Furrow dikes maximize irrigation and rainfall benefits

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Furrow diking is a versatile soil and water conservation practice that has been adapted to dryland and irrigated crop production. Therefore, it makes good sense for producers to install furrow dikes in their fields to maximize precipitation and irrigation benefits.

Furrow dikes are small mounds of soil mechanically installed in the furrow. The installation of furrow dikes creates a small water holding basin in front of each dike.

As producers strive to be more efficient and cut operating costs, this practice can improve water use efficiency and maintain crops with less water. Diking systems can be fitted into existing cultivation equipment with minimum capital outlay.

A return on investment is soon realized whenever precipitation exceeds infiltration rates. Furrow dikes hold water in place until it can soak into the soil. Area soil infiltration rates vary with clay soils having slow infiltration rates and sandy soils having much higher infiltration rates.

Slope in a field is also a factor that can be managed with furrow diking. A three-year study at the Texas A&M University Research and Extension Center at Lubbock showed an average runoff of 2.73 inches from land with varying degrees of slope. Use of furrow dikes can impound the water in the field and reduce runoff.

For every inch of water available about the basic water needs for plant development, cotton can yield 50 to 100 pounds of lint per acre; grain sorghum can yield 300 to 400 pounds of grain per acre; and wheat can yield two to three bushels per acre.

Cotton yields could be increased by 100 to 300 pounds of lint per acre from an additional two to three inches of water trapped by furrow dikes. A grain sorghum crop could produce from 600 to 1,200 pounds per acre. Other crops grown in the area should have similar yield increases when furrow dikes are used to retain additional water.

Furrow dikes are primarily used in irrigated agriculture to improve water application efficiencies of Low Energy Precision Application (LEPA) irrigation systems by reducing or eliminating surface runoff. They prevent irrigation water from moving

down the furrow and help increase infiltration and distribution uniformity across the field.

Furrow dikes area an essential “best management practice” that should be a part of every producer’s management strategy to ensure efficient use of our limited ground water resources.

Additional information about furrow diking is available in the High Plains Water District management note, *Furrow Dikes: Small Reservoirs of Yield Potential*. Copies are available by contacting the district office at (806) 762-0181.

Other furrow diking and water harvesting reports/ publications:

Krishna, Hari J. and Arkin, Gerald F. Furrow diking technology for agricultural water conservation and its impact on crop yields in Texas. Technical Report TR-140, Texas Water Resources Institute, Texas A&M University, July 1988

Krishna, H. J., G.F. Arkin and J. R. Martin. Runoff impoundment for supplemental irrigation in Texas. Water Resources Bulletin, Vol. 23, No.6, December 1987.