

19 May 2023

## **Roots secures USA design patent for Heat Exchange Probe (HEP) technology, completes second UAE project installation**

### **Highlights:**

- Roots has secured a design patent with the United States Patent Office for its unique Heat Exchange Probe (HEP) technology
- Technology will be designated in the US market as 'Adapter for Pipe Joints', and follows recent patent approval in Canada under the same designation
- Patent provides intellectual property protection for similar designs of heat exchangers and root zone temperature optimization products in the US agriculture market, for a period of 15 years
- Roots has also strengthened its market position in the United Arab Emirates with the completion of a second HEPs supply agreement with EliteAgro, a leading UAE-based agricultural company
- HEPs were installed across a 1.6 hectare greenhouse with 9,000 coffee plants, for EliteAgro's Coffee House Murmum Project
- The second coffee project was commissioned in the wake of beneficial results from the first HEPs supply agreement, which has now been operating for eight months
- Roots technology has a major opportunity to mitigate the growing risk associated with climate change of coffee production
- Recent studies have shown that climate change has the risk of reducing global Arabica coffee production by 45.2% and worldwide Robusta production by 23.5%<sup>i</sup>
- Ongoing global expansion initiatives progressing well – additional updates pending

Roots Sustainable Agricultural Technologies Limited (ASX: ROO, "Roots" or "the Company") is pleased to provide shareholders with the following update on activities in the United States and United Arab Emirates (UAE).

### **Patent Approval**

The United States Patent Office (USPO) has granted Roots's United States Design Application No. 35/513,369 under the designation 'Adapter for Pipe Joints'. The design patent is for Roots's unique Heat Exchange Probe technology and will provide 15-year protection for the Company from copying, manufacturing or using similar designs of heat exchangers and root zone temperature optimization products in the American Agricultural market.

The granting of the design patent secures an important piece of IP protection for Roots and unlocks significant commercial potential in the lucrative US market.

Roots will seek now a number of distribution agreements to sell its patented HEP technology in the United States, following similar patent approval in Canada last month (*refer ASX Announcement 19 April 2023*).



## Second UAE Supply Agreement

Roots is also pleased to confirm that it completed the second root zone cooling project for commercial-scale coffee production with Elite Agro (*refer ASX Announcement 16 December 2022*).

EliteAgro is a leading agricultural company headquartered in the UAE, with operations in several regional jurisdictions. Roots has been engaged by the group to facilitate, supply and install the HEPs as part of a root-zone cooling solution for EliteAgro's Coffee House Murmum Project.

The agreement included a shipment of parts and systems from Israel to the UAE, and the installation of two HEPs per plant across the 1.6 hectare, 9,000 plant greenhouse in collaboration with with local Elite Agro teams. The Company confirms that revenue generated from the project was US\$105,000 (~\$158,000), in line with its previous announcement.

Via data obtained from the first deployment of the technology, Elite Agro confirmed that it was able to maintain a stable root zone temperatures at 20°C, while inside greenhouse temperatures reached over 40°C. The results confirmed the capacity of the HEPs technology to maintain root zone area temperatures in a favourable growing range, which is significantly lower than air temperature in the region.

With a strong track record now established in the UAE, Roots hopes to secure additional orders in the region soon given the importance of agri-tech solutions to build commercial agriculture operations in a warm desert climate.

**Roots CEO, Boaz Wachtel said:** *Roots continues to strengthen its intellectual property portfolio, securing a major design patent in the most lucrative Agricultural market in the world - the USA. With new patents coming online we continue to build value with cutting edge products that will help farmers increase production, save energy and become more profitable. In addition, the UAE now offers a commercial project pipeline through ongoing business development and demonstration opportunities for the HEP systems. We look forward to providing further updates on our various installations and pending sales agreements in the near term."*



**ROOTS**  
Sustainable Agricultural  
Technologies Ltd.



***Images 1-3: Scale operations at EliteAgro's Coffee House Murmum Project in the UAE***



***Image 4: A close-up image of Roots' HEP technology in operation at the Coffee House Murmum Project***





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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 faced by agriculture today, including management of plant's root zone temperatures 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. Using Ground source heat exchange (GSHE) installations either alone, or in combination with heat pumps, or with heat pumps alone, ROOTS is able to provide accurate range of root zone temperatures for farmer and the plants to obtain the multiple benefits. 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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*This announcement was authorised by the Board of Directors of Roots Sustainable Agricultural Technologies Ltd.*

**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.sei.org/featured/global-challenge-adapting-coffee-changing-climate/>