

CHIVES



ROOTS

Sustainable Agricultural
Technologies Ltd.

INNOVATING THE CLIMATE CONTROL LANDSCAPE

Root-Zone Temperature
Optimization Technology for Chives



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.

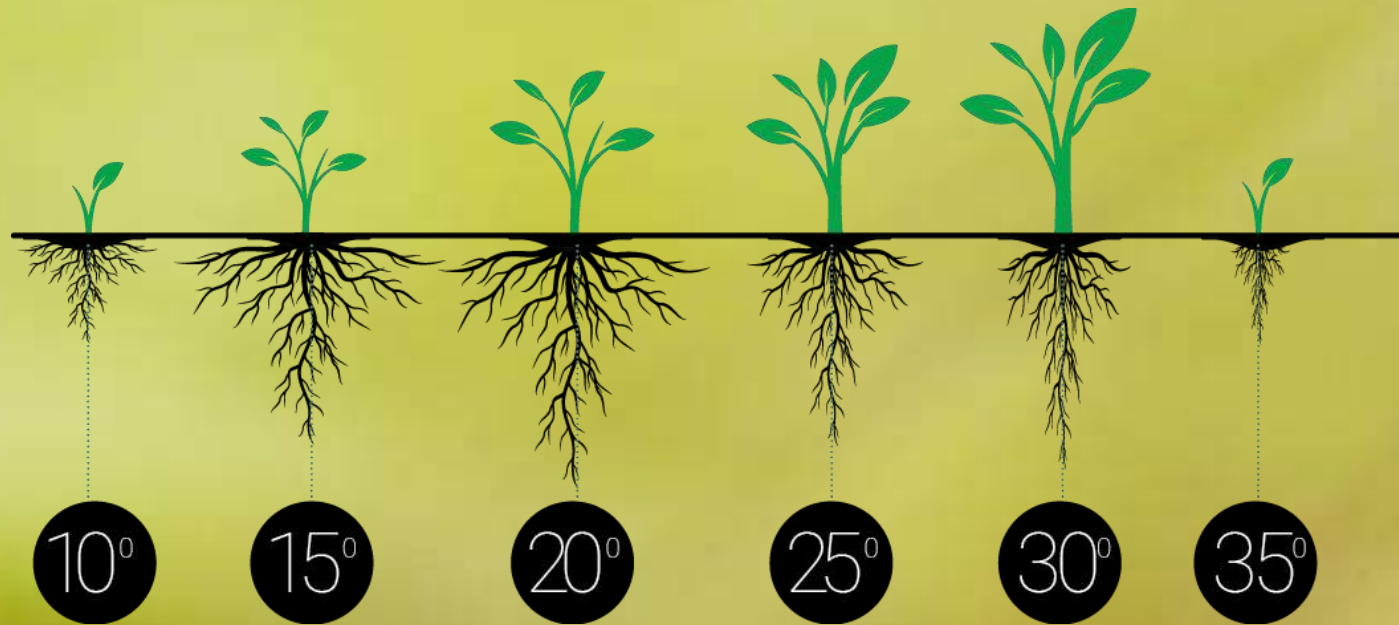
ROOTS is selling its disruptive, modular, cutting-edge technologies worldwide.

- 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 Chives summery

CHIVES



250%

Yield increase

Added
Growth cycles

Suitable for
Any substrate

Applicable for indoors,
greenhouses, hoop

Heating and cooling of roots
in one closed cycle system

House and outdoors

Greater resistance
to diseases

Remote control PC
and mobile viewing

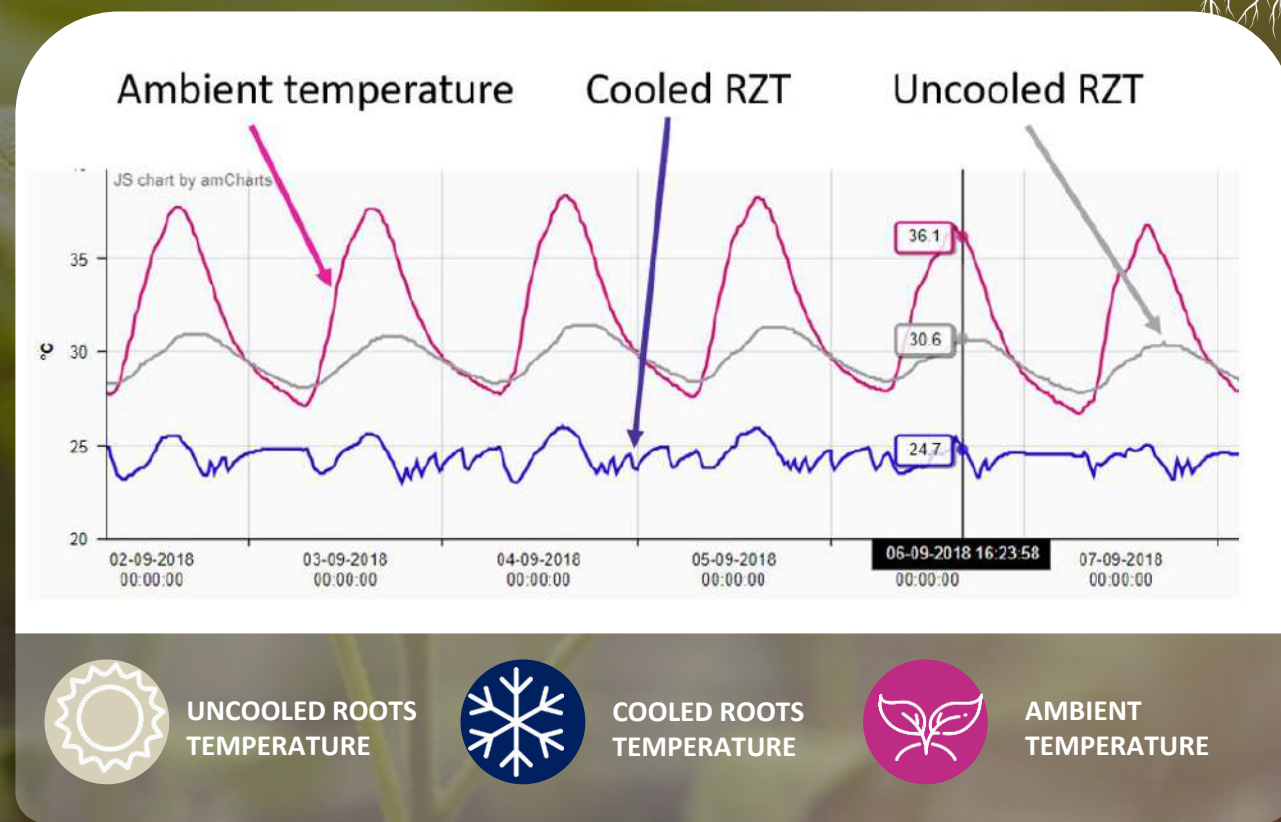


RESULTS

Temp. comparison: Cooled vs. Untreated



UP TO
5°C
DIFFERENCE
BETWEEN COOLED
ROOTS AND
UNCOOLED ROOTS

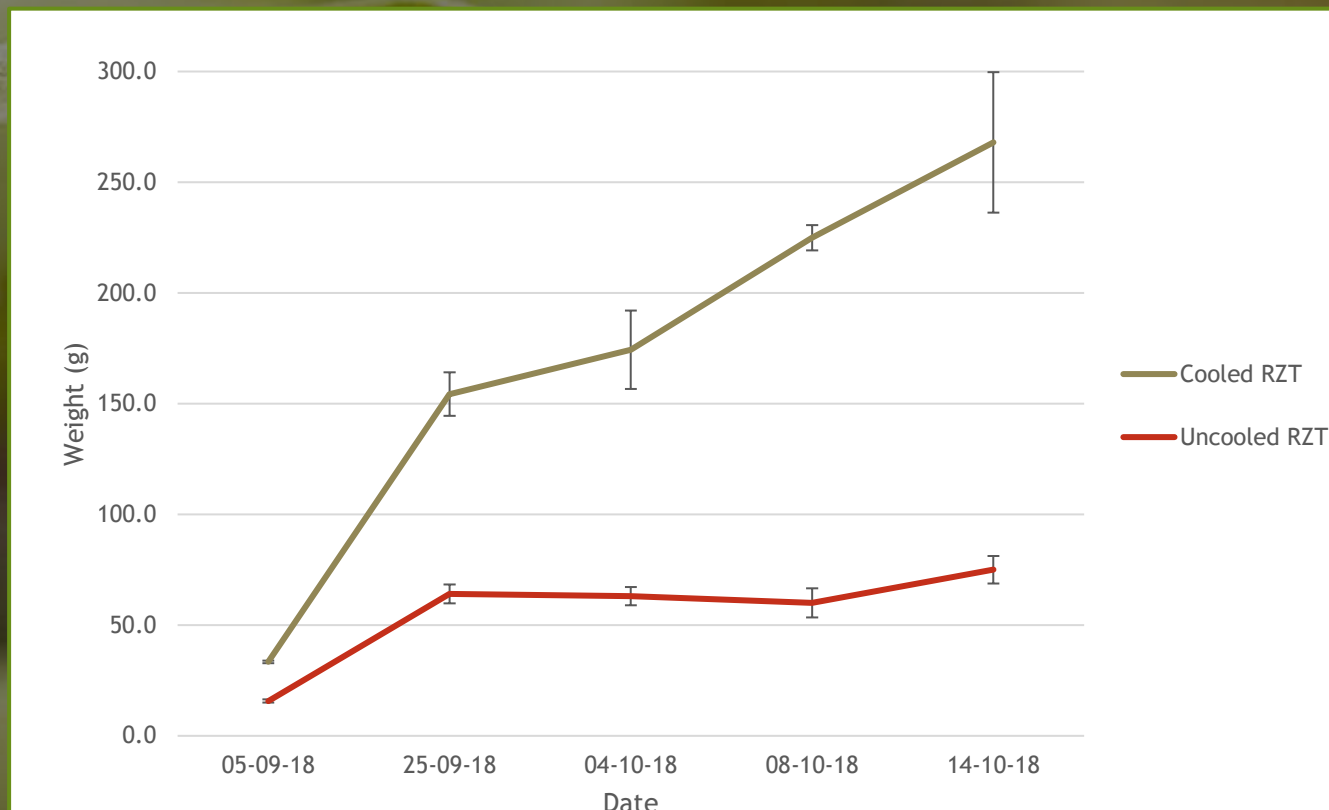




CHIVES HARVEST PRODUCTION



**THE AVERAGE
WEIGHT OF COOLED
CHIVES WAS MORE
THAN TWO-TIME
HIGHER (257%)
COMPARE WITH
UNCOOLED PLANTS**





Cooled vs. Untreated



FIELD PLANT SIZE COMPARISON: 25 DAYS FROM PLANTING

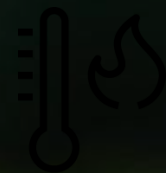


COOLED

CONTROL



COOLED VS. UNTREATED



CONTROL



COOLED



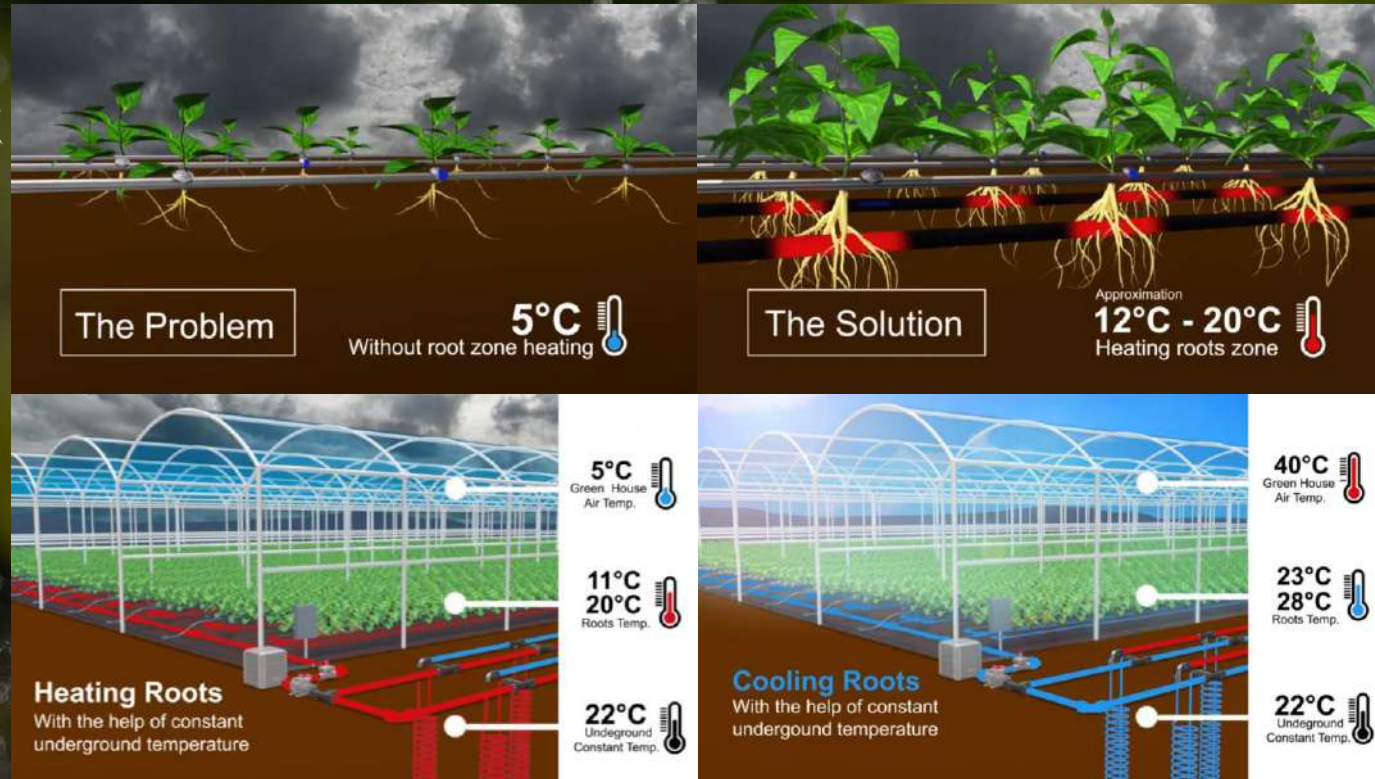
ROOTS
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Innovating the Climate Control Landscape



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

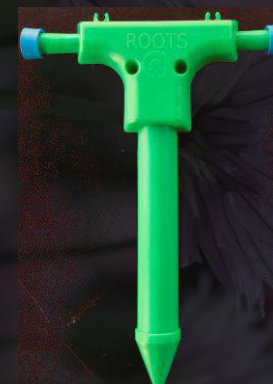




Suitable for any substrate

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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