

Competition—Why are “Weeds” So Successful?

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Abstract

The students engaged in this exercise, designed for non-majors and first-semester environmental science students, have often had very little lab experience. This exercise looks at plant competition in which two garden plants stand in for two common weeds; spinach and black mustard stand in for lamb’s-quarters (*Chenopodium album*) and garlic mustard (*Alliaria officinalis*) respectively. By the time they carry out this lab exercise, many students have encountered garlic mustard, an exotic species and noxious weed. Both wild species germinate and grow in the same conditions in late summer, though lamb’s-quarter flowers in the fall and garlic mustard, a winter annual, blooms the following spring. This exercise looks at the growth characteristics of their early weeks, when both allocate resources to roots and shoots. The students determine if there is any difference in allocation of resources to shoot or root growth of black mustard and spinach, each grown by themselves in pots. They will compare these characteristics to black mustard and spinach grown together, at the same density as the plants grown by themselves, to see if there is some difference in resource allocation when they are in a competitive situation.

For many of these students writing a lab report is a novel experience, and the second purpose for this exercise is to prepare students to analyze a more complex lab problem and write a formal lab report in the coming weeks. This exercise asks them to interpret data and make graphs. The questions in the discussion portion of this lab exercise are meant to serve as a model to help guide students through the type of questions they should ask themselves in the following exercise in the semester’s lab sequence.