

## ASX and MEDIA RELEASE

13 December 2017

### **Roots successfully completes world-first agronomical proof of concept of its closed-cycle 'Irrigation by Condensation' patented technology**

- **Roots' patented 'Irrigation by Condensation' technology grows lettuce, spinach and tomatoes only with condensation of the humidity in the air.**
- **Shows the ability to facilitate food production in areas with no access to irrigation water from any other source.**
- **Commercialisation to start at the end of 2018.**

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company)**, an Israel-based agri-tech company developing and commercialising cutting-edge technology to help farmers solve the world's food supply challenges, has completed proof of concept of its patented 'Irrigation by Condensation' closed-cycle technology where three major crops were grown only with condensation of the humidity in the air.

The proof of concept took place during the 2017 summer and autumn at Roots' experimental farm, Beit Halevy, in central Israel during a rainless period. Irrigation by Condensation technology sustained the growth of lettuce, spinach, and tomatoes with only condensed moisture from the air which irrigated the crop and chilled its roots with no additional water used for irrigation from any water source. Results were independently verified by world-renowned Professor Emeritus, Dr Uzi Kafkafi, of the Hebrew University Faculty of Agriculture, Food and Environment.

Commercialization at the first potential customer site is expected to begin at the end of 2018 as Roots utilises its extensive proprietary knowledge on integration, operation and scaling of its technology solutions.

Dr Sharon Devir, CEO and Co-founder said, "A successful proof of concept for our patented 'Irrigation by Condensation' technology shows that this has the potential for major economic and social impact worldwide, especially among small and medium plot holders, possibly even in arid and semi-arid zones."

"Roots believes that Irrigation by Condensation could help create or dramatically increase the possible food production for animal and human consumption in areas that often experience water scarcity. It could provide food security and income to many farmers globally and also help prevent hunger, poverty and migration due to lack of irrigation water and access to food."

Non-Executive Director, Roots Co-founder and inventor of the patented technology, Mr Boaz Wachtel, explains: "Roots' closed-cycle Irrigation by Condensation system is the only technology that could facilitate food production - and positively impact the entire food chain. Irrigation by Condensation is a standalone system that allows farming in remote locations previously unsuited to

food production due to water shortages. Our next stage of testing aims to take this autonomy one step further by allowing the system to work completely off any electricity grid.”

“The system is a closed cycle of chilled water which irrigates crops by condensing water from moisture and humidity in the air and soil on the external surface of pipes laid near the crops. This is possible because the relative humidity at night is high and sufficient to sustain some of the crop’s agricultural growth completely off-grid.”

**Summary of ‘Irrigation by Condensation’ technology:**

- Water is cooled in a well-insulated water tank to below dew point temperatures.
- Cold water is circulated, with a small flow pump, in pipes laid in the field or greenhouse to condense humidity in the air on the external surface of pipes.
- Pipes are placed near plants in various configurations – generally horizontally at ground level.
- For many crops no additional irrigation is required to maintain plant survival and food production and initiate a year-round, sustainable food chain for humans and animals.
- The amount of water produced and required energy depend on relative humidity, air temperature, pipe numbers and surface area, and water temperature circulating in the pipes.

**Next Steps**

Testing has expanded to wheat to exhibit the potential to grow a major staple crop from seeds. Testing will soon commence on the system's ability to sustain agricultural growth in semi-arid and arid areas in Israel.

The next stage toward commercialising the system is to provide photovoltaic power source to chill and circulate the water in a closed cycle and create a standalone, one-time water fill up system able to sustain entire growth cycles of major food crops, 365 days a year, independently of any external water and energy sources.

This proof of concept of Irrigation by Condensation technology is the first program with funds raised from the recent IPO on the Australian Stock Exchange. Funds raised will also be used to: fund commercialisation of current Roots zone temperature optimization - RTZO pilot programs; expand into global markets; and increase sales and marketing and research and development.

**About Roots Sustainable Agricultural Technologies**

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)

-ENDS-



**Investor Enquiries:**

Justin Foord

Market Eye

E: [Justin.foord@marketeye.com.au](mailto:Justin.foord@marketeye.com.au)

P: +61 2 8097 1200

**Media Enquiries:**

Tristan Everett

Market Eye

E: [tristan.everett@marketeye.com.au](mailto:tristan.everett@marketeye.com.au)

P: +61 403 789 096

**Corporate Enquiries:**

EverBlu Capital

E: [info@everblucapital.com](mailto:info@everblucapital.com)

P: +61 2 8249 0000