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ASX and MEDIA RELEASE

## **Key PCT Patent filed for a machine capable of controlling root zone, irrigation and fertigation temperatures**

### **Highlights:**

- **Intellectual Property (IP) portfolio strengthened following the submission and filing of PCT (Patent Cooperation Treaty) for “Fluid Management System for Supporting Root Systems”**
- **The patent application is a follow up on the recent design patent granted in the US and incorporates insights from running a number of prototypes at Roots’ experimental farm in Israel**
- **Target markets for the new system include the general agriculture sector, home and municipal markets in various jurisdictions around the world**

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, “Roots” or “the Company”)** is pleased to advise it has submitted a key Patent Cooperation Treaty (PCT) following the submission of a provisional patent last year to the United States Patent Office (USPO). USPO granted Roots the design patent as announced on 19 May 2023.

The Company submitted a comprehensive PCT patent for “Fluid Management System for Supporting Root Systems” – the patent relates for cutting edge revolutionary unified function machine that controls root zone temperatures as well as controlling irrigation and liquid fertilization temperatures.

By controlling these three functions, Roots' machine will provide plants with optimal growing conditions, maintaining a stable root zone temperature to achieve production security and maximum yield, and at the same time irrigate with water and liquid fertilizer (with the same piping infrastructure) at a stable and moderate temperatures to allow full production potential of the plants to become reality. Generally speaking, extreme irrigation and liquid fertilizers’ temperatures often damage crop's growth during winter and summer.

A prototype of the machine was built and tested on a number of crops successfully at Roots's Israel farm. Two potential large market segments could be served by for such a machine – Home gardens and commercial farms. To the best knowledge of the Company, management are not aware of any other companies offering such a unified solution that saves considerable expenses to farmers having to buy, thus far, separate equipment for each function.

**Roots CEO Mr Boaz Wachtel said:** *"Roots is pleased to report the submission of key Patent to expand the product mix and cater to new markets. The new patent for a unified system for controlling root zone temperatures as well as irrigation and fertigation temperatures hold promise to provide food and ornamental production even under severe weather conditions. It is aimed both to serve farmers involved with food crops production and home food and ornamental growers as well as to the municipal market. Once the patent is approved, we shall submit to expand the IP coverage to additional jurisdictions beyond USA."*



**Below are some excerpts from the filed patent:**

#### **TECHNOLOGICAL FIELD**

The presently disclosed subject matter generally relates to a plant irrigation and fertilization system. More particularly, the presently disclosed subject matter relates to a fluid management system for thermally treating root zone to optimize root system development.

#### **BACKGROUND**

There is a growing need, due in part to climate change, to maintain stable and optimal root zone temperatures to increase production security and allow growth year-round of agricultural and ornamental plants. These plants also require irrigation and fertilization (i.e., fertigation) that are provided by state-of-the-art technologies that include drip irrigation systems that tap into a fertilizing tank to combine fertilization with drip irrigation systems. There is a perceived need, addressed in the presently disclosed subject matter to provide fertigation within optimized root zone temperatures to achieve top agronomical performance of the plants.

The presently disclosed subject matter provides an “all in one” system for irrigation, fertigation and root zone temperature management and optimization of all functional elements managed by smart controls to provide a full solution to grow agricultural and ornamental plants year-round. The system according to the presently disclosed subject matter can be implemented in closed infrastructures as exemplified by covered agricultural environments as well in an open-air gardens and fields. The fluid management system can be installed as a stand-alone system in connection with a piping network and in some embodiments may be installed onto existing systems as a retrofit system by communicating with state-of-the-art irrigation control systems with add-on capabilities.

**-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 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. For more information visit [www.Rootssat.com](http://www.Rootssat.com)

**About Root Zone Temperature Optimization (RZTO)**

Root Zone Temperature Optimization (RZTO) systems optimises plant physiology for production security, increased growth, productivity, and quality. By stabilising the plant's root zone temperature, i.e. cooling the roots during the summer and heating them during the winter multiple benefits can be obtained for the farmer and plant: significant yield increase, option for early or late planting, improved quality, mitigation of extreme heat and cold stress and plant's immune system boosting. These benefits are achieved under significant energy reduction and savings compared with air heating and cooling. Using unique heat pumps, either alone or in combination with Ground source heat exchange (GSHE) installations, ROOTS is able to provide accurate stable range of root zone temperatures for farmer and the plants year round. ROOTS is a global leader in Root zone temperature management.

*This announcement was authorised to be given to the ASX by the Roots Executive Directors, Mr Boaz Wachtel and Mr Sharon Devir.*

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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.