



SPOTLIGHT

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Blueberries





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How modern grading and packing solutions enable blueberry packhouses to gain and retain competitiveness

For blueberry businesses, this is a time of change. Global demand is climbing. Production is increasing. New growing regions are gaining market strength. And consumers' quality expectations are rising. All these changes mean that growers and packhouses must now be more productive and efficient than ever before.

Demand for fresh blueberries more than doubled in the last decade and is expected to keep on climbing in the foreseeable future at a compound annual growth rate of about 7%. One reason for this exceptional growth is the heightened popularity of healthy foods in many nations around the world. Another reason is the transformation of blueberries from a seasonal product to one that's sold all year round.

Nobody could have imagined this when a U.S. cranberry farmer first began cultivating wild highbush blueberries in New Jersey in 1908, before selling the first commercial crop eight years later. From these humble beginnings, North America became the fruit's biggest





grower - but now other classes of the blueberry plant are being grown commercially and other nations are growing blueberries in great quantities. The number of countries producing more than 10,000 tons of blueberries annually has increased since 2010 from four to eleven. The U.S. still produces the greatest volume, followed by Canada; however, China will soon be the number one domestic producer of blueberries.

Selling to domestic markets is only part of the story. What's really driving sales is exports, and that's largely due to production expanding in the Southern Hemisphere. Today the world's biggest blueberry exporter (and third-biggest grower) is Peru, followed by Chile and Mexico, with the U.S. fourth in the exporter rankings. This counter-seasonal growing in the Northern and Southern Hemispheres puts blueberries on supermarket shelves every month of the year.

Demand for quantity and quality

Now that the availability of blueberries is expected, consumers are becoming more discerning about quality. Many now look for preferred blueberry brand names and countries of origin – and they resist buying from labels that have disappointed them. This is more than just a commodity: retailers are selling an eating experience, and it falls on growers and packhouses to provide satisfactory products.

In the quest for higher quality fruit, significant investments are being made in cultivar research. Food science is leading to blueberries that are larger, firmer, sweeter and tastier. And cultivar developers are seeking the holy grail: blueberries with a longer shelf life so more fruit arrives at export destinations in perfect condition despite spending weeks in shipping.

Quantity and quality are targets that once pulled in opposite directions. Higher throughputs at packhouses tended to imply lower product quality. Greater quality tended to require slower sorting and grading speeds and lower throughputs. But this, too, has changed. And the game-changer is technology. Today's state-of-the-art sorting, grading, and packing solutions can boost packhouse efficiencies by making the previously impossible possible.

The world-leading manufacturer of optical inspecting, sorting and grading machines for the food industry is TOMRA Food. TOMRA is also the only integrated line provider for blueberries, offering solutions for all varieties of blueberries, fresh to frozen, and handling everything from tipping the fruit onto the line to sorting, grading, and packing. In addition to sorting by size, color, softness, bruising, decay, dehydration, stems, peeling, and scarring, TOMRA also offers artificial intelligence for increased grading superiority across calyx, stem hole, and advanced defect detection.

TOMRA Food's blueberry solutions are scalable, making them suitable for businesses of all sizes, from small family-owned farms to multinational corporations. And because these solutions are modular, packhouse lines can grow as the business grows.

Innovation through R&D

One reason for the effectiveness of TOMRA's packhouse solutions is the company's longstanding culture of innovation through a commitment to research and development. This includes an in-house Fruit Science Program, run from the company's Field Research Centre in Waikato, New Zealand. This boasts a production design facility, cool storage, a facility for full test simulations, engineering space, and fruit science test labs.

Another reason is TOMRA's acquisition of BBC Technologies, which originated when blueberry growers in New Zealand invented a grader and sorter that they commercialized and sold to other growers. This led to world-class expertise in precision sorting and grading systems, and punnet and clamshell filling solutions, for blueberries and other small fruits.

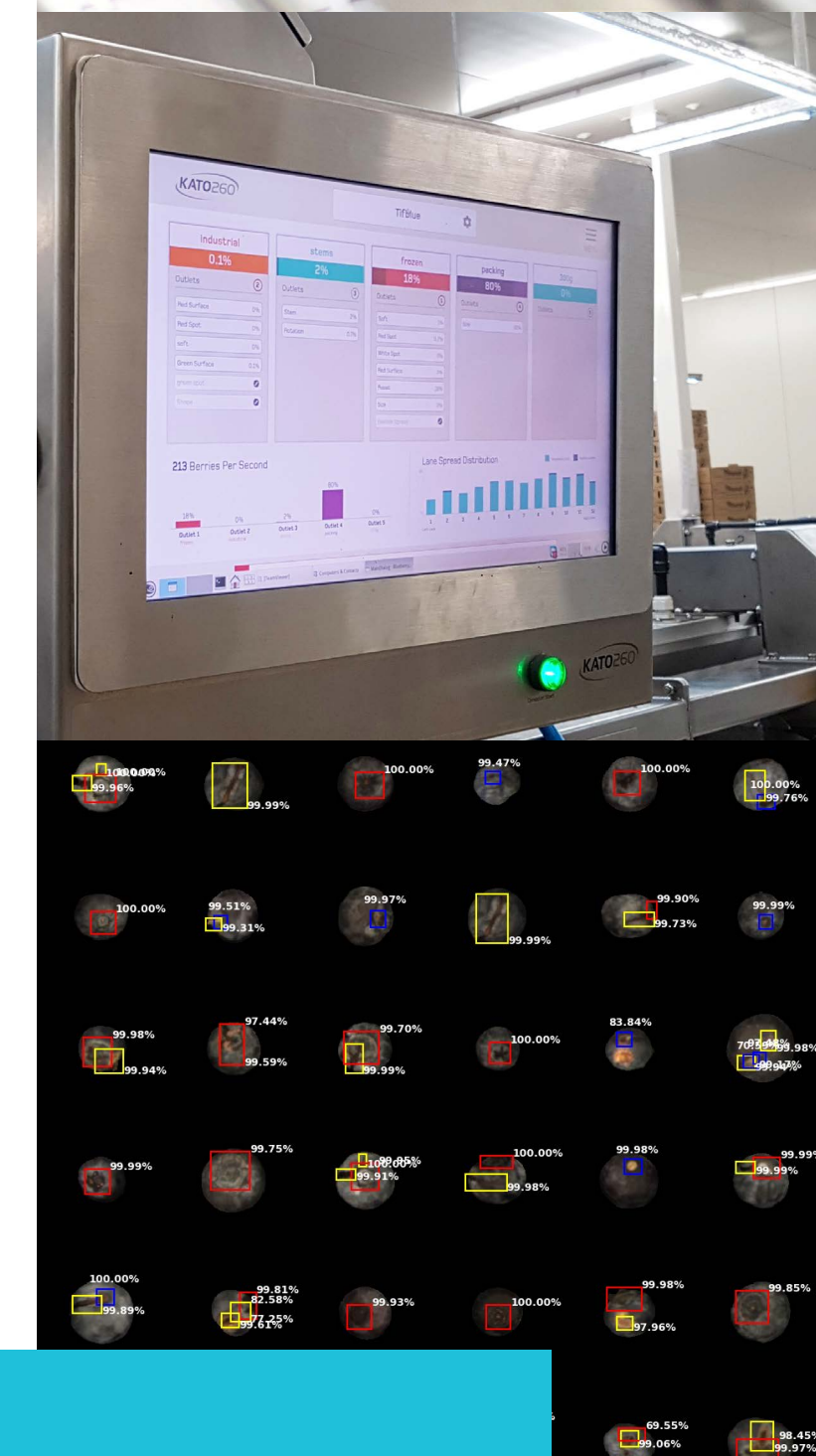
Yet another reason is that TOMRA's engineers have acquired a deep understanding of packhouses' operational challenges by working closely with their customers for over two decades. This working relationship is further enhanced by the fact that TOMRA is a direct-to-market provider. There's no 'middle-man' to dilute the feedback from packhouses, slow things down, or add another cost layer.

The previously impossible is now possible

The industry-leading precision sorting and grading system for blueberries is the KATO 260. Compact, to minimize floor-space requirements, and designed to handle the fruit gently to maximize bloom retention and shelf life, this versatile system is suitable for any fruit sorting condition. Whether sizing fruit into numerous bands or removing defective fruit, the KATO 260 provides five or seven outlets for seamless sorting in any size packing facility.

Fruit is gently loaded onto the KATO260 by an automated Tray Tipper which ensures a consistent supply and even distribution of blueberries onto the sorter, optimizing throughput. Then the KATO 260's unique rolling conveyor system singulates and rotates blueberries to allow for complete 360-degree surface inspection. Cameras take multiple pictures of each piece of fruit, and for precision grading the machine's software can identify defects as small as 0.2mm. What's more, this system's unrivalled guardianship of product quality is complemented by an ability to deal with great quantities: it can sort at speeds of up to 286 or 572 berries per second.

A valuable optional add-on for the KATO260 is a software and hardware package called LUCAi, which employs artificial intelligence to classify and grade fruit with unprecedented





accuracy. After each piece of fruit passing along the grading line is photographed by multiple cameras, LUCAi identifies and instructs how each individual berry is to be classified. Capable of processing up to 2,400 images each second, LUCAi can also view fruit in wavelengths not visible to the human eye, seeing subtle defects such as dehydration, bruising, and early anthracnose.

Another game-changing innovation from TOMRA, launched in 2022, is the KETE16 robotic case packing technology. This versatile, high-capacity, end-of-line system automates the process of placing punnets and clamshells into cases, trays, boxes, and crates. It's flexible to punnet size, case size, and pack orientation, making changing between different packs easy. No other robotic packing solution can accommodate a wide variety of pack designs at high speeds.

Automatically placing punnets and clamshells into boxes or cases has several valuable advantages. Labor

is freed-up from the packing area. An undesirable contact point between line workers and the product is eliminated. And there's the certainty of delivering consistent product at speed. The KETE16 also has the advantage of picking clamshells in a way that avoids the risks inherent with suction methods, which can open lids and compromise the end product.

The KETE 16 integrates seamlessly to match the speed and capacity of the CURO-16 packing system, the fastest fill-by-weight option on the market. As its name implies, the CURO-16 has 16 filling stations. These make it capable of handling up to 200 128-gram packs of fruit per minute. The sorting line's low drops and minimal transitions ensure the fruit is handled gently as it is directed into packs.

Blueberry packers also use the CURO-8 packing system, with eight filling stations and a smaller footprint. This can handle 110 packs per minute. These machines increase productivity by reducing human handling errors and fruit give-away, and can simultaneously pack for different markets.

By adopting these various solutions, blueberry packhouses can handle large quantities while also ensuring high quality - and can take action to optimize operational efficiencies and enhance profitability. This is why there are more than 2,400 lanes of KATO260 optical sorters installed globally, why more are installed every month – and why, despite increasing competitive pressures, packhouse owners who invest in the best equipment can look to the future with confidence.

To learn more about the TOMRA Food blueberry solution see here: <https://www.tomra.com/EN/SOLUTIONS/FOOD/FRUIT/BLUEBERRIES>