20 Soybean Processing and Utilization

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20–1 DEVELOPMENT OF PRACTICES AND MARKETS

20–1.1 Introduction

The ability of soybean [Glycine max (L.) Merr.] to produce more edible protein per hectare of arable land than any other major annual crop or through animal grazing, has been recognized for many years. Among available plant sources, soybean protein is closest to the optimum dietary essential amino acids (EAA) profiles for human and animal nutrition. Currently, soybean meal clearly is the world’s major source of feed protein; but the oil palm (Elaeis guineensis L.) is competing to become the leading edible oil source. Freshly made and fermented soybean protein products have long been consumed in various forms in China, and Eastern and Southern Asia, and are becoming accepted in other parts of the world. Production of soybean food protein ingredients, and whole seed food uses, also are increasing. Breeders and growers have good reason to take pride in this crop. However, consumer fashions, economic strategies, and politics often have more influence on availability and buying decisions than technical merit.

20–1.1.1 Chapter Objectives

Markets provide the pull for producing soybean and processing it into ingredients for food, feed, and industrial uses. This chapter is written with an industry viewpoint, and differs from reviews in earlier editions. In addition to describing current (2002) practices in soybean processing and utilization, selected research since the last edition and changes in the way business is done also are reviewed. Units are first expressed in the metric system for scientists and for readers in other countries, and also in the English system for convenience of domestic readers. The word “quality” has several everyday meanings including: (i) level of desirability or goodness; and (ii) reliability in producing products consistently at the selected level. The terms “quality level” and “quality reliability,” respectively, are used in this chapter when the meaning might not be clear otherwise. Space is limited, and readers desiring more details are directed to the extensive references. Only a few economic and nutrition details, necessary for this chapter, are included. Readers are referred to Chapters 19 (Sonka et al., 2004, this publication) and 21 (Birt et al., 2004, this publication), respectively, and to the literature for reviews of these subjects.