



Engineering Super Plants for the Future



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Researchers at PNNL want to know what happens when crops get stressed due to environmental changes like drought or poor nutrient availability. Using “-omics,” or the study of metabolites, proteins, RNA and DNA to understand the chemical changes that occur inside a plant under stress, they can get at these answers. The trick is to “spot the differences” between the plants grown under various conditions. Experiments are run by growing control plants and plants exposed to a stressor. Then, specific parts of the plants are sampled (for example, leaves and roots). The samples are run through a mass spectrometer and analyzed for proteins and metabolites. Data is analyzed for differences between the stressed and control groups. Finally, scientists figure out what molecular signatures are associated with beneficial plant traits so solutions can be found to large-scale problems.



The overall goal of this work is to be able to select for superior traits to develop stress-tolerant plants for food, feed, and energy.



For more information, visit:
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What do plants look like when they grow under “stressed” conditions?

How do researchers study these molecular-level changes?

How does this research support food and energy security for the future?