Evapotranspiration Depletion Comparison of Saltcedar Managed Areas Along the Rio Grande Valley

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Several methods of control have been implemented in an effort to reduce saltcedar evapotranspiration (ET), improve ecological health of riparian regions in the southwestern United States, and re-establish indigenous plants such as cottonwood, willows and saltgrass among others. Management practices for controlling saltcedar include mechanical, biological, chemical and ecological competitive means. This study investigated evapotranspiration (ET) depletion of saltcedar-managed areas where three common methods i) mowing, ii) herbicide treatment and iii) plowing or clearing have been practiced. The eddy covariance method was used to measure ET at four sites in New Mexico along the Rio Grande. The study sites included Caballo mowed saltcedar site, Monticello herbicide saltcedar treated site, Bosque del Apache National Wildlife Refuge (NWR) plowed or cleared saltcedar site, and Bosque del Apache NWR monotypic dense saltcedar site as a baseline. Results showed an average reduction in ET from 5 mm/day to 3.8 mm/day for 19 consecutive days during first mowing and from 5.3 mm/day to 4.8 mm/day for 22 consecutive days during second mowing at Caballo mowed saltcedar site. Precipitation during the second mowing period was reflected in the ET reduction. A comparison of mowed, herbicide treated and plowed ET to the dense monotypic saltcedar stand resulted in mean ET reduction of 24.5%, 52%, and 31%, respectively.