

MEDIA RELEASE – Embargoed for release on 12 February 2022 (Saturday), 8am

**RICE HARVESTING CEREMONY CELEBRATES THE PILOTING OF
HYPERLOCAL RICE CULTIVATION IN VERTICAL HIGH-TECH FARM IN TAMPINES**

Singapore, 12 February 2022 – Residents today witnessed the harvesting of the first batch of Temasek Rice grown at a vertical high-tech farm in the housing estate of Tampines by Netatech. Supported by Tampines Town Council, Temasek Foundation, and Temasek Life Sciences Laboratory (TLL), this harvest is part of a research initiative by Netatech to explore possibilities in cultivating crops including leafy vegetables and rice, through good husbandry, plant science and technology.

2. Besides high yield, fast growth and disease resistance, Temasek Rice is a semi-dwarf variety with a good threshold for drought tolerance. It can thrive for two weeks without water. Unlike growing rice in paddy fields, precision drip irrigation method is used to grow Temasek Rice in a Vertical High Tech Farm.

3. This pilot project supports Singapore's 30 by 30 goal to supply 30% of the nation's nutritional needs locally by 2030. With the latest technology in farm sustainability and the use of alternative spaces for food production (such as unutilised vertical spaces in HDB estates), Netatech aims to achieve capabilities to commercially produce more of the community's nutritional needs locally.

4. The launch event was attended by Members of Parliament (MPs) for Tampines GRC: Mr Masagos Zulkifli, the Minister for Social and Family Development, Second Minister for Health and Minister-in-charge of Muslim Affairs; Dr Koh Poh Koon, Senior Minister of State, Ministries of Health and Manpower; Mr Desmond Choo, Mayor of North East District; Mr Baey Yam Keng, Senior Parliamentary Secretary, Ministry of Transport; and Ms Cheng Li Hui, Chairman of Tampines Town Council.

5. The MPs for Tampines GRC were joined by Mr Lim Hock Chuan, Chief Executive, Temasek Foundation Liveability, in a symbolic rice harvesting ceremony to mark this milestone in modern urban farming. During the ceremony, the MPs and the guests threshed the rice by hand to recover the rice grains from the stalk to signify a bountiful year ahead. The rice being threshed was first initiated in TLL greenhouse, then transferred and transplanted in October 2021 to the vertical farm at Tampines Block 146. Previously, TLL conducted trials and optimised technologies to grow rice at an experimental vertical farming structure in Lim Chu Kang. The guests also viewed the vertical farm where other leafy vegetables were being cultivated.

6. TLL continues to research and optimise crop improvements for nutritious fruits and vegetables to potentiate in urban farm settings. Netatech will also be exploring establishing four new high tech vertical farms in Tampines.

7. Ms Cheng Li Hui, Chairman of Tampines Town Council commented, “Singapore is heavily reliant on food imports and faces the risk of supply disruptions. With modern technologies in urban farming, residents can look forward to fresh home-grown vegetables that are produced in the community, for the community. For many years, Tampines has committed itself to being a “living laboratory” for the latest technologies and solutions in sustainable developments. I am heartened to see the progress we have made in food sustainability, as this will help strengthen the community’s food resilience.”

8. Mr Lim Hock Chuan, Chief Executive of Temasek Foundation Liveability, said, “As a champion of sustainability, Temasek Foundation is committed to collaborations which uncover and support ways to substantially improve the resilience of our food systems and food supply chains. We hope that projects such as this will breathe new life into farming and make full use of urban vertical spaces to bring benefits to the community.”

9. Mr Peter Chia, Chief Executive Officer, Temasek Lifesciences Laboratory and Temasek Life Sciences Accelerator (TLA) said, “I would like to congratulate Temasek Foundation Liveability, Netatech and Tampines Town Council on the successful demonstration of how local innovation in the form of adaptive engineering structures and locally produced seeds can create opportunities in this new landscape of sustainable food systems in Singapore. We are happy to be part of this mission to deliver fresher and more sustainable produce to the community and hope to develop even more varieties with enhanced nutrition for local farms so that everyone in Singapore can benefit from having unique Singapore local produce at a more affordable price.”

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About Netatech

Netatech aims to create a sustainable future where cities are built beyond resilience using nature-based solutions and innovative technologies. Netatech specialises in urban irrigation, rainwater

harvesting & treatment, decentralised stormwater management and high-tech agriculture to close the Food Water Energy loop by creating a circular economy to solve future environmental challenges.

About Tampines Town Council

Tampines Town Council was set up in 1990 to manage and maintain common property of HDB housing estates in Tampines which consists five divisions, namely, Tampines Changkat, Central, East, North and West.

Tampines aims to become Singapore's model Eco-Town by 2025. As a “living laboratory” testing many smart and sustainable initiatives, Tampines will see enhancements making it more environmentally sustainable. The vision is for all residents to have easy access to facilities that support a sustainable lifestyle, whether it is an urban farm for alternative food sources, solar panels for clean energy or eco-digesters for recycling food waste.

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About Temasek Foundation

Temasek Foundation supports a diverse range of programmes that uplift lives and communities in Singapore and Asia.

Temasek Foundation’s programmes are made possible through philanthropic endowments gifted by Temasek, as well as gifts and other contributions from other donors. These programmes strive to deliver positive outcomes for individuals and communities now, and for generations to come.

Collectively, Temasek Foundation’s programmes strengthen social resilience; foster international exchange and catalyse regional capabilities; advance science; and protect the planet.

For more information, visit www.temasekfoundation.org.sg.

About Temasek Life Sciences Laboratory

Established in 2002, Temasek Lifesciences Laboratory (TLL) is a beneficiary of Temasek Trust. Its vision is to build a permanent organisation of global talent to undertake bio-molecular science research and applications to benefit people in Asia and beyond.

The research institute focuses primarily on understanding the cellular mechanisms that underlie the development and physiology of plants, fungi and animals. TLL’s research provides new understanding of how organisms function, which forms the foundation for biotechnology innovation.

For more information, please visit www.tll.org.sg.

Media Notes

VERTICAL HIGH-TECH FARM

This vertical high-tech urban farm by Netatech is the first zero-food-mile farm attached to unutilised vertical spaces of HDB blocks close to the community. Managed by young agri-technologists from Netatech, the net-zero energy farm uses the latest technology to optimise yields and minimise wastage. Taking just three to four weeks to grow and harvest vegetables such as nai bai and lettuce, the farm aims for broader adoption of urban farming to enhance Singapore's food security.

One of the innovations used in the farm is the state-of-the-art fertigation, rainwater harvesting and micro-drip technology implemented by Netatech. The system provides crops with the precise amount of water and added nutrients needed to grow. Other innovations include cloud computing, microclimate sensors, and drone technology maximise crop yields.

The high-tech vertical farm project, supported by Temasek Foundation, is deployed to test-bed hyperlocal production of vegetables and other crops using unutilised vertical spaces in HDB estates. It aims to help bring Singapore's "30 by 30" goal to reality. Beyond sustainable urban farming, Netatech also hopes to empower the next generation of agri-technologists with increased awareness of food production and more green-collar job opportunities.

SPECIAL FEATURES OF THE HIGH-TECH VERTICAL FARM

Rainwater harvesting: Rainwater can be harvested on the rooftop and collected in a tank, treated with ultraviolet rays and reused as non-potable water for irrigation. This reduces general water consumption and wastage.

Precision Drip Irrigation: Precision drip irrigation delivers water and nutrients directly to the plant's root zone, at the right time in the right amounts, so each plant to grow optimally.

Artificial intelligence and cloud computing: Artificial intelligence and cloud computing allow for adaptive remote control of irrigation and light, based on plant requirements. With integrated microclimate sensors, the farmer can make data-driven decisions in real-time. For example, the irrigation system can automatically trigger when external temperatures are high and substrate moisture levels are low.

Drone technology: Using drones in the farm allows agronomists, agricultural engineers, and farmers to help streamline their operations, using data analytics to develop crop insights. Crop monitoring is made more accessible by using drone data to plan and make ongoing improvements accurately.

Hyperspectral Imaging: Hyperspectral imaging in high-tech farming allows high tech farmers to detect minimal changes in the physiology of the plant and correlate it with a spectrum of reflected light. This technology enables a broader range of farming issues to be addressed and with the development of more advanced agricultural applications to optimize harvests.

Safety measures: Railing guards are deployed as anti-slip measures for workers while they are

traversing up and down the farm.

TEMASEK RICE

Temasek Rice is an elite, semi-dwarf aromatic rice variety with traits that resist biotic and abiotic stresses. A premium fragrant long-grain rice variety, Temasek Rice has increased resistance to rice bacterial blight and blast diseases, and heightened tolerance to environmental stresses, such as submergence and drought.

It is created through the use of genomic and marker-assisted breeding technology, which involves the use of DNA markers that are naturally linked to a gene of the desirable trait to conduct gene selection during breeding. With increased selection efficiency and use of better genetics, enhanced yields and stronger traits can mitigate threats brought about by climate change, which impacts food security.

Accreditations: Temasek Rice has been approved by Singapore's Health Promotion Board for its Healthier Choice Symbol Programme in "Higher in Whole-Grains". 100% natural, Temasek Rice is organically produced in compliance with the requirements as defined by the US Department of Agriculture (USDA), The Regulation EEC (European Union) and Japanese Agricultural Standard of Organic Agricultural.

Milestones: In May 2019, Temasek Rice was granted Plant Varieties Protection (PVP) by the Intellectual Property Office of Singapore (IPOS). Temasek Rice also obtained patent and trade mark protection for the technology related to the cultivation of the rice, as well as of the "Temasek Rice" brand.

In 2016, Temasek Rice was one of the seven varieties of rice sent by Temasek Life Sciences Laboratory to the "Doomsday Vault", a Norwegian seed vault whose sole purpose is to preserve samples of the world's crops, in case of a global catastrophe.

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