

Improving quality for the processing industry

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Historically NZ has marketed its primary produce to the world in a traditional process driven manner. We produced it and then tried to sell it. NZ wanted the world to buy whole sheep carcasses when the world wanted lamb loin cuts, NZ poured bulk skim milk powder onto the market when the market wanted specialised milk proteins. NZ primary producers will only survive in business if we are market driven. At all levels of our business we must understand fully the customers requirements and be able to respond to them quickly.

It is easy for people like you and I to nod our heads and think to ourselves that this is a pretty obvious concept but – still today as I speak – in our processing plant in Christchurch, a crop processing facility with an internationally recognised brand name representing quality, our process and our final product is determined by our raw material. We are raw material driven.

More and more of our customers are demanding more from their products. Pushing our raw material and processing equipment capability to the limit.

An example of the recent trends in customer requirements came from Japan where a customer required a certain grade of pea with an extremely low microbiological count, a size distribution of between 8 and 10 mm and a lower than normal level of defects. This request placed extraordinary demands on our processes, procedures and our people. This will be a growing trend and our ability to survive in business will be dependant on our ability to meet those requirements easily.

In the final analysis there are only two quality attributes that customers want from our crop products – the two things most difficult to give them – uniformity and consistency. They demand that the product they brought this week be the same as the one they purchased last week and the same as the next twenty purchases will be. They want the product to be the same colour the same size and the same flavour.

The role of the crop processor is to take a high quality raw material and with a bit of gentle processing

pack it for consumers as a good quality product. We cannot perform miracles and change a poor quality raw material into a good quality product. The crop quality is the single most important factor in determining the final product quality.

This year Canterbury experienced less than optimum growing conditions for potatoes resulting in a tuber with high sugars, variable solids composition and a high incidence of rot. All the good intentions and processing technology in the world cannot turn those potatoes into top grade french fries. From the day the first of that product reaches the customer to the day the last bag is consumed I will receive almost daily a complaint about those fries.

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We are dealing with a raw material where variability is inherent; variability between growing seasons, variability between growing regions and variability within the paddock. Minimising this variability is an important quality issue.

An excellent example of the effect of crop variability is whole baby carrots. Consumer studies have indicated that the requirement for this product is carrots of the length 30 - 85 mm. That percentage of the crop that does not meet this extremely tight requirement (about 60%) goes down the drain. Surely better control of the growing conditions could result in a more uniformly sized crop.

We need to improve our ability to control the growth and maturity of our crops. Understanding the biological processes that contribute to the maturing of a crop and good techniques to measure the maturity are in themselves not enough.

Currently demand for grade 7 peas far exceeds the demand for any of the other 7 grades. Maturation of peas occurs exponentially and so there is about 8 hours when a pea is to be harvested to achieve grade 7. Developments in the control of this maturation process would enable requirements to be more easily met.

NZ contributes a tiny trickle of organically grown products into the massive unfulfilled worldwide demand for them. NZ is in a unique position due to our clean green and nuclear free reputation. The potential for

future growth in organic products is enormous, however, we in processing confront the arrival of biogro crops with disdain. these clean green and healthier than thou products are laden with defects caused by disease and insect damage, they have numerous weeds and other vegetative matter amongst them and taste bland and floury. Ah, what a sweet taste the cocktail of herbicides, pesticides and fertilisers leave on the tongue. It is our hope that future developments will allow for growth of crops with increased resistance to disease.

We in the food industry are very good at evaluating our products way beyond the requirements of the average consumer. Development of rapid methodology and instrumental analysis techniques allows us to explore in a molecular manner the chemical and physical composition of our food. But when all the fancy analysis is complete Food quality is all about colour flavour and texture and, just as beauty is in the eye of the beholder, so is food quality in the mouth of the beholder.

The evaluation of food products is done organoleptically. The techniques are extremely subjective and mean that it is difficult to train people to do and maintenance of accuracy and repeatability without introduction of biases is an ongoing challenge.

There is something "romantic" about evaluating the bouquet of an excellent cabernet sauvignon and something exotic about exploring the complex textural characteristics of fine chocolate. It is much more difficult to excite the same organoleptic sensation into the grading of Pams Minted Garden Peas.

The most important quality attribute as far as the processor is concerned is the yield. Often the crop we are handling incurs a loss of 50%. Not only does this account to a large amount of money but it contributes to the escalating problem of effluent disposal.

There are often two different issues to be addressed when looking into crop quality. Let us take carrots as an example. We have customer demands for a series of

carrot products from whole baby carrots to carrot dices to sliced rings of carrot. Each of these demands requires a different type of raw material which must be able to be processed to meet the final product requirements.

One of the major quality issues we in the food processing industry experience is that of a lack of high quality staff. The seasonality of the crop processing industry has far reaching effects on the way the business can be managed. Staffing is in the main casual labour which means that it is difficult to train people in the highly subjective evaluation processes. Every season we have to train new staff and retrain the old staff and the development of a skilled workforce is difficult. Extended growing seasons would impact on the processing industry in a major way with the reduction in processed inventories freeing up millions of dollars.

In the past few years health professionals with the help of the media have heightened consumer awareness about the nutritional quality of foods. The result is that there is a lot of confusion amongst the general public about the content of the food they eat. Processed foods have been sweepingly branded as of poor nutritional quality and I personally receive about 5 phone enquiries an month from consumers who want to know how much salt we add to our frozen vegetables and what artificial food colouring do we use in peas. There is still much work to be done by the food industry in the area of consumer education.

So if I could sit back in my QA managers office and fantasise about what crops for tomorrow the agronomists of today could give me... it would be a skinless potato two feet long with square sides so that we can make whatever the customer wants from it.

We are in a very complex business - there is no denying that. A business where the science of agronomy is mixed with the technology of process engineering and delicately seasoned with the art of food. There is enormous international potential for crop processing in this country if we are able to meet the demands of our customers for quality products.