Tillage Practices for Water Management

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Tillage practices to conserve water are especially important this year. The primary purpose of spring tillage is to establish proper seedbed conditions for best seed germination and emergence. However, tillage beyond this point wastes water through evaporation from the soil surface. In general, up to one inch of water can be lost from silt loam soils by moldboard plowing, and up to half an inch by each additional tillage operation. Deep chiseling or ripping should be done early and followed by another tillage operation to close up the ripped soil channels. Otherwise significant moisture can be lost from open chisel channels. Evaporation losses can be minimized by performing several tillage operations within a short time period. Tillage equipment connected to perform several operations per pass is especially effective in reducing evaporation loss.

Early-season tillage when daily evaporation rates are low will also help reduce losses. However, tillage under too-wet soil conditions will cause serious soil compaction. The moisture content where the most serious compaction occurs is approximately field capacity for most soils. During the irrigation season, this occurs about 2-3 days after irrigation for loams and clays and 1-2 days after irrigation for sandy soils. To minimize compaction, you must wait another one to two days before working the soil.

In early spring, to check for appropriate moisture for tillage to avoid compaction, sample soil from the tillage depth and squeeze it in your hand. For loam, silt loam and clay loam soils, the ball will be firm but pliable. It shatters into medium to large-sized particles when broken. Hand is damp to slightly moist. Soil will ribbon out ¼ to ½ inch when rolled out between the thumb and forefinger (keep thumb and forefinger about 1/8 inch apart so little pressure will be exerted on the soil). For sandy and loamy soils, a weak ball can be formed. The fingerprint outline on ball is somewhat distinct to distinct. Soil particles will stick to palm in a fairly complete to patchy pattern. Soil will not ribbon but will stick to the thumb in a patchy to complete layer.