75th FEFCO

Forest Ecosystem Function Colloquium (FEFCO) は、地域や地球全体のレベルで森林生態系の機能とその持続的活用法を統合的に理解することを目的とし、研究者間の学術交流を推進します。

第75回森林生態系機能コロキウムは、チュニジアのGabes,大学のMustapha Ennajeh博士にご講演いただきます。どなたでも参加できますので、多くの皆様のご参加をお待ちしております。京都大学農学研究科森林利用学研究室がホストを務めます。

75th FEFCO
2025/7/8 16:00 - 17:30
Faculty of Agriculture Main Building, W506

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Plasticity in the xylem structure and function

Xylem is the main tissue transporting water and nutriments in the tree. Its structural and functional integrities are crucial for development and survival. The inter- and intra-specific variation and potential for plasticity of xylem hydraulic traits has been a topic of much recent interest specifically in regions where climate and land-use/land-cover changes occur. The knowledge of population xylem traits and potential variability are crucial for conservation, restoration and mitigation. We interested to two formerly broadly distributed woody *Atriplex* species now occur as fragmented populations across a range of microhabitats in the San Joaquin Valley Desert, southern California. We hypothesized that *A. lentiformis* and *A. polycarpa* exhibit inter- and intra-specific differences in their stem structural and functional traits fitting with differences in soil salinity and aridity. Water potentials and xylem function and structure traits were compared between three populations of *A. lentiformis* and four populations of *A. polycarpa*. The two species significantly differed in their xylem traits, with *A. lentiformis* displaying lower xylem density, wider mean and maximum vessel diameters, and higher hydraulic conductivity (Ks). In contrast, *A. polycarpa* populations varied in their stem xylem structural traits (mean vessel wall thickness, mean vessel diameter, maximum vessel length). Many of these differences were associated with soil salinity in *A. lentiformis* (increased salinity was accompanied with shorter and wider vessels), and with minimum seasonal water potential in *A. polycarpa* (populations of the driest site displayed the shortest vessels). The noticeable axial redundancy in stem xylem wood was caused by salinity in *A. lentiformis* and by aridity in *A. polycarpa*. Overall, both saltbush species showed high intra- and inter-specific xylem-trait variation. This could be a critical consideration in understanding the evolution of these native species and has important implications for their conservation and restoration.

Forest Ecosystem Function Colloquium
京都大学・森林生態系機能コロキウム