

ASX and MEDIA RELEASE

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Roots conducts world-first table grape harvest irrigated solely by the condensation of humidity in the air

- **World's first crop of table grapes grown and sustained solely with water obtained from condensation of humidity in the air.**
- **Roots' Irrigation by Condensation (IBC) off-grid system produces food crops using irrigation sourced only from humidity in the air and energy from either electricity, sun or wind.**
- **IBC 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.**
- **Irrigation by Condensation (IBC) solar and/or electric versions have now sustained nine crops including grapes, avocado trees, beans and alfalfa.**

Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company) has successfully conducted the world's first table grape harvest irrigated with its patented Irrigation by Condensation (IBC) solar and/or electric system which creates water solely from the condensation of humidity in the air.

The vines, planted in May 2018 and harvested in July 2019 at the Roots research and development hub in central Israel, were sustained throughout the year with water condensed on the external surface of pipes.

Boaz Wachtel, Roots co-founder and inventor of the IBC technology, said, "We are extremely pleased to harvest the first grapes grown only with irrigation from humidity in the air. The solar and electric versions produced enough water, under the 'deficit irrigation' concept to sustain the grape vines. This is a major achievement for Roots and we see great potential of the IBC system to address irrigation issues around the world for small and medium farm holders.

"The technology has great potential to answer acute needs of farmers around the world seeking access to clean water to irrigate small and medium plots. As climate change takes hold access for adequate quantity and quality to water to irrigate crops becomes a major issue, as aquifer or other water sources are being depleted and polluted at a rapid pace."

"Roots' IBC solution has attracted wide attention in the industry since we debuted it in May last year at one of the world's leading agriculture exhibitions, *Agri-Tech Israel* 2018. Now that we've shown its effectiveness on nine different crops it is even being compared by some as comparable with the invention of drip irrigation."

How Irrigation by Condensation works

Roots' breakthrough IBC installation for grapes used a combination of electric and photovoltaic power sources to chill and circulate a one-time fill-up water tank in a closed cycle. This created a stand-alone system that is able to sustain the entire growth cycle of the grape crop, 365 days a year, independently of any external water sources.



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

The energy produced by either the solar panels or electricity supply was used to chill the one-time fill-up water tank to below dew point in an insulated tank. A small flow pump then circulated this water in a closed cycle in pipes laid near the vines. This produced condensation on the external surface of the pipes that flowed 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.

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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

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