

The wonder weed

The basic summary of Mannie Liscum's research seems counterintuitive to those with a green thumb: Liscum and his colleagues work with a weed that could help save crops.

In a normal field, the plant research model *Arabidopsis* might be just another pesky weed to be removed. In the lab and test plots of Liscum and collaborator Candi Galen, both professors of biology, *Arabidopsis* has become a guide to learning how plants find water and survive drought.

Liscum studies phototropism, or the directional cues that plants take from different kinds of light. Just as shoots and leaves grow upward toward the light, roots grow downward away from the light and toward more water. This is particularly crucial in drought conditions, when water is scarce in the upper levels of soil.

Plants have multiple ways to sense light, and Liscum is trying to determine which genes best control the signals that send roots downward. He does this by "poking their eyes out," or knocking out the various light-sensing genes to see how the plants react. "By observing what a mutant plant does in the field, we can determine what the 'eye' we've poked out sees and how the plant responds to its vision," he says.

Studying how plants sense light and how they trigger roots to grow downward could translate to crops such as soybeans in the future. By learning the mechanisms in model plants such as *Arabidopsis*, which have short life spans and make for quick studies, researchers can save years of work.



Photo by Nicholas Benner

Professor Mannie Liscum checks on his *Arabidopsis* plants in the Bond Life Sciences Center. His research could lead to more drought-tolerant crops.