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James T. Nichols
University of Nebraska - Lincoln

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Cross Fences for Pastures Under Center Pivot Irrigation

This NebGuide discusses different types of fences for center pivot irrigated pastures.

James T. Nichols, Extension Range and Forage Specialist

Irrigated pastures produce more forage and maintain stands longer under a "graze-rest" system of use. When grazing is practiced season-long, cross fences are necessary to control 1) when and for how long grazing is permitted on a particular pasture, and 2) the degree of desired use. These controls are not possible without cross fences, and sound grazing management becomes difficult. See NebGuide *G81-563, Grazing Management of Irrigated Pasture*, for a discussion on the application of grazing management practices to irrigated pastures.

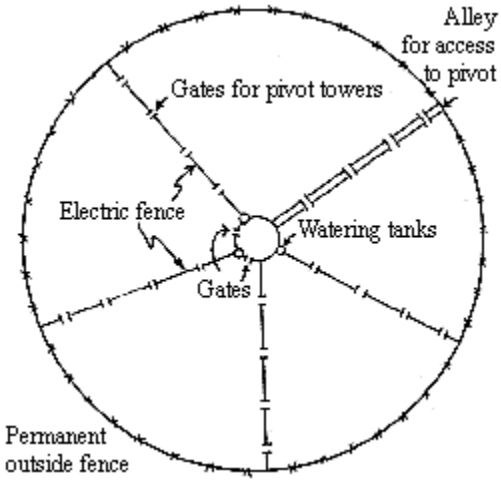

Figure 1. A convenient way to construct cross fences for irrigate pasture.

Fencing Pastures

Fence irrigated pastures around the perimeter with permanent-type fence. It is not desirable to run cattle on irrigated pasture with free access to other types of forage, such as rangeland or dryland pasture. Cattle should be retained on one type or the other for limited periods of time, but can be rotated between the different forages in some management systems.

When fencing the perimeter of an irrigated pasture, do not include dryland areas with the irrigated pasture, such as the corners around a center-pivot system. Trampling damage by livestock can be severe, especially on sandy soils. The vegetation does not have a chance to recover at the same rate as the irrigated grasses and will eventually be depleted. Small areas of non-erosive soil can be included within the confines of the pasture system for loafing, feeding or watering sites, but not for grazing purposes. Perimeter fences should nearly coincide with the outer limits of water application, but may deviate from

a perfect circle to facilitate fence construction.

The most convenient way to divide irrigated pasture for rotation grazing is for the fences to radiate out from the center of the pivot, making "pie-shaped" pastures (*Figure 1*). Easy access to the pivot is provided by a lane which also serves as a cross fence. A permanent-type fence is desirable for the lane when it is used to move cattle to the center for placement in the pastures.

Livestock water can be located either near the pivot or at the perimeter of the pastures. If water is near the pivot, tanks can be located between pastures on the fence lines, or as a single watering facility in the corral area near the pivot. The watering system should be independent of the irrigation system so that the availability of water for cattle does not depend on operating the irrigation system.

If more than one pivot is to be grazed under one management plan, fewer cross fences are needed for each pivot as long as the total number of pastures for all pivots are sufficient for a good rotation system. For example, if two pivots are to be grazed by a common group of cattle, each pivot could be divided into two or three pastures, making a total of four to six pastures for the rotation system.

Fence Construction

Cross fences can be either a permanent-type construction, an electric fence or a combination of both. Some type of gates are necessary to allow passage of the pivot towers without the attention of the operator.

Permanent-type fence for irrigated pasture cross fences is more expensive to construct, but may be justified if a strict separation of different groups of cattle is important, such as two different breeding herds or yearling heifers separated from the breeding herd.

Construction would normally consist of three or four strands of barbed wire, using a non-electrified gate to allow passage of the towers. Some type of bracing is required at each side of the pivot tower openings to maintain the tightness of the wire. This adds to the cost of this type of construction and is a major deterrent to its use.

Electric fences are much cheaper and easier to build than permanent fences. Most producers use them for this reason. They have also been shown to be very effective for keeping livestock within the boundaries of the pasture. A more effective electric fence can be made by using two electric wires and double electric gates at the pivot tower openings. Double wire electric fences are normally used when sheep, yearlings or calves are being confined. Single wire electric fence should be one half to two thirds as high as the animal's back. A height of 30 inches is usually satisfactory for yearlings or larger cattle, but may need to be lowered for calves.

Figure 2. Tower gate for electric cross fence.

Electric fences do not normally require brace posts at the tower openings because of the light weight of the fence. This reduces construction costs.

To facilitate charging the entire length of the fence through the gate openings, an insulated wire connecting the fence on each side of the opening is buried beneath the wheel tracks. The wire should be

buried deep enough so that the tower wheels do not contact it even when wheel tracks develop. It is important to use insulated wire that is designed and rated for underground installation to minimize the possibility of "shorting out" the current. For added protection, the electric wire can be placed in flexible plastic pipe or hose and the ends sealed with a flexible, putty-like material used for electrical installations.

An electric gate that does not require the electric line to be buried under the wheel track is shown in *Figure 2*. This gate is also available commercially.

All cross fences can be energized from a single fence charger by installing insulators on the center wire of the permanent perimeter fence and connecting each electric cross fence wire to it. An alternative method is to energize the perimeter of the center fence around the pivot point, making connections to the radius fences.

Combination permanent-electric fences can be constructed using permanent fences between the pivot tower openings and electric gates for the tower openings as shown in *Figure 2*. In this combination, the center wire of the permanent fence carries the electric charge to the electric gates. The same materials and construction methods apply for the gate opening as was suggested for the all-electric fence.

Fence chargers can be either 12-volt-battery powered or a 115 volt AC type receiving current from a power line. Both are satisfactory, but the latter is "hotter" and will not be "shorted" as readily by vegetation touching the wire. For this reason it is probably more desirable when a source of electric power is available.

Lightning arresters to protect the fence charger should be part of the construction for electric fences. Place these on the connecting wire between the fence charger and the fence wire. Drive a ground rod of copper coated steel or 3/4-inch galvanized pipe 3 to 4 feet into the ground.

Construction costs vary widely depending on the type of fence construction, the materials used, and the number of towers per pivot. Tower numbers vary from seven to thirteen, depending on the make and model of center pivot. For a single strand electric fence for a standard quarter section pivot (132 A), the cost for one cross fence (pivot center to outer perimeter) will vary from approximately $105.00 to $160.00, depending on the number of towers (1981 figures). These figures include using an electric gate. Construction costs are higher for other types of gates and fences.

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