Nutritional Value of Cereal Grains

CHARLOTTE E. RODERUCK
WFI, Iowa State University
Ames, Iowa

HAZEL FOX
University of Nebraska
Lincoln, Nebraska

Cereal grains have been and continue to be important dietary sources of carbohydrates, proteins, B vitamins, and minerals for the world. In many regions, diets commonly have a single cereal grain as the primary staple, while in other regions mixtures of cereal grains are consumed. In some areas, many people depend largely upon roots and tubers [e.g., cassava (Manihot esculenta Crantz), potato (Solanum tuberosum L.), and yam (Dioscorea bulbifera L.)] as staple foods. The most widely used cereals are wheat (Triticum aestivum L.), rice (Oryza sativa L.), and maize (Zea mays L.); however, millet (Panicum miliaceum L.) and sorghum (Sorghum bicolor (L.) Moench], barley (Hordeum vulgare L.), rye (Secale cereale L.), and oat (Avena sativa L.) are consumed in smaller amounts or by fewer people living in areas where the climate, soil, and altitude limit production of other cereals. In areas where people’s access to primary cereals may be limited, quinoa (Chenopodium quinoa Willd.), teff [Eragrostis tef (Zuccagni) Trotter], and buckwheat (Fagopyrum esculentum Moench) are also consumed.

1-1 SIGNIFICANCE OF CEREAL GRAINS IN HUMAN NUTRITION

The proportion of food energy provided by cereals in human diets varies from about 25% in the USA to as much as 80 or 85% in some locations where only small amounts of other foods are available or where incomes are extremely low (Scrimshaw and Taylor, 1980). In developing countries, locally grown legumes and pulses usually are consumed with cereals. Protein quality from many possible combinations varies with the proportion of legume to cereal; the ratio may range from 1:4 to 1:16 or even lower. Because legumes are higher in protein content than cereals, the ratio of protein from these two sources would range from about 1:1