

## Green Mussel Harvesting

By Karla English

They say you have to crack a lot of oysters to find a pearl. But Graham Garden at Lincoln Technology has cracked a lot of mussel shells over the last two years to find out... well, a lot about cracking mussel shells. Graham estimates that he has squeezed about 30,000 mussels in an effort to understand why a significant portion of the mussels that make up New Zealand's \$100 million per year export industry end up as damaged goods. For years, those in the industry have been unable to explain exactly why such a high number of the shells end up cracked. But last year, Lincoln Technology approached the Mussel Industry Council with a proposal to launch a program to find out why.

The green mussel's journey from the harvesting bed to restaurant serving platter is complicated, and Graham began the project by examining the pre-factory process. Green mussels grow in thick, grape-like clusters on underwater ropes. When the mussels are about 18 months old they are ready for harvesting, and the ropes are scrapped free of the clusters through a stripping process. The mussels are then de-clumped through a long rotating cylinder where water forces the clusters apart. The mussels then travel along conveyors and are dropped from various heights into large bulk bags. The bags are lifted and stacked on a harvesting barge for shipment to the nearest wharf. The bags are either unloaded directly at the processing plant, or loaded onto trucks or containers to be processed elsewhere. The mussels are then processed and packaged for the consumer. Graham began by simply counting the number of broken shells at each point of the process.

Surprisingly, the results were just as interesting for what they proved was not happening, as to what actually was. It had been widely believed throughout the industry that the lion's share of damage was occurring in the early harvesting process—in the stripping and de-clumping phases. Graham's results showed that this is was not the case. Together the two processes are responsible for only about 4% of the damage that is costing the industry an estimated \$10 million per year. Although more research needs to be done, it is clear that the handling and transportation of mussels is causing most of the damage. However, not all have embraced the research results with the enthusiasm they deserve. Mussel shells aside, Graham has found it is often harder to crack some rather tired perceptions

within the industry. Like any trade, mussel harvesting has a few of its own time-honored notions that are less than scientific. Some, such as the view that different harvesting sites produce mussels with different shell strengths, were quite easy to disprove. Others have been more difficult to dispel, such as the notion that mussels generally have very strong shells. Some mussels do, of course, but most possess characteristics that leave them susceptible to some kind of damage. Consequently, Graham has found the need to be both precise and politic in his work.

Nevertheless, harvesters can easily be forgiven for the belief that mussels are tough, as much of the breakage is very tricky to discern. Graham recounts with admiration how one inspector was able to detect broken mussel shells, even those that were nearly impossible to see, as she ran her fingers quickly over the shells. However, she has had ten years of practice to reach this proficiency level. But what if it is cracked? As we sit with fork poised over our steaming platter of Mussels Mariniere, why should we worry about a hairline crack that we can't even see? One part of the reason is presentation. The green mussel has been niche marketed by the industry in order to hold its own against the widely available blue mussel. Part of the marketing strategy is that mussels, like oysters, can be served "on the half shell", so exported mussels must be of the highest quality. But most importantly, the foreign market is demanding more and more that the shells be perfect. In fact, the US Food and Drug Administration will not allow cracked mussels to be brought into the US, due to listeria and other bacterial threats.

So, in the pursuit of the perfect mussel, Graham sees that much more work needs to be done to determine exactly what shipping and handling procedures are causing damage. Next month the Mussel Industry Council will release a set of practical guidelines to the industry, and Graham is careful to emphasize that many of the recommendations are based on "the best professional judgment" available at the moment, rather than hard science. There is no doubt that Graham would like to see that changed. In any case, it is certain that he will leave many more broken shells in his wake.