

**CHARACTERIZATION OF CELLULOSE IN DEVELOPING COTTON FIBERS****Allen K. Murray****Glycozyme Inc.****Irvine, CA****Robert L. Nichols****Cotton Incorporated****Cary, NC****Abstract**

During our investigation of cotton fiber development, the chemical fraction conventionally defined as cellulose was extracted from fibers developing within bolls of the cultivar 'D&PL 50' sampled at 21, 25, 30, 38, 44 and 56 days post anthesis (DPA). The cellulose fraction was further subjected to sequential 6N HCl hydrolysis until no material remained. Consistent with literature, we found releases of large amounts of glucose in the early digestions that quantitatively decreased in later digestions. Observation by light microscopy at 200x magnification of the residues of the successive hydrolyses revealed few differences in appearance. Rather microscopic examination consistently found less material with similar appearing structure in decreasing amounts. Different carbohydrates in different relative abundances were found in the sequential 6N HCl extracts at all stages of development. The later stage hydrolyzates contained cello-oligosaccharides ranging from DP2 to DP8. These cello-oligosaccharides have not been observed in hydrolyzates of samples of mature fibers. These results indicate differences in extracted carbohydrates from cellulose in the developing fibers at all stages sampled.