

AIR PRUNING, STABILIZED MEDIA & THE ELLEPOT[®] PROPAGATION SYSTEM



KEY FACTORS IN PRODUCING GREAT ROOTS



- **Substrate Physical Properties** (AFP; WHC; particle size; wettability)
- **Substrate Chemical Properties** (pH, EC and the composition of the salts)



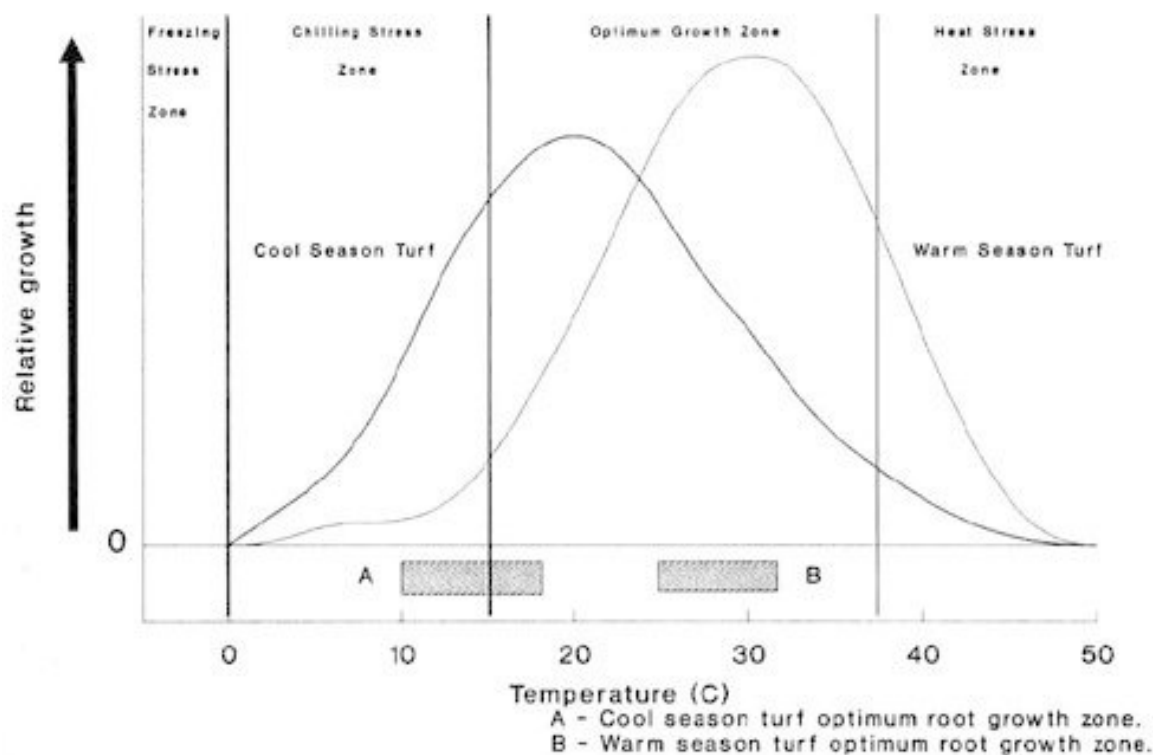
KEY FACTORS IN PRODUCING GREAT ROOTS



Substrate Temperature

PHYSIOLOGICAL EFFECTS OF TEMPERATURE STRESS

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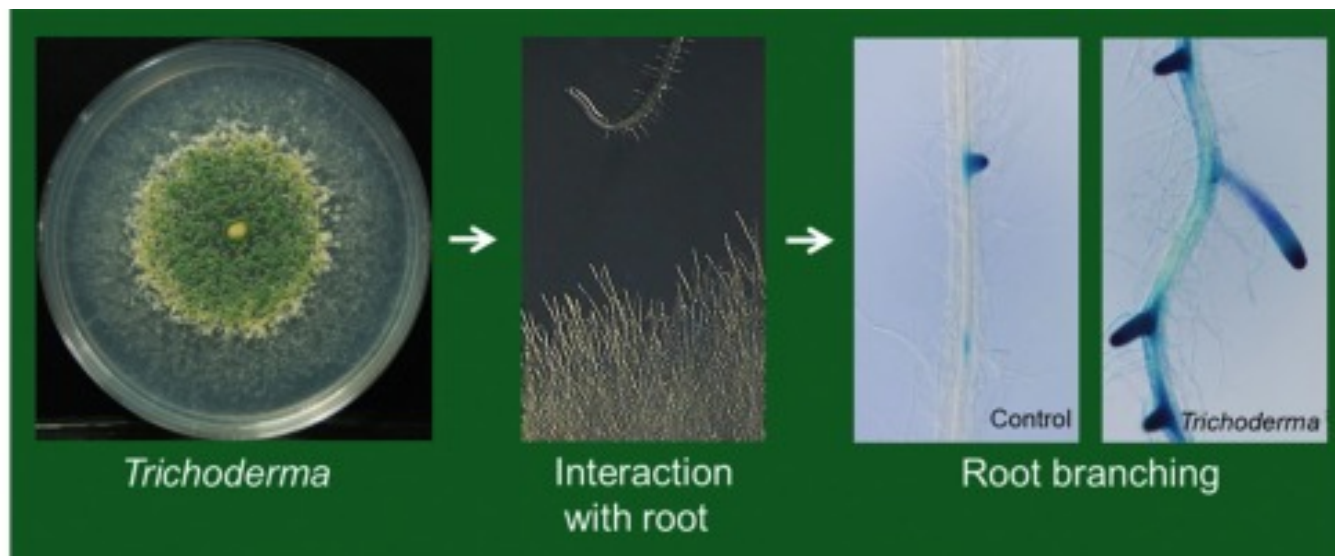


Source: P.M Sharples, Turf management

KEY FACTORS IN PRODUCING GREAT ROOTS



- **Plant nutrient status** (key nutrients such as phosphorous)
- **Plant Health**
- **Root zone Biology**



Source: José López-Bucio Ramón Pelagio-Flores Alfredo Herrera-Estrella – *Trichoderma as a Biostimulant*

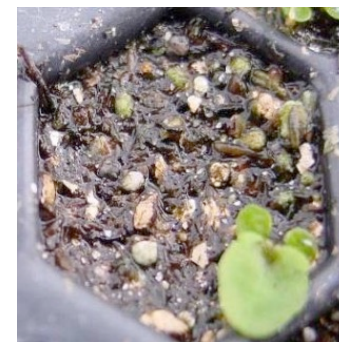
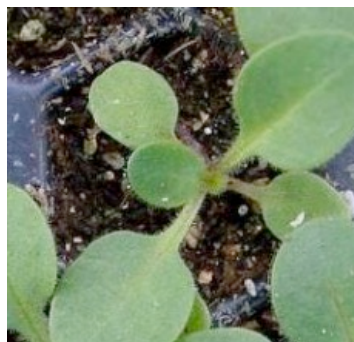
KEY FACTORS IN PRODUCING GREAT ROOTS



- **Container Water Management**

- Increased wet/dry cycles = increased root development
- Plant stress
- Air/Water Ratio

Plug Moisture Scale – Level 1- Level 5



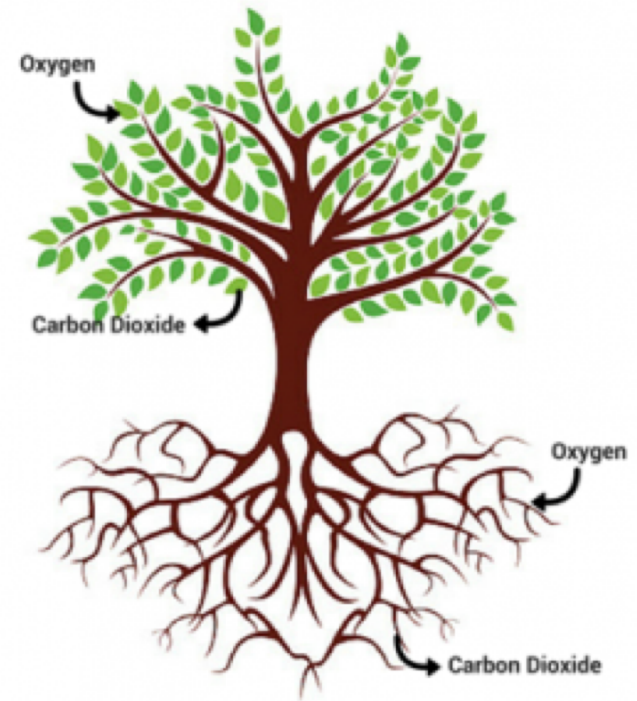
Source: Paul Fisher – Plug Moisture Scale



AIR in the root zone!!

Root respiration

- Roots take up oxygen in the soil
- Root hairs increase the surface area for absorption
- Water logged medium = more adventitious roots
- Anaerobic soil conditions
 1. Decreases root growth (fermentative pathways)
 2. Promotes anaerobic microbial activity
 3. Promotes root pathogens



KEY FACTORS IN PRODUCING GREAT ROOTS



AIR in the root zone!!



Mangrove plants develop pneumatophores (aerial roots)

CONTAINER DESIGN



CONTAINER DESIGN

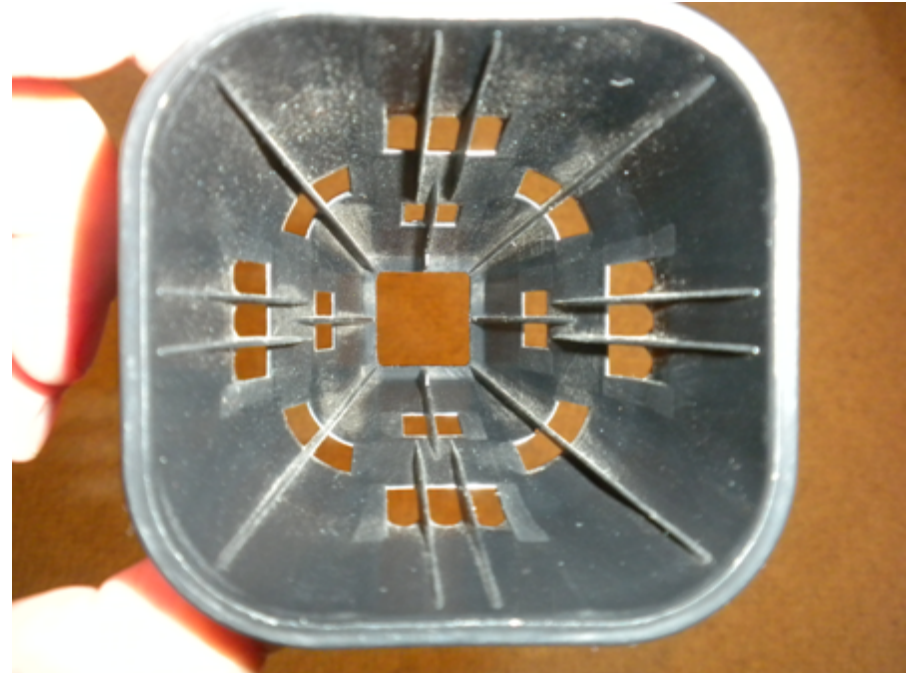


CONTAINER DESIGN



Strategies to avoid poor roots

- Mechanical removal of roots
- Copper treatment of container
- Light pruning
- Ribs to direct roots
- Side slots
- “Air pruning” at base of cell
- “Air pruning” at base and up side of cell



Copper coating ameliorates lateral root deformity to various extents





Air Pruning is the drying/burning-off of roots exposed to air.

Benefits of Air-pruning

- Concentrates plant energy on roots and not shoot growth (trials)
- Develops large quantity of active young roots that 'explode' into growth when transplanted
- Higher % establishment as there is quicker root development after stepping up
- More uniform plants
- Roots high up the side of the root ball for support
- Higher roots consolidate more container volume (better container utilization)
- Quicker root consolidation



AIR PRUNING



- Air pruning breaks root tip dominance
- Promotes root initiation/secondary roots
- Produces a root system that better resembles a direct sown seed in soil
- Improves gas exchange in the medium
- Faster root development
- Healthier roots
- Many air pruning containers on the market

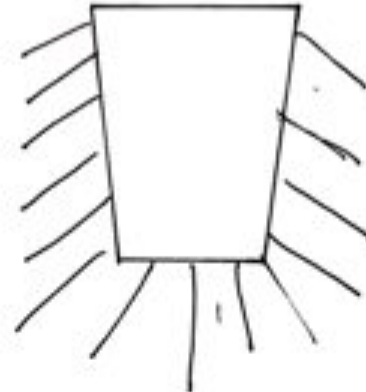
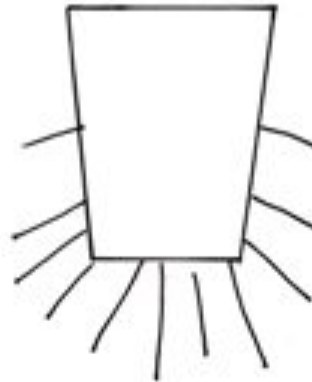


Euc. gunnii - 1 litre Air-Pot into 30 litre Air-Pot for 18 months - Scotland 2009 - CTC

Three systems at establishment time



Standard container **"air pruning" at base** **"air pruning" up sides+base"**



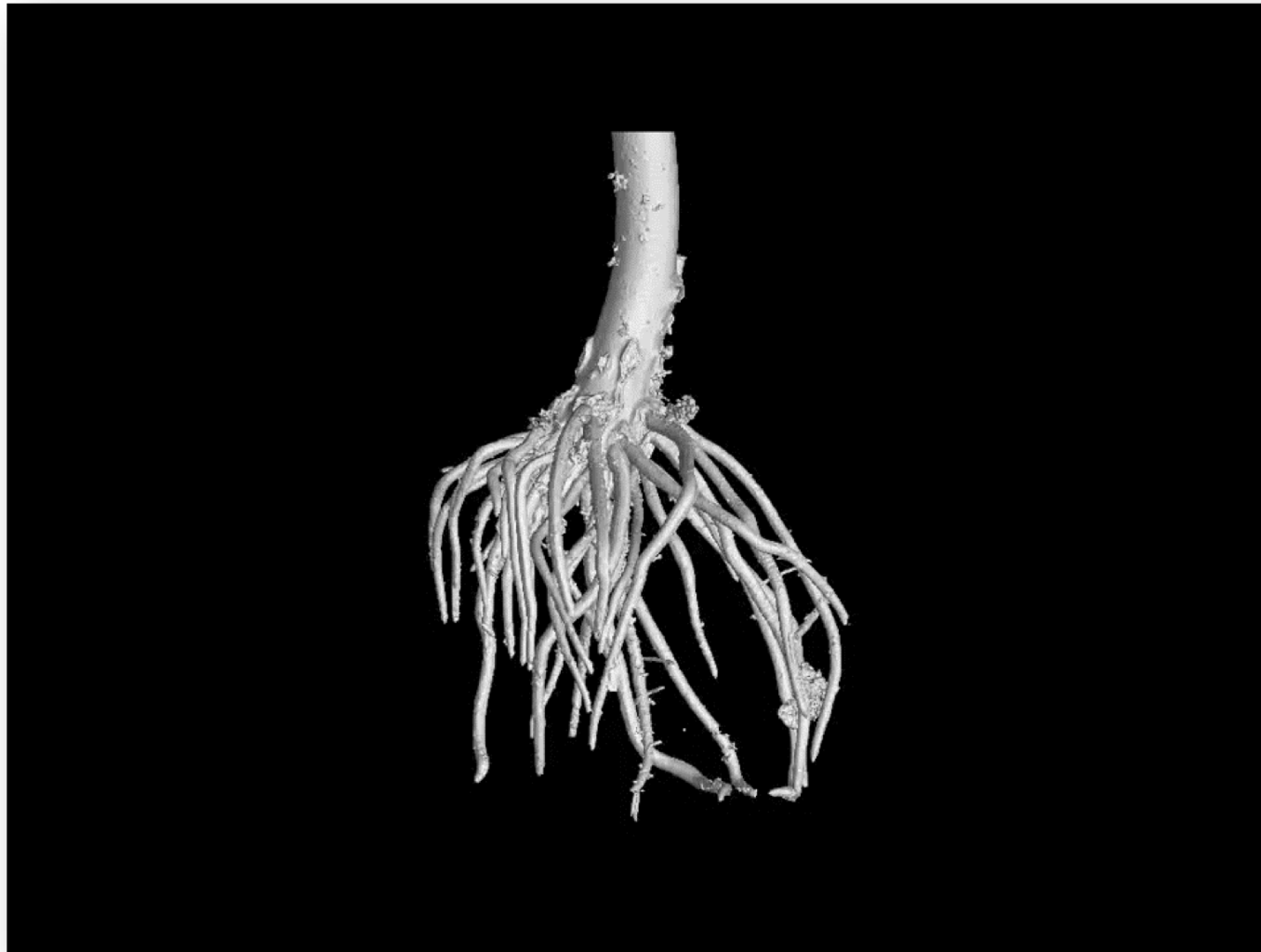
AIR PRUNING



ELLEPOT AIR PRUNED ROOTS



NEW TECHNOLOGY – CT SCANS





Stabilized media is a plug/container which 'holds' its integrity without requiring the roots to do so

- Potential savings in the nursery
- Suited to mechanisation
- Can send out a younger plant (less root pruning)
- The tray holder is critical

Examples include:

Fertil Pots; Jiffy Preforma; Jiffy Pots; Oasis; Fertiss; Growcoon; Omni Aero NT; Growtech Plugs; Ellepots



THE ELLEPOT[®] PROPAGATION SYSTEM





20 YEARS
OF EXPERIENCE



120 COUNTRIES



10 SALES &
DISTRIBUTIONS PARTNERS



3 BILLION ELLEPOTS PER
YEAR

INTRODUCTION TO ELLEPOT

We are the world's leading supplier of Integrated Propagation System

- Founded in 1989
- Head office with development, sales and production in Esbjerg, Denmark
- Sales offices in China and Brazil
- Core business and exclusively focus on the Ellepot system and its value for our customers
- Markets leader and one-stop supplier of an unique and integrated propagation System
- Ellepot Worldwide sales, distribution and service



OUR VISION ELLEPOT

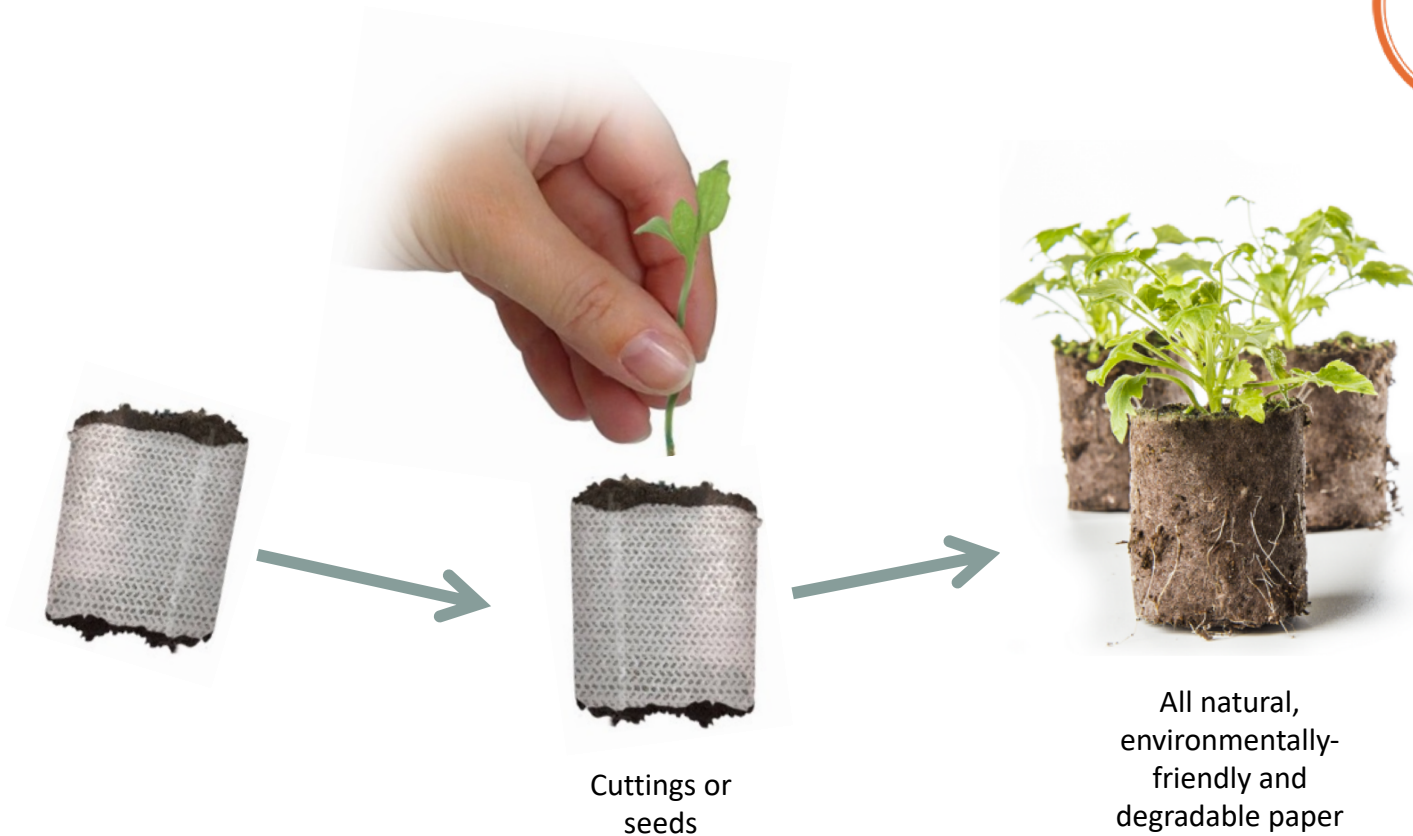
We help our customers do things smarter

Ellepot develops, manufactures and sells plug systems and consumables which improve production efficiency, optimize handling and deliver increased yield and lower costs of goods produced.



THE ELLEPOT EASY GROWING

The Ellepot is made of all natural Eco-friendly & degradable paper filled with your choice of growing media.



THE ELLEPOT GROW SMARTER



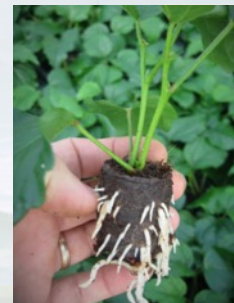
Substrate is wrapped
inside
Eco Friendly &
decomposable
Ellepot Paper



Great Air Circulation
and drainage through
the Ellepot Paper



Paper holds soil in
place before the
roots develop



Roots penetrate
through the Ellepot
Paper and are Air
Pruned



THE ELLEPOT PROPAGATION SYSTEM AN INTEGRATED SOLUTION



ELLEPOT
MACHINES



ELLEPOT
PAPER



ELLEPOT
TRAYS



ELLEPOT
SERVICE



THE ELLEPOT MACHINES

Ellepot machines are designed and developed with one overall purpose – to ensure a reliable, flexible and customized production set-up for our customers.

For more than 20 years we have been designing, developing and producing Ellepot machines. Each machine is custom made to fit the needs of our customers.

THE ELLEPOT MACHINES

SEMI-AUTOMATIC

H111

- Price: Eur ~15,800
- Capacity: 9,000 pots/hr
- Pot diameter: 15-50mm



H112

- Price: Eur ~19,800
- Capacity: 18,000 pots/hr
- Pot diameter: 15-50mm



H211

- Price: Eur ~17,000
- Capacity: 5,000 pots/hr
- Pot diameter: 50-90mm



H301

- Price: Eur ~29,000
- Capacity: 1,500 pots/hr
- Pot diameter: 80-120mm



AUTOMATIC

MULTIFLEX

- Price: Eur ~33,000
- Capacity: 7,000 pots/hr
- Pot diameter: 15-80mm



TURBO MULTIFLEX SETUP

- Price: Eur ~60,000
- Capacity: 12,000 pots/hr
- Pot diameter: 15-50mm



TRAY FILLER

- Upgrade H111/H101 to automatic
- Price: Eur ~27,000
- Capacity: 9,000 pots/hr
- Pot diameter: 18-50mm



FULLY-AUTOMATIC

EPM

- Price: Eur ~80-145,000
- Capacity: 14,000 pots/hr
- Pot diameter: 15-80mm



NGL

- Price: Eur ~125-199,000
- Capacity: 40,000 pots/hr
- Pot diameter: 15-80mm



FLEXLINE

- Price: Eur ~175-235,000
- Capacity: 40,000 pots/hr
- Pot diameter: 15-80mm



MACHINES

RELIABLE, FLEXIBLE AND CUSTOMIZED

SEMI-AUTOMATIC

H102

- Capacity: Up to 18.000 pots/hr
- Pot diameter: 15-50mm



AUTOMATIC

MULTIFLEX

- Capacity: Up to 12.000 pots/hr
- Pot diameter: 15-50mm



H202

- Capacity: Up to 18.000 pots/hr
- Pot diameter: 15-80mm



FULLY-AUTOMATIC

NGL

- Capacity: Up to 40.000 pots/hr
- Pot diameter: 15-80mm



SMARTER WITH AUTOMATISATION

ELLEPOT EQUIPMENT

Additional features for optimising automation:



TRAY HANDLING



SUBSTRATE HANDLING



DIBBLE, DRILL & IRRIGATION UNITS



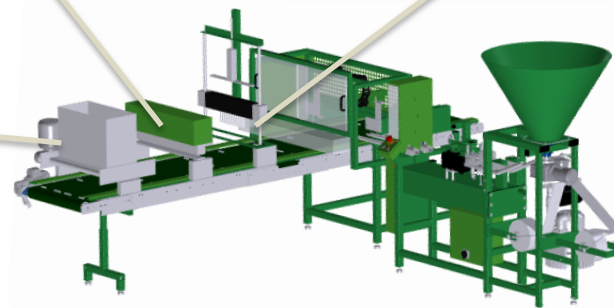
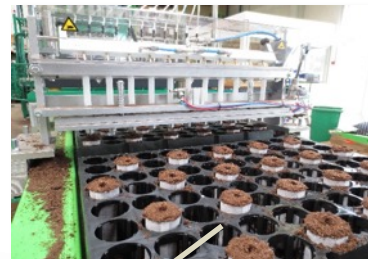
SEEDER LINE



CONVEYOR BELTS



STAND-ALONE EQUIPMENT



ELLEPOT®
GROW SMARTER



ELLEPOT PAPER & MEMBRANES

Through strong and long-standing cooperation with some of the world's leading cellulose manufactures, we have secured supplies of our exclusive high-quality Ellepot paper. Ellepot paper comes in many variations the best fit for your crop type. All of our papers are certified according to international standards, fully degradable and eco-friendly.

A WIDE ASSORTMENT A PAPER FOR EVERY CROP



We are proud to offer more than 14 different types of specially developed Ellepot papers for forestry, flowers, landscape, vegetables and fruit & nuts.

All Ellepot papers are degradable and eco friendly. Some certified in accordance with different industry standards such as rainforest alliance, FSC and Veriflora.

Option to customise in various ways according to the customers preferences, e.g. different sizes (varying the “pot” diameter) and adding the adhesive differently.

– We supply a paper for every crop and industry.





ENVIRONMENTAL FRIENDLY AND CERTIFIED



The mark of
responsible forestry



7P0472



Applies only to paper types:
Hydroponic & Membranes



Applies only to paper type:
Organic





THE ELLEPOT TRAYS

Ellepot customers around the world, have resulted in the current range of more than 80 different trays. All designed for improved production efficiency, optimized handling, increased yield and lower costs of goods produced.

NOT JUST A TRAY

CUSTOMIZED ELLEPOT PROPAGATION TRAYS

- Specially designed for the Ellepot System to fit each size of Ellepot
- Optimal drainage and ventilation
- Standard or customized trays
- Recycle or one-time use
- Easy to separate (this by hand or machine)
- Competitive pricing and conditions
- On time deliveries



TOMORROW'S PROPAGATION SYSTEM

GROW SMARTER



SMARTER
PRODUCTION



SMARTER
HANDLING



SMARTER
PROPAGATION



SMARTER
SALES



SMARTER PRODUCTION

Highly reliable and flexible, the Ellepot system can be customized to suit your exact needs with regard to output, pot and tray sizes, and soil mixes.

BENEFITS:

- On-site production
- Full control of production and product
- Integrated technology, automation and mechanization
- High production capacity
- Cost savings up to 50 %



SMARTER PROPAGATION

Ensures healthier and faster root development, with more uniform plants while improving crop timing and reducing plant shrink.

BENEFITS:

- Faster and healthier root development
- Shorter production cycle
- Increased wet/dry cycles
- Reduced plant shrink
- Higher uniformity of plants

BENEFITS IN PRODUCTION & PROPAGATION

Faster and
healthier
plant root
development



Easy sorting
and patching



Faster and
easier
transplanting



Uniform
plants





SMARTER HANDLING

Significantly reduces logistics and labor costs through easier and faster transplanting, eliminates transplant shock, and increases plant quality, health and structure.

BENEFITS:

- Easy consolidation and sorting
- Faster transplanting and handling
- Cost and logistics savings
- No transplant shock
- Automation



SMARTER SALES

Because Ellepots are made from all natural paper, you and your customers will enjoy the benefits of a fully sustainable solution, better propagation and smoother transplanting resulting in stronger, more uniform plants for sale.

BENEFITS:

- Green and environmental-friendly solution
- Fully sustainable solution
- Labor savings
- Higher yields/higher survival rates
- Uniformity of plants
- Easier packing/shipping
- Higher quality end-product

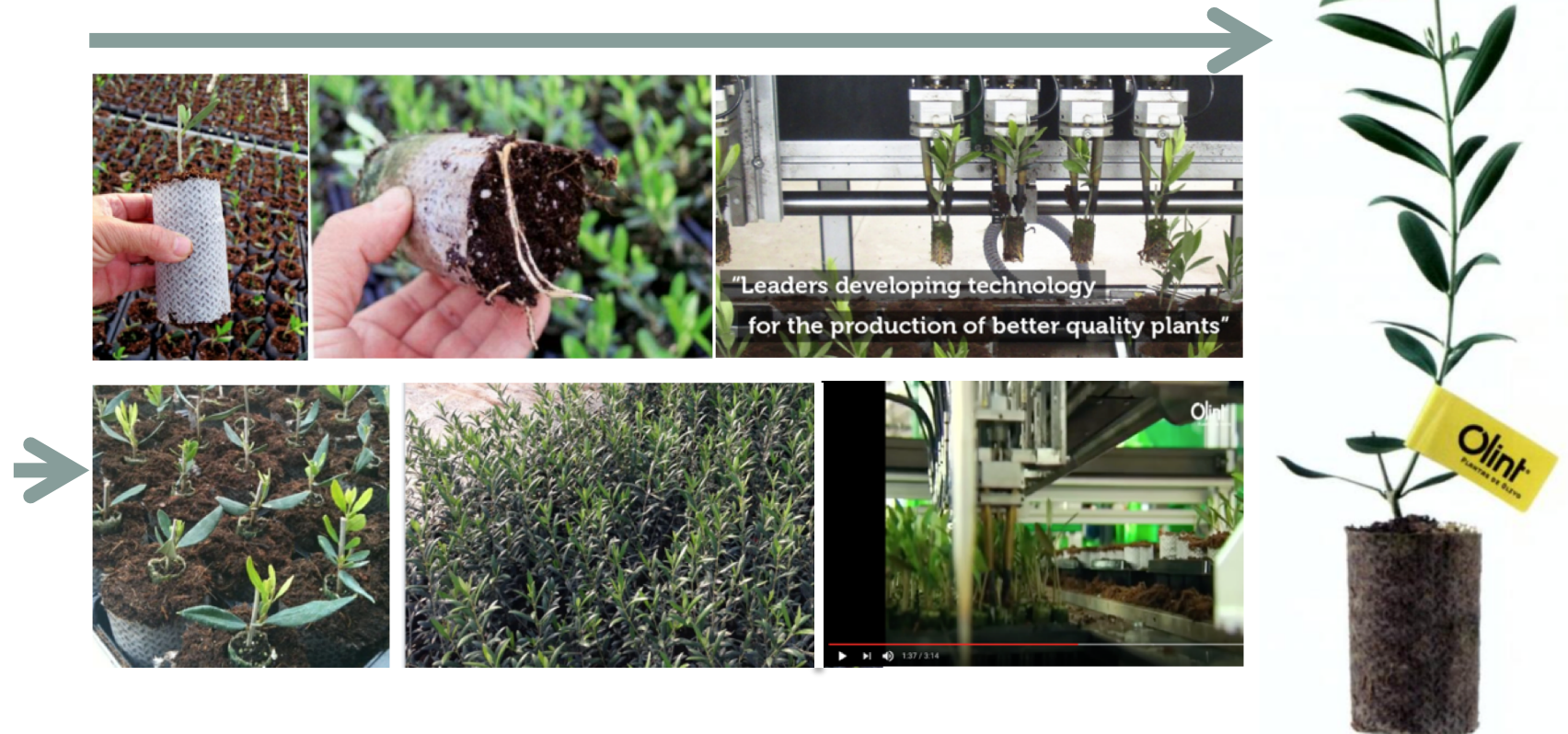
CASE

AGROMILLORA GROUP



Agromillora is the World Leader in fruit and olives trees

Agromillora is a nursery dedicated to the production and commercialization at both the national and international levels, of plants with the highest genetic and production quality. Agromillora is the only global platform propagating woody species for agriculture, offering an ideal meeting place for the global community of breeders and producers.



CASE

SIERRA GOLD - CALIFORNIA



Sirerra Gold, California revolutionizes nut/fruit tree propagation and planting.
Introducing new JET line machine for 100 mm Ellepot.
Quick start trees – trees ready in as little as 3 months instead of 2 years



SIERRA GOLD NURSERIES





The Ellepot Propagation System delivers in the following ways:

- Excellent root development (air pruning; air exchange)
- Suited to mechanisation, stabilized media, step up options
- Growers can use their own growing media
- Smaller volume containers possible (cost; medium; nursery capacity; shipping benefits)
- Automated system that is labour efficient
- Reduced transplant shock, better performance in field



GIVE YOUR BUSINESS THE BEST POSSIBLE START

GROW SMARTER

All these “smarter solutions” is what Ellepot is about.
And added together they help our customers.



SMARTER PRODUCTION:

- Customizable, Flexible, Long Lifecycle, Reliable, Prompt Service and Spare Parts Delivery



SMARTER HANDLING:

- Easier and faster Transplanting, No Transplant Shock, Healthier and more Uniform Growth



SMARTER PROPAGATION:

- Faster, Healthier Root Development, More Uniform Plants, Improved Crop Timing, Reduced Plant Shrink



SMARTER SALES:

- Fully Sustainable Solution, Degradable and Eco-Friendly Paper, Higher Quality End-Product