Figure 4. Side-wheel-roll sprinkler system irrigating cabbage transplants for establishment.

ous field shapes and sizes, and (3) can be moved with many Florida vegetable crops which are rotated from field-to-field to avoid disease problems or on rented land. A limitation to the use of portable hand-moved systems is the large labor requirements to move the pipe between zones. Because the pipes must be manually moved, these systems are not adaptable to tall crops such as corn, or other crops which would prohibit easily moving the system.

Tractor-moved systems

Portable tractor-moved sprinkler systems consist of sprinklers mounted on portable aluminum lateral pipes which are rigidly connected and mounted on wheels or skids. The laterals are towed between zones by pulling from the ends of the laterals with a tractor. These systems are more expensive than portable hand-moved systems, but have lower labor requirements. They are only used on short crops which are not disturbed by the skids or tractor traffic. These systems are most adaptable to larger land areas (longer lateral lengths) than hand-moved systems, or heavier soils than typical Florida sands so that less frequent moves are required. Therefore, portable tractor-moved sprinkler systems are not often used in Florida.

Self-moved systems

Portable self-moved sprinkler systems consist of sprinklers mounted on aluminum lateral pipes which are mounted above the soil surface on wheels (Fig. 4). They also contain the mechanical components required to move the system, thus making these systems more expensive than hand or tractor-moved systems. There are 2 types of self-moved sprinkler systems, classified by the method of movement: (a) Side-wheel-roll, and (b) Side-move sprinkler systems.

Side-wheel-roll sprinkler systems. These systems use laterals which serve as the axle for wheels located along the length of the lateral. This system is moved between sets by rotating the lateral pipe (axle). The lateral pipe is typically rotated by a chain drive system powered by a small gasoline-powered engine located near the center of the lateral. Sprinklers are kept in an upright position for effective operation by means of a weighted swivel coupling on each sprinkler.

Because the lateral pipe is mounted only 3-4 ft above the soil surface, this system is only adaptable to short crops. Few of these systems are used in Florida. The most common applications are for vegetables, short forage crops, and turf production.

Side-move sprinkler systems. These systems use a lateral pipe mounted on a short A-frame 4-5 ft above the soil surface. Each A-frame is supported by 2 wheels, which are typically powered by a chain-drive mechanism from a drive shaft that runs parallel to the lateral pipe along the length of the lateral. These systems are more expensive, but have no appreciable advantages over side-wheel-roll systems for Florida crop production systems. Thus, they are not commonly used in Florida.

Semi-permanent sprinkler systems

A semi-permanent sprinkler irrigation system (Fig. 5) is a system which is set up and left in place throughout the crop growing season, after which it is manually removed and stored for the next growing season. Components of the system, such as the main or manifold pipelines are often permanently installed. A type of semi-permanent multiple sprinkler irrigation system used in Florida is the solid set system. Solid set systems are those in which the laterals and sprinklers cover the entire field to be

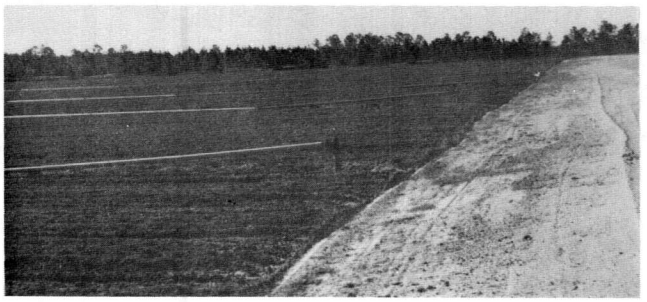

Figure 5. Semi-permanent sprinkler system with portable laterals fed from permanent underground pipelines.