O62 Species selection to maximize restoration success

O62.02 - Development of a method to validate the performance of riparian forest species regarding to their ecological potential and use for restoration

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The objective was to validate the performance of riparian forests species through the aggregation of the ecological potential and their uses for ecological restoration. The experiments were implemented in 2011 in three disturbed areas of central Brazil. We used seedlings of 21 native species. The methodology for validation was based on three aspects: performance of species (growth and survival); ecological potential for restorability (EPR): category sucessional, fruit type, ability to attract fauna and crown projection, which ranged from 1 to 9; and the potential to use (PU): the possibilities of uses by species, which ranged from 1 to 20 (bibliographic data). The sum of EPR + PU generated the potential of restauration and use of the species (PRU). The values of the PRU were categorized: low (2 to 8), medium (9 to 16) and high (17 to 29). The results of aggregate performance to PRU validated and classified the species: 1) 8 species as highly recommended (high performance + high or medium PRU; 2) 8 species recommended (medium performance + high or medium PRU); 3) 4 species recommended with restrictions (medium performance + medium or low PRU) and 4) 1 species little as recommended (low performance + medium PRU). The application of PRU can be an important tool to assist in the choice of species for restoration and it can be use in the valuation process of the species.

O62.03 - A functional trait analysis for drought and fire pressures for tree species selection for restoration in a tropical dry forest of Costa Rica

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The tropical dry forest, the most degraded Mesoamerican forest, requires clever decisions about tree selection for restoration purposes, which are more critical in the face of climate variability. We measured functional traits of trees in the Palo Verde, Costa Rica during 2015 and 2016 in order to obtain a sensibility classification of tree species after ranking them according to the values of functional traits that identify water stress and fire tolerances, which are the main climatic and anthropogenic dry forest stressors. We measured stem hydraulic conductivity, xylem-specific density, leaf mass area (SLA), thickness, wood volume and density on 25 dominant tree species; On 46 tree species, we measured the following fire-related traits: tree diameter, bark thickness, relative bark thickness, amount, thickness and water content of leaf litter, and some litter flammability parameters obtained from burning tests. The three evergreen species showed the highest degree of drought resistance. Smaller tree diameters and reduced bark thickness were related to greater susceptibility to fire. Flammability tests provided a ranking of tree species where large, thin leaf species with larger SLA burn more easily, with faster and greater intensity than small, thick leaves with small SLA, which take longer to start the combustion and with less intensity. Taken together, functional traits provided an initial tree species list to choose to plant for restoration and to identify areas with greater risk of drought and fire. Further studies must consider other traits to obtain a comprehensive list, such as growth rate, dispersal, and establishment success.