Timing of Water Application on Pearl Millet and Sorghum Yields in Western Nebraska. (C03-mason160947-Poster)

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Abstract:

Pearl millet and sorghum are drought tolerant crops, but both crops yield higher when rainfall is evenly distributed throughout the growing season. A 2-year study was conducted on a Keith silt loam soil near Sidney, NE with the objectives to determine the adaptation of pearl millet and grain sorghum to western Nebraska, and to compare yield response of pearl millet and grain sorghum under rainfed, partial, and full irrigation. In the dry 2000 year, sorghum yielded 4.1 Mg ha-1 compared to 1.9 Mg ha-1 for pearl millet. In the higher rainfall year of 2001, sorghum produced 5.0 Mg ha-1 compared to 3.9 Mg ha-1 for pearl millet. In 2000, yields were increased by 89, 108, and 245% with irrigation at boot stage, grain fill, and full irrigation, respectively, while in 2001, the increases were 14, 30, and 55%. Pearl millet and sorghum both used 330 mm to 374 mm. Sorghum had higher WUE than pearl millet, 12.4 vs 5.1, and 13.4 vs. 10.4 kg grain ha-1 mm-1 in 2000 and 2001. Full irrigation and irrigation at grain fill increased WUE and kernel weight. These results indicate that supplemental irrigation at grain fill, when necessary, will be enough to increase the yield of both crop to near its maximum. Sorghum is better adapted than pearl millet to this region.

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