

Quality assurance in the New Zealand milling wheat crop

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Introduction

Since de-regulation of the New Zealand (NZ) wheat industry in 1987 the quality of the milling crop has steadily increased. The past two seasons have favoured high yields, yet the protein content and baking quality of the crop has remained high. This paper outlines the systems used by the NZ wheat producer which have given rise to this improved position. Cultivar development and choice, crop management, marketing, and grain handling and delivery will all be discussed. Particular emphasis will be given to the close interaction and cooperation of all sector groups within the industry, as typified by the Strategic Partnership agreements developed by the United Wheatgrowers (UWG) and the New Zealand Flour Miller's Association (NZFMA).

Cultivar development and choice

There is one major milling wheat breeding programme funded predominantly by the crown, but also with significant input from the UWG and the NZFMA. Other seed companies also test milling wheats, sometimes from their own crossing programmes, but more commonly from overseas breeding companies. All lines are evaluated in a series of Recommended List Trials (RLT), organised by a committee representing all sectors of the industry. Publication of the RL allows the industry to compare the cultivars on reliable agronomic and quality information. The committee acts as a forum for discussion on appropriate breeding objectives and their relative importance. Recently, the NZFMA also published a set of quality guidelines.

There are also two specialist nurseries organised for advanced lines: a series of disease nurseries funded by the UWG which target all the major wheat diseases within NZ; and a nursery funded by the NZFMA which measures sprouting resistance by sequential harvesting.

All breeding companies do pre-release quality testing with cooperating milling companies, involving small pre-RLT samples, or larger semi-commercial scale blocks.

Since de-regulation millers have issued wheat contracts listing preferred cultivars, with associated indexing and quality incentives. The close involvement by the millers in the cultivar development programme allows them to accurately index the new cultivars as soon as they are available.

Crop Management

Management advice to farmers once the cultivar has been chosen mainly involves sowing time, fertiliser use and disease control. All other sectors are involved with providing this advice: individual companies through cultivar specific management packages or company newsletters; or jointly through fora such as Plant Health Monitors, field days or industry meetings. Increasingly the millers are becoming involved with on-farm quality management; either directly through their quality incentives, backed by newsletters and cultivar management packages, or indirectly by specifying the use of certified seed to ensure crop purity. The millers have significantly up-graded their laboratory support services (most to ISO quality standards) so they can accurately determine the qualities of their incoming wheat and outgoing flours.

Marketing

Following de-regulation, the domestic flour market reduced as the quality of the flour increased, allowing a higher loaf yield. Domestic volumes have since regained this lost tonnage, and progress has been achieved for export flour and bakery products. The key characteristics of the current New Zealand wheat processing market are: significant competition between retail chains; in-store bakeries are a major growth area; the rate of innovation/new product introduction is increasing; product quality and consistency is "expected"; bread and biscuit markets are reasonably static; there is room for improvement in flour consumption: NZ 57.1 Kg/person, UK 67.8 Kg/person; generic flour sales are 24% of total

retail sales; growth in "homemade" convenience foods is increasing; price is critical.

Grain handling and delivery

New Zealand experiences a maritime climate, which can mean poor weather during the late summer harvest period. In spite of sprouting resistance being a priority breeding objective, several of the most successful cultivars have poor resistance, and other strategies such as early harvesting and grain drying have had to be routinely implemented.

Most of the crop is stored in on-farm facilities. Grain can therefore be stored on-farm for up to 12 months, and initial hygiene and later monitoring is critical. Good hygiene must also include all grain handling equipment and not just the storage silos. The miller's contracts include arrangements for storage, which may involve storage incentives and various forms of forward purchase options.

Following the harvest a representative sample of the contracted wheat is tested for all quality parameters. These tests give the miller and farmer a clear indication of the quality and potential use for the wheat. The actual quality payment is determined from another sample drawn at the time of delivery.

Conclusion

The close interaction and involvement of the total wheat industry in all steps of milling wheat production has allowed modern quality management practices to be applied. In the 1991 Strategic Partnership agreement the millers and growers identified four key areas for the maintenance of a sustainable NZ wheat industry: market development, quality assurance, cost minimisation and efficiency, and internal and external communication. In 1993 the plan was revised and new key areas were identified including market development, agri-economics, industry infra-structure and cohesion, research and development, and pricing mechanisms. These revisions show the significant advances and maturity gained throughout the industry by this partnership approach.