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## Root Zone Temperature Optimisation (RZTO) pilot trial commenced on grapevines

- Trial to test the effects of root zone heating of grapevines using RZTO commenced in Israel
- Pilot being undertaken on 220 plants over 2 years with results expected within 9 to 12 months
- Provides Roots access to large new market segment – European wine market alone is valued at US\$159Bn per year and growth at a CAGR of 6.7%

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company)** is pleased to report that it has commenced a pilot trial to test the effects of root zone heating of grapevines using its proprietary Root Zone Temperature Optimisation (RZTO) technology.

The trial is being undertaken at Calmor grapes in North Central Israel and in collaboration with a leading vines researcher and academic Dr Netzer Yishai. The pilot will test 220 plants over a 1,000m<sup>2</sup> patch. Half of the plants will be heated to 22-25°C range using RZTO technology with the other half used as a control group. The trial is expected to last up to 24 months with early results expected within 9 to 12 months.

The trial will utilise a heat pump to heat and cool water in the pipes running alongside the plants. Installation was complete, taking only three days through the use of a tractor tooled ROO's insertion device, allowing for fast and convenient installation.

RZTO technology optimises plant physiology for increased growth, productivity and quality by stabilising the plant's root zone temperature year round. Optimal root zone temperature is commonly known to be the most influential parameter in a plant's physiology besides water.



**Images:** RZTO technology being installed at site

The Company is confident that its RZTO technology will have a positive effect on the growth and yield of the heated plants, as previous studies have outlined grapevine with warmed root zones have shown accelerated leaf emergence, extended internodes and elongated shoots with larger leaves<sup>1</sup>.



Success in the pilot trial would leave Roots well placed to pursue opportunities with grape growers and wine producers globally. World wine production reached peak levels in 2018, with consumption continuing to grow<sup>ii</sup>. The total revenue generated in the wine market in Europe alone is estimated to reach US\$159Bn in 2020 and grow by 6.7% (CAGR 2020 – 2025)<sup>iii</sup>.

**Roots Executive Chairman and CEO, Boaz Wachtel said:** *"This pilot trial is a major step forward for Roots and any positive results have the potential to open up a number of opportunities for us in a very large market. We are confident that early study results, which will be reported in the coming months, will provide us with further validation of our technology and allow us to progress discussions with large grapevine growers and wine producers in Israel and across Europe."*

*"We continue to witness increased interest in our RZTO solutions as more countries and producers tackle the issue of food security and increase local cultivation to decrease reliance on exports. We look forward to providing further updates on R&D and commercial progress in the near term."*

**-ENDS-**

**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 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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**Forward Looking statements**

This announcement contains forward-looking statements with respect to ROOTS and its respective operations, strategy, investments, financial performance and condition. These statements generally can be identified by use of forward-looking words such as "may", "will", "expect", "estimate", "anticipate", "intends", "believe" or "continue" or the negative thereof or similar variations.

The actual results and performance of ROOTS could differ materially from those expressed or implied by such statements. Such statements are qualified in their entirety by the inherent risks and uncertainties surrounding future expectations. Some important factors that could cause actual results to differ materially from

expectations include, among other things, general economic and market factors, competition and government regulation.

The cautionary statements qualify all forward-looking statements attributable to ROOTS and persons acting on its behalf. Unless otherwise stated, all forward-looking statements speak only as of the date of this announcement and ROOTS has no obligation to up-date such statements, except to the extent required by applicable laws.

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<sup>i</sup> [https://www.researchgate.net/journal/1755-0238\\_Australian\\_Journal\\_of\\_Grape\\_and\\_Wine\\_Research](https://www.researchgate.net/journal/1755-0238_Australian_Journal_of_Grape_and_Wine_Research)

<sup>ii</sup> <https://www.bkwine.com/features/more/world-wine-production-reaches-record-level-2018-consumption-stable/>

<sup>iii</sup> <https://www.statista.com/outlook/10030000/102/wine/europe>