

## **ASX and MEDIA RELEASE**

**11 December 2018**

### **Interim cannabis RZTO open field heating results show increase in plant wet weight of up to 272%**

- **Heated plant weight increased by 40 - 272% compared with un-heated control crop**
- **Root Zone Temperature Optimisation (RZTO) heating system used on several cannabis strains during late fall in Washington State**
- **World-first use of RZTO heating technology on cannabis in an open field**
- **Proof of concept conducted in collaboration with American Farms Consulting and its clientele of licensed cannabis producers.**

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company)** has released interim results showing a 40 to 272 percent increase in average cannabis plant wet weight in the world's first Root Zone Temperature Optimisation (RZTO) heating pilot on cannabis in an open field.

Conducted during October and November 2018 in an open field in Washington State, Roots' patented RZTO heating technology was used on several cannabis strains in various RZTO heating treatment architectures (total of 216 plants) and corresponding control groups (total of 81 un-heated plants). Cannabis roots were heated to stabilise root temperatures at optimal degrees despite air temperatures dropping below zero degrees centigrade.



Roots and American Farms Consulting achieved 40 to 272 percent increases in average cannabis plant wet weight in various strains under frost conditions in the world's first RZTO heating pilot

Roots CEO, Dr Sharon Devir said, “These interim cannabis results have exceeded our expectations, particularly as they were achieved in an open field with heavy frost conditions. The wide wet weight range was due to the different types of cannabis strains and heat management architectures. Our RZTO technology is the only way for growers to mitigate the risks of high-value crops in open fields, where plants are exposed to extreme external weather conditions.

“Companies like Roots are in a sweet spot in the US cannabis market at present. The recreational cannabis market in the United States has developed rapidly with many crops now being grown in the open field due to lower initial capital expenditure. However, as cannabis prices have fallen due to an increase in supply, growers are needing to turn to ag-tech equipment to dramatically improve crop yield and quality.

“In addition to increasing plant wet weight and corresponding yield by stabilising the root temperatures, we expect final results to show faster growth rates. This will allow growers to benefit from higher, premium prices for longer periods. With these performance figures, farmers can expect in most treatments and breeds to get a return on their investment within a year, depending on the price per gram the farmer receives.”

Chief executive at American Farms Consulting, Mr Elad Kohen said, “Roots’ RZTO technology has allowed our clients to better control crop climate during the tricky fall conditions, dramatically increasing wet weight by as much as 272 percent. Based on the local Washington state price per gram (US\$0.30) this yield increase can equate to an additional income of US\$60,000 to US\$405,000 per acre for 40% to 270% yield increase respectively. There is direct correlation in most strains between wet weight, size of the plant and the eventual yield per plant.

“The recreational and medical cannabis markets are highly competitive with growers increasingly looking to new, clean technologies to increase profitability and extend growing cycles. We look forward to continue and expand our working relationship with Roots, and together, help many producers increase the quality and productivity of their work.”

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

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

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