

19 August 2019

Roots expands into plant-based meat market

- **Trial planting program begun to enter the plant-based meat market by increasing the protein content of several crops using Roots' RZTO and IBC technologies**
- **Follows 40% yield increases on beans using Roots RZTO technology¹**
- **Several crops including beans and peas were chosen for planting for their high protein content**
- **The protein derived from peas and beans are one of the key and vital ingredients in plant-based meat**
- **If successful, Roots will continue to allocate further marketing resources to develop their offering to the plant-based meat market**
- **The plant-based meat market is an emerging industry and is expanding rapidly**
- **Increasing awareness of the environmental impact and negative health effects of producing and consuming real meat is accelerating a trend towards plant-based meat**

Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company) has initiated a planting program specifically aimed at examining the effects of its RZTO and IBC technologies on several protein-laden crops to increase the content of leghemoglobin.

The crops will be planted at Roots' research and development hub in central Israel where the protein content of the beans and peas will be measured in a two-part program using the company's root zone temperature optimisation (RZTO) and Irrigation by Condensation technologies. Initially root zone cooling will be measured, then in the autumn and winter a second round of crops will be tested using root zone heating. Roots' Irrigation by Condensation (IBC) technology will then be used to examine the effect on protein content of the 'deficit irrigation' concept using irrigation from just humidity in the air.

The results from each plot will be compared with a control plot planted under the same ambient conditions and results compared.

Leghaemoglobin is a form of protein in plants and contains Heme. Heme is the key ingredient in plant-based meats (similar in look, preparation style and flavour as beef, but without the environmental impact and negative health effects of real beef). Beans and peas are examples of crops from which Heme can be extracted.

Growing interest in meat replacement crops has accelerated the search for high protein vegetables and technologies that can increase the protein content in any given crop. Reasons include health benefits of plant-based proteins over meat sources, ethics around livestock management, and environmental issues. For example, 1kg of beef requires 15,415 litres of water. Whereas production of 1kg of pulses has a water footprint of 4,055 litres of water, 74% lower¹.

¹ <https://rootonefood.co.uk/pages/plant-based-protein>



Companies such as Beyond Meat (NASDAQ: BYND) and Impossible Foods have developed versions of plant-based substitutes for meat which are now sold commercially. Beyond Meat's market capitalisation has increased by over 500% since its May 2019 IPO to USD\$10.0B².

Roots CEO, Dr. Sharon Devir said "Roots is aiming to enter the meat replacement market with this research initiative. We plan to address a major market that is surging due to the changing way we eat. Growing concerns about sustainable consumption of animal protein has urged consumers to elect for alternative protein sources, furthering demand for plant-based meat products. The global demand for plant-based meat is estimated to reach US\$27.9Bn by 2025.³

"Reports state bean and pea protein is becoming more accepted in communities and is rapidly gaining popularity among plant-based meat manufacturers at a global level thanks to its high protein content and health benefits. Leading manufacturers in the global plant-based protein industry have shifted resources to developing common meat products, using pea protein as a base for future product development."

The Company is continuing to look for value add opportunities in the plant-based meat sector and will keep the market informed.

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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

² Source: Yahoo Finance as at 14 August 2019

³ <https://www.marketsandmarkets.com/ResearchInsight/plant-based-meat-market.asp>



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