

**Finco, M. V. 1999. Watershed-scale sediment yield estimation from surface-irrigated agriculture: Imperial Valley, California. Ph.D. dissertation. University of Utah. Salt Lake City, Utah. 140 pp.**

Intensive irrigation makes the Imperial and Mexicali Valleys a thriving, year round agricultural region. One by-product of the irrigated agriculture is the nonpoint introduction of sediment, pesticides, and nutrients to the surface water. In this dissertation, an erosion model, linked to a Geographic Information System (GIS), is used to quantitatively estimate sediment yield at the parcel scale. The model results in spatially disaggregate, temporally sequenced estimates of sediment yield at the parcel scale, and provide insight into the patterns and causes of sediment yielded to the drain system. Intensive row crops are found to contribute 65% of all sediment in the study area. Further analysis shows that 20% of the parcels contribute 70% of the sediment to the drain system, and that the northern half of the study area is responsible for over 72% of all sediment generated. Similar erosion characteristics of erosion are hypothesized for the entire Imperial Valley. The implementation of best management practices, such as settling ponds and vegetative filter strips, is modeled for the study area, and the effect of these practices for reducing sediment in the drains is quantitatively evaluated. The research shows that crop-specific, parcel-scale best management practices would be most effective at reducing sediment in Imperial Valley drains.