



Natural Resources Conservation Service  
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March 12, 2009

Mr. John Plummer [johplummer@yahoo.com](mailto:johplummer@yahoo.com)  
Taos Valley Acequia Association  
Taos, New Mexico

Dear Mr. Plummer:

Thank you for your patience regarding this reply to your concerns expressed by email to Mr. Michael Neubeiser concerning two publications entitled, "Conservation in Irrigation Can Increase Water Use" and "Consumptive Water Use Within the NRCS EQIP Program." These publications and your concerns related to consumptive use, EQIP, and water savings.

The articles were written in somewhat general terms but, as with many topics, must be answered with the caveat – "It depends". Irrigation systems ideally supply adequate water to meet full crop requirements but often the amount of water is inadequate to meet that need.

Irrigation efficiency of an irrigation system with adequate water to meet the crop needs, is a ratio of water needed to grow the crop versus water diverted (either from a stream, reservoir or a well). With an inefficient irrigation system, diverted water can be "lost" by leaks and seepage in the delivery system, movement of water below the root zone of the plant (deep percolation), and/or runoff from the field. The fate of this "lost" water can thus be defined as surface or subsurface losses. In New Mexico, acequia systems in the mountainous regions have the highest likelihood of returning water via any of these methods.

The seepage and deep percolation water return to the aquifer. The two mentioned articles insinuate that this water remains in the basin. I think that is an over-simplification of what actually occurs and is not always true. Some of this water will stay within the basin and some water could enter another basin. Some of this water stays within the basin will be at a depth within the aquifer from which it can be economically withdrawn and some of this water will go deeper so as to economically render it unavailable. It is highly improbable that the fate of these waters can be quantified with an acceptable degree of accuracy.

The delivery system leaks and field runoff follows a down-hill path. Some of this extra water might reach a water course where it could be available for reuse. Some of this excess water could become deep percolation. Unfortunately, in practice, a lot of this excess water generally irrigates "weeds" in and near the field from which it came.

In the case of Government funding through EQIP where sufficient water is available to meet crop needs, it is safe to say that this funding can indeed result in less water being diverted to accomplish the task of irrigation.

On the other hand, a large portion of the state operates in the deficit irrigation mode. The crop could use more water if it were available. Application uniformity (as opposed to irrigation efficiency) is a more accurate way to describe the performance of irrigation systems in this situation. Before the advent of higher application uniformity systems such as LEPA or drip

systems, it would have been difficult to detect water lost with older systems, particularly water lost through deep percolation. These newer systems still do not have sufficient water to meet the crop needs and thus the same amount of water will be used. Any improvement in application uniformity generally results in higher production.

So in the case of Government funding through EQIP where insufficient water is available to meet crop needs, it is safe to say that this funding does not affect the amount of water diverted but can improve the productivity of the water that is diverted.

In summary, the underlying question is not just about water conserved, but the beneficial and appropriate use of that water. Important considerations regarding the beneficial and appropriate use are field or farm specific, such as location, groundwater basin, and full or deficit irrigation mode.

Sincerely,

A handwritten signature in blue ink that reads "Roger Ford". The signature is written in a cursive style with a large, stylized "F" and "R".

Roger Ford  
State Conservation Engineer

cc: Mary Podoll, Area Conservationist, NRCS, Albuquerque  
Pearl Armijo, District Conservationist, NRCS, Taos  
Michael Neubeiser, Resource Conservationist, NRCS, Albuquerque