

ASPARGUS



ROOTS

Sustainable Agricultural
Technologies Ltd.

INNOVATING THE CLIMATE CONTROL LANDSCAPE

Root-Zone Temperature
Optimization Technology for Asparagus



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.

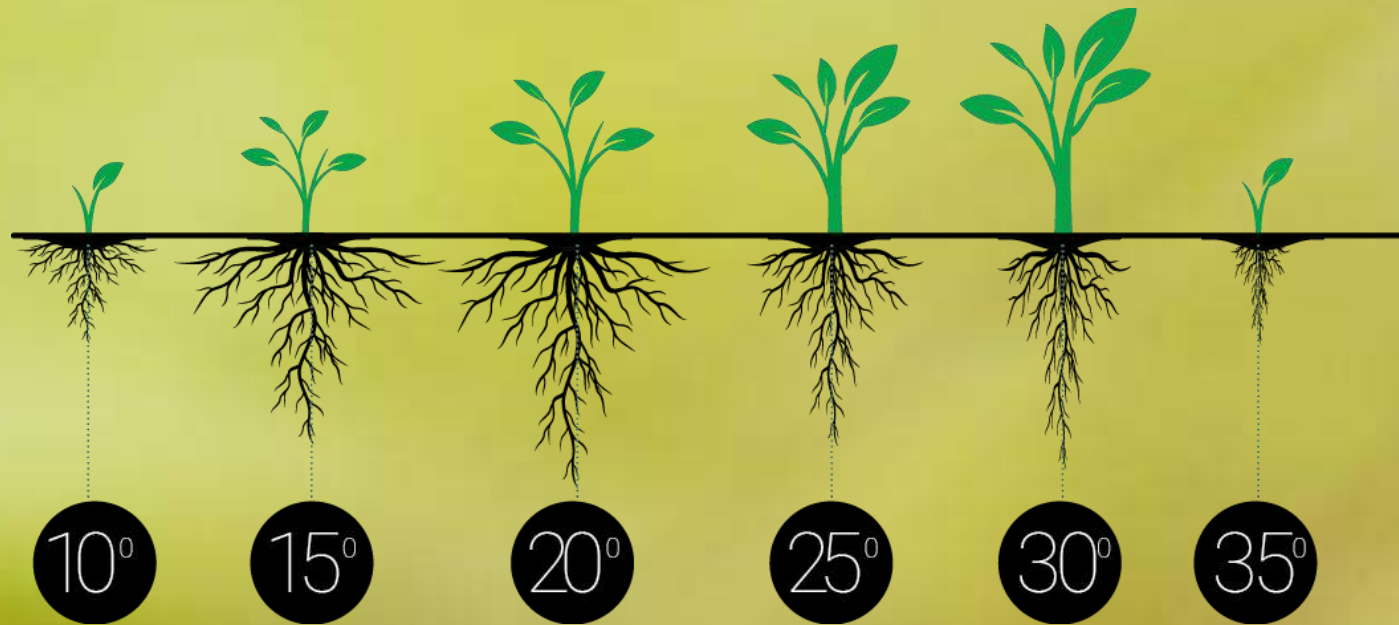
ROOTS is selling its disruptive, modular, cutting-edge technologies worldwide.

- 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 Strawberry summery

ASPARAGUS



90%

Yield increase

Suitable for
Any substrate

Applicable for indoors,
greenhouses, hoop

Quick ROI

Heating and cooling of roots
in one closed cycle system

Energy efficient

Greater
resistance to
diseases

Remote control PC
and mobile viewing

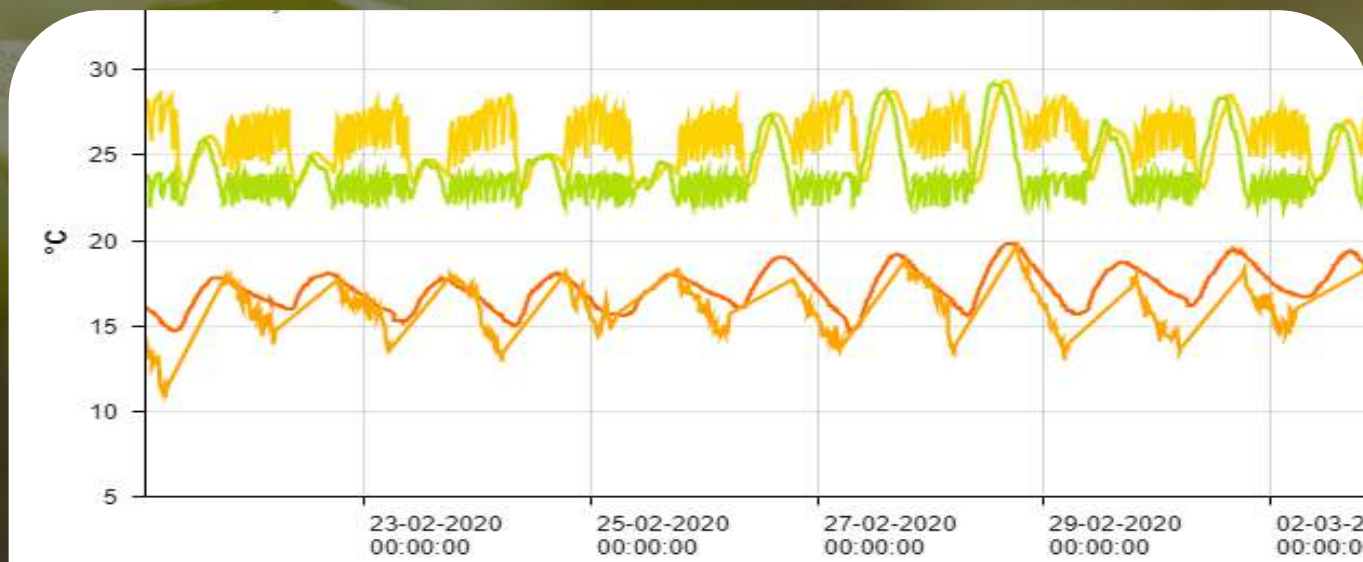


RESULTS

During wintertime,
Center of Israel

UP TO
10°C
DIFFERENCE
BETWEEN HEATED
ROOTS AND
UNHEATED ROOTS

25



UNHEATED ROOTS
TEMPERATURE



AMBIENT
TEMPERATURE



HEATED ROOTS
GSHE
TEMPERATURE



HEATED ROOTS
HYBRID
TEMPERATURE

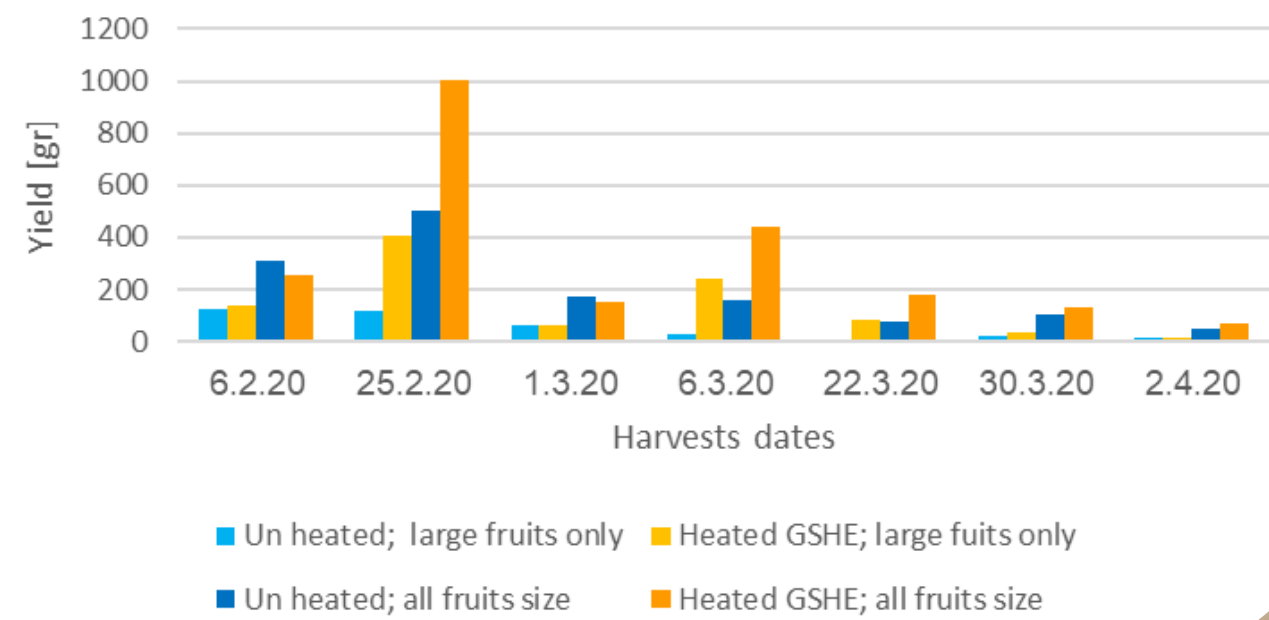


HEATED ROOTS vs. UNHEATED ROOTS



**Up to
90%
percent
yield
increase
in heated
plants**

Asparagus yield Heated roots vs un-heated
large vs all fruits sizes



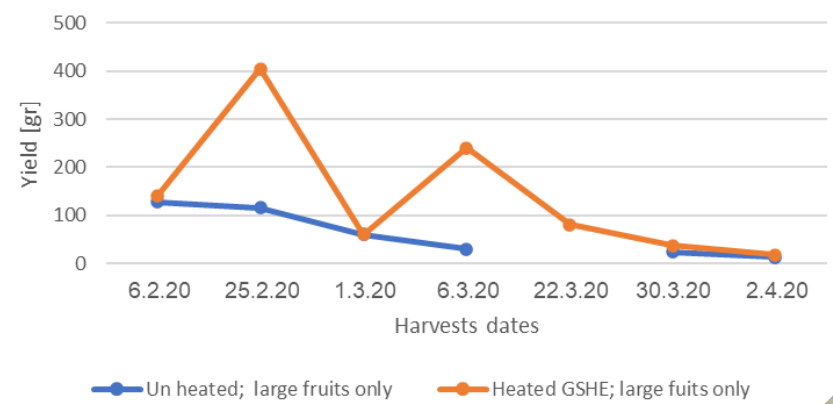


HEATED ROOTS vs. UNHEATED ROOTS

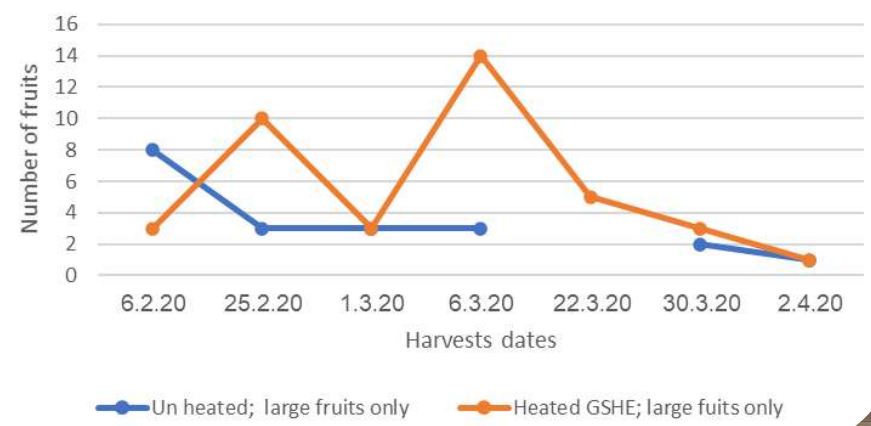
XXX
percent
yield
increase
in
heated
plants



Asparagus yield Heated roots vs un-heated
large fruits only



Asparagus # fruits Heated roots vs un-heated
large fruits only





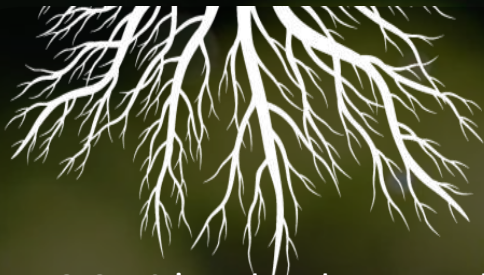
HEATED ROOTS vs. UNHEATED ROOTS

- Asparagus roots usually can be found at 30cm to 60cm depth
- ROOTS heating pipes were embedded at 25 cm depth





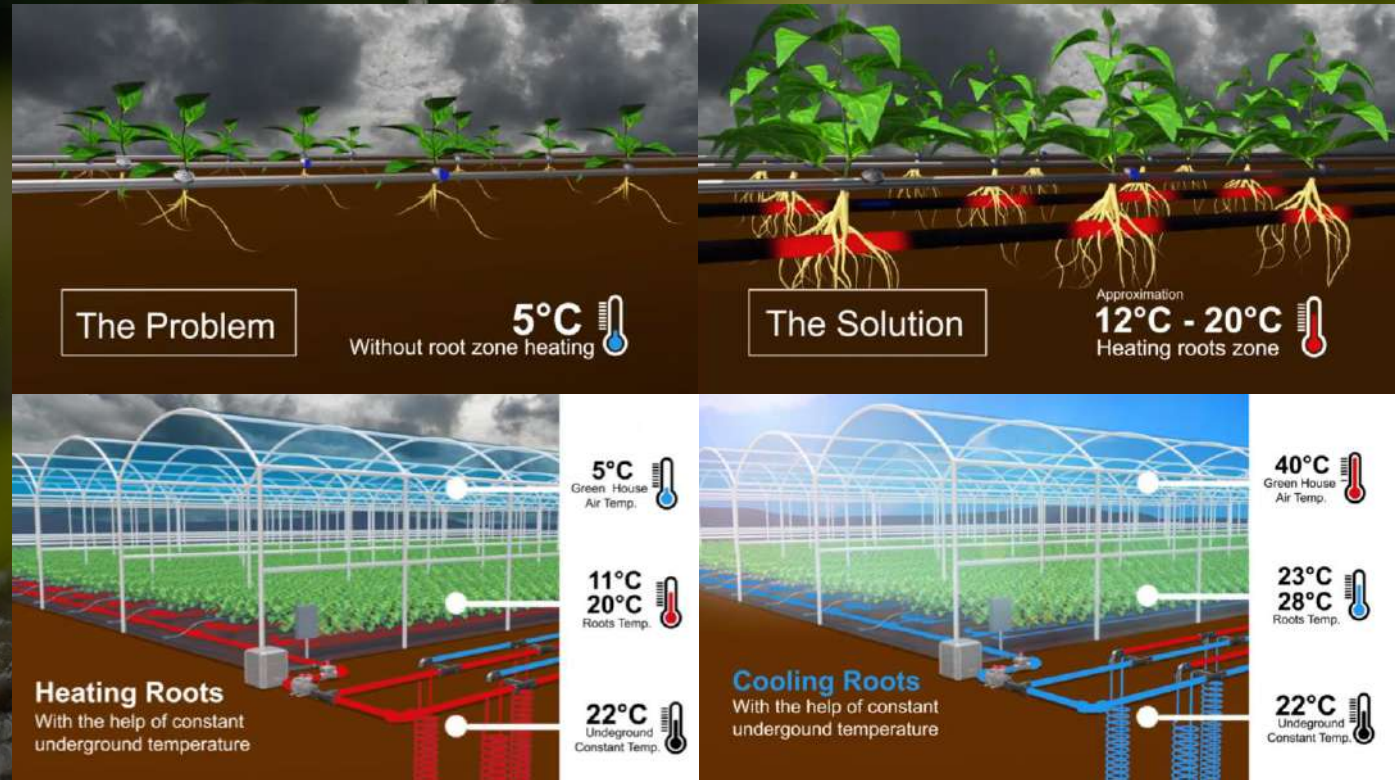
Innovating the Climate Control Landscape



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

Roots Sustainable Agricultural Technologies Ltd

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