

30 October 2018

Roots enters new market and segments, granted patents and subsidies in Q3 2018

September 2018 Quarterly Report and Appendix C

Highlights:

International marketing and sales

- Entered South Korea's ag-tech market with reseller agreement with Ezfarm
- Secured first commercial order for RZTO systems in South Korea
- Israeli Government subsidy for RZTO technology approved for basil growers
- Patent granted for Roots' Irrigation by Condensation (IBC) technology in India

Technology

- World-first proof of concept using RZTO to cool the roots of medicinal cannabis in Israel, promising interim results
- RZTO heating system installed for recreational cannabis in open field in the United States
- Successful RZTO pilot cooling the roots of greenhouse-grown lettuce, where fresh weight increased more than 130 percent

ROOTS Sustainable Agricultural Technologies (ASX: ROO, the "Company" or "ROOTS") is pleased to provide its quarterly update for the three months ending 30 September 2018.

Commenting on the Company's continued progress over Q3 2018, CEO Sharon Devir said, "Roots is the only company in the world with commercial root zone cooling technology. Our activities this quarter have demonstrated the many benefits of root zone cooling on various crops and growing conditions. These results have shown the tangible benefits for farmers including enhanced plant growth, shorter growing cycles as well as improved quality and considerable energy savings. Results from pilots in countries where extreme heat is a factor are expected in the coming quarter and we are confident our RZTO cooling technology will be effective in stabilising crop roots even during extreme weather conditions."

"Roots continues to progress its commercialisation plans with a focus on converting these successful pilots into paid customers in our six main territories. In addition to our ongoing R&D and pilot programs, we've also been active in looking at new segments which offer significant growth opportunities for the business, such as supplying equipment to the cannabis market. Interim cannabis results are promising and given the size and scale of the global market, we are optimistic about our ability to generate sales in this sector."

"We continue to move towards commercialisation with our disruptive Irrigation by Condensation (IBC) technology, which offers a solution to the severe water shortages and droughts which are affecting large areas of the world at present. This technology could help create or dramatically increase crop production in areas where erratic rainfall and water scarcity has affected food production."

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Financials

The Company's cash balance as at 30 September 2018 was US\$1,098 million.

The Company expects that the cash burn rate will continue in line with expectations as it continues commercialization efforts and product engineering in new markets, investment in demonstration and pilot installations, ongoing new product development and collaborations. The Appendix 4C attached to this report contains the Company's cash flow statement for the quarter.

Operational updates during the quarter

Ongoing project updates

China

The first commercial RZTO sale and installation in China worth A\$323,000 (US\$257,000) is nearly completed. This is part of the binding exclusive distribution agreement for the China market with Dagan Agricultural Automation ("Dagan"), one of the world's leading global ag-tech integrators. Exclusivity of the distribution arrangement is conditional on \$US19 million in sales on the basis of the agreement continuing for five years.

TAP Collaboration

During the quarter, Roots completed a pilot combining RZTO with NFT technology, developed by Teshuva Agricultural Products (TAP), successfully cooling the nutrient temperature of hydroponic lettuce in Central Israel. The two technologies combined to ensure the water that delivered dissolved nutrients to hydroponic bare plant roots remained within favourable growing ranges, more than 11 degrees lower than the ambient air temperatures in the greenhouse of nearly 40 degrees. This increased production quality and shortened the growing cycle by about 20 percent compared to traditional plantings where no nutrient temperature control was used.

New projects

South Korean ag-tech market

During the reporting period Roots expanded its presence in North East Asia, signing a non-exclusive reseller agreement for the South Korean market with leading ag-tech distributor Ezfarm. The binding agreement allows Ezfarm to import and resell Roots' patented root zone temperature optimisation (RZTO) technology for an initial one-year term, with the option to renew the agreement annually.

Israeli Government subsidy for RZTO technology

In September, Roots' RZTO technology was approved for an up to 30 percent subsidy for basil growers by the Israeli Government. The subsidy was granted under the Precision Ag Program, a collaboration between the Israel Ministry of Agriculture and the Ministry of Finance, which is investing AU\$17.6 million in innovative ag-tech and machinery until the end of 2019. The approval follows a successful pilot in the Israeli winter where the roots of traditional summer basil plants were heated an average of up to five-degrees warmer using Roots' RZTO technology. The heated plants grew faster than control plantings, increasing yield and average plant size by 65 and 35 percent respectively. As part of the approval process, Roots' RZTO technology was subject to lengthy and comprehensive analysis involving government economists, agronomists and engineers who examined these results, ROI, energy savings and increased profit potential for farmers.

Entry into new segment with two cannabis pilots

Roots entered a new segment last quarter, commencing two proof of concepts on cannabis plants in Israel and the United States. In a world-first, Roots is conducting a proof of concept with its root zone cooling technology on medicinal cannabis grown in a greenhouse in northern Israel. The proof of concept with one of Israel's leading medicinal cannabis growers, is examining the impact of root zone cooling on crop yield, quality, duration of growing cycle, cannabinoid content and composition. Interim results are promising, showing a more than 25 percent vegetative increase and enlarged stem diameters on cooled cannabis plants in contrast to control crops.

In a pilot with American Farms Consulting (AFC) in Washington, Roots has installed its RZTO cooling system on cannabis seedlings in a 30,000 sq. ft. open field farm. AFC is a licensed breeding platform for cannabis growers for the legal cannabis industry in Washington State. Assuming the pilot is deemed a success, AFC will then purchase the RZTO system for future use. The US cannabis market is currently estimated at US\$7 billion and is expected to increase to US\$22 billion by 2021.

IBC patent granted in India

During the quarter Roots was granted a divisional patent for its Irrigation by Condensation Technology (IBC) in India. The patent secures Roots' intellectual property in one of the largest potential markets for IBC technology with the country currently suffering from the worst water crisis in its history. IBC technology facilitates crop production in semi-arid areas without access to irrigation. To capitalise on the patent and address the urgent need in India, Roots is in the process of developing a range of additional solar-operated and electric versions of its IBC systems tailored specifically for small holder units of up to a quarter acre as well as mid-sized systems for larger plots.

Successful RZTO pilot on Romaine lettuce

A successful greenhouse pilot using Roots' RZTO cooling technology on Romaine lettuce has increased lettuce leaf fresh weight by 132 percent and nearly halved growing time. Cooled lettuce plants had an average fresh weight of 502g, compared to an average weight of 216g for non-cooled plants. The pilot was conducted during the Israeli summer over 27 days between July and August 2018, at Roots' research site in central Israel. Lettuce roots were cooled to remain relatively stable around 24 degrees centigrade despite air temperatures in the greenhouse frequently topping 34 degrees. In comparison, roots of control planting fluctuated between 28 and 34 degrees.

Additional pilot program updates

In ag-tech pilot programs and proofs of concept play an important role in showcasing the effectiveness of the technology on different crop types in different growing conditions.

The following pilots were started during the quarter:

- Medicinal cannabis cooling in greenhouse in Northern Israel;
- Legal cannabis cooling in open field in Washington State, USA;
- Sorghum using IBC technology
- Ongoing avocado R&D in the north of Israel
- Tomato cooling in southern Israel
- Peas cooling in southern Israel
- Apricot trees in Australia
- Pepper in the south of Israel, desert climate.

Sales

As alluded to previously, the final instalment of the first commercial RZTO sale and installation in China was completed in the quarter.

Roots secured its first commercial order in South Korea for two RZTO systems to be used with 'TapKit', an NFT technology developed by Teshuva Agricultural Projects (announced 3 October 2018). The order, valued at AU\$22,500 in two installments, is expected to be the first of many larger orders, with a high level of interest in the technology shown by Korean farming groups.

Outlook

Roots expects to secure further RZTO sales from China in the near future. South Korea also offers additional sale opportunities with a high level of interest in RZTO technology in combination with the TapKit hydroponic greenhouse from Teshuva Agricultural Projects.

Interim RZTO results on cannabis crops have already attracted interest from several key players in the market as well as new potential customers for Roots to engage.

Roots will continue to perform RZTO proof of concept and pilot demonstrations with new and potential customers on greenhouse crops, hydroponics and young trees in open fields in Israel, Spain, South Korea, USA and Australia. As existing pilots are successfully completed, Roots expects to convert these into sales.

The company continues to move ahead with the commercialisation of its Irrigation by Condensation (IBC) technology and anticipates launching a semi-commercial version of its standalone alternative energy system later this year. Roots will also continue developing a range of additional IBC systems tailored specifically for small holder units of up to a quarter acre.

-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



ROOTS

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Appendix 4C

Quarterly report for entities subject to Listing Rule 4.7B

Introduced 31/03/00 Amended 30/09/01, 24/10/05, 17/12/10, 01/09/16

Name of entity

Roots Sustainable Agricultural Technologies Ltd

ARBN

619 754 540

Quarter ended ("current quarter")

30 September 2018

Consolidated statement of cash flows	Current quarter US\$'000	Year to date (9 months) US\$'000
1. Cash flows from operating activities		
1.1 Receipts from customers	-	172
1.2 Payments for		
(a) research and development	(89)	(602)
(b) product manufacturing and operating costs	(73)	(213)
(c) advertising and marketing	(118)	(513)
(d) leased assets	-	-
(e) staff costs	(204)	(513)
(f) administration and corporate costs	(31)	(338)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	-	-
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	-
1.8 Other (institutes, IPO costs)	(45)	(160)
1.9 Net cash from / (used in) operating activities	(560)	(2,167)
2. Cash flows from investing activities		
2.1 Payments to acquire:		
(a) property, plant and equipment	-	(35)
(b) businesses (see item 10)	-	-

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Consolidated statement of cash flows		Current quarter US\$'000	Year to date (9 months) US\$'000
	(c) investments	-	-
	(d) intellectual property	-	-
	(e) other non-current assets	-	-
2.2	Proceeds from disposal of:		
	(a) property, plant and equipment	-	-
	(b) businesses (see item 10)	-	-
	(c) investments	-	-
	(d) intellectual property	-	-
	(e) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (Restricted cash)	-	(15)
2.6	Net cash from / (used in) investing activities	-	(50)

3.	Cash flows from financing activities		
3.1	Proceeds from issue of shares	-	-
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (IPO costs)	-	-
3.10	Net cash from / (used in) financing activities	-	-

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of quarter/year to date	1,768 (*)	3,544
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(560)	(2,167)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	-	(50)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-

+ See chapter 19 for defined terms

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Consolidated statement of cash flows		Current quarter US\$'000	Year to date (9 months) US\$'000
4.5	Effect of movement in exchange rates on cash held	(110)	(229)
4.6	Cash and cash equivalents at end of quarter	1,098	1,098

(*) Cash and cash equivalents as presented in the financial statements for the six months ended 30 June 2018, which were signed on August 28, 2018.

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter US\$'000	Previous quarter US\$'000
5.1	Bank balances	1,098	1,768 (*)
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	1,098	1,768

(*) Cash and cash equivalents as presented in the financial statements for the six months ended 30 June 2018, which were signed on August 28, 2018.

6.	Payments to directors of the entity and their associates	Current quarter US\$'000
6.1	Aggregate amount of payments to these parties included in item 1.2	(56)
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
6.3	Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2	
	Salaries and wages paid to Directors and/or Director related entities	US\$34k
	Corporate advisory fees paid to a Director related entity	US\$22k

7.	Payments to related entities of the entity and their associates	Current quarter US\$'000
7.1	Aggregate amount of payments to these parties included in item 1.2	(81)
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
7.3	Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2	
	Payments for research and development to a related entity.	

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8. Financing facilities available <i>Add notes as necessary for an understanding of the position</i>	Total facility amount at quarter end US\$'000	Amount drawn at quarter end US\$'000
8.1 Loan facilities	-	-
8.2 Credit standby arrangements	-	-
8.3 Other (please specify)	-	-
8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.		

N/A

9. Estimated cash outflows for next quarter	US\$'000
9.1 Research and development	(84)
9.2 Product manufacturing and operating costs	-
9.3 Advertising and marketing	(124)
9.4 Leased assets	-
9.5 Staff costs	(194)
9.6 Administration and corporate costs	(99)
9.7 Other (provide details if material)	-
9.8 Total estimated cash outflows	(500)

10. Acquisitions and disposals of business entities (items 2.1(b) and 2.2(b) above)	Acquisitions	Disposals
10.1 Name of entity	N/A	N/A
10.2 Place of incorporation or registration		
10.3 Consideration for acquisition or disposal		
10.4 Total net assets		
10.5 Nature of business		

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Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.



Sign here: (Company secretary)

Date: 30 October 2018

Print name: Sarah Smith

Notes

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.