

WHAT IS IT?

Improving agricultural irrigation efficiency helps to reduce demand for groundwater – by optimizing effective use of water.

Equipment and information technology contribute to increasing water use efficiency in agricultural settings.

Irrigation efficiency improvements help reduce the amount of water “lost” (or not available for crops) due to:

- Leaky pipes
- Blocked sprinkler heads
- Strong winds
- Overwatering

WHY DO IT?

Too much water... not enough water... irrigating too soon or waiting too long... all of these can stress crops!

Increasing ag irrigation efficiency helps to conserve water supplies – while also helping ranchers and farmers apply the right amount of water, at the right time, to their crops. Efficient irrigation can save water and improve crop production.

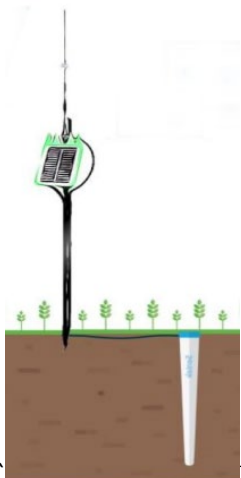
In **Sierra Valley**, individual farm assessments were conducted to identify possible opportunities for improving efficiencies on pivot and wheel line irrigation systems.

TIMING – WHEN TO IRRIGATE

Irrigation schedules must take a number of factors into account: soil types, soil moisture levels, crop needs (related to evapotranspiration), weather and farm activities such as planting and harvesting.

Multi-level soil moisture sensors precisely measure and transmit data on soil moisture at different depths – up to 8 feet below ground level.

This provides greater certainty about when and how much to irrigate.



EQUIPMENT – APPLICATION SYSTEMS

Irrigation efficiency improvements work to effectively provide adequate and consistent application of water – in a way that best uses every drop!

Farm assessments help identify where irrigation efficiency can be improved.

This may involve:

- Eliminating leaks
- Updating older irrigation equipment provides better efficiency
- Increasing the consistency of water distribution to crops



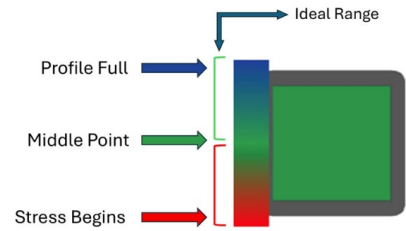
AG IRRIGATION EFFICIENCY PROJECTS IN SIERRA VALLEY

TIMING – WHEN TO IRRIGATE

Approximately 12-15 soil moisture sensors are currently installed throughout Sierra Valley. These sensors collect real-time soil moisture levels used to improve irrigation efficiency and support irrigation scheduling decisions. Additionally, soil samples were collected at select sites to better understand soil profiles, soil reservoir capacity, and water supply available to crops.

In 2026, soil moisture readings will inform recommendations on:

- 1) when to begin irrigating,
- 2) how to optimize irrigation for cuttings, and
- 3) pivot scheduling and speed.

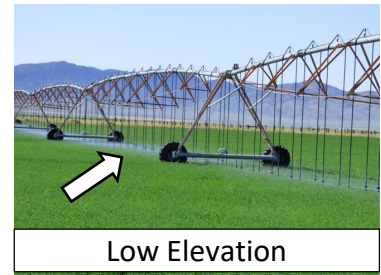
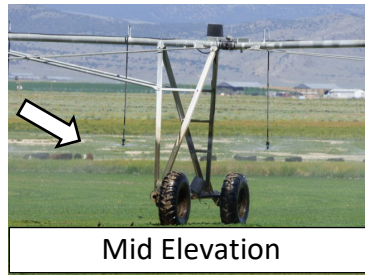


Phone app dashboard for soil moisture.

EQUIPMENT – EFFICIENT SPRINKLER SYSTEMS AND SPRINKLER HEADS

Wind drift and evaporation can contribute to significant losses of applied water (in terms of how much water actually reaches the crop).

Lowering the elevation of sprinkler heads reduces water use.



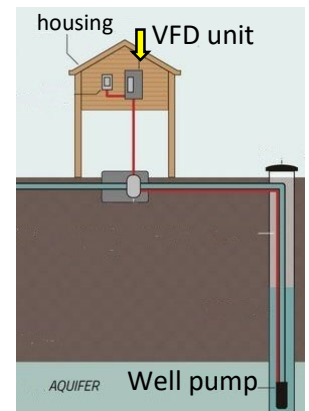
High-efficiency sprinkler heads, designed to minimize water loss, deliver larger and heavier water droplets.

Installation of high efficiency sprinklers can generally provide water savings of 15%.

EQUIPMENT – MORE CONSISTENT APPLICATION OF WATER

When water is not uniformly applied, some parts of the field receive less water. To protect crops, irrigators tend to meet the water needs in the driest areas. This results in other areas of the field being over-irrigated. The following equipment helps increase uniform distribution of irrigation water:

- Variable frequency drives (VFDs) for well pumps: these electric controllers provide more consistent output of water by changing the speed of pump motors, as needed, to adjust to changes in water flow or pressure.
- Filtration systems help to prevent sand and sediment from clogging sprinkler heads – resulting in more consistent application of water.



Adapted from: Arcadia



Source: RainBird

