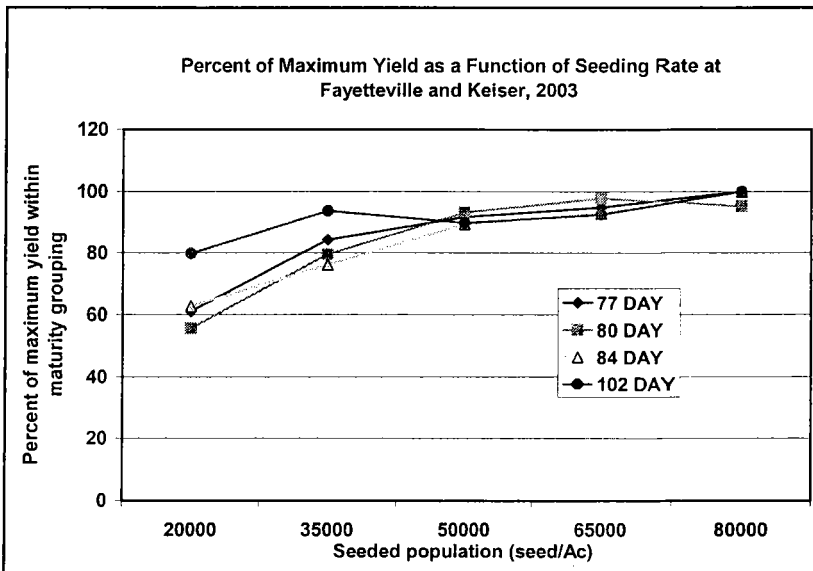


**2003 Annual Report Presented to the
Arkansas Corn and Grain Sorghum Promotion Board**

Project Title: Low Input, Ultra-Short Season Corn Production

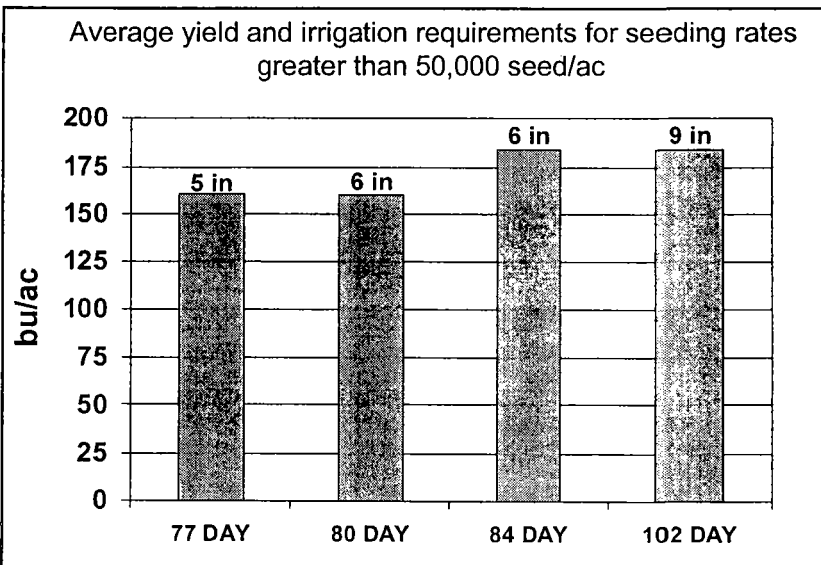
Principle Investigators: Larry C. Purcell and Earl D. Vories

This was the third year of our research evaluating ultra-short season corn hybrids for yield potential and their ability to decrease irrigation. These hybrids were originally developed for the northern U.S., and to use these hybrids successfully in Arkansas, we have evaluated a wide range of population densities.



In the figure to the left is the relative yield of 77, 80, 84, and 102 day hybrids evaluated at seeding rates from 20,000 to 80,000 seeds per acre for 2003 with data averaged for experiments at Keiser and Fayetteville. The crops were sown in mid-April and received a total of 200 (Fayetteville) or 250 (Keiser) units of nitrogen. Half of the nitrogen was applied at planting and the other half was applied at the 6 to 8 leaf stage. These data indicate that higher populations are required to produce full yield potential of the earlier

hybrids, and that early hybrids produce highest yields at seeding rates of 50,000 per acre or more. These results are similar to those found in 2001 and 2002.



One advantage of the short-season corn hybrids is that they mature prior to the hottest and driest portion of summer, which typically occurs in late July and August. The figure at the left is yield data from 2003, averaged over the Keiser and Fayetteville locations. At seeding rates of 50,000 per acre or more, yield potential was greater than 150 bu/ac for the 77- and 80-day hybrids, and greater than 175 bu/ac for the 84- and 102-day hybrids. The total amount of irrigation

required to produce the corn crop increased as maturity rating increased from 5 inches for the 77-day hybrid, 6 inches for the 80- and 84-day hybrids, and 9 inches for the 102-day hybrid.

An additional benefit of the short-season hybrids is that soybean can be produced after the corn harvest. Corn hybrids with relative maturities of 77 and 80 days were harvested July 30 with yields at the higher population densities ranging from 150 to 170 bu/ac, depending upon hybrid. Immediately after harvesting, corn residue was bush-hogged and a maturity group I soybean cultivar was sown with a no-till drill at a seeding rate of 350,000/ac. Soybean emergence was August 4, and average soybean yield following corn for this sowing date was greater than 40 bu/ac. Soybean sown at later dates, after later maturing corn hybrids, had considerably lower yields. In previous years, we have also demonstrated that wheat can be sown after the soybean crop with no adverse effects on wheat yields, thus making a productive 'triple cropping' system.

Future research efforts will be focused on identifying a wider group of ultra-early (less than 100 day) corn hybrids that perform well in the Midsouth. This can be done by conducting an ultra-early hybrid evaluation test, similar to the variety testing trails, at several locations in Arkansas (Keiser, Stuttgart, and Rowher). One goal of this research would be to stimulate interest among seed companies in developing short-season hybrids specifically for the Midsouth.