

Improving Drainage of Agricultural Lands for Salinity Problem in the Lower Arkansas Valley

Rose Rotter and Ramchand Oad
Civil Engineering Department, Colorado State University

John Wilkins-Wells
Sociology Department, Colorado State University

Abstract. The agricultural land in the Lower Arkansas River Valley is experiencing problems with high levels of salinity and a high water table. The valley agriculture has long been sustained through irrigation but in recent years water has been purchased by municipalities and removed from the valley. Subsurface tile drains were installed in several areas throughout this area in the 1920s and 30s. Over time knowledge of the locations of these tile drain systems has been lost and the systems often have not been maintained. Over the past five years Dr. Gates and Dr. Garcia have done much work in the Valley which has established soil salinity as a major problem. Along with deterioration of the subsurface drains, so too has the organization of the drainage districts. This project aims to renew the organization of the drainage districts to share in regular maintenance and upkeep of the drains. To demonstrate the effectiveness of the drains and sewer cleaning technology and to build community support, select drains will be cleaned and lateral drains will be designed to connect to an existing drain. Through community meetings throughout the valley, farmers have voiced their drainage concerns and have been informed of the project. The response of the community has been overwhelmingly favorable. Based on conversations with farmers, and examining old engineering plans and aerial photographs, tile drain systems have been located throughout the valley. Two sites were selected as demonstration sites based on location, length of tile drain, and farmer cooperativeness. Cleaning of the primary site, field 17, has shown the existing tile drain to be intact but that the original design did not include enough manholes to allow regular cleaning and maintenance. Further cleaning has been scheduled in early March for field 17 and at the secondary site, the George Reyher Trust farm. Preliminary designs are being made to add lateral relief drains to the existing tile drain on field 17.