

686.32 CONCLUSIONS AND RECOMMENDATIONS OF CENTER PIVOT SPRINKLER EXAMPLE PROBLEM

The evaluation shows that this system is capable of delivering a low quarter average application rate of .27 in/day. The peak design use rate of .325 in/day is greater than this so this means that the lower ¼ area of the field won't have sufficient moisture unless one of the following conditions or a combination thereof happens.

1. Develop a larger water source.
2. Change the sprinklers on the pivot so there is a more uniform distribution
3. Schedule the irrigations so the soil profile is full when usage reaches .27 in/day and depend on the moisture stored to make up the difference. Figure 686-18.
4. Depend on rainfall to make up the difference

In this example we will assume that 3 and 4 are the only options we have. The area under the crop coefficient curve which is cross-hatched represents the volume of water that will be deficient in the lower 1/4. Figure 686-19 shows the depletion of moisture that will occur in the soil profile for the period of June 28 to August 20. For comparison purposes, a curve is shown for a system that could only deliver .225 in/day (curve 4). The comparison example assumes a full profile on June 28. It should be noted that the comparison curve shows a deficit of 1.7" which would have to be made up by rainfall during this period. Weather Bureau records indicate that this would not have happened 6 out of the last 33 years.

Without changing this pivot system curve, #2 shows that room could be left for 1" of moisture on June 28, and the needs of the crop could be met in the lower ¼ of the field. This would be the recommendation made to the land user.