Almost all plant cells are surrounded by glycan-rich cell walls, which form much of the plant body and collectively are the largest source of biomass on earth. Plants use polysaccharides for support, defense, signaling, cell adhesion, and as energy storage, and many plant glycans are also important industrially and nutritionally. Understanding the biological roles of plant glycans and the effective exploitation of their useful properties requires a detailed understanding of their structures, occurrence, and molecular interactions. Microarray technology has revolutionized the massively high-throughput analysis of nucleotides, proteins, and increasingly carbohydrates. Using microarrays, the abundance of and interactions between hundreds and thousands of molecules can be assessed simultaneously using very small amounts of analytes. Here we show that carbohydrate microarrays are multifunctional tools for plant research and can be used to map glycan populations across large numbers of samples to screen antibodies, carbohydrate binding proteins, and carbohydrate binding modules and to investigate enzyme activities.