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## Exploiting Genomics to Improve Cannabis Cultivars

Large scale DNA sequence information or genomics has been used with great success in plant breeding for important crop plants to improve yield and tolerance to important environmental stresses like drought. This same paradigm can be used to improve cannabis cultivars, as well as to determine the effect of different environmental growth conditions on how individual cultivars can grow, their resistance to pathogens and the important metabolites like cannabinoids and terpenes they produce. We have the expertise derived from our experience using these technologies to study important crop plants like corn and rice to do the same for the cannabis industry.

In an effort to discover genetic mechanisms controlling plant growth and yield under external factors such as nutrient limiting conditions and other abiotic stresses, we identified a number of key genes in rice and corn using large-scale DNA sequence information (1,2,3). We have been able to determine function of genes in nutrient use (4,5,6), plant architecture (7,8) and increased dry biomass and seed yield under different nutrient conditions (3, 9); increased amino acids and nitrogen contents (3,9), delayed senescence (8,10,11,12) and improved performance under abiotic stresses (13,14,15,16). These studies utilizing large scale DNA sequence and information allowed us to investigate responses under different growing conditions and this research supports the notion that there are unique responses of different cultivars for each type of growth environment (14,17,18).

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### Full Version

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