

17 December 2019

## **Positive RZTO Results from First Stage of Protein-based Plant Program**

- **Global warming induces extreme climate conditions on agricultural crops which negatively impacts ripening**
- **First RZTO results on two protein model grown plants in an open field (peas and beans) showed the cooling of the roots during summer yielded increased weight**
- **Results position Roots favourably as it pursues opportunities in the organic protected high end plant-based meat segment**
- **Second stage of heating roots in beans and peas starts next month**

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company)** is pleased to report on the first stage Proof of Concept (POC) study on the effects of Roots' patented Root Zone Temperature Optimization (RZTO) technology on protein-based model plants which yielded very encouraging results.

The roots of two protein-based model peas and beans plants were cooled by deploying RZTO. Observations at the end of the summer growing cycle at Roots' R&D facility in Bet Halevi, Israel, resulted in **57%-67%** more pods yield per plant for both the peas and beans when compared with uncooled plants. Plant roots were cooled by the vertical RZTO 'stab', and horizontally by RZTO architecture respectively.

While protein percentage was slightly affected, total pods protein content increase by 77% and 55% in peas and beans respectively in cooled plants, when compared to uncooled plants<sup>1</sup>

Roots is encouraged by these results as the POC demonstrated that RZTO use resulted in weight increase per plant and more pods being generated per plant. This could have significant benefits for growers in a commercial environment.

The protocol of the POC conducted at Roots' facility was organic and used no fertilizer or other chemicals. The Company believes that this initiative will be of particular interest to the plant-based meat industry. Roots is currently planting another cycle of beans and peas for the second stage of the POC growing cycle in an open field. During this cycle, the plants will be heated using Roots' technology throughout the coming winter.

The graph below illustrates that while outside measured temperatures peaked at more than 30<sup>c</sup> degrees, uncooled root zones peaked at 25<sup>c</sup> degrees and cooled roots zones were never more than 19<sup>c</sup> degrees.

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<sup>1</sup>Protein content was calculated according to common practice in the literature based on ratio between measured N content and crude protein on a ratio of 6.5.



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**Roots CEO, Dr. Sharon Devir said,** *“We are very encouraged by the results from this POC, conducted at our experimental farm, without the use of fertilizers, herbicides and pesticides using our proprietary RZTO technology. The results may support our hypothesis that by cooling roots using RZTO, the plant will increase the total pods yield and therefore, increase protein content. This is very promising for Roots as it pursues opportunities in the high end, organic artificial meat replacement industry which relies on industrially grown, high protein crops with heavy use of herbicides and pesticides. Our organic-based protein crops, free of chemicals, are thus likely to have broad appeal.*

*“The second stage of this important POC commences next month and we look forward to reporting on progress. This is indeed another positive development for the growing appeal of RZTO.”*

**-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 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)

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