

## **Decomposition Rates of Wheat, Fava Bean, and Pea in Northern California**

Hope Coulter, K. Brasier, and H. Zakeri; Department of Plant and Soil Sciences, California State University, Chico

Contact: Hope Coulter, [hmcoulter@mail.csuchico.edu](mailto:hmcoulter@mail.csuchico.edu); Kyle Brasier, [kbrasier@csuchico.edu](mailto:kbrasier@csuchico.edu)

As California growers are increasingly adopting cover crop (CC) practices. Common CC mixes include plant species from Poaceae, Fabaceae, and Brassicaceae. Seeds of these species are mixed in specific ratios and planted in fall or spring. At termination time the CC is incorporated into the soil or crimped and left on the soil surface. In this study, the decomposition rates of three winter CC species were quantified to help growers choose which CC species to incorporate into their mix, timing of CC termination, and planting date of subsequent crops.

Roots and aboveground biomass (AGB) of winter-grown wheat, faba bean, and pea were harvested in the spring at the legumes' full-pod stage. The root biomass was washed, and both root and AGB were cut into pieces ~1 cm long. 40g fresh biomass each of the root and AGB were weighed into semipermeable bags and secured with zip ties. Depending on the quantity of material available, 21-28 samples of each species were prepared. One bag of each set was dried to get the initial moisture content. The remaining bags were buried ~1ft deep between rows of established calendula flowers. Bags were removed from the field every 7-24 days, dried and weighed. Decomposition was measured in % /week of biomass lost.

Averaged over two years, the decomposition rate of wheat root and AGB was 2.6 and 4.0%/week respectively. For pea root and AGB these values were 3.3 and 3.2%/week respectively, and for faba bean root and AGB they were 3.5 and 3.0%/week respectively. The decomposition rate of all roots taken together was 3.1%/week and the decomposition rate of all AGB taken together was 3.4%/week.