

Carbon and nutrient cycling in a changing world: role of plant-soil interactions

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Plants spend large amounts of carbon belowground to take up nutrients and water from the soil. Carbon costs associated with nutrient uptake have large effects on the productivity and competitiveness of individual plant species and communities in natural and agricultural ecosystems, and have ramifications for soil carbon storage and nutrient retention. I will give an overview of recent research in our group on how the exchange of carbon for nutrients by plants is affected by environmental and management factors. I will provide examples from mountain ash forests impacted by wildfires, grasslands impacted by climate change, and croplands impacted by management. Using these examples, I will explain novel stable isotope techniques that we have developed in assessing carbon and nutrient dynamics in intact plant-soil systems.