Soil compaction has been shown to reduce crop yields in the northern corn belt of the U.S.A. and Canada (Adams et al., 1960 and Raghaven et al., 1979). Modern row crop production can result in many trips over the field and as a result much of the field area is subjected to field traffic, some areas many times. Compactive force from field traffic is determined by the surface contact pressure of the tires while the depth that compaction extends into the soil is determined by axle load (Sohne, 1958). Controlled wheel-traffic studies by Voorhees et al. (1978) on a loam textured soil showed that normal row crop farming operations with equipment weight limited to 4.5 Mg per axle could result in soil compaction below 30 cm.

Compaction can influence crop production by changing bulk density, soil strength, aggregate size distribution, and pore size distribution. These changes in turn affect infiltration, drainage, water availability, aeration, root exploration, and nutrient uptake. Larson et al. (1980) reported that soil compactibility can be categorized based on type of clay and amount of organic matter. Larson et al. (1980) also showed that soil compaction increased with increased soil water content. Gupta and Allmaras (1987) found that the compression index increased with increasing clay content up to 33% and then leveled off showing that clay soils are more susceptible to compaction than sandy soils. The degree of soil compaction for a given axle-load is dependent on several soil properties such as clay, organic matter, and water content at the time of compaction. Differences in these soil properties are frequently associated with both landscape position and