



Figure 12. A cable-tow traveling gun pulls itself through the field by winding up a cable anchored at the edge of the field.

traveling gun systems are in common use. They both use the same types of guns for water distribution, but they are different with respect to the way the guns are moved through the field. With both systems the guns are mounted on carts or trailers that are slowly and continuously moved through the field as the guns operate. The rate of water application and total depth applied depend on the flow rate from the gun, the diameter of coverage, and the speed at which the gun travels.

Cable-tow traveling guns

Cable-tow systems automatically tow a large gun through the field by winding up a cable (Fig. 12). The gun is mounted on a cart which also contains a cable reel and winch. The cable is stretched across the field in the desired direction of travel, and the end of the cable is firmly anchored at the end of the travel lane. As water flows to the gun, an impeller drive unit or water piston is used to power the winch. Thus, the cable-tow traveling gun pulls itself across the field by winding up the cable. The speed of travel is adjustable from only a few feet per minute (fpm) to 10 or more fpm. Water is supplied to the gun by a collapsible, flexible hose that is also towed by the system. A travel lane approximately 10 ft wide is required for this type of traveling gun because the flexible hose loops behind the cart.

Because they are set up to irrigate long travel lanes, cable-tow systems require much less labor than portable guns. Travel lane lengths of up to 1320 ft are typical. A typical 500 gpm cable-tow traveling gun can irrigate up to 80 acres.

Despite the high cost of gun operation, cable-tow systems are commonly used to irrigate field crops,

vegetables, melons, and citrus in Florida. They are widely used throughout the state, although their high operating costs have caused some systems to be replaced by more energy-efficient microirrigation systems, especially for perennial crops such as citrus.

Hose-reel traveling guns

A hose-reel traveling gun uses a large reel unit to wind up the hose and retract the gun (Fig. 13). The hose is semi-rigid and does not collapse on the reel, so that water can be continuously pumped through it during operation. The hose and gun are laid out in the desired direction of travel. The reel is then used to retract the hose and gun at slow speeds, irrigating as the gun is retracted.

Hose-reel systems require less labor than cable-tow systems because they are easier to set up for operation. A typical 500 gpm hose-reel traveling gun can irrigate up to 90 acres. However, these systems are more expensive than cable-tow systems, thus they have not displaced all cable-tow systems.

Hose-reel systems are used for the same crops as cable-tow gun systems. In addition, there is some use of hose-reel systems for the establishment of transplanted vegetable crops. The smaller cart on which the hose-reel gun is mounted permits use in row crops without the need for a wide travel lane to tow the hose behind the gun.

Surface irrigation systems

Surface irrigation systems are those in which water is applied on the soil surface and is distributed

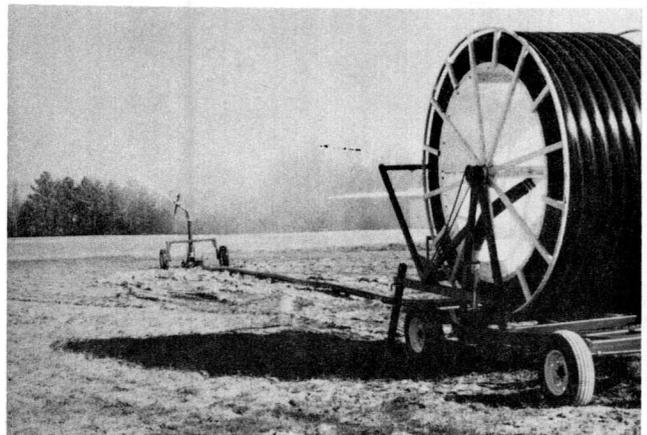


Figure 13. A hose-reel traveling gun winds up the hose on a large reel to move the gun during irrigation.