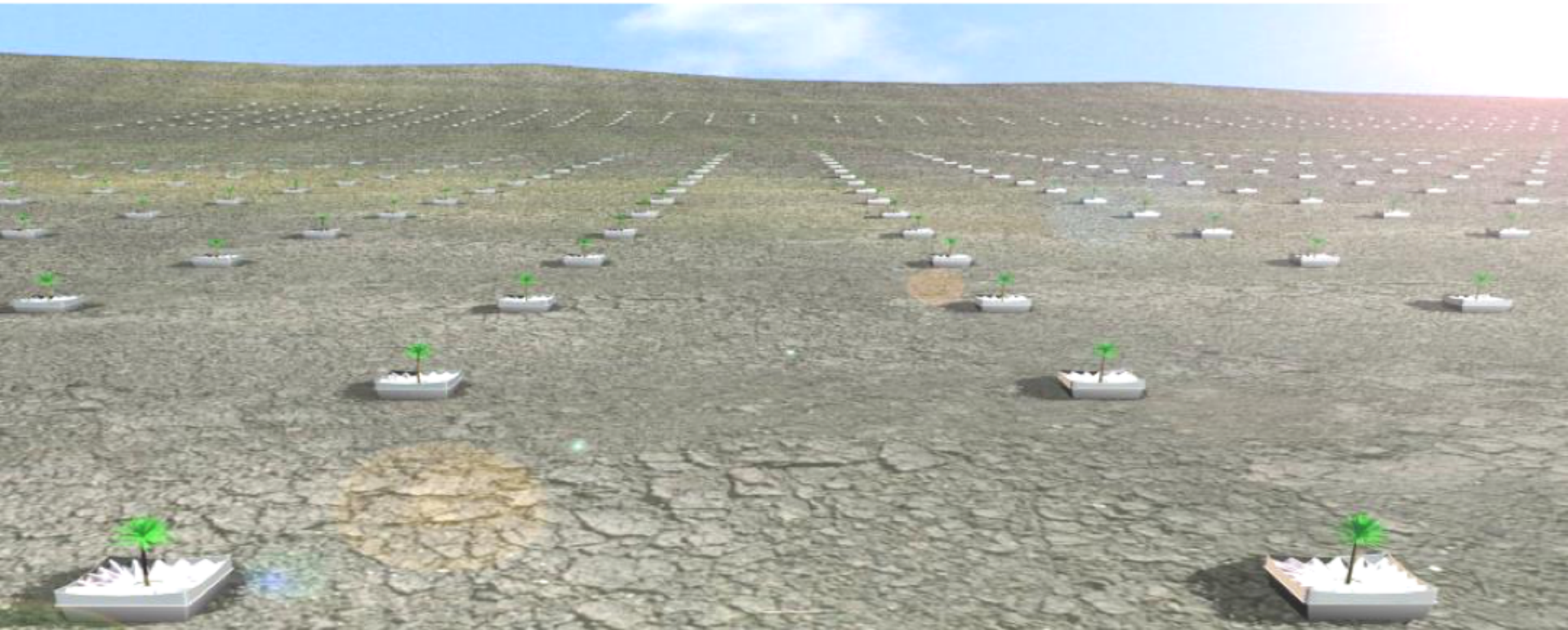
Ministerie van Economische Zaken,
Landbouw en Innovatie

Groasis is proud to be National Icon of the Netherlands

Groasis and the Treesolution

lower cost, less water, faster growth

Attractive investment opportunity that addresses global food, water and climate change concerns by allowing low-cost planting on degraded soil whilst using 90% less water and resulting in 90%+ survival rates.



The Problem

Mankind faces seven interconnected challenges

7) Land degradation

Every year 12mn hectare of arable land is lost due to drought & desertification (equivalent to half of the United Kingdom)

Land degradation affects 1.5bn people or 74% of the poor globally

6) Climate change

Greenhouse gas emissions (GHG) need to fall by >50% to 21-22Gt by 2050 to meet 2°C target

GHG will grow by 75% to 85Gt by 2050 (BAU)

>60Gt target gap (1.3x today's GHG)

5) Rural-urban migration

Globally, 66% of the global population is expected to have migrated to urban environments by 2050

1) Poverty and

2) Unemployment

500mn small scale farmers support the livelihoods of >2bn people and produce 80% of the food in developing countries

Small scale farms are the primary source of employment and the only pathway out of poverty

52% of the land used for agri-culture is moderately or severely affected by soil degradation

3) Food shortage

Food demand will increase by 60% by 2050

Majority of growth needs to come from improved crop yields

In the next 25 years we need to produce as much food as in the past 10,000 years

4) Water scarcity

Irrigation consumes 70% of global freshwater

Water demand will increase 50% by 2050

About 2/3 of 2050 population will suffer from water stress

Sources: UNFPA (1998), WRI (2013), UNEP (2012, 2015), FAO (2012), EIA (2012), IEA (2012), Houghton (2008).

The Treesolution

Plant 2bn ha degraded land using the Groasis Technology

1) Poverty eased

Generate 30% faster plant growth while being >90% cheaper;
viable solution for rural families to generate income by selling crops

7) Land degradation solved

Combat desertification & land degradation while ensuring biodiversity

6) Climate change limited

Disconnect 15 tonnes CO_2 per hectare

Almost all of today's GHG disconnected in 50 years (or 60% of GHG target gap)

5) Rural-urban migration eased

Create local jobs in rural, degraded areas, with people staying where they find work

2) Employment boosted

Create 0.5 direct and 0.5 indirect jobs per hectare

Keep unemployment in developing countries in check

3) Food shortage mitigated

Generate 5-10 tons of food per hectare, enough to feed the planet

4) Water scarcity lessened

Save >90% water per ha

More scarce water available in the future for other uses than irrigation

Groasis Ecological Water Saving Technology (GT)

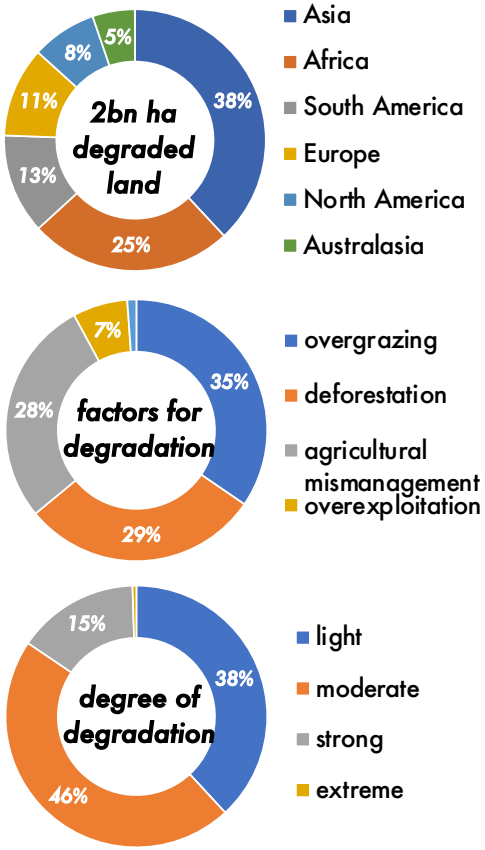
is the ultimate solution for addressing the mankind´s seven interconnected challenges

Until now, degraded land could not be planted without irrigation, which is expensive and inefficient

Revolutionary GT makes it possible to plant eroded areas without irrigation and energy, and at substantially lower cost

The Treesolution
Why now?

- There are 2 billion hectares of degraded land (15% of earth´s land surface, equivalent to the size of South America). This land used to be covered by plants and trees and was fertile and productive, but today it isn't
- There is sufficient rain, but it falls in peaks so this land cannot be planted without irrigation, however this is too expensive and there is not enough water to be applied on a large scale
- The Groasis Technology allows planting 99% of the earth's degraded land with productive trees without using irrigation and energy, and at substantially lower costs
- Our Waterboxx® plant cocoon was a first step towards realising the Treesolution, but for its users the initial investment was relatively high and it needs to be removed after every planting cycle
- After spending more than 10 years of developing and perfecting the Groasis Technology, the ***revolutionary improved Growboxx® plant cocoon (launched mid 2016)*** is the ***game changing technology*** which is biodegradable, comes at a fraction of the Waterboxx® cost, and combines planting trees with vegetables/bushes/flowers. It is therefore suitable for two major application areas:



1) Agroforestry

Planting productive trees (e.g mangos) in combination with vegetables. Particularly suitable for 500mn small-scale farmers via a micro-credit model

2) Ecosystem restoration

Planting native trees (in combination with bushes and wildflowers). Particularly suitable for large scale reforestation.

Sources: Bonn challenge, Global Assessment of Soil Degradation (GLASOD), UNEP.

The Product

Five tools for optimal results and exponential scalability

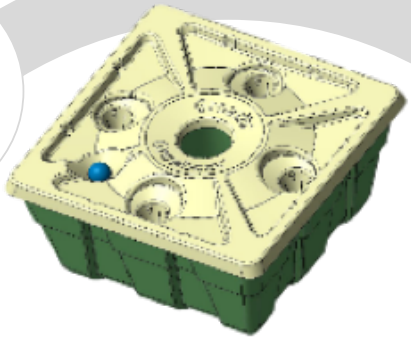
Groasis Ecological Water Saving Technology

user defines which products to combine with the plant cocoon for "more water in (the ground) and less water out (used)"

Growmaxx Mycorrhizae

replaces fertilizers

Fungi that feed the plant and support a healthy root system. Fertilizers contain salt and in dry soil often burn the roots. Helps replace expensive fertilizers (natural alternative) while supporting faster plant growth.



Growboxx® / Waterboxx® plant cocoon

core product

Intelligent bucket that provides water to a tree and vegetables/bushes/flowers while creating a healthy micro-climate. Helps the roots of planted trees to reach over 3m depth within the first year(s) after which trees can survive on their own (tap the available groundwater in the soil).

(Bio)Growsafe Telescoprotexx

protects plants

Plant protector against heat, frost, wind, (sand)storms and grazing animals. Protects plant and speeds up plant growth, planted trees grow 25% faster to a height where they are high enough to survive without the protector.
Available in carton or polypropylene.

Capillary Drill

elevates planting productivity

Machine used to accelerate making planting holes while leaving the capillary system intact. Digging planting holes by hand takes 15min/hole (32-40 holes/day). Capillary Drill is up to 150x more productive (6,000 holes/day).

Terracedixx

increases water infiltration

Machine used to make mini-terraces to stimulate increased water infiltration into the soil. Currently just 25% of (rain)water enters the soil in degraded areas, by using the Terracedixx up to 90% of the rainfall is harvested.

Product Development in action

Human centric design and validated learning

Main images: ecosystem restoration project, Middle East (planting, year 1, year 2)
Inset: incredible growth of white teak tree in just 13 months, Latin America


Sustainable food production with the Waterboxx®

Plant Mother Earth

With Groasis it is possible to plant anywhere

VINEYARD CREATION
USA (Napa Valley)

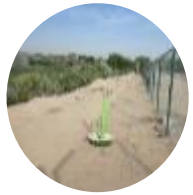
MOUNTAIN PLANTING
ECUADOR

ECOSYSTEM RESTORATION
PERU

URBAN FARMING
ECUADOR, NETHERLANDS, USA

MINE RESTORATION
SPAIN

DESERT PLANTING
DUBAI



LANDSCAPING
JORDAN

GT is successfully tested in a wide variety of climatological conditions (42 countries, 6 continents)

NORTH AMERICA	SOUTH AMERICA	EUROPE	AFRICA		MIDDLE EAST		AUSTRALASIA
HONDURAS	ARGENTINA	FRANCE	BURKINA FASSO	MALI	BAHRAIN	OMAN	AUSTRALIA
MEXICO	CHILE	NETHERLANDS	ETHIOPIA	NAMIBIA	IRAQ	SAUDI ARABIA	CHINA
NICARAGUA	COLUMBIA	PORTUGAL	EGYPT	MOROCCO	IRAN	QATAR	INDIA
USA	ECUADOR	SPAIN	GHANA	SENEGAL	JORDAN	UAE	KAZAKHSTAN
	PERU	TURKEY	KENYA	SOUTH AFRICA	KUWAIT		MONGOLIA
	URUGUAY		LIBYA	GHANA	LEBANON		PAKISTAN

Degraded land made productive again

Main image: sustainable agroforestry in Ecuador
Inset: greening of Sahara desert in Morocco

Users are satisfied

User testimonials and scientific feedback

Swen Lorenz
Executive Director,
Charles Darwin Foundation
Ecuador, 2013

Goal: ecosystem restoration

"Based on the results that we see in this report one can conclude that we ***can do*** an ***ecosystem restoration*** plan ***on a huge scale*** in the Galapagos. Besides the ***high survival rate*** we can also see that there is an ***impact on the growth speed of the plants***."

Juan Ignacio Boudon
Regional director of CONAF,
Ministry of Forestry
Chile, 2012

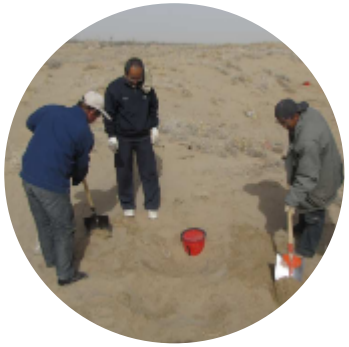
Goal: resilient agroforestry

"These results show clearly that the ***plantations done with*** the ***Groasis Waterboxx® were a success***, with a ***survival ratio in excess of 90%*** in our 2011 project.
There are ***important water savings*** [we gave] only 15 litres per tree"

Ashenafi Asmelash
Executive Director,
Mums for Mums
Ethiopia, 2016

Goal: smallholder agroforestry

"The study on the effects of the Waterboxx® on the survival rate of fruit trees…show a ***survival rate of 100% on apple, orange and guava***, and the ***survival rate of avocado was 84%***… ***Water savings are considerable.***"



Man Duoqing and Liu Shizeng
Gansu Desert
Control Research Institute
China, 2015

Goal: halting desertification

"Through the water-saving afforestation experiments with the Waterboxx®, the ***plant surviving ratio is improved 10-90% in 6 land/soil types***…After 3 years Groasis afforestation experiments, most of ***plants can improve growth 15-40%*** than the control, the ***biggest growth can improve 300%***."

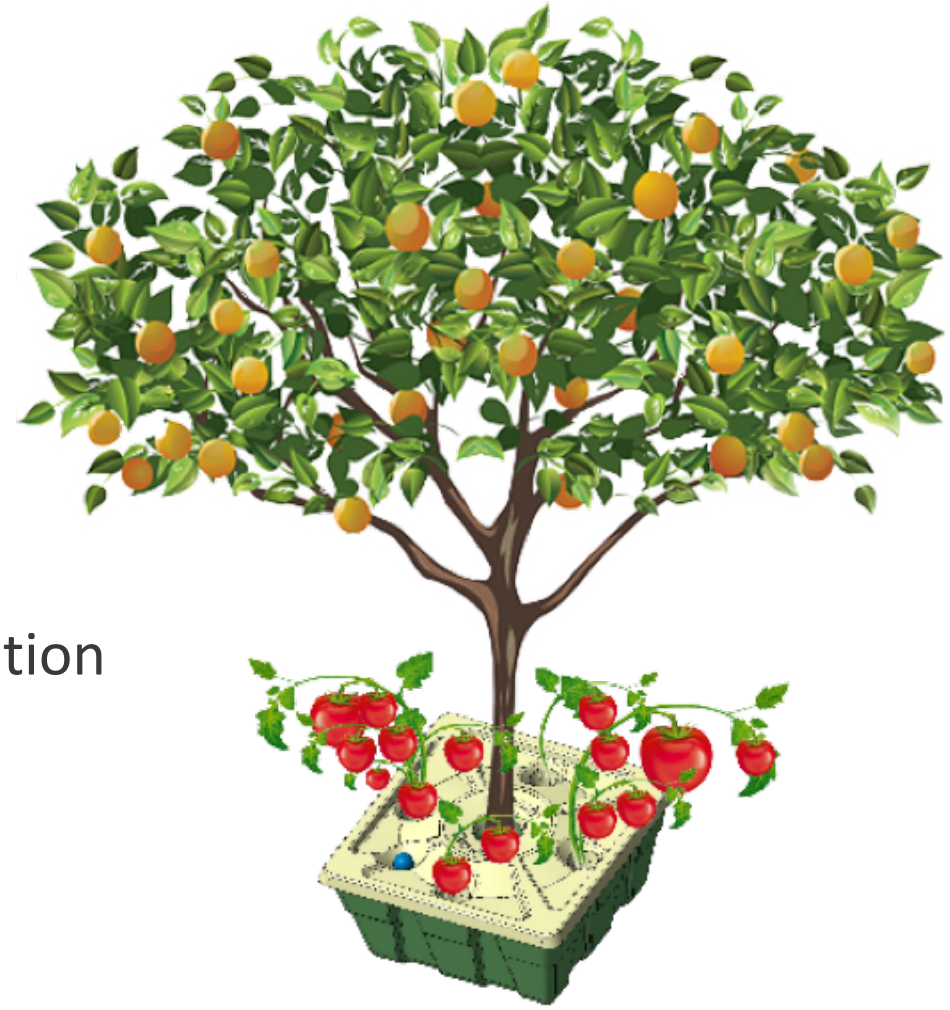
If something isn't simple, you haven't thought long enough

- Develop an effective, simple tool with an extremely low cost price – make it affordable for millions of consumers at less than USD 2 per Growboxx®
- Twelve years of product development and perfection – multiple product generations lead to current generation of Waterboxx® and Growboxx® that both offer a "triple 90 benefit": 90% lower cost, 90% less water, 90% survival rate
- Extended development cycle due to natural processes – survival success and product effectiveness only proven after 3-5 years
- Product designed with local circumstances and the local community in mind; gender neutral, culturally adaptable and simple implementation
- No dependency on external resources, it uses no electricity, and requires no maintenance.
- Successful planting of deserts using 90% less water
- Unique secret food-safe blend of additives to ensure water tightness of molded paper box
- Integrated osmosis filter for water provision
- Integrated hydroponics system for vegetables - up to 60kg vegetables harvested in the first year
- And more…

Groasis has a superb technology that can help us restore the balance of climate on Mother Earth

If something isn't simple, you haven't thought long enough

The “Groasis Ecological Water Saving Technology” offers the



“Triple 90 Benefits”

- 90% less water use
- 90% cheaper than drip irrigation
- +90% survival rate

Groasis has a superb technology that can help us restore the balance of climate on Mother Earth

The Team

Agricultural expertise coupled with execution skills – a small team punching well above its weight

Pieter Hoff

Founder & Chairman

THE INNOVATOR

Pieter, Groasis founder, has a background as innovator and entrepreneur. He was one of Holland's leading breeders of flower bulbs.

While travelling for business to around 50 countries he became worried about the falling ground water levels, which he noticed at his clients who all used drip irrigation and had to dig deeper and deeper wells.

In 2003 he sold his company and started developing the Groasis Ecological Water Saving Technology. His inventions won many international awards, amongst others the Popular Science "Best of 2010" innovation and most recently was appointed "National Icon" by the government of the Netherlands.

Pieter speaks fluent Spanish and is currently working on ramping up production and selling projects in Latin America. He also continues to work on research and development to further improve the Groasis Technology.

Wout Hoff

Founding Partner & CEO

THE EXECUTOR

Wout has twelve years experience at multinationals (BP, INEOS) in the energy and chemicals industry, where he worked across Europe. Before joining the corporate world, from the age of 18 Wout ran his own web design company with over 30 clients.

He has an established track record in entrepreneurship, sales, corporate strategy and planning, delivering projects and managing operational risk. Wout speaks 6 languages.

Behind the scenes, Wout has been active since the start of Groasis and as a small team, has managed to create a network of 30+ distributors and execute dozens of pilots projects. From January 1, 2017 he acts as the company's CEO. His focus is on building an effective sales and marketing organization that will underpin realizing the Treesolution and identifying and contracting Licensed Producers to support large scale implementation of the Groasis Technology.

Productive apple tree
in combination with peppers

Groasis®

lower cost – less water – faster growth

General enquiries: investor@groasis.com

Beautification tree (Japanese Prunus)
in combination with bedding plants

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National Icon

Ministry of Economic Affairs,
Agriculture and Innovation

Groasis is gratified by to recognized / awarded by:

United Nations Global Compact

World Food Programme

agra ME

FP4BATTW

POPULAR SCIENCE

TÄLLBERG FOUNDATION Global Leadership 2015

platform

NCD

Climate CoLab

DNV·GL