AUSTRALIA

Australia enabled to export iceless Broccoli to Dubai

For the first time Queensland broccoli producers have been able to export Australian broccoli to Dubai without ice. Using Biopac modified atmosphere plastic (Map) Liners and a new carton box from Orora it is now possible to increase levels of carbon dioxide, and decrease oxygen while also controlling the humidity.

Trials by Queensland's Department of Agriculture & Fisheries have shown the broccoli can be stored in this way for more than 40 days, explained Biopac's Antar Douadi. This means that seafreight could now possible for broccoli exporters.

Since the success of the iceless airfreight to Dubai, the next destinations being looking into for broccoli exports are Singapore, Taiwan, Hong Kong and Japan.

"The benefits for exporters are huge," Douadi said. "With ice, you pay three tonnes of freight, two of which is broccoli and one tonne of ice. With the Biopac Map bags, you pay for three tonnes of freight and get three tonnes of broccoli.

Adding the savings for the cost of ice and the styrofoam box, makes Australian export much more competitive.

Optifreeze delivers frozen revolution: Ground-breaking technology allows fruits and vegetables to be frozen and thawed with no loss of quality.

CHINA

Market for agricultural drones already fully developed in China

In China, people have been working for years on the development of agricultural drones. These can keep an eye on the crops, and they can make sure they are sprayed in time. One of those Chinese suppliers is Zhuhai Yuren Agricultural Aviation, located in the city of Zhuhai in the Guangdong province, near Hong Kong.

The company was founded in 2008 and focuses on the development, construction and sales of agricultural drones. "At first we only focused on China, but last summer we realized our first overseas sales. Drones for the agricultural sector are a fully developed technology in China, but it is still very new for the rest of the world. Our drones can make sure crops are sprayed with pesticides in the correct manner and at the correct time. The drones are used for many different kinds of crops, including fruit and vegetables. Agricultural drones are a growing trend in the world of pesticides, and drones have an enormous number of advantages compared to traditional sprinklers," says Jeff Yi, sales manager with the company.

Yi indicates that they distinguish themselves by experience. They have been building drones for the agricultural sector for more than eight years already, and we are also involved in agricultural aviation. They are familiar with cultivators, cultivation techniques and everything to do with that. They are therefore specialized in this branch of the technology."

Zhuhai Yuren Agricultural Aviation has already been present at multiple overseas fairs. The company also participated in Macfruit 2016. Up till now they have exported to South Korea, Japan, Taiwan, Malaysia, Brazil, Belgium and Italy. They are seeing opportunities for growth in Europe, South Korea, Japan, Central Asia, the US, Brazil and elsewhere."

GERMANY

Fresh-cut bananas become a reality

Fresh-cut, ready-to-eat bananas could soon be available on supermarket shelves thanks to a ground-breaking, shelf-life extension treatment developed by FOOD Freshly®, the German specialist in Bio-preservation for fruits and vegetables.

The product, O Plus Ultra-7, is an antioxidant which is able to add approximately 8-10 days of shelf-life without using preservatives, genetically modified organisms (GMO) or other harmful substances.

Fully compliant with EU, US, and Canadian food safety legislation, O Plus Ultra-7 is, in common with all FOOD freshly® products, applied as an aqueous solution in which bananas are dipped for 1-2 minutes.

Natural banana flavours are preserved, while structure and colour are retained without becoming soft. Processors also do not need to use modified atmosphere packaging (MAP) or other special cost-adding packaging.

"Bananas are not to be found in the fresh cut landscape as of yet, since they turn brown immediately," explained Benjamin Singh, Director of Technical Sales at FOOD Freshly®.

Current antioxidants on the market were not able to handle these sensitive fruits until now.

FOOD freshly® is dedicated to helping fresh-cut processors grow sales by introducing new, innovative fresh-cut products. Along with naturally flavoured apples, fresh-cut bananas are the next useful step to help expand fruit processors' market share and to grow their business.

"We are glad to be able to offer this unique opportunity of being first-to-market with a fresh-cut banana product to our customers," Singh added.

ITALY

Italian grape exporters ready for Canada

Following a recent trade agreement between Italy and Canada, ten table grape exporters in the Italian region of Puglia have been given the green signal to ship their fruit directly to Canada for the first time. According to representatives from Puglia fresh produce association Apeo, exports from three regions, Puglia, Basilicata and Sicily can in theory begin immediately and will be subject to a trial period of one year. During this period the Canadian authorities will conduct phytosanitary checks on consignments entering the country.The first containers are expected to depart in the coming weeks.

All of the companies registered to send their table grapes to Canada have agreed to follow a strict protocol and adhere to a rigid system of quality controls.The ten companies are: Agricoper, Agrigal, Dino, Di Palma Donato, Nicola Coniglio, Franco Pignataro, Frutta Italia, Giuliano, Nava and Ortofrutticoli la Pernice.

"We are now in the final phase of this important agreement," Apeo president Giacomo Suglia told Italiafruit News. He added ,"To export to Canada, Pugliese companies will now have to make a specific request to the region.The Canadian market can take all kinds of grapes, from yellow to red to black, depending on the customers' specific requests."

JAPAN

Farmer develops Cucumber sorting machine with the help of Google

Around a year ago, a former embedded systems designer from the Japanese automobile industry named Makoto Koike, started helping out at his parents' cucumber farm, and was amazed by the amount of work it takes to sort cucumbers by size, shape, colour and other attributes.

In Japan, each farm has its own classification standard and there's no industry standard. At Makoto's farm, they sort them into nine different classes, and his mother sorts them all herself spending up to eight hours per day at peak harvesting times.

There are some automatic sorters on the market, but they have limitations in terms of performance and cost, and small farms don't tend to use them.

Makoto first got the idea to explore machine learning for sorting cucumbers from a wildly different source - Google AlphaGo competing with the world's top professional Go player.

"When I saw the Google's AlphaGo, I realized something really serious is happening here," said Makoto. "That was the trigger for me to start developing the cucumber sorter with deep learning technology."

Using deep learning for image recognition allows a computer to learn from a training data set what the important "features" of the images are. By using a hierarchy of numerous artificial neurons, deep learning can automatically classify images with a high degree of accuracy. Thus, neural networks can recognize different species of cats, or models of cars or airplanes from images. Sometimes neural networks can exceed the performance of the human eye for certain applications.

Makoto set out to see whether he could use deep learning technology for sorting using Google's open source machine learning library, TensorFlow."Google had just open sourced TensorFlow, so I started trying it

out with images of my cucumbers," Makoto said. "This was the first time I tried out machine learning or deep learning technology, and right away got much higher accuracy than I expected. That gave me the confidence that it could solve my problem."

One of the current challenges with deep learning is that you need to have a large number of training datasets. To train the model, Makoto spent about three months taking 7,000 pictures of cucumbers sorted by his mother, but it's probably not enough.

"When I did a validation with the test images, the recognition accuracy exceeded 95%. But if you apply the system with real use cases, the accuracy drops down to about 70%. I suspect the neural network model has the issue of "over fitting" (the phenomenon in neural network where the model is trained to fit only to the small training dataset) because of the insufficient number of training images."

The second challenge of deep learning is that it consumes a lot of computing power. The current sorter uses a typical Windows desktop PC to train the neural network model. Although it converts the cucumber image into 80 x 80 pixel low-resolution images, it still takes two to three days to complete training the model with 7,000 images.

"Even with this low-res image, the system can only classify a cucumber based on its shape, length and level of distortion. It can't recognize colour, texture, scratches and prickles," Makoto explained. Increasing image resolution by zooming into the cucumber would result in much higher accuracy, but would also increase the training time significantly.

To improve deep learning, some large enterprises have started doing large-scale distributed training, but those servers come at an enormous cost. Google offers Cloud Machine Learning (Cloud ML), a low-cost cloud platform for training and prediction that dedicates hundreds of cloud servers to training a network with TensorFlow.

KYRGYZTAN

Kyrgyzstan wants to supply EEU countries with organic food

According to Investment Promotion Agency, Kyrgyzstan produces 800,000 tons of fruit and vegetables annually, agriculture accounts for 14% of GDP, and 30% of Kyrgyzstan's population is engaged in this sector .The country has the potential to produce and export organic goods but there are a number of hurdles currently preventing this.

According to Bio-KG Organic Federation, "Kyrgyzstan's farmers are interested in organic farming but the unavailability of long and soft loans to farmers and agro processors prevents the development of organic production in Kyrgyzstan".

The absence of a stable, operating, producer-consumer chain and high transportation costs and customs duties, also hinder the development of the industry.

Despite Kyrgyzstan's aim to boost organic farming there have been no changes in this area yet. With Kyrgyzstan's joining the Eurasian Economic Union, local producers may now export their products to the large, 170 million EEU market, but the country is not ready for that.

The State is mainly engaged in the creation of conditions for organic products, including improving logistics, laboratories, and training the people. However, this does not make sense if organic products cannot compete with products of other countries due to high costs and small volumes.

Kyrgyz producers face problems with crossing borders, especially with Kazakhstan. The Eurasian Economic Commission (EEC) has advised Kazakhstan to remove the sanitary control at the border with Kyrgyzstan. Kazakhstan continues conducting sanitary control at the Kyrgyz-Kazakh border, contrary to the decision of the Supreme Eurasian Economic Council of May 8, 2015 on the abolition of this kind of control. The current situation causes significant delays in the export of goods from Kyrgyzstan to Kazakhstan.

MEXICO

Laser bio-stimulation to improve agriculture

Much improvement can be brought in the development, strength and quality of many crops of agro-industrial interest when low intensity laser is applied to seeds and plants, irradiation, which is widely used in different areas, such as physics, medicine and engineering.

According to the research of an interagency group of experts, biological stimulation with various types of lasers, and within certain irradiation parameters, can benefit planting in adverse conditions affected by UV radiation, drought, cold, salinity, or metal contamination.

The research team is composed of Alfredo Cruz Orea, from the Department of the Physics Research Center and Advanced Studies (CINVESTAV) and experts from the School of Mechanical and Electrical Engineering (ESIME), the National Polytechnic Institute (IPN), the Autonomous University of Zacatecas, the Graduate School, and the School of Higher Studies Cuautitlan, among other institutions.

"We characterized the seeds to determine their optical absorption spectrum, (i.e. what wave lengths (colours) have increased light absorption) at the Cinvestav. We also determined how much the laser penetrates them whether it only touched the surface or if it penetrated the seeds," the physicist stated.

To complete this phase of the analysis, in which they worked on samples of different products, such as corn, wheat, beans, lettuce, and tomato, he said, the researchers used a photo acoustic spectrometer.

The data obtained allowed researchers to have a reference that would help them define what the optimal doses and radiation intervals are in each case, he said.

Laser irradiation has been experimentally used in numerous crops since the 1960s, although most of the studies have been concentrated on wheat. Initially scientists employed ruby lasers and subsequently they tried helium-neon, argon, carbon dioxide, and neodymium lasers.

However, they now have laser diodes, which are much more efficient and less expensive than the others, he said.

Irradiance levels (hundreds to thousands of milliwatts) and exposure periods (from 0.1 to 10,800 seconds) vary depending on the type of laser used, its wavelength, and the plant species being treated.

Experts believe that applying this technology on an industrial scale could increase food production and crop yields and help meet the challenges posed by climate change and population growth.

According to an academic article on laser bio-stimulation of seeds and plants published recently. This could be done in an economic and sustainable manner, as it would reduce the use of agrochemicals.

"Laser bio-stimulation mechanisms, as well as the micro and macro effects simulations of the behaviour of agricultural seeds (according to their characteristics) should be further studied to predict the optimal irradiation parameter levels that produce favourable effects," added Cruz Orea.

MOROCCO

Moroccan Citrus regains position in US

According to the ONSSA, Morocco's National Food Safety Office, Moroccan citrus resumed exports to the US Market, following a suspension of almost eight months. The suspension was initiated in February 2016 after the discovery of fruit fly larvae in clementine exports to the US, which has a zero tolerance policy for the insect.

Since February, several meetings have taken place between the ONSSA and Aphis, the USDA's Animal and Plant Health Inspection Service, with the two sides agreeing in June to establish an operational action plan for managing the issue.

The plan, which will be followed by everyone involved in Moroccan citrus, includes additional phytosanitary measures to avoid the presence of fruit fly in citrus exports. Following an inspection by US experts to production sites in Morocco, the provisions of the plan were deemed to have been met, leading Aphis to lift the suspension in October.

THE NETHERLANDS

'Digital future' for farming

According to a keynote speaker at the Global GAP Summit 2016 digitalization, 3D food printing, vertical farms and insect production will shape the agricultural industry of the future.

In his futuristic speech to open the conference, held this week (27-28 September)s in Amsterdam, author and 'trendwatcher' Adjiedj Bakas told delegates that "technology will renew your industry" and warned them to embrace change with the right attitude.

"According to him digitalization will be present at every part of the farm. For example, driverless tractors will monitor disease and yields, while the farmer does other tasks. Farmbots will herd livestock, and harvests will be fully-automated.

There is much more we can do with vertical farms, urban farming will become much more important. In the future, sea farms will produce vegetables in abundance by recycling salt water to grow crops.

To enable this new era of innovation, Bakas said that the farming industries should give more room to "outsiders" and "use more craziness". "Watch people who are doing things differently and learn from them.He further added, "We are living in pre revolutionary times. Be aware of it all, you will do it but you will only do it if you embrace change."

As technology continues to develop, Bakas said consumer engagement and the role of the media will also see a step change. He said the industry should address the 'underground media' much more than the mainstream and traditional outlets. "We need to be more assertive on social media, and answer back to that. We shouldn't invest so much in the mainstream media," he added.

PHILLIPINES

Bananas not banned from entering the Chinese market

According to Stephen Antig of the Philippine Banana Growers and Exporters Association (PBGEA),

regardlss of the issues of phytosanitary the Philippine bananas were never really banned from entering the Chinese market, but there were some regulations. So now China is once again allowing the import of Philippine bananas.

Mr. Stephen said, "The residue present in the bananas exceeded the maximum levels, which was the reason the shipments of bananas were held back at customs. However, we've invited a team of Chinese inspectors to our plantations and packaging plants to check on our production process. While they did mention some issues we could improve upon, they were generally satisfied with what they've seen."

Before the visit of the Chinese health inspectors, the PBGEA had already submitted all measures for improvement for the Philippine banana sector to the Chinese authorities. According to Antig, all small and medium banana growers in the Philippines are relieved by this outcome. 90% of the Philippine banana export is destined for China. While the banana sector has become more diversified and isn't as dependent on China as it used to be, it's still the most important market for the Philippines. Stephen further "Every now and again there will be some phytosanitary issues, but as long China doesn't outright ban our produce, we'll get by".

The PBGEA has made an appeal to President Duterte with regards to the NPA at a banana congress that was held recently. Other issues that were addressed were the need of a banana council. While President Duterte acknowledged the benefits of such an organization, he remarked that the establishment of a banana council needs more than just a presidential decree. Rather, it would need the proposal and adoption of a new bill, meaning it will take some time for this council to be set up.

At this congress, a list of issues was presented to the secretary of agriculture. Apart from the need of protection from the NPA and the establishment of a banana council, other topics were more measures against pests and diseases, the establishment of a research institute and the need for trade negotiations with Japan and South-Korea.

SWEDEN

Optifreeze delivers frozen revolution

Sweden's OptiFreeze had developed a new technique to preserve the quality of frozen fruits, berries, vegetables and herbs that promises to deliver produce to the consumer as fresh as the day it was picked.

The patented technology, which allows produce to be frozen and subsequently thawed with no apparent impact on its quality, was developed by researchers at the Department of Food Technology at Lund University seeking to understand why certain plants can survive freezing while others collapse and die.

Freezing causes many fruits and vegetables to lose their flavour, form and structure. This is due to the cells of the living plant bursting as the ice crystals form during the freezing process. When researchers examined plants such as winter wheat, they were found to contain natural sugars that protect the cell membrane from frost damage and prevent cells from collapsing. OptiFreeze works by extracting these natural sugars and plant proteins and inserting them into the cells of fruits, berries and vegetables.

The technology opens up new horizons for produce suppliers and manufacturers of frozen ready meals by creating increased revenue streams, cutting transportation costs and reducing the environmental impact of food production.

"We believe this technology could revolutionize the fruit industry by opening up new markets around the world," says CEO Fredrik Westman. "It gives companies the ability to harvest fruit such as berries at optimum ripeness and transport them across large distances, ensuring they reach the consumer in good condition."

The process works better for crops that already have a high sugar content and can be applied to fruits and vegetables with a high porosity such as leafy vegetables, berries, apples and mango.

There are two stages involved in the method. In the first step, vacuum impregnation, products are soaked in a bath filled with a specific concentration of naturally occurring sugars and anti-freeze proteins extracted from cassava or winter wheat for example. The second step involves exposing the product to very brief high-voltage electrical pulses, which create pores in the cell membranes allowing the sugar to enter. As soon as the electrical field is withdrawn, the cell membranes close and the product is ready to be frozen.

OptiFreeze is now working to scale up the technology and has built a prototype plant that will give the company a clearer idea of the cost implications for producers. Westman estimates that the production cost could be is below €0.02 per kg.

Together with its partner John Bean Technologies and Swedish vegetable producer Norrvidinge, OptiFreeze is now working on delivering frozen rocket leaves to Orkla Foods Sweden to be added to their frozen ready meal range later this year.

USA

Apple ripeness to be gauged by devices

Scientists at MIT, the Massachusetts Institute of Technology in the US, have developed a handheld device that gauges the ripeness of an apple by measuring the glow of chlorophyll in the fruit's skin under ultraviolet light.

The gadget is thought to be useful for apple distributors, which are sometimes forced to guess where to send their stock rather than delivering the ripest fruit to destinations likely to sell out quickly.

"There's a tremendous amount of wastage," said MIT's Anshuman Das, lead author of the paper describing the invention.

Testing the ripeness of the fruit could also help farmers decide the best time to harvest their crops, the paper stated. The technique involves using a spectrometer to measure the brightness of light at specific wavelengths.

Since such machines are large and expensive, and therefore unsuitable for farmers, Das's team employed entirely off-the-shelf parts, building a spectrometer that uses ultraviolet light to make the chlorophyll in the skin fluoresce. The dimmer the glow, the riper the apple.

The data is sent via Bluetooth to an Android phone app, which compares the information with a previous database on an apple's various stages of maturity. If the spectrometer shows a batch of apples has been ripening for 10 days, then this should be shipped out before the 3-day-old ones, preferably to nearby stores.

In the future, Das foresees the technology being used on other fruits and vegetables. Some products like broccoli would be even easier to measure, he said, due to their elevated chlorophyll content.

According to the study, the whole kit, including the smart phone, costs less than US$250. ◆