

28 August 2018

Interim results show more than 25 percent increase in vegetative growth in medicinal cannabis RZTO proof of concept

- **Cooled plant heights increased on average by more than 25% compared with un-cooled control plants.**
- **World-first root zone cooling proof of concept on cannabis in Greenhouses will examine impact of root zone cooling on several parameters including crop yield, quality, duration of growing cycle, cannabinoid content and composition.**
- **Interim results look to provide considerable value to farmers in the medicinal cannabis market, which expects up to \$31 billion¹ in sales globally over the next four years.**

Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company) has released interim results showing a more than 25 percent vegetative increase and enlarged stem diameters on cooled root zone cannabis plants in contrast to control crops in its world-first proof-of-concept cooling medicinal cannabis roots using Root Zone Temperature Optimisation (RZTO) technology.

Current cannabinoid prices in the California medicinal cannabis market are US\$2-3 a gram. The Cannodoc control crops typically produced 600 grams of cannabinoids per tree each growing cycle: US\$1200 - \$1800. The Roots RZTO pilot represents a potential 25 percent increase in yield.

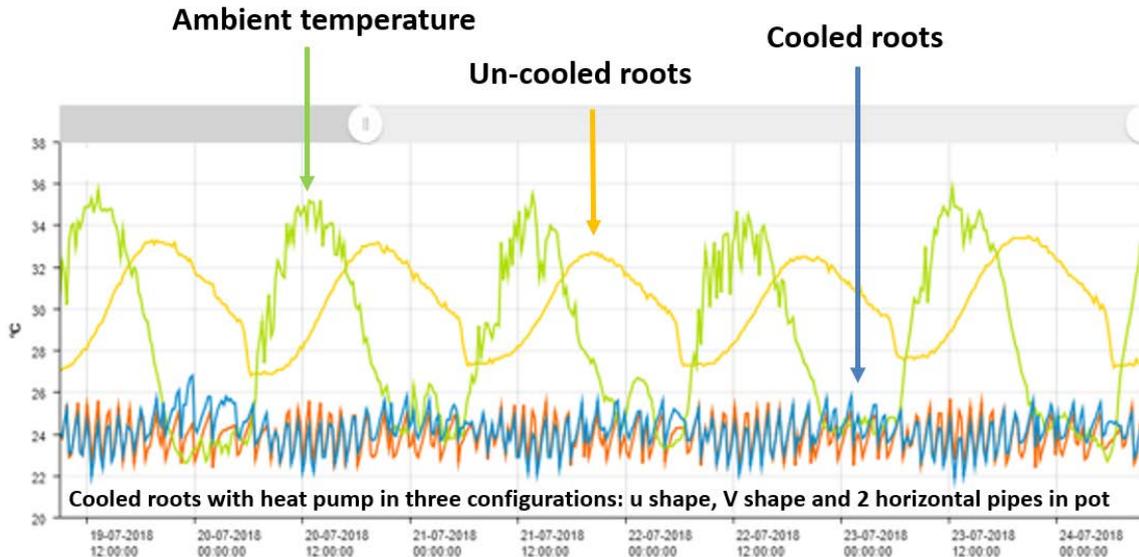
Roots CEO, Dr Sharon Devir said, “The interim results from this proof of concept are very promising. When you consider that most commercial cannabis greenhouses have thousands of plants, the increased yields, shortened growing cycles will add up to a significant financial benefit to farmers.”

“It is one reason we were keen to get into the ag-tech sector providing micro-climate control equipment for the root zone area to growers in the medicinal cannabis market – which expects up to \$31 billion in sales globally over the next four years.”

“Like other high-value crops where quality is of paramount importance that we have done proofs-of-concept on, we’re finding that by applying our RZTO technology to keep root zones at optimum temperatures we’re able to greatly increase yields and shorten growing cycles. So far in this summer pilot we have been able to keep the root zone of cannabis plants at more than 7 degrees below the root zones of the control crops. RZTO is providing increased protection against heat and stabilising the temperature range between night and day.”

¹ Brightfield Group | Report: Canada & International Cannabis Markets 2017

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RZTO technology is achieving a 7+ degree difference between cooled and uncooled roots

The pilot continues until November 2018 where Roots and Canndoc staff will examine the effects of root zone cooling on cannabinoid profile, content and composition, crop yield and weight, quality, uniformity, stem diameter and growing cycle duration.

[Click here](#) for a short video on the interim results shot in the testing greenhouse comparing the RZTO and control crop growth.

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About Roots Sustainable Agricultural Technologies Ltd:

Israeli-based, Roots Sustainable Agricultural Technologies Ltd. is developing and commercialising disruptive, modular, cutting-edge technologies to address critical problems being faced by agriculture today, including plant climate management and the shortage of water for irrigation.

Roots has developed proprietary know-how and patents to optimise performance, lower installation costs, and reduce energy consumption to bring maximum benefit to farmers through their two-in-one root zone heating and cooling technology and off the grid irrigation by condensation technology.

Roots is a graduate company of the Office of the Israeli Chief Scientist Technological Incubator program.

More information www.Rootssat.com

About Root Zone Temperature Optimization (RZTO):

Root Zone Temperature Optimization (RZTO) optimises plant physiology for increased growth, productivity and quality by stabilising the plant's root zone temperature. Leveraging the principle of Ground Source Heat Exchange (GSHE), Roots installs a closed-loop system of pipes. The lower part are coils installed at a depth where soil temperature is stable and not affected by weather extremes, and the upper part in the target crop's root zone just below the soil surface. Water flowing through the lower pipes is charged by the soil's stable

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temperature. The heated (or cooled) water is pumped through the pipes installed in the root zone, where the heat (or cold) is discharged.

ROOTS technology is based on three main configurations: (a) GSHE only; (b) Hybrid GSHE coupled with a heat pump; and (c) heat pump only. POC is often demonstrated with configuration (c) only to simulate and calibrate agronomic thresholds. The technology is appropriate for Greenhouses, Nutrient Film Technique (NFT) hydroponic greenhouses, small open fields, young tree plantations and for grow bag set ups.

This significantly increases yields, increases off season cycle planting options, improves quality, mitigates extreme heat and cold stress while significantly reducing energy consumption by stabilising and optimising the roots zone temperature.

About Canndoc Ltd

Canndoc Ltd is one of the leaders in the Israeli medical Cannabis industry since 2008. It produces top quality cannabis-based products under license from the Israel Ministry of Health following strict protocols and standards.

Canndoc has expertise in breeding, genetics, tissue culturing R&D, production and harvesting methods and protocols for dehydration and curing of Cannabis plants including the extraction of specific active ingredients.

This has resulted in the development of a comprehensive and unique method for cultivation and production of medical grade Cannabis in all facets of the value chain which are being supplied to thousands of patients in Israel since its inception.

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