



31 January 2020

## December 2019 Quarterly Report and Appendix 4C

### Highlights

- Enters Italian and Canadian ag-tech markets for the distribution of patented Root Zone Temperature Optimization (RZTO) technology.
- Positive results released from Initial root zone cooling of protein-based plant program.
- Design patent for ROOT's revolutionary RZTO heat exchange stub registered in Australia.
- A\$820,000 raised to commercialise RZTO in various jurisdictions, increase marketing and sales activity and pursue cannabis and hemp opportunities in North America.
- Additional raise is expected before the end of January.
- Attending major N. American Cannabis conferences produced over 80 leads to pursue Q 1 2020
- Sale of RZTO system and heat exchange stub to Israeli medical cannabis producer.
- Boaz Wachtel appointed CEO and Executive Chairman January 2020

**Roots Sustainable Agricultural Technologies Limited (ASX: ROO, Roots or Company)** is pleased to provide its quarterly update for the three months ending 31 December 2019.

**Commenting on the Company's progress over Q4 2019, Roots Executive Chairman and CEO, Boaz Wachtel said:**

"The December quarter was marked by operational and collaborative advances, highlighted by the successful results from the planting program first initiated back in August 2019. The Company significantly advanced its product offerings for the General Ag and cannabis sector, specifically the deployment of RZTO technology throughout the later sector. The Company received orders to expand systems coverage installations following pilot demo installation with Cannabis growers. This is a strong indication that installed systems provide the benefits expected from Roots' technology. The global cannabis market is one that presents considerable upside and more near-term revenue opportunities for the Company, and thus demands greater emphasis.

"Roots is also positioned favourably to pursue opportunities in the organic protected high-end plant-based meat replacement sector and pursuing opportunities here is also priority.

"With strengthened footprints in the lucrative global cannabis and artificial meat sectors, Roots progressed a number of collaboration agreements which further illustrated the demand for our root zone heating and cooling technology around the world – as shown by our entry into the Canadian and Italian ag-tech markets.

"2020 is looming as a transformational year for Roots, as we look to establish our footholds in these lucrative sectors while simultaneously advancing our patented technology."

### Financials

The Company's cash balance as at 31 December 2019 was US\$341K (A\$487K).

The Company completed a private placement in October 2019, raising A\$820,000. Funds were used to commercialise RZTO in various jurisdictions, increase marketing and sales activity as well as opportunities in North America.

The sale orders of the RZTO system and heat exchange stub in Q4 totalled US\$ 71K (A\$102K), indicating a rise in sales and their size to the Cannabis sector.



## **Operational updates during the quarter**

### **Significant advancements made for the deployment of RZTO in the cannabis sector, especially in Israel and N. America.**

Roots continued to pursue opportunities in the global cannabis sector, highlighted by numerous developments pertaining to the deployment of the Company's RZTO technology.

In October, Roots announced its RZTO cooling technology had increased the yield of dry cannabis flowers by up to 118 per cent. The increase was compared to uncooled crops from various strains within a climate-controlled greenhouse at CannDescent's facilities in Southern California.

The RZTO cooling system was used to stabilise the roots of cannabis plants at an optimal temperature of 21°C (70F), despite ambient air temperatures within the greenhouse reaching 30°C (85F) and outside temperatures topping 43°C (120F).

Increases of 30 and 118 per cent were achieved during the US summer on two cannabis strains of 400 and 200 cooled plants respectively within a climate-controlled greenhouse utilising wet mattresses and fans.

Furthermore, a collaboration agreement was signed with Tel Aviv Stock Exchange-Listed medicinal cannabis producer 'Seach Medical Group Ltd' (TASE: SEMG, Seach) in December for indepth research on the effect of RZTO technology on cannabis crops.

Under the agreement, Roots and Seach are testing the effects that RZTO technology has on the weight, EC, PH and soil moisture levels of cannabis crops.

Testing is underway at Seach's premise in Givat Chen and is scheduled to be completed at the end of March, with results to be reported thereafter.

And subsequent to the reporting date, Roots re-positioned its senior leadership team in accordance with the Company's greater emphasis on the global cannabis sector.

As such, Boaz Wachtel was appointed CEO and Executive Chairman on 13 January 2020 with Sharon Devir assuming the role of Executive Director and Business Development.

### **Initial protein-based plant program successful; Roots enters indoor growing market for organic meat replacement crops**

Further inroads were made during the quarter to expand the Company's presence in the artificial meat market, including the entry into the growing market for organic high-value meat replacement crops.

As previously advised, in August 2019 Roots initiated a trial planting program to examine the effects of its RZTO technologies on several protein-laden crops with the aim of increasing the content of protein used in meat replacement products. In December, the results from the program were released, which were very encouraging.

The roots of two opened field 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.

These results positioned Roots favourably as it pursues opportunities in the organic protected high-end plant-based meat segment. These opportunities were highlighted in October as discussions commenced with a European consultancy group and a bio-based company to apply for a Euro bi-national grant between Israel and Holland.



### **LOI signed with Italian ag-tech leader signifying entry into Italian market**

Roots signed a 12-month Letter of Intent (LOI) in October with leading Italian ag-tech producer and nursery Cairo & Dautcher to install a commercial demonstration utilising the RZTO technology and explore distribution opportunities.

Under the LOI, Roots installed its hybrid ground source heat exchange system combined with a heat pump to improve crop quality and increase yields for herbs and flowers at Cairo & Dautcher's growing facilities in Southern Italy. The grower is extremely pleased with the effects of the system and the Italian minister of the Agriculture visited the site upon the invitation of the farmer.

Once the demonstration results are finalised, both parties will look to collaborate on an exclusive multi-year purchase and distribution agreement in Italy.

### **Collaboration with ClearVue on greenhouse opportunities**

The Company signed a collaboration agreement with ClearVue Technologies (ASX: CPV) on 14 October to explore complementary sales opportunities within the growing greenhouse sector, including the construction of demonstration greenhouse in Israel.

Both parties will pursue sales opportunities with new and existing clients, leveraging each other's industry-leading technologies to offer a unique combined offering within the greenhouse market.

The complementary technologies will be demonstrated within a specially designed greenhouse where ClearVue's innovative energy producing clear glass panels will be used to power Roots' RZTO technology and allow for off grid PV and electric operating system installations to be part of the Company's offerings.

### **Collaboration with Nostromo progress off-grid Irrigation by Condensation technology**

The Company announced a collaboration with cold thermal energy storage company Nostromo Ltd in October to progress the commercialisation of its solar-powered off-grid Irrigation by Condensation (IBC) systems.

Under the agreement, the collaboration centres on developing an autonomous and cost-effective solar-powered water cooling and energy storage system to replace lithium batteries in Roots' IBC system.

The combined demonstration design is underway at Nostromo's lab in Israel using Nostromo's IceBrick to irrigate crops at night using only the condensation formed on the external surface of pipes. IceBrick is a modular thermal cell that can be fitted as an extension to greenhouses or buildings and is 10 times more efficient in energy density per square metre than any other solution on the market.

### **Roots enters Canadian ag-tech market with signing of 'Water Ways Technologies' Distribution Agreement**

Roots entered the Canadian agricultural market in December, signing a non-binding exclusive agreement with leading Israeli-based publicly traded in Canada agriculture technology company Water Ways Technologies.

Water Ways specialises in providing water irrigation equipment solutions to farmers around the world.

Under the terms of the agreement, Water Ways have the right to import and sell Roots' patented RZTO technology in Canada, thereby capitalising on Water Ways' established market presence.

This entry marked a significant market opportunity for the Company, as Canada is actively promoting new agricultural innovations through the C\$3 billion 'Canadian Agricultural Partnerships' innovation program.



## **Design Patent registration received for revolutionary heat exchange stub**

Post-quarter end, the Company successfully registered a design patent for the revolutionary heat exchange stub in Australia.

The heat exchange stub is designed to be inserted into the tops of plant's pots and grow bags to significantly simplify working procedures and further lower the installation time and cost associated with Roots' RZTO technology.

Roots completed the registration on 10 January 2020 and were awarded the design patent shortly afterwards. The patent was approved by IP Australia, an agency of the Department of Industry, Innovation and Science.

## **Outlook**

Roots is well positioned to increase its Cannabis related international sales volume as Proof of Concept and pilot installations produced significant benefits to growers, leading to heightened reputation, greater exposure and further sales.

The introduction of Roots' unique and patented heat exchange stub is a game changer. The Intellectual property in the form of a registration of a design patent has been awarded in Australia and similar registration is expected to be granted soon in additional jurisdictions.

As early spring planting nears, we anticipate further advances into the organic meat replacement market with our heat zone temperature optimization technology. We especially plan to advance in the high end, covered ag organic meat replacement niche'.

Regarding the Irrigation by condensation (IBC) – as the prices of photovoltaic cells drop further, we aim to advance a new design of the IBC system and lower its price to customers. We also anticipate to advance collaboration with (added value) international partners and use synergies to advance the design and sales of the revolutionary IBC systems.

Overall, 2020 is expected to be a water shed year for Roots. We are committed to providing value to our shareholders in Australia and elsewhere and as the value of our technologies is recognized more and more, this will be translated to a stronger bottom line.

**\*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)



*This announcement was authorised to be given to the ASX by the Roots Executive Directors, Mr Boaz Wachtel and Mr Sharon Devir.*

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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

**ABN**

619 754 540

**Quarter ended ("current quarter")**

31 December 2019

<b>Consolidated statement of cash flows</b>	<b>Current quarter US\$'000</b>	<b>Year to date (12 months) US\$'000</b>
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	33	122
1.2 Payments for		
(a) research and development	(16)	(155)
(b) product manufacturing and operating costs	(35)	(105)
(c) advertising and marketing	(227)	(758)
(d) leased assets	-	-
(e) staff costs	(144)	(692)
(f) administration and corporate costs	(72)	(440)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	-	-
1.5 Interest and other costs of finance paid	(2)	(4)
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	-
1.8 Other (institutes)	(58)	(47)
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(521)</b>	<b>(2,079)</b>

<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire:		
(a) property, plant and equipment	-	(9)
(b) businesses (see item 10)	-	-
(c) investments	-	-

<b>Consolidated statement of cash flows</b>	<b>Current quarter US\$'000</b>	<b>Year to date (12 months) US\$'000</b>
(d) intellectual property	-	-
(e) other non-current assets	-	-
2.2 Proceeds from disposal of:		
(a) property, plant and equipment	-	12
(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	(1)	(3)
<b>2.6 Net cash from / (used in) investing activities</b>	<b>(1)</b>	<b>-</b>

<b>3. Cash flows from financing activities</b>		
3.1 Proceeds from issues of shares	558	1,289
3.2 Proceeds from issue of convertible notes loan converted to CDIs	-	573
3.3 Proceeds from exercise of share options	-	161
3.4 Transaction costs related to issues of shares, convertible notes or options	-	-
3.5 Proceeds from borrowings	-	-
3.6 Repayment of borrowings (convertible loan converted to CDIs)	-	(88)
3.7 Transaction costs related to loans and borrowings	-	(157)
3.8 Dividends paid	-	-
3.9 Other (IAA related)	-	8
<b>3.10 Net cash from / (used in) financing activities</b>	<b>558</b>	<b>1,786</b>

<b>4. Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1 Cash and cash equivalents at beginning of quarter/year to date	298	593
4.2 Net cash from / (used in) operating activities (item 1.9 above)	(521)	(2,079)
4.3 Net cash from / (used in) investing activities (item 2.6 above)	(1)	-

<b>Consolidated statement of cash flows</b>		<b>Current quarter US\$'000</b>	<b>Year to date (12 months) US\$'000</b>
4.4	Net cash from / (used in) financing activities (item 3.10 above)	558	1,786
4.5	Effect of movement in exchange rates on cash held	7	41
<b>4.6</b>	<b>Cash and cash equivalents at end of quarter</b>	<b>341</b>	<b>341</b>

<b>5.</b>	<b>Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter US\$'000</b>	<b>Previous quarter US\$'000</b>
5.1	Bank balances	341	298
5.2	Call deposits	-	-
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
<b>5.5</b>	<b>Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>341</b>	<b>298</b>

<b>6.</b>	<b>Payments to directors of the entity and their associates</b>	<b>Current quarter US\$'000</b>
6.1	Aggregate amount of payments to these parties included in item 1.2	(75)
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\$ 55
Corporate advisory fees paid to a Director related entity	US\$ 20

<b>7.</b>	<b>Payments to related entities of the entity and their associates</b>	<b>Current quarter US\$'000</b>
7.1	Aggregate amount of payments to these parties included in item 1.2	-
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	

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8. <b>Financing facilities available</b> <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	573	573
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.

On February 2019, the Company has received a financing commitment by way of execution of a convertible securities agreement with CST Capital (hereafter: the Investor), in which the Company borrowed a total amount of up to AUD 1.62 million (\$1,212 thousand) via the issue of convertible notes (hereafter: the Notes). The Notes will be issued in two tranches with a face value of AU\$1.00 per Note (Face Value), with 1,650,000 collateral CDIs over fully paid ordinary shares (CDIs) to be issued to the Investor prior to the first purchase of 900,000 Notes. The first tranche is for an amount of AU\$0.81 million. A subsequent tranche of up to AU\$0.81 million will be issued at a later date subject to mutual consent between Roots and the Investor. The Notes will be interest-free and convertible.

The Notes can initially be converted at 130% of the 5-day VWAP prior to issuance of the applicable tranche. From 65 days following the date of issue, the Notes can be converted at the lower of 130% of the 5-day VWAP prior to issuance of the applicable tranche and 90% of the lowest daily VWAP during the 15 trading days preceding the conversion date. Other than with the prior written consent of the Company, in any calendar month, upon issuance of a tranche, the Investor will receive options equal to the face value, multiplied by 0.2, divided by the closing VWAP prior to issuance. The options will be exercisable for 18 months and have an exercise price equal to 160% of the 5-day VWAP prior to issuance of the options.

On 19 February 2019, the Company issued 1,935,484 Unlisted Options (exercisable at \$0.14 on or before 19 August 2020) being the Options relating to the first tranche of Notes.

9. <b>Estimated cash outflows for next quarter</b>	US\$'000
9.1 Research and development	87
9.2 Product manufacturing and operating costs	-
9.3 Advertising and marketing	124
9.4 Leased assets	-
9.5 Staff costs	179
9.6 Administration and corporate costs	93
9.7 Other (provide details if material)	-
<b>9.8 Total estimated cash outflows</b>	<b>483</b>

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

### 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.

Date: 31 January 2020

Authorised by: Board of Roots Sustainable Agricultural Technologies Limited  
(Name of body or officer authorising release – see note 4)

### Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply 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.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.