

TOMATOES



**ROOTS**

Sustainable Agricultural  
Technologies Ltd.

# INNOVATING THE CLIMATE CONTROL LANDSCAPE

Root-Zone Temperature  
Optimization Technology for Tomatoes



## Roots - Sustainable Agricultural Technologies Ltd. (ROOTS)



Israeli based, publicly traded in Australia (ASX: ROO), ROOTS is a graduate of the Israeli Chief Scientist Technological Incubator program.

ROOTS is selling its disruptive, modular, cutting-edge technologies worldwide.

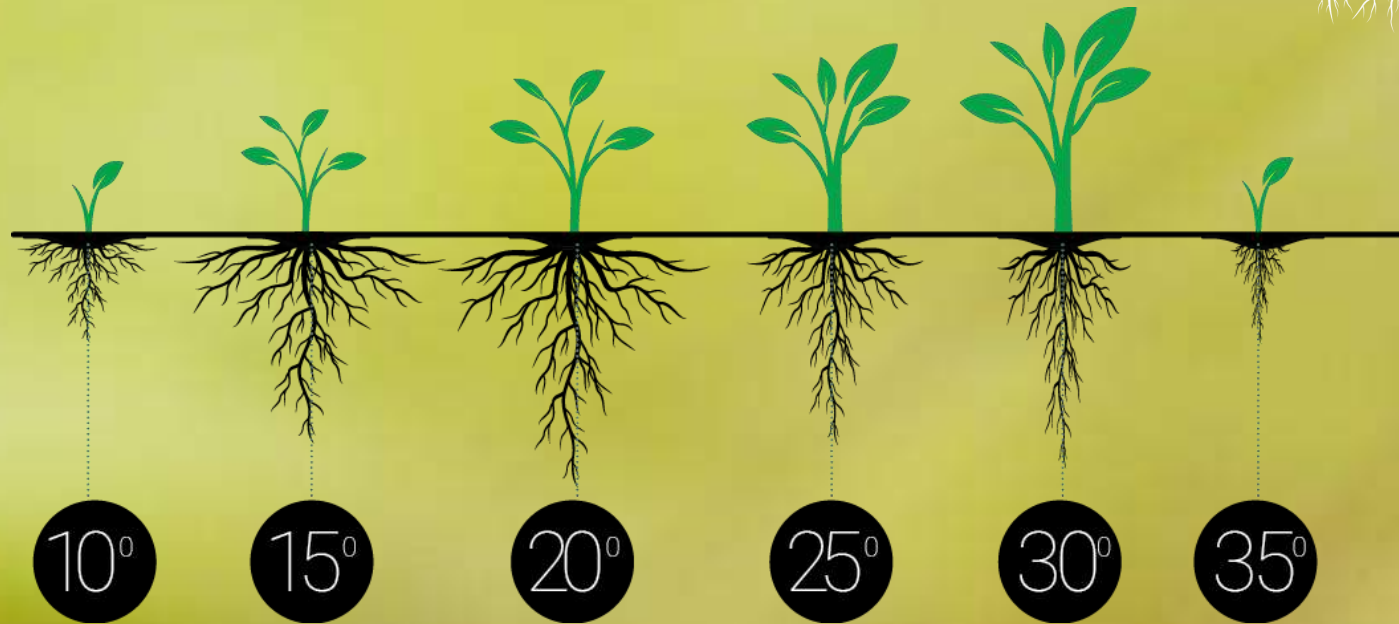
- Root Zone Temperature Optimisation (RZTO): Two-in-one root zone heating and cooling for indoors, greenhouses, hoop houses and outdoors.
- Irrigation by Condensation (IBC): Electric or solar powered irrigation by condensation technology irrigating just with the humidity from the air.

Roots' technologies/systems assist growers increase yield, save energy, shorten growing cycles, provide supplies security and produce water for irrigation from humidity in the air. All designed to increase the grower's profitability and mitigate extreme weather effects on production and cultivation.





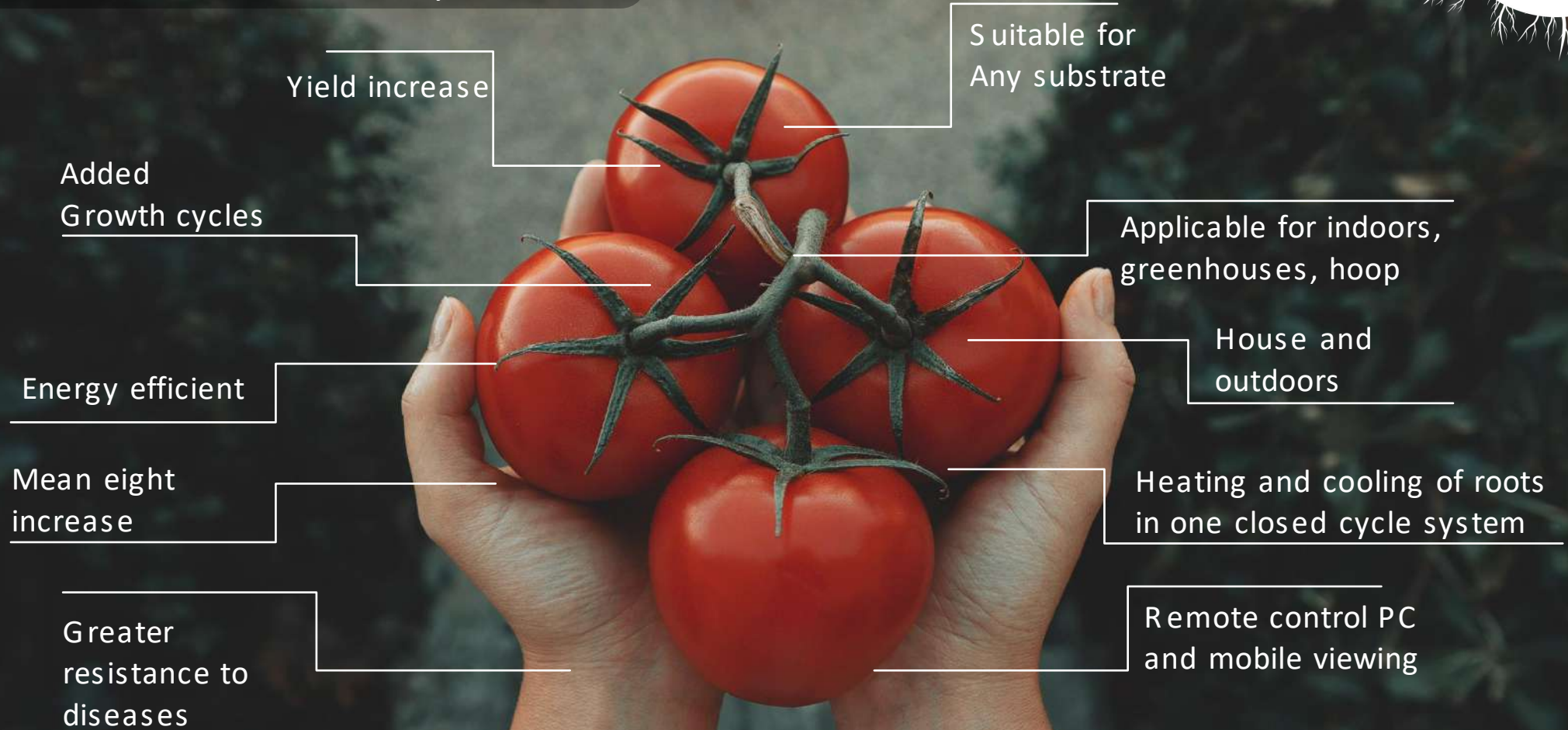
ROOT TEMPERATURE IS THE MOST INFLUENTIAL FACTOR IN PLANT PHYSIOLOGY FOR GROWTH, PRODUCTIVITY AND QUALITY. AN OPTIMUM TEMPERATURE RANGE IS ESSENTIAL TO PRODUCTIVITY, HEALTH AND OUTPUT QUALITY.





## Root-Zone Temperature Optimization Technology for Tomatoes summery

### TOMATOES



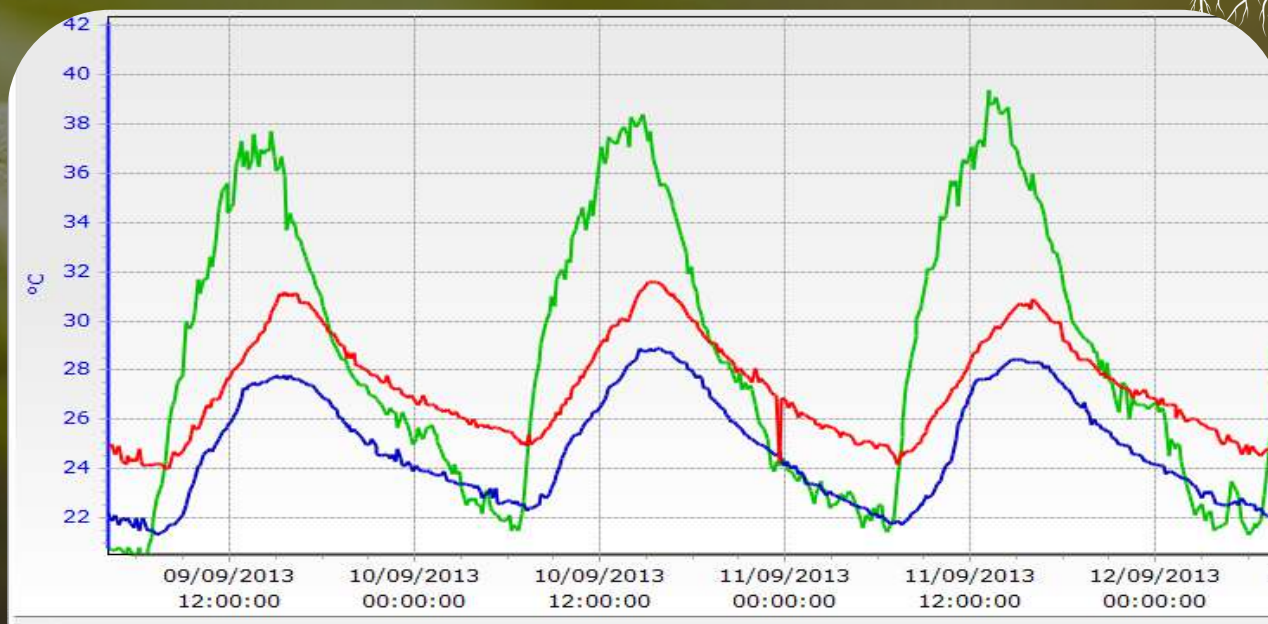




## RESULTS

Jordan Valley ,ISRAEL

UP TO  
**3°C**  
DIFFERENCE  
BETWEEN COOLED  
ROOTS AND  
UNCOOLED ROOTS



COOLED ROOTS  
TEMPERATURE



UNCOOLED ROOTS  
TEMPERATURE



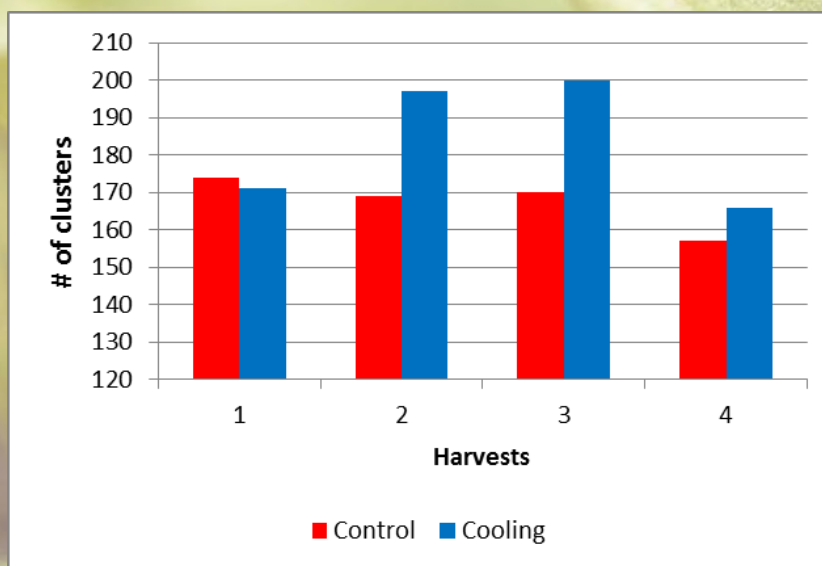
AMBIENT  
TEMPERATURE



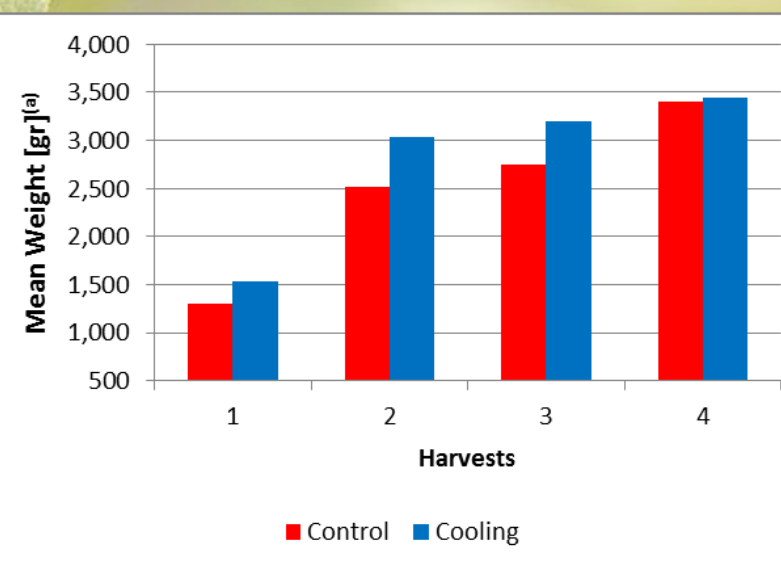
## Cooling Cherry Tomatoes summer planting



Difference in weight and # of Tomatoes clusters  
on first 4 harvests (until first rain)



NUMBER OF FRUITS

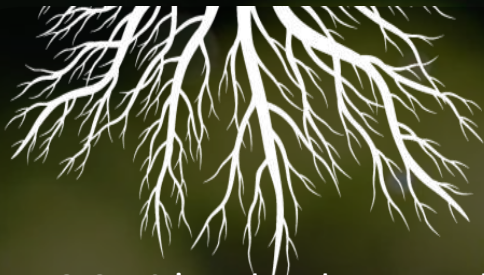


MEAN WEIGHT





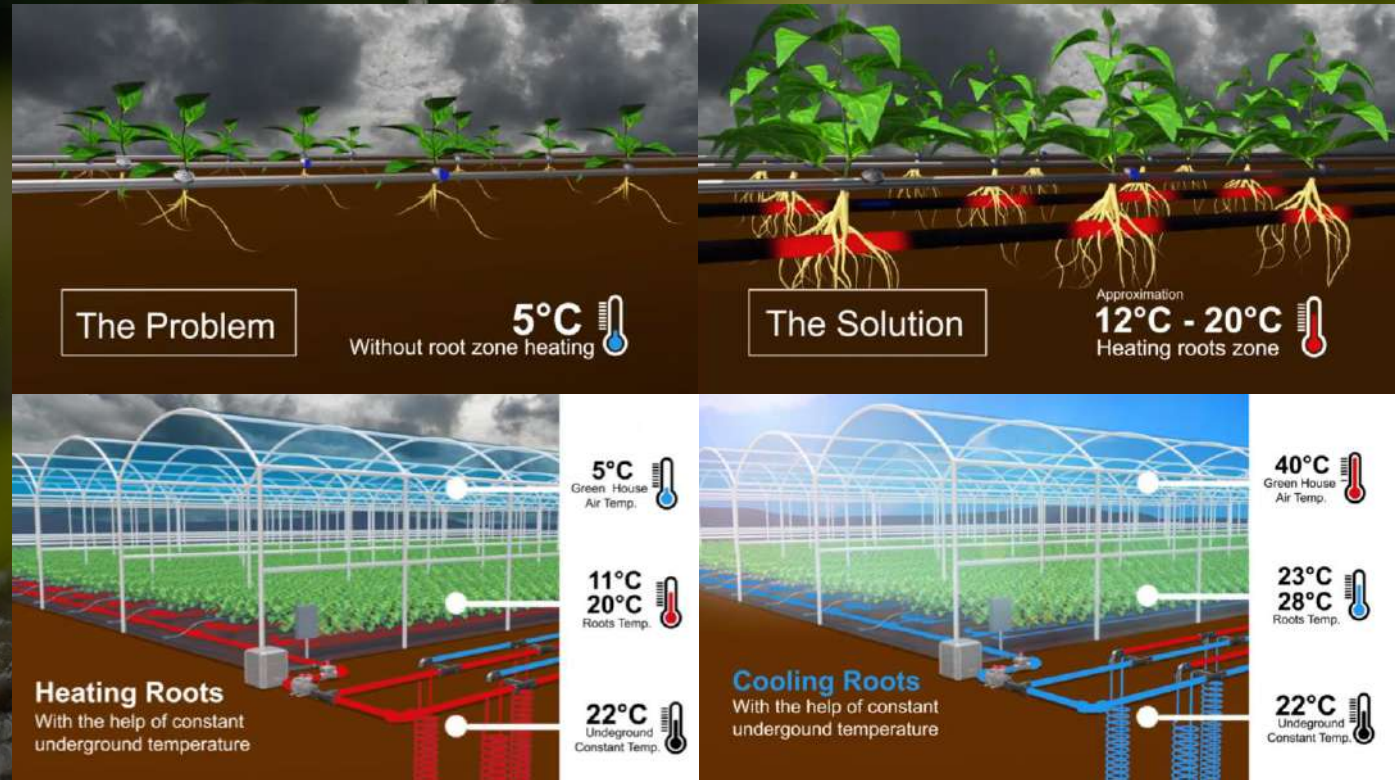
## Innovating the Climate Control Landscape



ROOTS' technology cools & heats root zone in one system to maintain an optimum temperature range year round



[Click here to view technology' video](#)







## Suitable for any substrate

Roots' proprietary stub enables producers to stabilize pot and grow bag soil temperatures year- round, increases pot maneuverability as well as significantly reduce costs associated with RZTO installation.

Heat exchange stub for various substrates - saves on entering the pots or grow bags from the side and allows free movement of the pots and substrates just by lifting the stub. Covered by ROOTS patent.







## How does it work?



### Configuration A:

#### Heat pump

We install efficient heat pumps for root zone heating and cooling, remotely controlled operated either with electricity or gas.

### Configuration B:

Ground source heat exchange (also called Geothermal):  
Inserted coils pipe in soil at 10 Meters for heat exchange between water in the coils and soil at depth. Stable water temperature of water emerges from the underground exchange discharged near roots in any substrate. The only energy used to cool or heat by up to 10 degrees vs. control is a circulation pump.

### Configuration C:

Hybrid – Inserted Geothermal coils + heat pump

For more accurate and influential results under more extreme weather conditions. Slightly more energy use compared with the basic configuration.

**All three configurations come with a stable monitoring and control equipment available for viewing in app on mobile phone and PC.**





# THANK YOU

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