



WHY IS PROTEIN SO IMPORTANT, AND WHY DO FLOUR MILLERS WANT SPECIFIC VARIETIES AT SPECIFIC PROTEIN?

As described under the question, **What Is Australian Wheat Used For?**, there are different protein requirements for different products, e.g. 10-12% protein is required for Australian bread flours, while 7.5-8.5% protein is preferred for biscuit and cake flours. (It should be noted that the protein content of flour is always about 0.8-1% less than the protein content of the wheat it was prepared from, because some of the original grain protein ends up in the bran and pollard fractions after milling).

The miller is concerned to meet the characteristics and specifications required for the particular product, and this is largely dependent on the variety of wheat. There is some specialisation, and some millers may have dedicated mills for different products. Some may specialise in soft wheats, others in exotic/specialty flours for health food and other specific markets.

For cakes, a lack of protein is important. For bread, protein levels between 10.5% and 12% give the best dough consistency to trap the gas bubbles formed by the action of yeast. These bubbles are given off when yeast ferments the sugar produced by starch breakdown.

Not only is the amount of protein important, but the properties of the protein are also important. If the total protein is too “strong”, there is too much resistance to the gas bubbles expanding during baking, so the loaves do not rise properly. For a given variety of grain, generally the higher the total protein, the better the loaf volume. Protein quality is not always the same, because wheat varieties differ in the quality of their gluten. (Gluten protein is what’s left after you wash the starch and the soluble protein out of flour). The most important factor is the grain variety, but seasonal effects and location effects on growth are also important. Gluten gives a dough strength, causes resistance to stretching and allows bubble entrapment. If a dough is too weak, it will stretch but then collapse again.

Glutens can differ in quality because they are made up of a mix of large proteins called glutenins, and smaller proteins called gliadins. There are many different types of glutenins and gliadins, and the type and proportions of each in particular varieties of wheat can cause a lot of variability in the properties of dough made from the different wheats. Quality Wheat CRC can supply guidelines to blend Australian wheats without ill effects on dough strength, and will be doing further work in this area.

contact details

Quality Wheat CRC Ltd.
Locked Bag No. 1345, P.O. North Ryde NSW 1670
Phone 02 9490 8488 Fax. 02 9490 8503
Web page <http://www.wheat-research.com.au>

