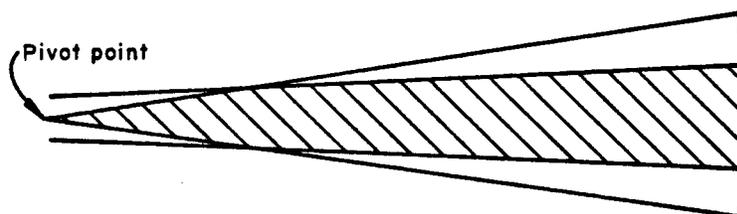


**Section 684.62**

## (a) Center Pivot Design Criteria.

Center-pivot sprinkler systems are unique in that the rate of speed and also the volume of water applied must increase as distance from the pivot point increases.

Like all irrigation systems, it is the intention of the designs to apply the same depth of water throughout the irrigated area. If it was the designer's intention to apply the water at one application rate throughout the length of the pivot, the spray pattern would be like the area between the outer lines in the following drawing.



**Figure 684-4 Center-pivot patterns**

Due to an economic limit on pressure head, it isn't possible to create this pattern without resultant high energy requirements on the outer end of the pivot. In reality, many of the spray patterns look like the cross hatched area. These systems are still designed to apply the same depth of water from one end of the pivot to the other, but the intensity of application or the application rate increases from the inside to the outside of the pivot.

Therefore, there is no one application rate for these systems. The outside end of the system may also be unique if a corner system is used. It will have an application rate that may be different from that of the main system, and the main system may have a different application rate.

The designer needs to make sure that the maximum application rate under the pivot doesn't exceed the intake rate for the soils in the field and cause runoff. Maximum intake rate for different periods of time can be found in Table 684-4.

The design of the following items needs to be considered in a pivot design or evaluation in this order:

- (1) What is the maximum daily consumptive use of the crop? Section 683.2.
- (2) Is the water supply capable of satisfying this maximum consumptive use?
- (3) What is the maximum intake rate of the soil?
- (4) The design of the pivot should be such that the application rate doesn't exceed the intake rate of the soil anywhere in the field.
- (5) The pivot should be designed so that the depth of application is uniform. (A distribution uniformity of 80% is considered good.)