Mechanical Harvesting in Blueberries — taking the intensity out of labour

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Growers continue to look at various avenues to sustain profitability. The focus has been on breeding for seasonal timing of production, taste and harvest efficiencies to produce larger, more well-presented berries; relocating to more ideal elevation/geography; exploring protected cropping options; and potentially bench marking the cost of production.

There is absolutely no question that the labour component is the largest expense category in berry production and any changes that can reduce that labour cost will contribute significantly to overall profitability.

The recent pandemic highlighted the industry's fragile reliance on a transient workforce and has placed pressure on growers to adapt and innovate to ensure future viability.

The Bennings family has been growing blueberries in Northern NSW successfully since 1998 and know all too well about the need to innovate or disappear. While other growers have chosen the path of geography and genetics, they have made a conscious decision to mechanise their harvest operations to overcome increasing labour costs. Speaking to Jas Benning, he believes their current mechanical harvester set-up, which takes 3 people to operate, is able to harvest an area in a similar time frame to 400 pickers. For growers aware of the magnitude of managing and paying 400 pickers per day, this is nothing short of an extraordinary feat!

The Bennings family currently have two machines operating which cost approximately $500,000 each to import from the United States. Not every farm will be suitable for the use of mechanical harvesters as there are some pre-requisites for the use of the current technology:

- a suitable age or size of bush
- the right variety
- no protected cropping structures like netting or tunnels
- trained operators
- an adequate grading machine

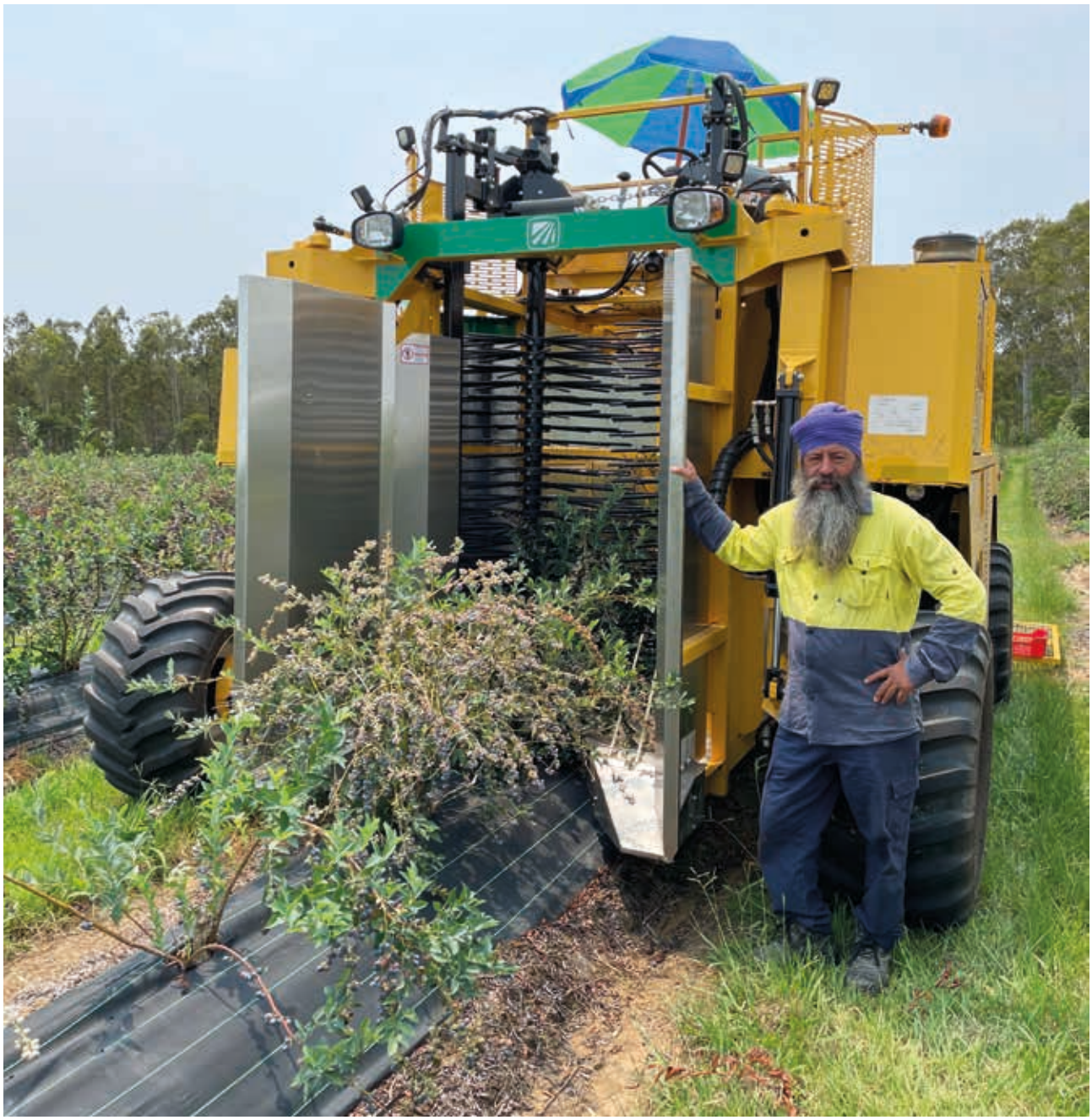
Looking at the current set-up, the ideal variety for machine harvesting would have a compact harvest window, upright growth and laterals, easy detachment of ripe fruit (without pedicel attached), small picking scar, not prone to tearing and overall firm fruit quality.

For the final harvested product, a more advanced grading machine (e.g. KATO260) is required to ensure efficiencies and profitability gained from mechanical harvesting are not lost during the grading or packing process.

A few limitations surround current varieties that are not very suitable for machine harvesting. As such, blocks still have to be hand-picked at the start of the season to be prepped for mechanical harvesting. Thereafter, if there are too many low hanging laterals (especially on younger plants), hand-picking ensures the block is free of over-ripe fruit that will pose risks to fruit fly infestations.

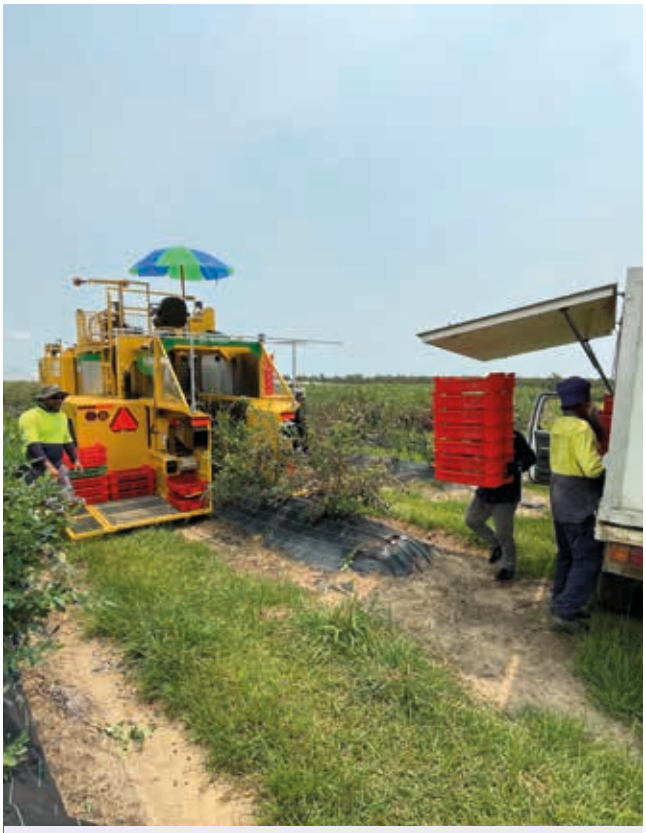
In addition, during the off-season, the machines currently remain idle due to the lack of suitable varieties in their current planting inventory. As such, they are looking at contracting the machines out to growers who may be interested.

Even without the perfect mechanical harvesting scenario available, the efficiencies gained are well and truly apparent and the future is bright for the pairing of genetics and mechanisation to revolutionise the sustainability of the Australian fresh blueberry industry.

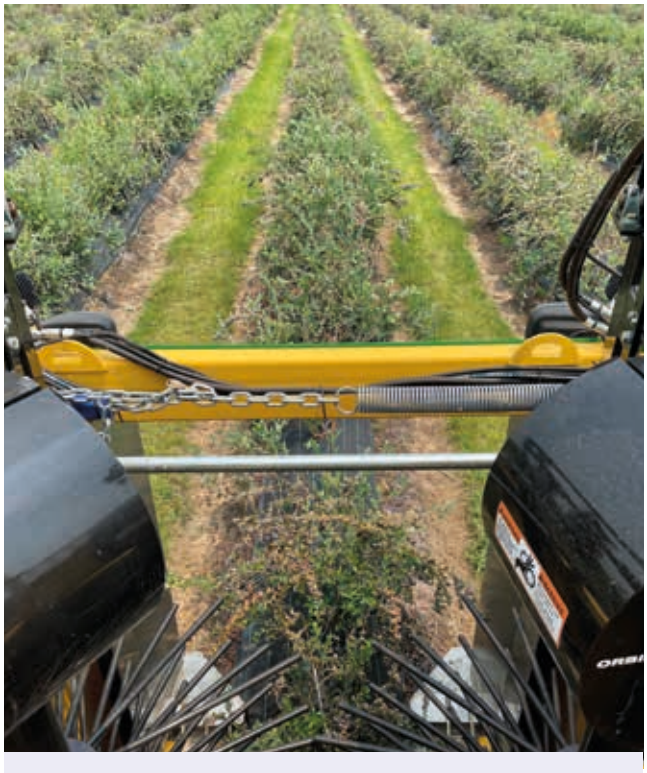


Jas Benning standing next to the blueberry mechanical harvester in a rabbiteye block. Photo credit: NSW DPI

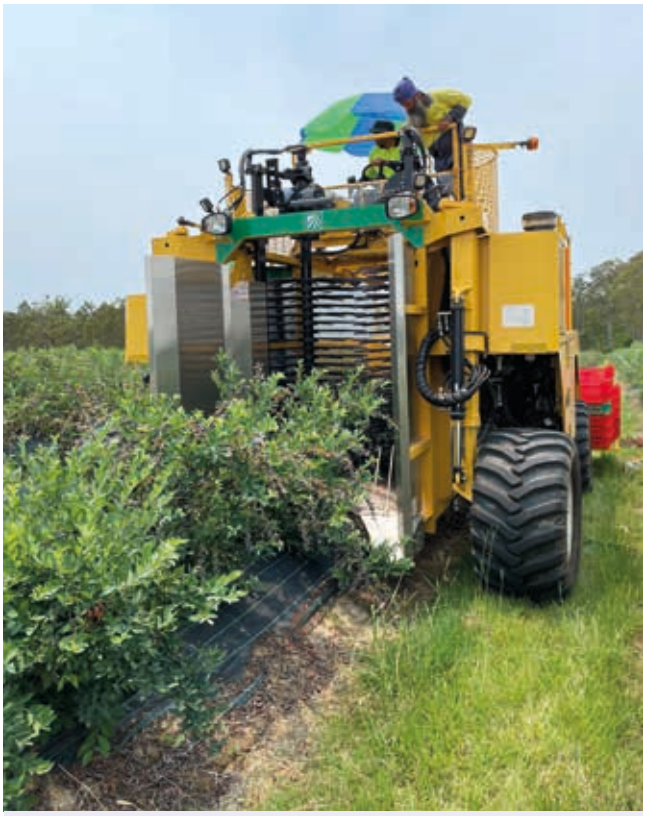
Rabbiteye blueberries ready to be harvested



Re-stocking on red trays that hold the berries for transport to the packing facility

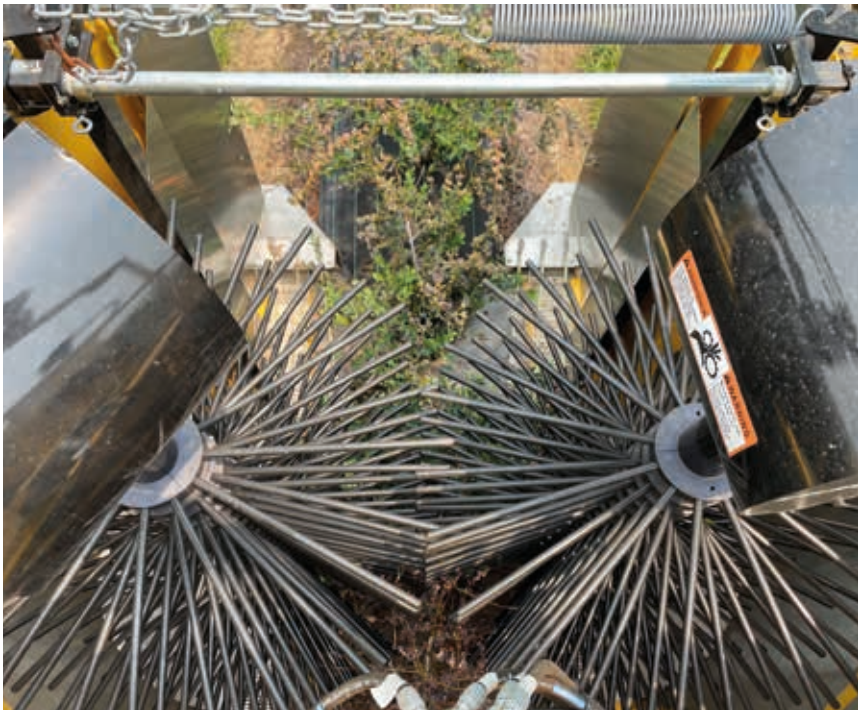


Positioning the mechanical harvester in the middle of the row ensures no fruiting laterals are missed. One of the difficulties faced harvesting a young bush is the proximity of the fruiting lateral to the weed mat



Jas Benning standing on top of the harvester ensuring proper positioning, speed and vibration is used

Photo credit: NSW DPI

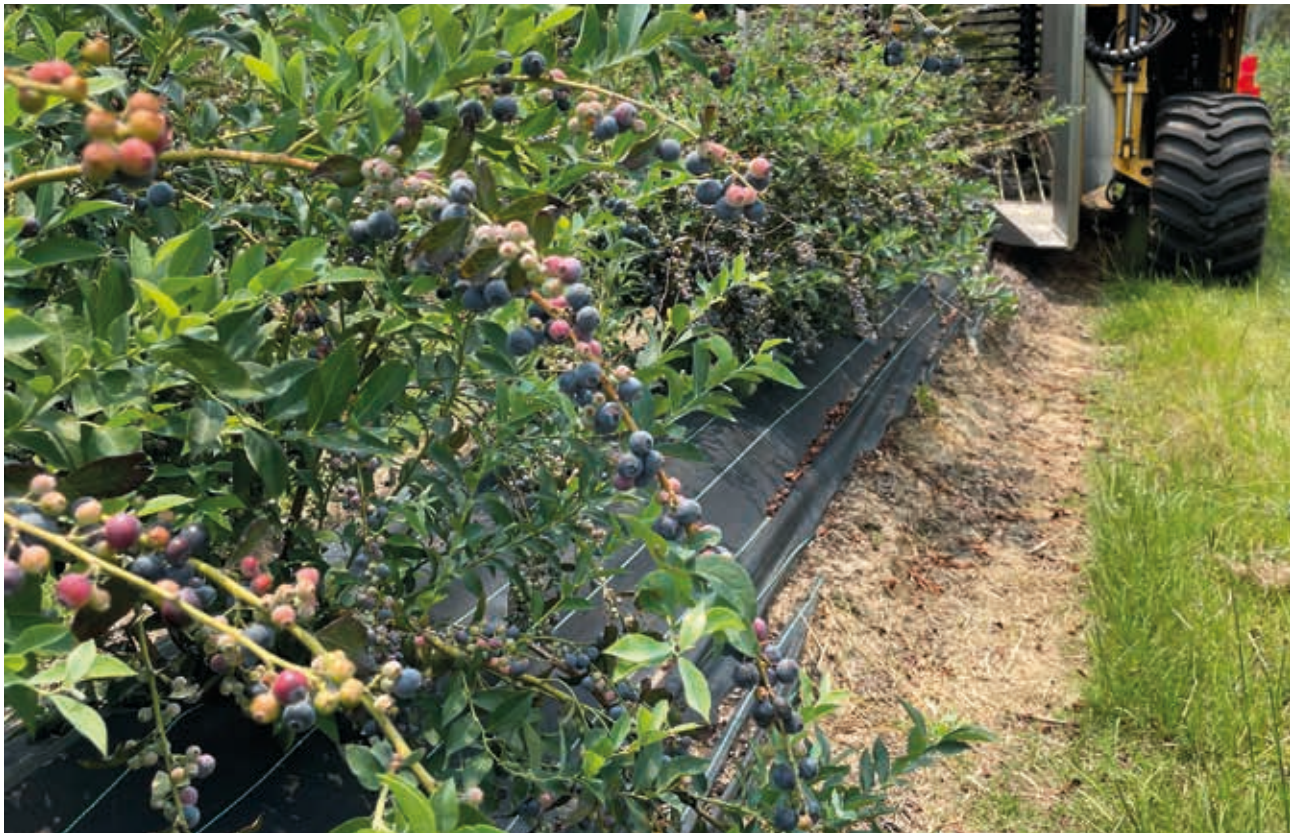


Rotating and vibrating rods used to detach ripe berries. The speed and vibration of the rods dictates the strength at which the blueberry bush is shaken

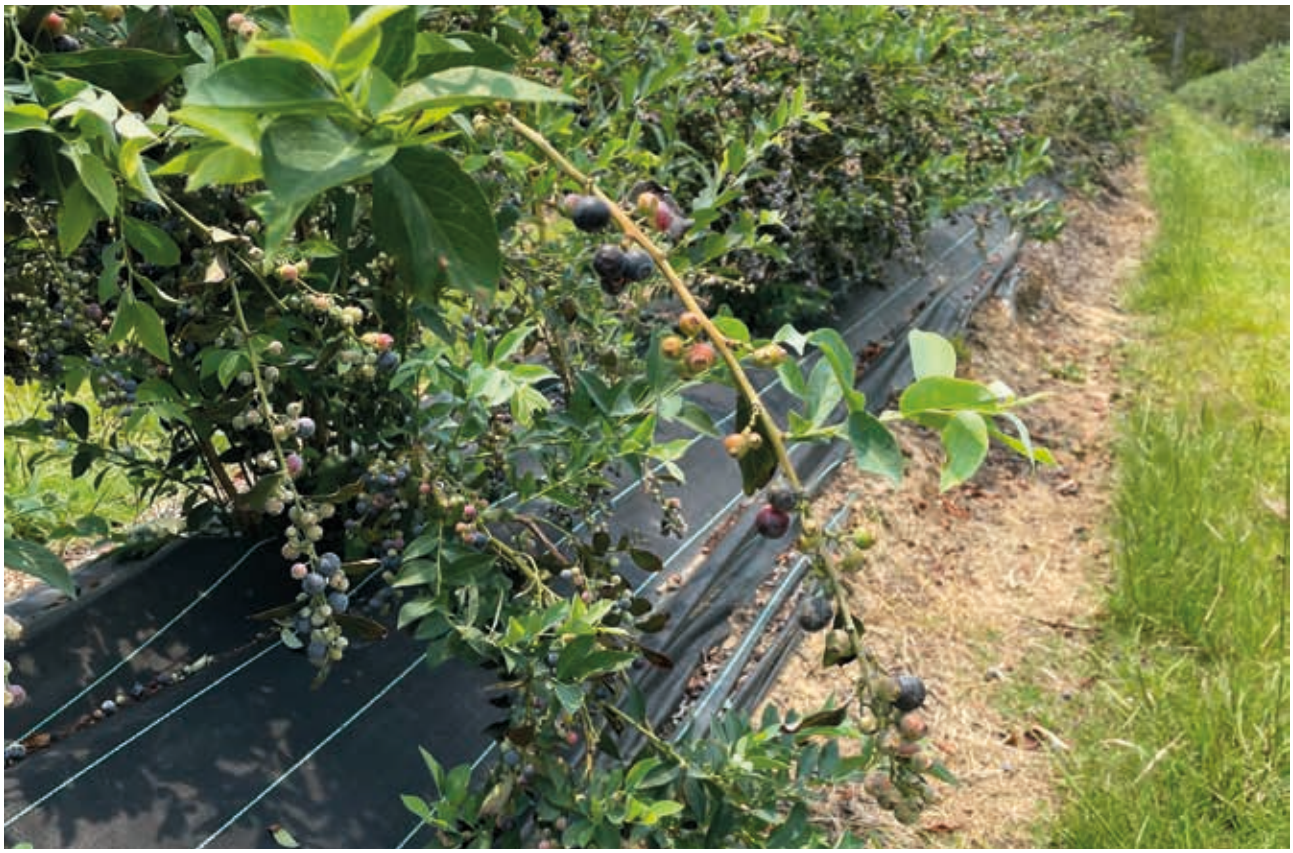
If the machine is operating 'under strength', too many ripe berries are left on the bush. This creates inefficiencies and decreases the quality of the next harvest

The machine can strip too many leaves and green fruit off if not calibrated properly. Jas Benning checks the rows to ensure not too much fruit has been lost

Photo credit: NSW DPI

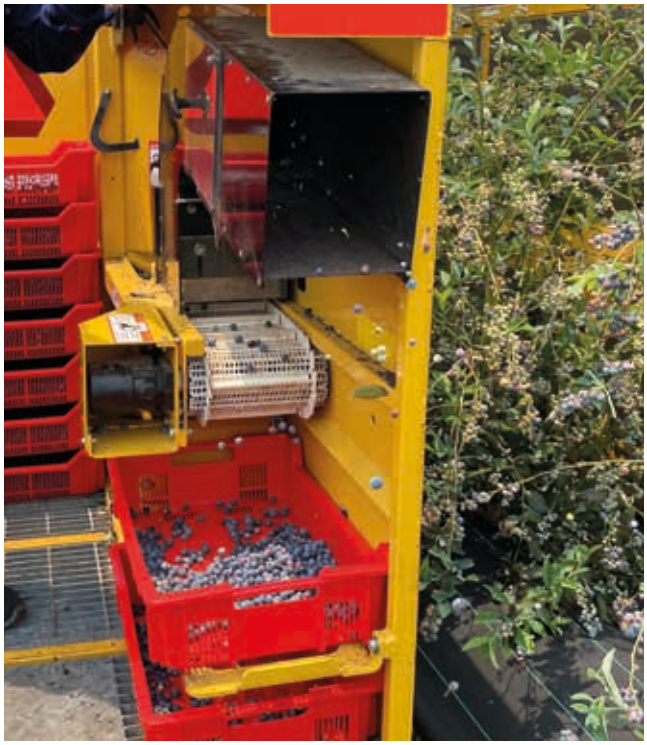


A fruiting lateral BEFORE the harvester has gone through



A fruiting lateral AFTER the harvester has gone through

Photo credit: NSW DPI



Fruit that has been knocked off the bush is moved into red trays on the white conveyor belt, while rubbish is blown off from a chute above it

The machine harvested product is ready to be transported to the packing facility for further grading and sorting

Photo credit: NSW DPI

To see the Mechanical Harvester in action scan this QR code

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