

PURCHASING WHEAT ON A QUALITY BASIS: TECHNICAL PROBLEMS AND A PROPOSAL

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The only practicable basis for payment for quality in the foreseeable future would be based on protein.

We expect our new 50g Mechanical Dough Development (M.D.D.) harvest test system to be more precise than its Bulk Fermentation predecessor but we do not consider it will be precise enough for payment for quality.

I would remind you that the MDD process substitutes a short period of intensive mechanical work for the several hours fermentation involved in the traditional breadmaking process. Yeast is still used and its fermentation produces the gas which inflates the dough during "final proof", before baking. About 90% of New Zealand bread is made by MDD.

It would be desirable to use a baking test to screen sprout, bug and heat damage although specific tests could be used.

Shrivelled grain is not attractive to the miller — obviously it has less endosperm and hence less flour. However, shrivelled grain often has a high protein level and it would be important to ensure that this did not lead to misunderstandings. Shrivelled lines have high screenings and low kernel weights, so exclusion from millers' grists is not difficult.

Protein tests would be best done on samples drawn at time of delivery and on a load by load basis. This would require about 30,000 tests/annum. It seems that most wheat intakes will be equipped with near infra red reflectance machines for estimating protein in the near future and they will presumably be using the machines to check all incoming wheat in any case.

Sampling does not seem to me a problem. It is relatively easy to sample a truck by probing from a walkway or to take a running sample while tipping.

Varietal identification would be required because milling quality varies between cultivars and the protein/bake score relation also varies. Identification aids such as booklets and charts are likely to become available in the future.

Fig. 1 represents county average protein levels plotted against county average bake scores for 1981. Other years would give different lines, in general parallel to those shown. The data shows that, at 10% protein, Oroua is about four points better than Kopara and this type of relativity seems to persist from year to year.

It would be simplest to apply a common discount/premium for protein and compensate for differences between cultivars by differences in base price.

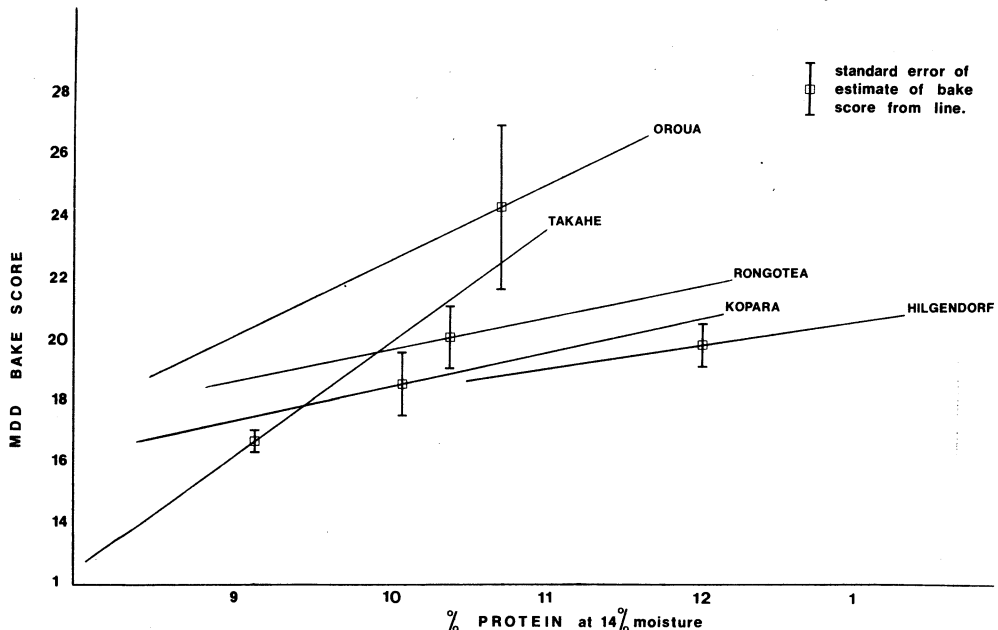


Figure 1: The relationship between County average protein levels and county average bake scores for 1981.

An objection would be, that in a good, high protein year, the Board would find itself with a high wheat cost and in a poor year the growers would get a low return. This could be avoided by paying premiums and discounts for wheat above and below the average protein for the season. These would balance so the total price would be unchanged. The average protein would not be known until mid year but growers who made early deliveries could receive an interim payment.

Accuracy would, of course, be a problem. It would be necessary to supply calibration services to keep machines in line, presumably a job for Wheat Research Institute. It would be possible to make provision for the grower to retain a portion of the delivery sample, which could be submitted to a reference laboratory (at the sender's expense) if there was a disagreement.

All concerned would have to realise that the NIR method, like all measurements, has a scatter. The standard deviation is at least 0.10% protein. Rather than have a few big price steps, a number of small increments would lead to fewer arguments.

The magnitude of the discount/premiums would, of course, be decided by negotiation but the following is an example of one line of reasoning.:

We are on an international wheat price. I note that Australian Hard brings about \$10/tonne more than Australian Standard White, and has about 1% more protein. On this basis, we could pay \$1/tonne for each 0.1% protein above a base level. At 4 tonnes/hectare a farmer could spend no more than \$40/hectare to raise protein by 1%.

Whether such a scheme would be acceptable to all parties and whether it would be effective in raising the level of flour quality are major questions to which this symposium may give partial answers.