Nitrogen Use in Dryland Farming Under Semiarid Conditions

The management of soil and crop for most economic production in dryland farming requires substantially different operational procedures than are employed in the more humid regions. Moisture conservation is of the essence for preventing drought effects on the crop grown; all that is possible must be done to store and preserve the limited rainfall received for crop use. This basic requirement adds complication to the management of fertilizer N, which, when improperly used, can accentuate the drought hazard.

Wheat is the predominant crop grown in the semiarid regions of the world, partly because of its acceptance as food grain and partly because of the fit of its growth cycle with climatic, especially moisture, factors. It will be the purpose of this chapter to elaborate results achieved in adapting fertilizer N use into dry farming practice, particularly with the wheat (Triticum aestivum L.) crop.

I. DRYLAND FARMING DEFINED

The term dryland farming implies agricultural production under conditions of limited moisture availability. A common textbook definition is the tillage of land for crop production where the subsoil is continuously dry. Such a delineation embraces a major portion of the arable land of the world, including the dry topics, the Sahel of Africa, the Middle East, much of the People’s Republic of China and USSR, and the western half of North America. Soils so situated will normally have a zone of lime accumulation