versatilidade. Neste trabalho, foram avaliados dados biometricos de Gnetum webberianum (popularmente conhecido como taboca) que se desenvolve em borda de floresta (ambiente antropizado) e no interior da floresta. Valores de DAP (diâmetro na altura do peito) foram usados para calcular a biomassa de acordo com modelos específicos para a espécie e região. Observou-se que os tabocaíres que cresceram na borda obtiveram menores valores de biomassa em comparação aos tabocaíres crescendo no interior da floresta, observando-se uma média de 1,76 kg vs. 4,59 kg por indivíduo, respectivamente, o que mostra um efeito negativo do estresse abiótico causado por diversos fatores antropicos característicos da borda da floresta (desmatamento, danos mecânicos, efeitos do vento etc.). Além dos dados biometricos, este trabalho irá correlacionar a biomassa com as características anatômicas dos colmos e raizes de bambu de forma a entender como esses fatores de estresse abiótico interferem na anatomia do bambu.

Flowering phenology and pollen characteristics of Quercus species growing in Korea

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Recently, the incidence of major allergic diseases has increased due to the conversion of coniferous forests to deciduous broad-leaved forest in Korea. Oaks such as Quercus serrata, Q. acutissima and Q. mongolica, which are typical broad-leaved species of Korea, are allergen-inducing pollen species. Furthermore, identification of the dynamics between the flowering time and pollen dispersal under elevated CO2 is very important in the establishment of health monitoring system. The present study aimed to assess bud development stages and pollen dispersal of Q. acutissima according to elevated CO2. The pollen dispersal and production of oak species can be predicted by the interaction between temperature and other climatic factors as well as the complexity of overlapping plant seasonality. The pollen production increased in Q. acutissima grown under elevated CO2 compared with the atmosphere CO2. The pollen dispersal of Q. serrata tends to be different depending on the climatic factors, and the climate change due to the increase of CO2 concentration is expected to increase the air pollen dispersal. Climatic change and global warming are the main cause of plant phenology, but these phenological patterns can also affect other factors including precipitation and CO2 concentration. Plant phenological patterns are an important biomarker of ongoing ecosystem changes and can provide a general idea that future climate change can be a key driver of biodiversity changes. This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (No. 2018R1D1A1B02044883).

Effects of potassium/sodium fertilization and water availability on wood properties of Eucalyptus grandis trees

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In Brazil, most Eucalyptus plantations are located in regions experiencing periods of water shortage where fertilizers such as potassium (K) are intensively used to achieve high productivity. Recently, sodium (Na) has also been considered a potential nutrient. As well as tree growth, wood properties are also an important factor to consider in order to measure the impacts of silvicultural practices and water deficit on forest productivity, since they are determinants for quality and yield of pulp and paper. In a split-plot experimental design with 4-year-old Eucalyptus grandis trees, located in Sao Paulo State, Brazil, we evaluate the effects of K and Na supply compared with a control treatment, under two water supply regimes (37% throughfall reduction versus no throughfall reduction) on stem volume, heartwood proportion, basic density, fiber, and vessel properties. K and Na fertilization increased stem volume 2.7 and 1.9 fold, respectively, with a non-significant effect of 37% throughfall reduction. Na fertilization was more detrimental to wood properties that K fertilization, affecting heartwood proportion, basic density, and fiber wall thickness. K fertilization affected only heartwood proportion and basic density. The 37% throughfall reduction only affected wood basic density, increasing it. Effects of fertilization treatments did not change regardless changes in water supply. Despite the detrimental effects of fertilizers (stronger with Na supply) in wood properties there is a large beneficial effect on stem volume (stronger with K supply), even under a water availability reduction, that would be compensates the loss of wood quality for pulp and paper production.

Urban and industrial air pollution effects on a native species of Atlantic Rainforest

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The large Brazilian urban centers are located in the Atlantic Rainforest domain, an important global biome, and urban air pollution contributes to forest decline. In the Itapetinga's city, Minas Gerais - Brazil, exist a steel mill and a circulating fleet of vehicles responsible for atmospheric pollutants emissions that contribute to the reduction of environmental quality. The objective was to evaluate the urban and industrial air pollution effects of Itapetinga in Joanesia princeps. Using the visual foliar damages and the anatomical and micromorphological effects in extrafloral nectaries (EFNs) or this species. During 126 days, visual foliar damages and the anatomical and micromorphological effects in extrafloral nectaries (EFNs) of this species. During 126 days, 4 periods of seedling were used in the plant system. The highest concentrations of NOx, NOx, SO2, O3, benzoic and naphthalene were recorded. The highest concentrations of hydrocarbons pollutants were recorded in the Cidade Jardim and Venezuela points. In plants exposed at the Cidade Jardim point, more visual damage was observed. Regarding the anatomical and micromorphological damages in the EFNs, the skin necrosis, wound healing formation and cell lysis, intense superficial damage such as epidermal rupture, fungal colonization, disarrangement and trichome fall were observed. Thus, our data suggest that the urban air pollution of Itapetinga's city promotes changes in the morphology and micromorphology of native plant species.

Mangrove species of Rhizophora apiculata BL. and Avicennia alba BL. in response to the changes in sediment condition impacted by processes of deposition and erosion in coastal areas, Vietnam

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Mangrove forest is one of the most important ecosystems in the world, contributing to the formation, stabilization, and development of coastal muddy banks. Mangrove species are naturally adaptive to normal disturbances but sensitive to stresses. Rhizophora apiculata BL. and Avicennia alba BL. are the most abundant mangrove species distributed in the South areas of Vietnam. Unbalance in the deposition and erosion processes within this area have been strongly affecting