Alley Cropping Practices

Alley cropping is broadly defined as the planting of rows of trees (single or multiple rows), at wide spacings, creating alleyways within which agricultural or horticultural crops are produced (Gold et al., 2000). In contrast to its use in the Tropics, in the temperate zone less emphasis is placed on using trees to restore and maintain soil fertility and productivity. While alley cropping is a common practice in parts of the Tropics, only recently has it come into use in North America. In the Midwest where alley cropping is most popular, high-value hardwoods are often used to create alleys of various widths that support conventional row, forage or horticultural crops. Such practices are developed with both production and conservation benefits in mind and can be highly diverse (Gordon et al., 2008; Bradley et al., 2008). Yields on a per-unit-area basis for each crop within the practice may be less than when grown in monoculture, however, the combined value of the crops may increase. This results from creating positive interactions between crops that improve the use of the land. Furthermore, alley cropping by design provides the opportunity for landowners to enhance enterprises within the farming system that may not have a high dollar value, yet are important in improving their standard of living, for example, hunting and recreational benefits. Although they may contribute little in income, unless the landowner capitalizes through lease agreements, (see Millspaugh et al., 2009, Chapter 10 of this volume) the improved recreational values are often reward enough.

Potential for Alley Cropping

While few data exist that provide reliable estimates of the hectares established in alley cropping in the United States, an estimate of land suitable for alley cropping is possible. Table 7–1 shows that more than 40 million ha of nonfederal cropland in the United States have been designated as having highly erodible soils (HEL). These are defined as soils having an erodibility index (EI) equal or greater than 8 (USDA, NRCS, 2007). Soils with a low EI (<5) are only slightly susceptible to erosion and farmers wishing to plant row crops have a wide range of alternatives on these lands. The HEL designation, then, represents soils that are typically susceptible to damage and are difficult to protect when used as cropland (USDA, NRCS, 2007). Unfortunately, these lands are often cropped in a manner that leads