Learner-Centered, Web-Based Education Website and Simulation Modules for Controlled Environment Agriculture Program

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An instructional website with animated, interactive teaching modules that simulate controlled environment engineering, plant physiology, and environmental concepts has been initiated by an interdisciplinary team of faculty and students from the College of Agriculture and Life Sciences. This collection of interactive animations, streaming videos, and instructional modules, collectively named, a “Day in the Life” of a plant, will provide instructors and students with engaging learner-centered, asynchronous educational tools designed to concretely demonstrate the abstract concepts and principles discussed in traditional classroom lecture. The students will achieve a deeper, more applicable understanding of their course material and ultimately gain an elementary understanding of the extremely complex and dynamic interrelationships of greenhouse plant systems. The teaching modules will become the basis of graduate and undergraduate courses, including Greenhouse Engineering, Physiology of Plant Production in Controlled Environment, and Hydroponic Crop Production. A living laboratory consisting of a 500 m$^2$ commercial-style greenhouse, contains nearly 1000 tomato and pepper plants and serves as the link from the virtual simulations of the website to the hands-on resource of actual greenhouse experiences. The Tomatoes Live! Web cam and the PTZ Pepper cam provide a live visual of plant production within CEA for off-campus students [see http://ag.arizona.edu/ceac].