

# **Conserving Water** **in agriculture**

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## **Commercial Sprinkler Systems**

A water saving of 20 percent will result in a 25 percent increase in land area that can be irrigated with the same water supply. Here are a few suggestions that can make a significant savings in the amount of water you need for irrigation this year.

1. Obtain a copy of the publication PNW 63, "Sprinkler Irrigation in the Northwest--a trouble shooters guide" from your county Extension agent.

Study this guide and apply it to your system. It contains many helpful suggestions on operation and maintenance of set type sprinkler systems for maximum performance.

2. Eliminate leaks at couplers by inspecting coupler gaskets for hardening and cracking and replace as needed.

These flexible gaskets deteriorate in time so they can no longer seal with water pressure--resulting in aggravating leaks.

Sand frequently works its way between the gaskets and the gasket seats. This area should be cleaned before the gaskets are reinstalled.

3. Keep evaporation losses to a minimum by avoiding irrigation during periods of high wind and temperature (usually not over 10 percent to 15 percent of water applied).

Evaporation losses from 5/32 nozzle sprinklers will be about 9 percent in winds of 5 miles per hour and temperatures of 80° F, but will increase to 20 percent if the wind increases to 15 miles per hour and to 26 percent if the temperature increases to 100° F. Small sprinklers have higher losses than large sprinklers. Normally, high winds occur for only short periods of a day. Irrigation during this period can be avoided.

The extent that this procedure is practical will depend on the water source. If water is delivered continuously in a ditch, as with some irrigation districts, this practice cannot be followed unless temporary storage is available on the farm.

4. Reduce percolation losses (this can amount to 20 percent of the water applied).

Deep percolation losses occur because more water is applied to a specific location than is required to refill the root zone to field capacity. This can be caused by:



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- running the system too long;
- extremely poor uniformity of water distribution.

- If the system is being run too long, shut it off sooner. You can determine how long to run the system by probing in the field two or three times during an irrigation to see how deep the water is penetrating in a given period of time. From these observations you should be able to predict how long to run your system to fill the root zone. Probing should be done within 5 feet of the lateral half-way between sprinklers.
- Uniform application requires that correct nozzle size, spacing, and pressure relationships be used for the conditions encountered during operation of the system. This is discussed in detail in PNW 63 on page 11.

You can obtain maximum uniformity of distribution from your existing system if you follow a lateral offset program during the entire irrigation season. This involves placing the lateral opposite the valves on the mainline as usual for the first irrigation and subsequent odd numbered irrigations, but placing the lateral approximately half-way between the valves for all even numbered irrigations. It will be necessary to purchase a short length of pipe and a ninety degree "L" to connect the lateral to the mainline when in the offset location. This is a practice that pays off big and the number of growers following it increases every year.

Solid set permanent systems cannot be offset. Yet few of them can apply water uniformly under winds because the sprinkler spacing in the design is usually extended to reduce investment costs. These systems should not be operated in winds higher than 5 miles per hour if water savings is a major consideration.

