

MANAGING AGRICULTURAL WATER SCARCITY IN THE COLCA VALLEY

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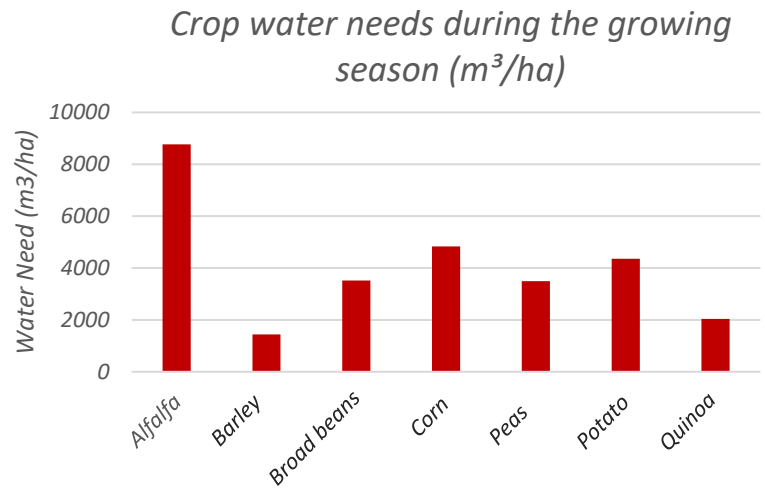


WATER SCARCITY IN THE COLCA VALLEY

Water scarcity in the Colca Valley limits agricultural production potential. The use of water conservation practices can help minimize the amount of water needed for irrigation and increase yields and agricultural profits.

CROP CHOICE AND MANAGEMENT

Drought-tolerant crops are less sensitive to water limitation, use less water and there is less risk of yield loss when water supply is interrupted. Drought-tolerant crops include barley, maize, and quinoa. This graph shows the amount of water needed to grow common crops in the Colca Valley. Of the crops shown, alfalfa needs the most water, and barley is the most drought tolerant. Poor soil limits plant water uptake, so making sure the crops are properly fertilized will improve water use efficiency.



SOIL MANAGEMENT

Soil degradation decreases water use efficiency by limiting how much water moves into and is held in the soil. Rotating grazed areas and cropped areas can reduce soil compaction and increases water infiltration capacity.



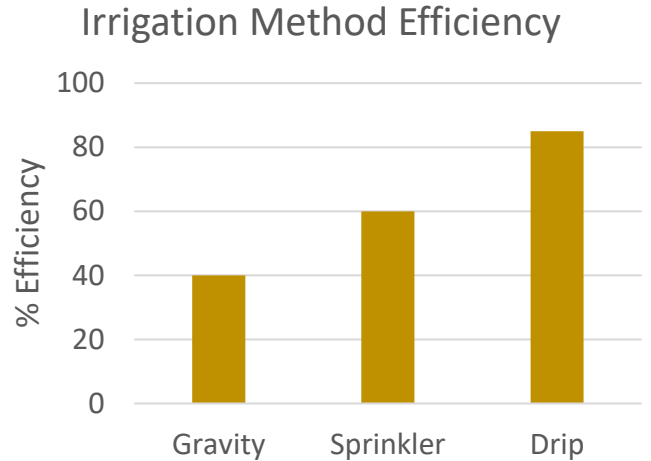
Reincorporating plant residue cut from your field back into the soil instead of burning it can increase infiltration and add nutrients. Nutrients such as nitrogen and phosphorus are necessary for crop growth and can increase crop productivity.



IRRIGATION MANAGEMENT

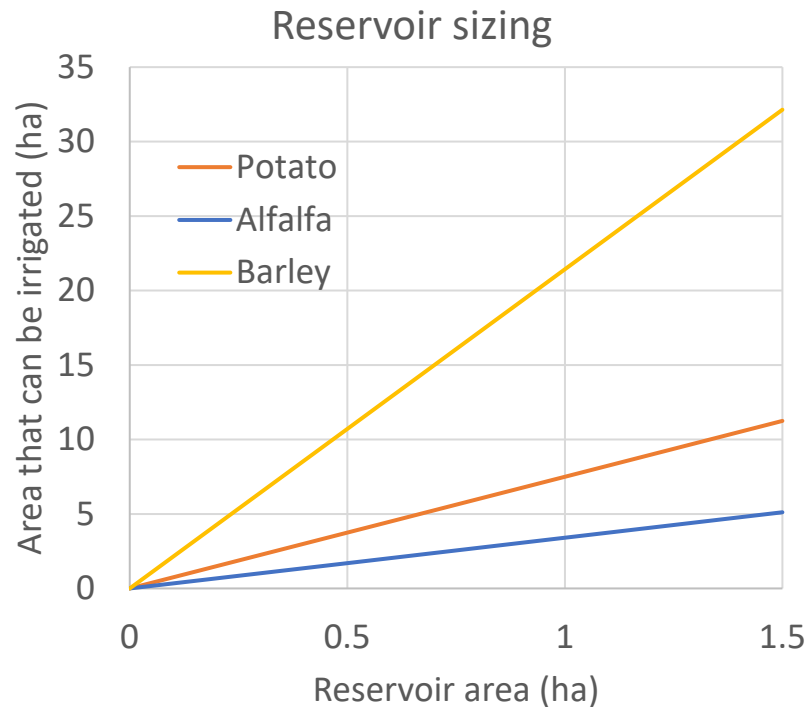
The timing, frequency and method of irrigation can also have a big impact on total water use. When infiltration is limited, irrigating every day may increase runoff and disease. Watering in the evening can reduce water loss through evaporation as well.

More water is lost to evaporation with gravity and sprinkler systems than drip systems, but gravity systems can reduce soil salinity by flushing salts. Drip irrigation supplies water directly to the roots of plants, reducing the chance of evaporation. These can be labor intensive to install but have the most efficient water use.



WATER CAPTURE AND STORAGE

Another option is to capture excess water that flows during the rainy season. Farmers or groups can build ponds or reservoirs to capture and store water for use during dryer periods. The graph shows the area of different crops that can be irrigated based on the area of a 3-meter-deep reservoir. In this example, for a reservoir of a given size, the water supply will last longer when irrigating drought-resistant crops, like barley.



CONTACT

For more information about the developers, this factsheet, and other tools developed by the Sustainable Water Management team of the Arequipa Nexus Institute, contact us at nexus-swm@purdue.edu.