Nitrogen is the most important and most expensive of the major crop nutrients. The escalating costs of energy-intensive commercial N fertilizers and the concern to develop energy-frugal cropping systems as sources of less expensive food have heightened the interests of producers, policymakers, and scientists in meeting part or all of crop N needs through symbiotic fixation. This chapter examines the prospects of and constraints to substituting N\textsubscript{2} fixed by the \textit{Rhizobium}-legume symbiosis for commercial N fertilizers in cropping systems. We emphasize technologies based upon the use, management, and improvement of existing crop species capable of symbiotic N\textsubscript{2} fixation, rather than speculating on the uncertain prospects of creating new N\textsubscript{2}-fixing plants.

**LEGUME NITROGEN CONTRIBUTIONS IN CROPPING SYSTEMS**

The history of crop husbandry is replete with examples of yield enhancement of a nonlegume crop by growth and incorporation of a legume