's initial focus is on the Azerbaijani agricultural market, which has an estimated value of \$400 million. We have already attracted strong interest from over 5 prospective farmers, eager to adopt our solution. Our outreach strategy includes agricultural exhibitions, online platforms, and targeted marketing through distributor networks.

## **6. Business Model**

Agroefficient follows a direct sales model, providing biodegradable hydrogel to farmers at a price of 23 AZN per kg, with a production cost of 11 AZN per kg. For optimal results, 40 kg of hydrogel is required per hectare. By leveraging contract manufacturing to minimize capital expenditure, we ensure a sustainable profit margin. We aim to expand rapidly, with plans to sell our product across 50,000 hectares, projecting significant revenue growth in the coming year. (The Business Model is as of October, 2024)

## **7. Technology and Methodology**

Our hydrogel is developed using advanced chemical compounds, including ammonium, potassium, and other materials, which are crosslinked at specific conditions to enhance water absorption. The hydrogel is compatible with all soil types and helps retain essential nutrients. Field tests in the arid region of Gobustan, Azerbaijan, demonstrated that crops treated with the hydrogel had significantly improved germination rates. The hydrogel not only retains water but also absorbs and releases fertilizers, promoting efficient crop growth.

## **8. Achievement**

Agroefficient has already achieved several key milestones. We won a 19 900 AZN grant from the Small and Medium Business Agency of Azerbaijan, which has supported our product testing and development. Additionally, Agroefficient has partnered with the Research Institute of Crop Husbandry. The product is highly recognized by the Ministry of Agriculture of the Republic of Azerbaijan from the Agricultural festivals held by Agrarian Innovation Center. We were also selected as one of the top 250 global startups in the SLINGSHOT 2023 competition, advancing to the next stage and gaining international recognition. Additionally, the startup – Agroefficient also secured investment of \$100,000 from Startup Wise Guys, and became the first startup ever won the Lisbon Summit and participated at the Global Accelerator of Hult Prize.