

## ASX and MEDIA RELEASE

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### **Roots unveils world's first solar or wind-operated Irrigation by Condensation (IBC) system that works 'off the grid'**

- **Roots' IBC off-grid system produces food crops using irrigation sourced only from humidity in the air and energy from the sun or wind**
- **Allows small and medium scale food production in areas with no stable access to local electricity or water, including semi-arid areas, benefiting farmers who suffer from water quality, scarcity and infrastructure access issues**
- **Will be unveiled at Agri-Tech Israel 2018 International Exhibition and Conference (8-10 May)**
- **High protein crops including beans and alfalfa were planted at the company's research site in Israel to demonstrate the system's ability to provide irrigation for a complete growth cycle**
- **The off-grid installation follows a successful proof of concept with electric power, displaying the system's ability to sustain full growth cycles of several crops**

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company)** has successfully installed the world's first stand-alone Irrigation by Condensation (IBC) system utilising solar and/or wind energy capable of growing and sustaining entire growth cycles of food independent of the electricity grid or a normal water supply.

Roots' IBC off-grid system was specifically designed to enable small and medium scale farmers to grow food crops irrigated only from humidity in the air, even in remote semi-arid areas suffering water scarcity and quality issues with no access to grid electricity or irrigated water. It follows the successful proof of concept conducted late last year with electric power, which demonstrated the technical and agronomical ability to sustain the full growth cycle of several crops.

The 'Irrigation by condensation off-grid' installation is designed initially for growing high protein crops including beans and alfalfa and will be showcased at one of the world's leading agriculture exhibitions, *Agri-Tech Israel 2018*, 8 - 10 May. Many delegates have expressed interest in viewing the IBC system as well as the Company's root zone heating and cooling technology.

Boaz Wachtel, the inventor of the technology and the co-founder of Roots said, "Roots' successful installation of the world's first solar or wind-powered IBC system demonstrates a viable decentralised solution for many of the 500 million smallholder farmers who currently struggle with water for crop production.

"Our patented IBC system has the ability to play a tangible role in benefiting many of the 2 billion people across the world who depend on these smallholder farms for their livelihoods, by providing a more sustainable living for farmers, families and the communities in which they operate. This is particularly important in areas where rainfall is scarce.

“The IBC system is also designated for use in advanced agricultural countries to irrigate plantations, covered crops in greenhouses and anywhere where water scarcity is the limiting production factor. The commercial potential for Roots is significant.”

### **How it works**

Dr. Sharon Devir, Roots CEO and co-founder explains, “Roots’ breakthrough installation now operates using a combination of wind turbines and photovoltaic power sources to chill and circulate the one-time fill-up water tank in a closed cycle. It creates a stand-alone system able to sustain entire growth cycles of food crops, 365 days a year, independently of any external water and energy sources.

“The energy produced by either solar panels and/or wind turbines is used to chill the one-time fill-up water tank to below dew point in an insulated tank. A small flow pump then circulates this water in a closed cycle in pipes laid near the plants in the field or greenhouse. This produces condensation on the external surface of the pipes that flows by gravitation to the soil and roots.



*Condensation forms on the external surface of the pipes that flow by gravitation to the soil and roots.*

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. Following a one-time purchase expense, the system operates autonomously after a single water tank fill at installation. After this, the farmer will not have to pay for water or energy for years to come.

“Our system is also effective in semi or arid areas due to high humidity at night that is sufficient in most cases to produce the water required to sustain growth cycles.

“Roots’ IBC off-grid system could also assist forestation efforts to fight desertification by providing young trees with water during the early stages of growth, before their roots reach the depth that would allow them to survive the harsh arid environment.”

Roots is seeking technology partners to make the IBC off-grid system affordable to low income farmers, as well as looking to collaborate with international and government institutions interested in marketing and/or subsidising the disruptive technology for low income level farmers.

Roots hopes to offer the first commercial version of the IBC off-grid system for sale by the end of the year.

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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)

**Investor Enquiries**

Justin Foord  
Market Eye  
[justin.foord@marketeye.com.au](mailto:justin.foord@marketeye.com.au)  
+61 2 8097 1200

**Media Enquiries**

Tristan Everett  
Market Eye  
[tristan.everett@marketeye.com.au](mailto:tristan.everett@marketeye.com.au)  
+61 403 789 096

**Corporate Enquiries:**

EverBlu Capital  
E: [info@everblucapital.com](mailto:info@everblucapital.com)  
P: +61 2 8249 0000