

식물생명공학과

초청세미나

Title: Plant-beneficial bacteria to manage plant disease and abiotic stress

강의 일정

2023. 11월. 24일 금요일 시간 14:00

강의 장소

생명과학관 서관 534 호

초청 연사

상미경 박사

소속: 농촌진흥청 국립농업과학원 농업미생물과

Abstract :Plants routinely face challenges from both plant pathogens and abiotic stressors such as drought, salt, and extreme temperatures. Utilizing bacteria offers a valuable solution to address plant diseases, presenting an alternative to chemical fungicides and helping to mitigate the potential risks associated with their excessive use. Furthermore, these bacteria possess the capacity to enhance plant tolerance against abiotic stresses resulting from climate changes. In this presentation, I will introduce two case studies that exemplify the practical application of plant-associated bacteria in salinity stress—a major constraint on global crop productivity with various adverse effects on plant growth and yield. To alleviate salinity stress in a plastic-house cultivation, we have identified a *Bacillus* strain that not only enhances induced tolerance to salinity stress in tomato plants but also acts as a biocontrol agent against bacterial wilt. This *Bacillus* sp. has demonstrated its ability to induce changes in the allocation of phenolic compounds, potentially playing a crucial role in enhancing tolerance to abiotic stress. In another study, we explore the potential of selected bacterial extracts to mitigate salt stress in a field crop, soybean. The extracts from *Bacillus* and *Streptomyces* improve seedling emergence in salt-stressed soybeans, inducing changes in soybean leaf spectral reflectance due to salt stress. The extracts also influence plant enzymatic antioxidant activity and hormone levels, particularly abscisic acid. While the bacterial extract increased node production in salt-stressed soybeans and partially impacted soybean metabolites, it did not affect microbial diversity and composition. These illustrative examples contribute to the development of biocontrol strategies for disease management and bio-stimulants for alleviating abiotic stress. These efforts have the potential to overall enhance plant health.