



CANNABIS



INNOVATING THE CLIMATE CONTROL LANDSCAPE

Root-Zone Temperature
Optimization Technology for Cannabis



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.

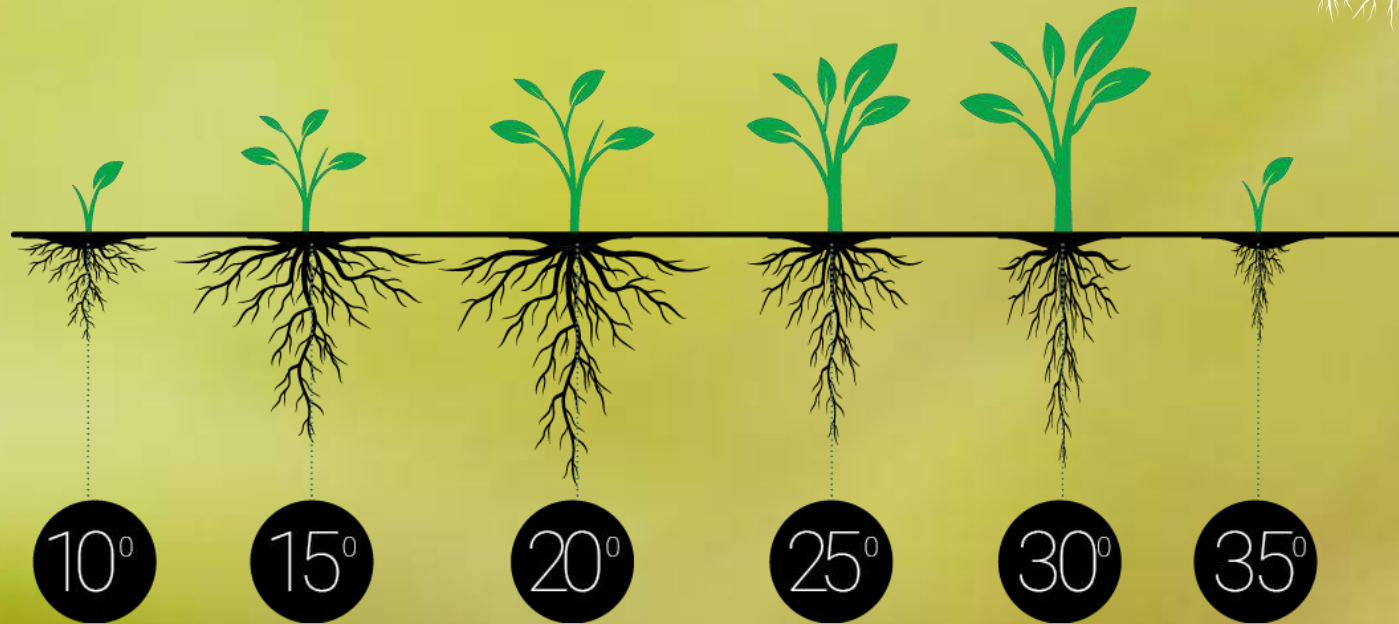
ROOTS is selling its disruptive, modular, cutting-edge technologies worldwide.

- Root Zone Temperature Optimisation (RZTO): Two-in-one root zone heating and cooling for indoors, greenhouses, hoop houses and outdoors.
- New product from Roots – sustainable agricultural technologies. The RZTO system combined with a state-of-the-art fertigation (irrigation and fertilization) system 2 in 1

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 Cannabis summery

CANNABIS



40-270%

Yield increase

Added
Growth cycles

Quick ROI
(less than a year)

THC increase

Greater resistance
to diseases

Suitable for
Any substrate

Applicable for indoors,
greenhouses, hoop

House and
outdoors

Heating and cooling of roots in
one closed cycle system

Remote control PC
and mobile viewing



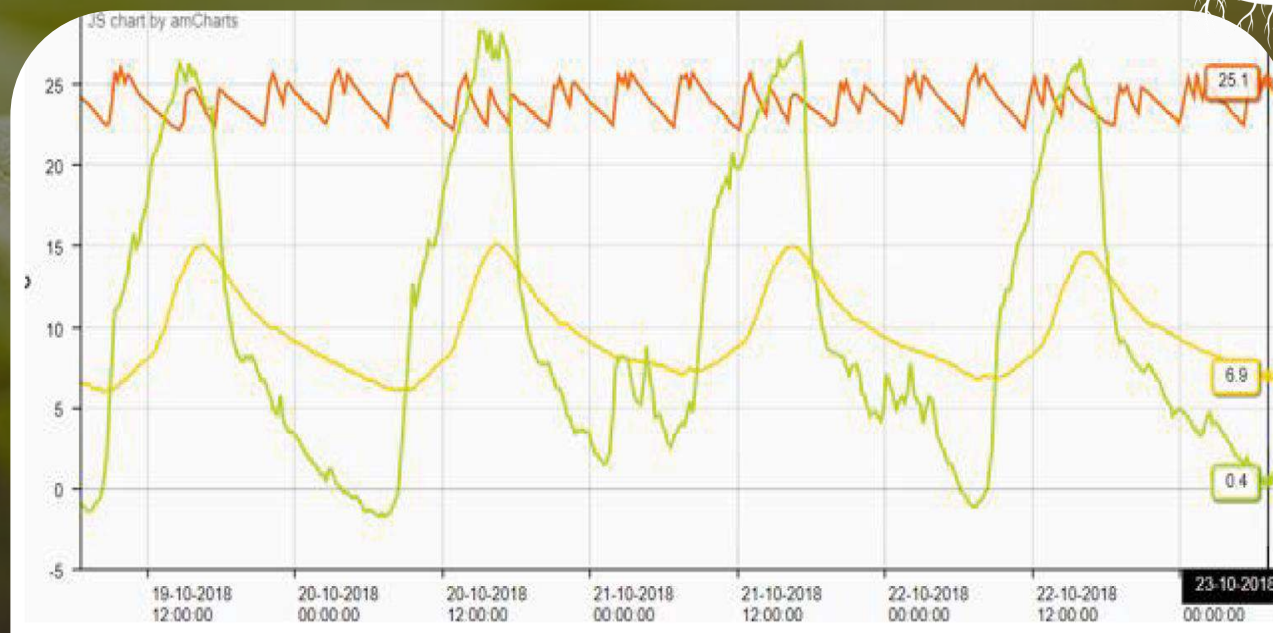
RESULTS

Sun-grown, open field in
Washington State

UP TO
18°C
DIFFERENCE
BETWEEN HEATED
ROOTS AND
UNHEATED ROOTS



ROOTS
Sustainable Agricultural
Technologies Ltd.



UNHEATED ROOTS
TEMPERATURE



HEATED ROOTS
TEMPERATURE



AMBIENT
TEMPERATURE



RESULTS

Sun-grown, open field in
Washington State



HEATED ROOTS:
INCREASED DRY
FLOWER WEIGHT
BY

40-270%



CONTROL



HEATED

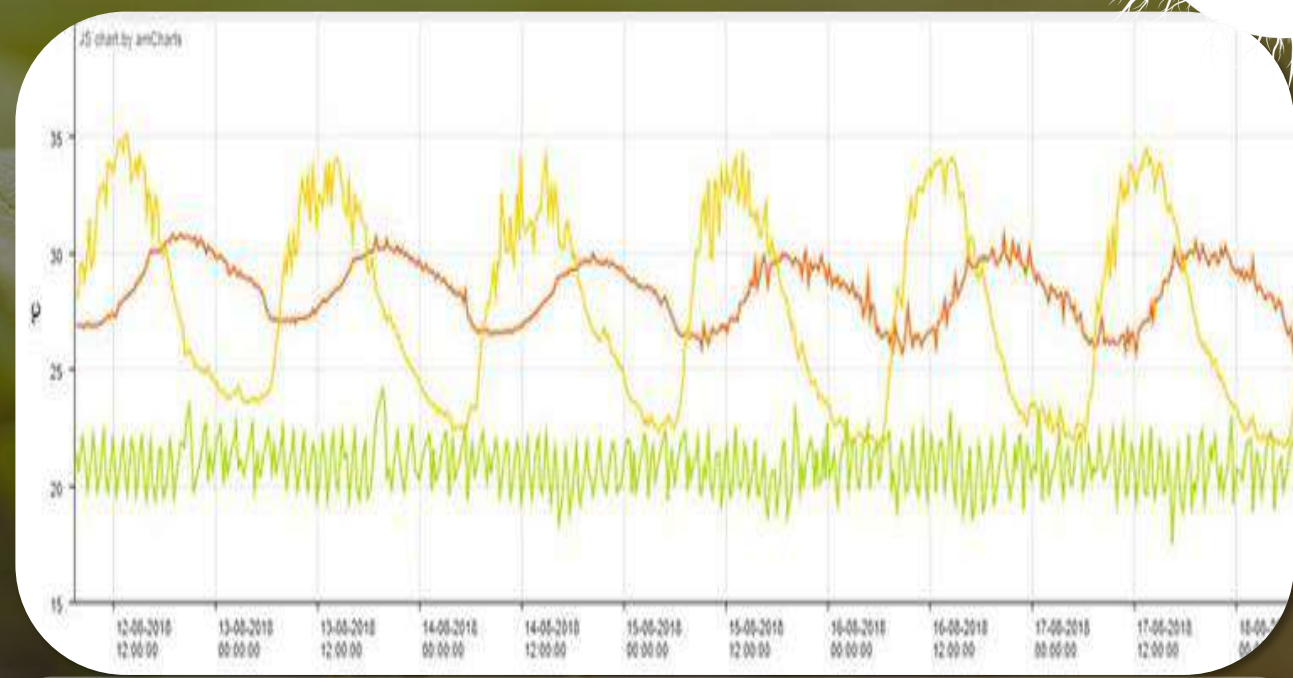


RESULTS

Medical Cannabis,
Greenhouse, in Israel



UP TO
15°C
DIFFERENCE
BETWEEN COOLED
ROOTS AND
UNCOOLED ROOTS



UNHEATED ROOTS
TEMPERATURE



UNCOOLED ROOTS
TEMPERATURE



COOLED ROOTS
TEMPERATURE



RESULTS

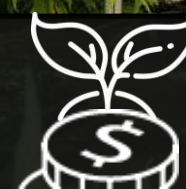
Medical Cannabis
Greenhouse, in Israel



**COOLED ROOTS:
INCREASED DRY
FLOWER
WEIGHT BY
40%**



CONTROL



COOLED



RESULTS

Hoop house in California State

UP TO
18°C



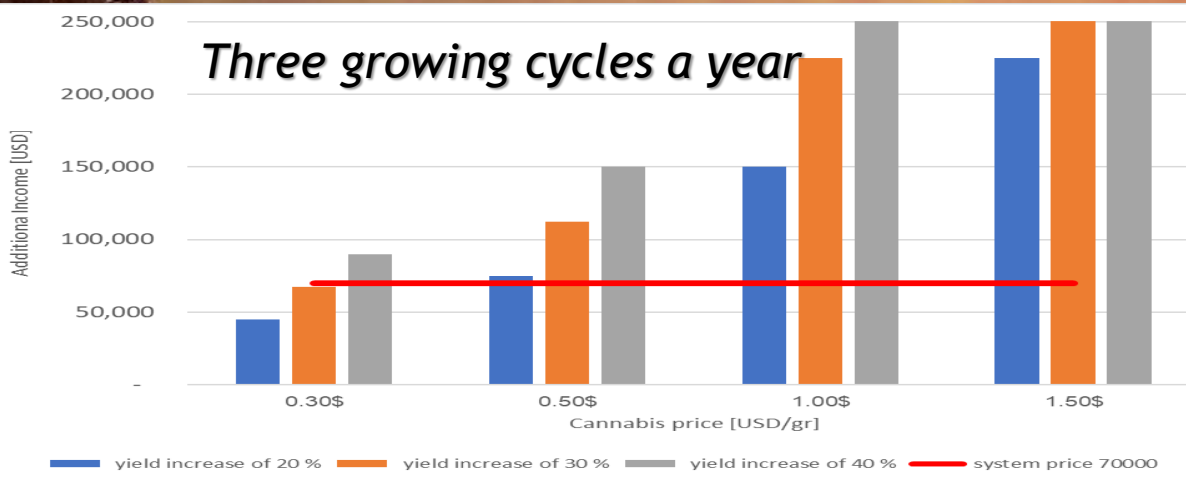
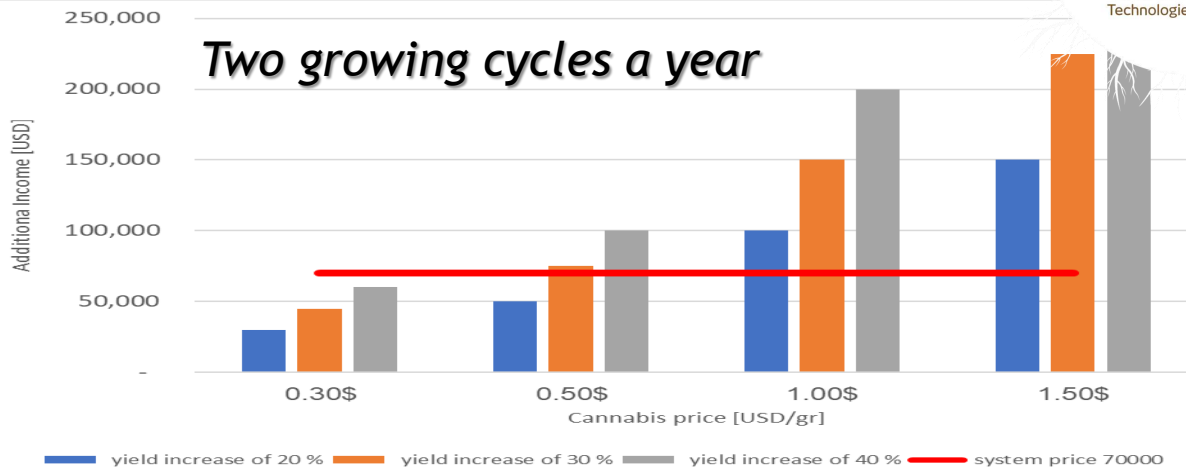
DIFFERENCE
BETWEEN HEATED
ROOTS AND
UNHEATED ROOTS





Return on
investment*

Sensitivity analysis for a
typical American
10,000 [sqFt] farm;
ROOTS system user price
USD 70,000



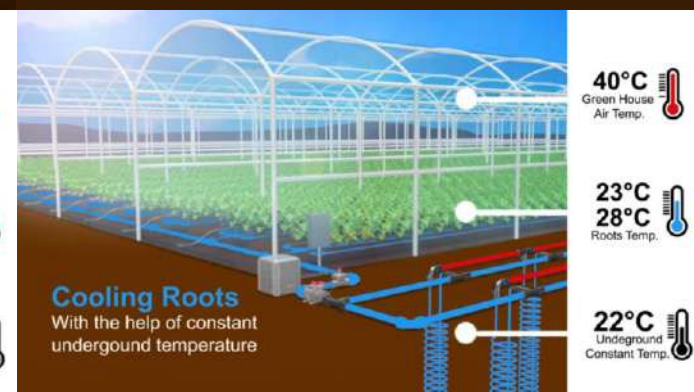
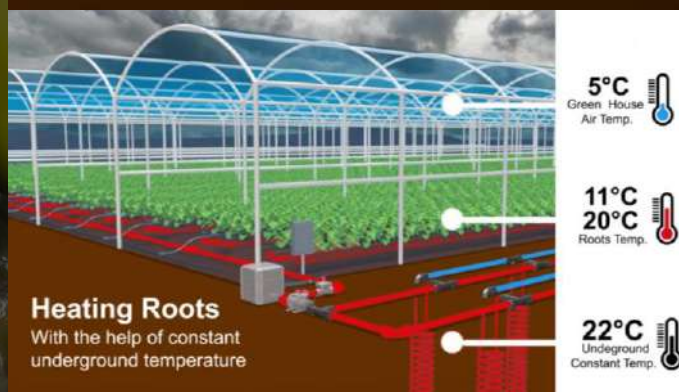
**Bases on installed ROOTS commercial systems performance and farmers' testimonials*



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

Roots Sustainable Agricultural Technologies Ltd

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