ASA, CSSA, and SSSA
2010 International Annual Meetings
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Green Revolution 2.0: Food+Energy and Environmental Security

231-4 Water Use Efficiency.

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Tuesday, November 2, 2010: 9:20 AM
Long Beach Convention Center, Room 103B, First Floor

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Irrigated agriculture is a critical component required to meet future food, fuel, fiber, and feed requirements for a world with an exponentially expanding population, declining water resources, and reduced, more impaired arable lands. Irrigation worldwide was practiced on more than 270 Mha and provides much greater productivity and water use efficiency (WUE) than rainfed or drylands. The objectives of this paper are to (i) review irrigation worldwide in its ability to meet our growing needs for food production, (ii) review irrigation trends in the USA, (iii) discuss various concepts that define water use efficiency (WUE) in irrigated agriculture from both engineering (blue) and agronomic (green) viewpoints, and (iv) discuss the impacts of enhanced WUE (both blue and green) on water conservation. Scarcely one-third of our rainfall, surface water, or ground water is used to produce plants that are useful to mankind. Without appropriate management, irrigated agriculture can be detrimental to the environment and endanger sustainability. Irrigated agriculture is facing growing competition for low cost, high-quality water. In irrigated agriculture, WUE is broader in scope than most agronomic applications and must be considered on a watershed, basin, irrigation district, or catchment scale. The main pathways for enhancing WUE in irrigated agriculture are to increase the output per unit of water (engineering and agronomic management aspects), reduce losses of water to unusable sinks, reduce water degradation (environmental aspects), and reallocate water to higher priorityuses (societal aspects).

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