



AquaGel (Pty) Ltd

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AquaGel sells innovative agricultural products designed to balance soil, water and nutrients to prevent waste and increase yields. Partly made with a waste material called biochar, their products can be used for a variety of purposes, adding huge benefits to clients, food security and the regeneration of nature.

“You have to drive people towards change. If I demonstrate to you that you can use this product to sequester carbon, improve your yield, save on water and fertilizer while improving on long term soil health, that’s a real incentive.”

Words and photography by Chris de Beer-Procter



ABOUT THE BUSINESS

Seeing HydroCache at work can be perplexing at first. Initially, AquaGel's flagship agricultural product is a rather unassuming, fine charcoal-coloured black powder which sits low and level at the bottom of the tall drinking glass Clayton Postma has placed on a table between us. Clayton, who created and sells the product through his company, AquaGel, makes little theatre of pouring water into the glass while explaining the incredible potential of this rather miraculous dust. "In a nutshell, we create the balance between soil, water and fertilizer," he says, turning the glass around in his hand as the product slowly mixes with the water.

"There's a few ways you could use this," Clayton says, lifting the glass which is now filled to the top with a light grey gel where water and an unbelievably small amount of HydroCache once were. Using this soil conditioner, he explains, farmers can greatly improve yields, save water and fertilizer, improve long term soil health and sequester carbon dioxide and nitrous oxide from the atmosphere.

"The soils are getting depleted. With desertification, the karoo is getting bigger, the Western Cape green belt is getting smaller. We need to reclaim those soils. The only way to do that is to put back what you've taken out in the last 100 years."

"We know that up to 50% of applied fertilizers either volatilize into the atmosphere or leech down into the earth beyond where the plant can use it," he explains, a process which also contributes CO2 into the atmosphere. But when mixed with fertilizer and added to soil, HydroCache acts like a sponge, retaining the water and solubilized nutrients, and releasing it slowly over the season. Considering the skyrocketing costs of fertilizers, as well as increasing water and food insecurity, a product like this could make a huge impact on farmers and the communities they serve.

So, how does this tiny powder with big promises work? And how does it contribute to the circular economy? There are two main components which make up HydroCache: a polymer which can absorb moisture and release it as needed, and biochar which is an activated carbon created by burning biomass in an oxygen-free environment. "We use waste from forestry to generate biochar," says Clayton. "Forestry has a lot of waste which they typically burn to power their saw mills, but doing so in an oxygen-free environment means you can carbonise a proportion of it," he explains. Doing this drives off volatiles and results in a (microscopic) graphitic structure, which stores water like a sponge and provides the perfect home for microbes and the nutrients they produce.

"Coming back to forestry, we then use it to plant trees again. When a sapling comes out of the nursery, we put a litre of this gel around it," he says. The gel protects the vulnerable sapling from transplant shock by creating a buffer with all the water and nutrients it needs to thrive.

Aquagel's technology can also be used for a process called hydroseeding, by creating a gel that can easily be applied to soil with standard farming equipment like tractors. "We're doing this with the fruit tree guys," Clayton explains. "The raised area between the rows of trees is usually treated with mulch and compost to return carbon and nitrogen to the soil, but then they still have to spray for weeds." However international pressure from importers to cut back on pesticides and herbicides has encouraged the search for more environmentally friendly alternatives, like hydroseeding. "You end up with a living mulch which is nitrogen-fixing for the soil and takes nitrogen out of the air," says Clayton. The resulting suppression of

weeds also decreases the need for harmful chemicals. "It's a win-win for the industry and the environment," says Clayton. It's just another example of how AquaGel's products offer value to clients, while simultaneously contributing to regenerating nature.

AquaGel's mission is underlined by the knowledge that food security is paramount. "It's evident that this is our biggest concern," says Clayton. With Africa's population set to rise by up to 55% by 2050, he wonders, "how

will we feed these people?" Clayton hopes that their products can help, by increasing soil health, reducing the need for harmful chemicals, retaining water and nutrients and keeping carbon and nitrogen in the soil where they ultimately increase yields. It all starts there, he says, "in the soil."

VISION FOR THE FUTURE

"We're expanding our range and building relationships with organisations who can help us produce every part of the product in South Africa, thereby creating jobs. We want to be a major contributor to food security and the fight against climate change."



ADVICE ON CIRCULARITY FOR ENTREPRENEURS

"Find a problem that you are passionate about and make it your business to find a solution."

When you focus on the 'why', the 'how' gets easier.

