Summary

* Plant-soil microbe interaction, also known as plant-soil feedback (PSF), have received attention for over two decades since its inception. Such interactions can have profound impacts on various community processes.
* Recently, there has been an increasing recognition of time in plant-soil microbe interactions, a critical yet overlooked aspect in previous PSF studies.
* Different timing and duration of conditioning and responding plants within and across multiple generations can yield distinct outcomes of plant growth and biomass performance.
* Moreover, soil microbes can have demographic consequences for plants, affecting seed germination rate and timing, seedling survival, and flowering phenology.
* By integrating temporal dimensions of plant-soil microbe interactions and the demographic effects into theoretical models and parameterizing these models with empirical results, we envisage a better prediction of long-term dynamics of plant-soil microbe interactions in natural contexts.