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New light shed on kiwifruit technology

by Elaine Fisher | 7th September 2010

Millions of kiwifruit are going under the spotlight at Aongatete Coolstores to discover if they have what it takes to wow international customers.

The packhouse is using Near Infra Red (NIR) technology to automatically grade fruit for softness and taste in a trial it, and the company which produces the technology, hopes will lead to industry-wide adoption of NIR.

Aongatete managing director Allan Dawson is one of the few in the kiwifruit industry who continued to have faith in NIR technology, originally introduced about 10 years ago, but abandoned by many post harvest operators when it didn't produce the results they were seeking.

Mr Dawson was convinced that NIR, which can detect faults or attributes in kiwifruit without damaging it, had the potential to improve both the quality of fruit being exported and also grower returns. A trial at the packhouse this season has endorsed that belief.

Taste Technologies, part of the Auckland-based high tech company Compac, which specialises in fruit and vegetable sorting equipment, has been working with Aongatete staff to refine NIR for the kiwifruit industry and Mr Dawson is delighted with the results.

He's so pleased, in fact, that Aongatete will host an open day for all kiwifruit growers and other post-harvest operators to see NIR in action on September 14 with two one-hour tours.

At the packhouse, fruit already checked for external blemishes, size and shape by Compac's In Vision photographic technology, pass under a bank of NIR lights.

Each set of two has a sensor which automatically detects fruit too soft for export and fruit with a high dry matter content, an attribute which improves its eating quality.

Massey PhD graduate Ivan Davie, now quality manager at Aongatete, explained that the sensors were programmed to detect whether near infra red light is absorbed or reflected back from the fruit, indicating (depending on the programme model) whether the fruit is soft, has a soft patch and or its actual dry matter content.

Although Mr Dawson had long been an advocate of NIR, it was only once Mr Davie joined Aongatete two seasons ago that the opportunity to revive its use presented itself.

And while Taste Technologies NIR equipment is used nationally and internationally to grade a wide range of fruits and vegetables, including potatoes and apples, it isn't being used for kiwifruit.

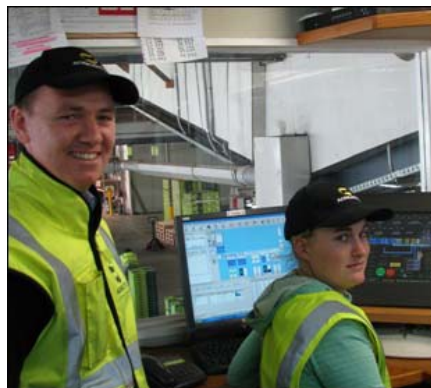
Part of the problem was developing models for determining the attributes in kiwifruit the technology was required to identify and just how to do that.

It was Mr Davie and two of Aongatete's product supervisors, Margaret Miller and Frances Ramsay, who worked for months, often into the wee small hours, developing a model for kiwifruit.

Aongatete first used NIR technology in the 1980s. In the late-90s it produced a line of sweet-tasting fruit which was exported under a collaborative agreement with Zespri to Sainsbury's in the UK.

The fruit earned a premium because customers could be assured of a good eating experience and now, with significant refinements to the technology, Mr Dawson believes it should be widely adopted to continue to give New Zealand kiwifruit a competitive edge and premium price in the markets.

"Whenever I visit Asia, in particular, people tell me they love green New Zealand kiwifruit - but not the sour ones. If we can give them great tasting green kiwifruit, that coupled with the significant health benefits now being scientifically proved for our green fruit, then we will have a distinct advantage in the market," he said.



Ivan Davie and Margaret Millar were part of the team which developed models for the Near Infra Rad grading technology. Photo: Elaine Fisher

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for softness manually.

"It is human graders who feel the fruit to see if it is soft or firm, and handling the fruit can damage it," he said. "We now have a system for grading or re-grading this fruit without the need for human

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The only way to check for dry matter content in a line of kiwifruit is to take samples which are cut, weighed, dehydrated and weighed again but that method does not indicate the dry matter of every piece of fruit in the line.

"With NIR we can check every piece of fruit time and time again without destroying it," said Mr Davie.

Like the old adage of one bad apple spoiling the whole barrel, a soft kiwifruit can spoil a whole tray or one sour tasting kiwifruit can discourage a consumer from buying the fruit again.

The team at Aongatete believe NIR offers the opportunity to not only improve the keeping and eating qualities of export kiwifruit but also to improve grower returns because those who produce high dry matter fruit receive a premium for their fruit.

By detecting lines likely to ripen early, better decisions can also be made about which markets they should be sent to and how long they should be kept in storage.

OPEN DAY

Aongatete's open day for all kiwifruit growers and post-harvest operators to see NIR in action is Tuesday, September 14 with tours from 1pm-2pm and again from 3pm-4pm.

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