Wetland Cropland Rotational Management to Improve Wetland Habitat and Sustain Crop Production in the Tule Lake National Wildlife Refuge, CA. (A08-loshuertos185231-Oral)

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Abstract:

The Tule Lake NWR encompasses both wetlands and leased irrigated cropland. Wetland/cropland rotational management is proposed as a strategy to improve wetland diversity, soil and water quality, and sustain agricultural production, The concept is that crop cycles function as a disturbance allowing early successional wetlands to be established upon re-flooding, while the wetland phase breaks pest cycles and improves soil quality. We evaluated impacts of rotational management on wetland habitat, crop production, and soil and water quality. After flooding desirable wetlands utilized extensively by waterfowl were created within 2-3 years and soil exch-P increased. Surface water quality was variable and localized interactions seemed to dominate nutrient fluctuations. Drainage from seasonal wetlands at summer draw down had lower DO, temperature, and elevated ortho-P and ammonium. Refuge models show high canal flows during draw down could minimize adverse water quality impacts, but competition for water in late summer may be an issue. Overall the strategy has considerable potential, and a scheme for evaluating the merits and tradeoffs for different management designs will be discussed.

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