Exotic Plant Invasion Affects to Arbuscular Mycorrhizal Fungal Community

Park, Wooju
Jeon, Sangjun
Jeon, Yujin

The successful invasion of exotic plants often cause a serious damage by reducing species diversity, ultimately leading to deleterious effects on the ecosystem. There are some researches on how the invasion of exotic plants affect and change the aboveground ecosystem. However, it is not well known how the underground microbial community is affected. Therefore, we looked for changes of underground fungal community caused by exotic plant Phytolacca americana in the context of arbuscular mycorrhizal fungi(AMF). AMF plays an important role in growth of vascular plants. We collected soil and root samples of Phytolacca americana and Korean native plants Persicaria blumei and Setaria viridis, and investigated difference in AMF community using PCR, DNA cloning and DNA sequence analysis. Analysis of soil samples revealed significant decrease in evenness for AMF species distribution in Phytolacca americana as compare to the two native plants. In addition, a notable difference of AMF community in the roots between the exotic plant and native plants was discovered. Acaulospora, which is the most abundant AMF genus in Korea, was found to be the major genus colonized in the roots of exotic plant. Phylogenic analysis of host plants indicated that two native plants share the common AMF species in spite of their far genetic distance. The results suggest that the exotic plant has changed soil fungal community in species distribution. Also, forming symbiosis with the most abundant local AMF species may be a factor which contributed to the successful establishment of exotic plant Phytolacca americana in Korean peninsula.

Awards Won: