trees to promote genetic connectivity among populations. Seed collection for tree improvement or conservation should observe a minimum distance of 60 m to avoid sampling of closely related individuals.

Efficiency of artificial neural networks to predict genetic values and genetic gains in *Bactris gasipaes*

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Bactris gasipaes, popularly known in Brazil as pupunha, is a palm species native to tropical America. The heart-of-palm and the fruits are edible and commercially harvested from plantations. Brazil is the main producer in the world, but the domestic market consumes almost the entire annual production. Strategies to maximize their productivity through breeding are therefore necessary. In this study we propose the use of Artificial Neural Networks (ANN) with Multilayer Perceptron method to predict genetic gains and values and capture genotype information that are not contemplated in conventional stochastic procedures. The germplasm used in this study is composed by progeny tests from open-pollinated seeds. Those tests were established in Paraná, Amazonas and Roraima states, in complete block design with one plant per linear plot, in 2 x 1m spacing. The phenotypic traits were height, diameter and heart-of-palm production. We used ANN to predict genetic values and rank genotypes for selection. In ANNs, we used as input of the network the individual breeding and genotypic values. The data was randomly divided into training (80%) and extrapolation (20%) data. The best ANN architecture was three hidden layers with 14-5-5 neurons, and showed a root mean square error (RMSE) of 0.3999, a mean absolute error (MAE) of 0.3898 and coefficient of determination (R^2) of 0.9596 with the residual graph showing no bias. The performance of ANN showed superiority than multiple regression models in predict genetic gains and genetic values.

D2c: CONSERVATION, SUSTAINABLE MANAGEMENT AND DEVELOPMENT OF FOREST GENETIC RESOURCES ACROSS THEIR RANGES: REGIONAL RESEARCH AND COLLABORATION

Assessing the value, performance and potential implementation of assisted migration across Canada's forests

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Proponents of assisted migration—the intentional movement of tree species (either within or outside of native range) to more suitable areas based on climatic projections and genetically-informed seed selection— see this novel forest management strategy as a means to enhance forest resilience in an era of global climate change. Others express caution or outright objection, pointing to the potential risks associated with assisted migration, such as the introduction of invasive species or pests/diseases and planted tree species failing to establish. This study used a cross-Canada survey to quantify the judgements of forestry and conservation specialists about the possible implementation of five climate-adaptive reforestation options representing a continuum from business-as-usual to technologically intensive interventions in Canada's forests, and including assisted migration within and outside of native range. Results from the survey highlight the diversity of professional judgements on the relative importance of forest management objectives in the context of climate change and the likely performance of reforestation options in Canada's forests. The study also explores the influence of four key factors¾economic, governance, scientific knowledge and social licence¾on the implementation of assisted migration strategies in Canada's forests and assesses the anticipated risks and benefits of such actions. Finally, the analysis outlines positive and negative attitudes regarding assisted migration strategies as a means of adapting to climate change within the practitioners' community.

Predicting the potential habitation and threats of a near threaten and cross-border rosewood species (*Dalbergia cultrata*)

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Dalbergia cultrata is a rosewood species and widely distribute in a tropical and subtropical zone in Indo-China peninsula, and the south of China. In recent decades, its nature population has been shrinking seriously due to anthropogenic activities or other threats. Understanding the habitat requirements of this species, evaluating habitat quality, and predicting its potential habitat are also essential to conserve the target species. Hence, the following work had been carried out: (1) the preliminary survey of natural population of *D. cultrata* was investigated; (2) based on the public and realistic occurrences including China and neighboring countries, the potential habitat and its requirements of were predicted. (3) habitat suitability of *D. cultrata* for double CO_2 level scenario were calculated. The results showed that (1) natural populations distributed in tropical zone in the south of China is sporadic, small and young. Their habitation is fragmented by criss-crossed road and rubber plantation, which may increased difficulties of natural regeneration and gene flow. (2) distribution of *D. cultrata* is mainly influenced by the isothermality, annual range of temperature, and precipitation of wettest and warmest quarter, which suggested it is sensitive to climate change. (3) Habitat suitability will be reduced in for double CO_2 level scenario. Therefore, making a priority to conserve the natural resource of *D. cultrata* is imperative and significant in response to threats. However, *D. cultrata* is cross-border and vulnerable species, we also appeal and desire to seek further cooperation with resource-owner countries on the conseravtion and sustainble use of *D. cultrata* .

Conservation approaches for forest genetic resources of the Indian Himalayan Region

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The Himalayas well known for complex and diversified biological and physical attributes, are spread over the north-western and north-eastern states of India. Due to richness and uniqueness of biodiversity elements, the region has been recognized as one of the 35 global biodiversity hotspots. However, increased use of its forest resources and shrinking forest land base threaten the sustainability of forest genetic resources and highlight the importance of conservation