

Cereal structure and composition

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Abstract

Cereals are cultivated grasses that are grown throughout the world. As well as providing food for man, they, or fractions derived from processing them, make an important contribution to the diets of farm stock. Cereal grains have a long storage life under favourable conditions because they are harvested at a relatively low moisture content and comprise stable components. The principal energy sources within the grains are protected from infestation by outer coverings that are difficult to penetrate and in some cases unpalatable components in the coverings discourage predation by wild populations. The largest morphological component of all grains is the starchy endosperm, and approximately 80% of this is starch, occurring as microscopical granules with forms characteristic of the species. Also characteristic of the species are the storage proteins, which make the next largest contribution to endosperm dry weight. Proteins are important both as nutrients and by virtue of the fact that the class includes enzymes which, although making a small contribution to grain weight, can have a marked effect on grain quality and hence price. Other chemical components present as minor contributors, but with potential for exerting significant nutritional influence, are phytates and tannins, and current knowledge of these is briefly discussed. The walls of endosperm cells comprise a complex mixture of polysaccharides including cellulose, arabinoxylans, and β -glucans, as well as proteins and esterified phenolic acids. Attention is drawn to the difficulty in defining 'fibre' as it is method- or function-dependent and includes contributions from the endosperm cell wall components as well as the lignified walls of cells in the outer protective pericarp and the contents and cuticle of the testa.

Full Text

<http://www.publish.csiro.au/nid/40/paper/AR98158.htm>