LOGAN R. NELSON, Dept. of Biology and Environmental Science, West Virginia Wesleyan College, Buckhannon, WV, 26201, and MATTHEW L. REID, Dept. of Biology and Environmental Science, West Virginia Wesleyan College, Buckhannon, WV, 26201. Responses of belowground multitrophic interactions under warming climate conditions.

Belowground interactions among plants and soil organisms are complex. Plant roots form associations with mutualists, including arbuscular mycorrhizal fungi (AMF), while also interacting with soil fauna that may feed on plant roots and fungal hyphae. Each of these interactions is likely to be affected by a warming climate, and community-level responses may not always be evident. We investigated the growth responses of the perennial C4 grass *Panicum virgatum* and a generalist AMF mutualist *Rhizophagus intraradices* to increased air temperature and addition of herbivorous nematodes (*Pratylenchus penetrans*). We conducted a 2x2 factorial experiment, where we manipulated air temperature (ambient vs. warm) and nematode addition (presence vs. absence). While neither air temperature nor nematode addition had any effect on aboveground plant biomass, warmer temperatures reduced plant belowground biomass by 48.5%, and nematode addition reduced belowground plant biomass by 40.9%. Nematode addition reduced the length of extraradical hyphae (ERH) in the soil by 65.8%, while warmer temperature had no effect on ERH length. Levels of AMF colonization in the roots differed significantly based on the interaction of nematode addition and temperature. Under ambient temperature conditions, nematode addition reduced root colonization levels by 38.1%. However, under warming conditions, nematode addition resulted in increased root colonization levels by 25.9%, indicating potential greater reliance by the plant on its AMF mutualist. Overall, these results suggest complex responses of multitrophic interactions to warming temperatures. Given *Panicum virgatum* is a cellulosic bioenergy crop, our results highlight the potential effects on plant growth and belowground carbon storage.