Key factor affecting seed germination of two pine species in Yunnan: Moisture

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Pinus yunnanensis and P. kesiya var. langbianensis are the main components of forest vegetation of the central and southern Yunnan, respectively. The response of the seed germination of the two pine

species to the environments remains unclear.

In a study published in *Forest Ecology and Management*, researchers from Xishuangbanna Tropical Botanical Garden (XTBG) and their collaborators investigated the seed germination percentages of P. yunnanensis and P. kesiya var. langbianensis under different temperature, water potential and storage conditions. They tried to find out what causes the differentiation of the two pine species in Yunnan.

Seed germination is influenced by environmental conditions and is considered to be the most important and vulnerable stage in plant life cycle.

The researchers found that the temperature requirements for P. yunnanensis and P. kesiya var. langbianensis were similar. The temperature range of 15°C to 30°C was appropriate for seed germination and normal seedling emergence of the two pines.

However, the moisture requirements for the two species were significantly different. Precipitation is a main cause for the differentiation of the two pine species.

The seed germination of P. kesiya required high moisture level, making it distributed only in southern Yunnan, which is more humid than central Yunnan. However, P. yunnanensis can adapt well to drought climate and stay in central Yunnan. Thus, P. yunnanensis can outperform P. kesiya var. langbianensis at lower moisture levels.

"The difference in the response of seed germination and storage of the two species to moisture levels may be an important factor causing the difference in their geographical distribution patterns," said LAN Qinying of XTBG, the corresponding author of the study.

More information: Yukun Fan et al, Possible causes for the differentiation of Pinus yunnanensis and P. Kesiya var. Langbianensis in Yunnan, China: Evidence from seed germination, *Forest Ecology and Management* (2021). DOI: 10.1016/j.foreco.2021.119321

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