Soil Microbial Community responses during Early Season Corn Growth following supplemental N and P starters. (S03-quincke145152-Poster)

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Abstract:

Improved N management by monitoring the crop N status and using fertigation reduced N-fertilizer inputs in irrigated cornfields in central Nebraska. However, yield monitoring suggested that undetected early season stresses could cause consistent yield losses with respect to highly fertilized check strips. Objectives were (1) to ascertain the occurrence of early season corn growth stresses in a field under improved N-management, and (2) to determine whether such stresses are associated with shifts in soil microbial communities. Supplemental starter fertilizer was dripped over the row immediately after planting in 1999 and 2000, using either UAN or DAP at 20 or 40 lb N/acre. Control strips had reduced N fertilization, while check strips additionally received 80 lb N/acre at sidedress. Fatty acid methyl esters (FAMEs) profiles were used to 'fingerprint' soil microbial communities in early growth stages (V3 to V9) in response to fertilizer treatments. Data revealed neither consistent early growth stress nor the expected yield loss as found in three preceding years. FAME profiles indicate minimal effect of starter fertilizer treatments on the microbial communities. However, a significant effect of growth stage on FAME profiles was observed.

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