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# Litter photodegradation depends on functional leaf traits

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Leaf litter photodegradation plays a key role in net primary production and nutrient cycling in arid landscapes. A potential biodiversity loss might alter leaf trait composition of litter mixtures from different species, and understanding how UV radiation may affect litter mixtures with a new balance of functional traits, modifying decomposition dynamics, is important to anticipate ecosystem responses to global change. We conducted an experiment to investigate the effects of photodegradation in leaf litter mixtures using three common species in arid SE Spain (Chamaerops humilis, Retama sphaerocarpa and Stipa tenacissima) with contrasting functional traits (carbon and nitrogen content, specific leaf area and litter moisture capacity). Litter from these three species in mixtures and monospecific were exposed during 200 days to continue UV radiation. We hypothesized that functional diversity in mixtures would increase photodegradation effects. Indeed, our results showed that photodegradation increased mass loss by 2-3% over treatments without UV, and litter mixtures increased mass loss by 5 %, vs. 1% in monospecific treatments, with no significant statistical interaction. Photodegradation did not affect litter moisture capacity, and specific leaf area is not related to the effects of photodegradation. However, UV radiation modified C and N contents, and the intensity of this effect depended on the species identity. Our results indicate that the effects of photodegradation are important and may influence biological decomposition, particularly of leaf litter mixtures. The potential change of species diversity traits may, therefore, affect decomposition dynamics with consequences for nutrient cycling.