



How to breathe new life into desert soil

In many locations around the world, the soil has become seriously degraded. **JURRIAN RUYS** is planting trees in arid regions to recover fertility.

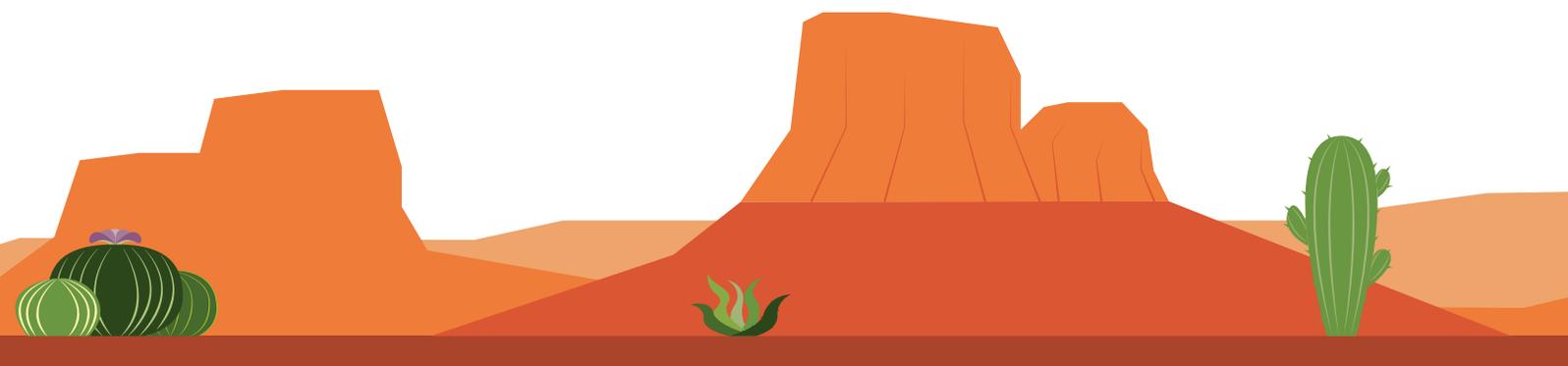
“IT’S NO SIMPLE FEAT TO PLANT TREES here,” Jurriaan Ruys observes. He’s contacted me via Skype from his hotel room in Doha, the capital of Qatar, an Arab emirate that consists primarily of desert. That large stretch of sand is not even the main challenge, though, says Ruys. “People need to become used to our idea. That takes time.”

Sowing seeds in the desert. It may seem like a mirage, but planting trees in the cork-dry ground is the core business of the Land Life Company, an Amsterdam startup that the 47-year-old Ruys co-founded in 2013. With the help of a type of incubator, a small water reservoir and soil-enriching fungi, a scrawny little branch can grow into a tree as tall as three meters, says Ruys.

At the invitation of the Qatar Ministry of Environment, he was able to present his proposal for greenification. It’s an ambition the country sets great store by in the run-up to the soccer World Cup that it will be hosting in 2022. “Trees offer shade, as well as protection against lashing sandstorms and floods,” Ruys explains. What’s more, the green plants can provide food. Trees also extract CO₂ from the air, which will help to offset the air travel of soccer fans coming here from all over the world.

“All nice side benefits,” says Ruys, “but our goal, first and foremost, is to restore the soil.” A third of the planet is struggling with soil degradation caused by erosion, exhaustion, acidification, compaction, salinization and chemical pollution, as stated in a report by the Food and Agriculture Organization of the United Nations. A rising world population makes the need for fertile earth clear.

Despite these alarming facts, Ruys believes fervently in the ability of technology to provide solutions. “We know we don’t have three earths, so we will restore nature. We will take the plastic back out of the sea, return the fish to the oceans and repair the skin of the earth.” And the climate? “The climate has a dynamic of its own. But we are going to succeed in extracting the CO₂





Q&A

When you won the Postcode Lottery Green Challenge in 2015 ... “I was overwhelmed. We had just heard four other fantastic stories from the other candidates, so it’s very special to be chosen as the winner.”

How did you spend the prize money? “The money goes to an iconic demonstration project in Monterrey, northern Mexico. We’re restoring the breeding ground of the monarch butterfly, flying from Mexico through the United States, to Canada and back. This way, we reach many people with a positive signal that the earth is getting greener.”

What other benefits came with winning the Green Challenge? “It’s incredibly motivating, both for the team and for the people with whom we work. Investors gained more confidence in us and dared to take more risks.”

that we polluted our atmosphere with out of the air. I am a dyed-in-the-wool optimist. Although I prefer to call myself a realist.”

Ruys, trained as an engineer, began his career at Shell. How does he look back on his time in the fossil fuels sector, the world’s most polluting industry? He doesn’t think of it in black-and-white terms. “Everyone loves nature, whether they work at an oil company or elsewhere, vote right-wing or left-wing.” After six years, he moved on to work at consulting firm McKinsey, where he was in charge of solar energy and wind energy projects. When a friend of his quit his job at an international nature organization to strike out on his own, he was inspired to do the same. “He said, ‘I don’t only want to conserve nature, I want to repair it.’ And I thought, yes, that’s what I want too.” And so began the Land Life Company, of which he is the CEO.

About three years later, the Land Life Company has planted 10,000 trees in ten countries, from Australia to Mexico and from South Africa to Spain. It is too early to draw conclusions about soil restoration, but Ruys is optimistic. “Normally trees have a survival chance between 0 and 15 percent. But with our methods it’s 80 to 90 percent.”

Their most important trump card: their incubator, a protective, nutrient-rich cocoon.

It consists of a cardboard cylinder with air holes that is planted around the baby plant and protects it against heavy rain and sun. The water reservoir is underground: a round “cookie tin” containing 23 liters (6 gallons) of water. Everything is made of pulp—from palm or corn leaves or other organic materials—that breaks down during the first year and provides nutrients for the soil. There is no need to add fertilizer or irrigation. “These methods are centuries old,” says Ruys, “but we aim to scale things up. Our product is cheap, simple and easy to transport, so that we can distribute it widely.”

When the plants go into the ground, they also get some mycorrhizal soil fungi. These microorganisms attach to the tree roots and help the plant absorb far more water, as well as essential nutrients such as nitrogen, iron and phosphorus. These fungi used to occur in most soil but have often disappeared due to, among other things, the use of fertilizers or irrigation. One place this is happening is California, a state that is struggling with the worst droughts in living memory. The almond farming in this region is one of the culprits—each almond requires no less than 4 liters (1 gallon) of irrigation water. “Now, finally,” Ruys says, “farmers are thinking in terms of ‘How can we use less water?’”

Farmers in poor countries such as Kenya

also wrestle with this question. Because climate change is leading to more droughts, Land Life is also active here. A Dutchman planting trees in Kenya—does that work? “Well, that’s not exactly how it’s being done. We are working in close collaboration with farmers and with local universities. You know, the people there are facing the same problems that we are. We are all learning a great deal from each other’s solutions.”

Playing soil doctor to heal Mother Earth is a noble pursuit, but isn’t prevention better than a cure? “Of course,” replies Ruys. “But a great deal of soil has already suffered degradation. It can only be restored through human intervention.” To win the battle against soil degradation, we have to start farming differently, he says. “We are in favor of generative agriculture, a form of farming that repairs nature instead of breaking it down—using green manure crops such as lupines as a soil conditioner, for example.

Ruys has great hopes for planting millions more trees in the coming years. “You need to think in the long term,” says Ruys. “Here in Doha, it is necessary to talk, talk and then talk some more, but the day will come when I will be walking with my children through a forest I once planted myself. Whether it is in Qatar or elsewhere, I love this vision.” | LEONTIEN AARNOUDSE

