Soybeans [Glycine max (L.) Merr.] have become a very economically important crop in the USA and in many other areas of the world. They contribute significantly to the world's food supply. Because the concentrations of K⁺ and the amounts of K⁺ removed in soybean grain are much greater than concentrations and amounts of K⁺ in cereal grains such as corn (Zea mays L.) and wheat (Triticum aestivum L.), it is important that the K nutrition of soybeans be generally understood by all people involved with soybean production, marketing, and use.

Data concerning the dry weights and K contents of soybean plants during the growing season have been reported by several investigators (Borst & Thatcher, 1931; Dunphy, 1972; Hammond et al., 1951; Hanway & Weber, 1971a–1971d; Harper, 1971; Henderson & Kamprath, 1970; Karlen et al., 1982b; Konno, 1977; Loberg, 1979; Mason et al., 1980; Sartain et al., 1979). Because the recent data of Dunphy (1972) and Loberg (1979) are the most complete and agree with those from the other studies, their data were used as the primary sources in preparing Fig. 32–1, 32–3, and 32–4.

In Dunphy's (1972) field experiments, three soybean cultivars were grown at low and high K fertility levels and were sampled throughout the growing season. In Loberg's (1979) field experiments, 18 different genetic lines of soybeans were grown at a high K fertility level and were sampled five times from growth stage R5 to maturity. In both studies, the plants sampled were separated into different plant parts, dried, weighed, and analyzed for K. The K⁺ concentrations in the plants varied between the low and high K fertility levels but were similar among the soybean cultivars and the two studies. Soybean grain yields did not vary significantly among treatments in Dunphy's experiments; therefore, Fig. 32–1, 32–3, and 32–4 were prepared for low and high K fertility levels using data from both studies. Final oven-dried seed yields were 2340 and 3510 kg ha⁻¹ (40 and 60 bu acre⁻¹ of 13% moisture grain) at the low and high fertility levels, respectively. It should be noted that although the higher yields probably would not have been obtained at the low K fertility level, the difference in seed yield was not entirely due to the difference in K fertility level.

These data were obtained from indeterminant soybeans. However, the results for dry matter and K accumulation in the different plant parts are very similar to those obtained for determinant soybeans by Henderson and Kamprath (1970) and