and possible end uses. Knowledge about the relationships between the growth characteristics, growth conditions such as ecological zone type and climatic conditions on wood quality (anatomical, physical and mechanical properties) can help improve the selection of trees as well as grading considerably.

Opportunities

Eggeling and Dale (1951) described *Daniellia* as fast-growing and light demanding deciduous tree. Odeyeji (Pers. comm.) described that plant as secondary colonizer that outgrows most herbaceous species and other woody species such as *Vitelleria paradoxa* in Nigeria's savanna ecosystem. As a legume, it adapts well to poor soil conditions and found growing luxuriantly even in disturbed sites. In Ghana, it has a wide ecological range. These descriptions together with ease to work wood and stable wood inform *Daniellia* can be a very good species for large scale planting. Wood property information and value-added research on the wood would increase the economic value and its adoption as an important plantation species.

Urban Forest Assessment in Dominican Republic

Mervin E. Pérez[1,2*], Elvia Meléndez-Ackerman[2], Solhanlle Bonilla[2], Jerry Bauer[4,5], Mirel Volcán[5], Ana Pou[5], Claudia Caballero[5], Leonardo Cortés[5], Wayne J. Arendt[4], Tischa Muñoz-Erickson[4], David Nowak[6]

[1]University of Puerto Rico, Río Piedras Campus, Puerto Rico
[2]Universidad de San Carlos de Guatemala, Centro Universitario El Progreso, Guatemala
[3]Instituto Tecnológico de Santo Domingo, República Dominicana
[4]USDA Forest Service, San Juan, Puerto Rico
[5] USDA Forest Service, Santo Domingo, República Dominicana
[6]USDA Forest Service, Northern Research Region, United State of America
[*]ixmulej@gmail.com

The world´s urbanization forecast shows that 60% of the human population will be living in cities by 2050 (United Nations et al. 2017). This growth will negatively impact natural forests surrounding urban areas and will contribute to losses of biodiversity, ecosystem functions, and ecosystem services. Urban green infrastructure is often associated with improvements to city aesthetics and even with improvements in resident (Kabisch and van den Bosch 2017). Yet, the ecosystem services are more extensive as it captures air pollutant, reduce urban runoff by rain interception and water infiltration (Nowak et al. 2006, Nowak and Dwyer 2007), buffer thermal environment of cities (Méndez-Lázaro et al. 2018), and helps to remove atmospheric carbon (Strohbach and Haase 2012). For these reasons, understanding, the quality and quantity of green areas have been a priority of major cities worldwide. In 2015 we started using iTree tools (Nowak et al. 2008) to estimate, qualitative and quantitative, ecosystem services provided by green infrastructure in some cities in the Dominican Republic. To date 104 persons (professors,

technicians, students, and citizens) have been trained in the use of iTree tools, and a total of 18 projects have been developed at the country level. From this total, one was at the National District of Santo Domingo; seven projects in public and private universities (Universidad Autónoma de Santo Domingo, Universidad Iberoamericana, Instituto Tecnológico de Santo Domingo, Pontificia Universidad Católica Madre y Maestra, Universidad Nacional Pedro Henríquez Ureña, Universidad Evangélica, Universidad Pro Educación y Cultura); four in public areas (Parque Las Praderas, Parque Iberoamerica, Plaza de la Cultura, and Centro Olimpico Juan Pablo Duarte); and four projects at the neighborhoods scale (Ciudad Colonial, San Carlos, Ciudad Nueva, and Gascue) in Santo Domingo metropolitan area. Additionally, one project has been developed in San Pedro de Macorís (Universidad Central del Este), and another ongoing project in Santiago de los Caballeros (Parque Central).

Depending of the study area, the project design included a plot sampling method or a complete inventory. Over the study period we have collected data in more than 9,000 ha of urban areas. Tree cover percentage ranged from 2.7 up to 56.7, where neighborhoods scored the lowest value and public areas the highest. Overall, a total of 2,104 trees have been measured represented by more than 140 species. Species richness ranged from one to 15 tree species per plot (0.04 ha), while density ranged from 25 to more than 1,000 trees/ha. The most common species were the non-native palm species *Adonidia merrilli* and *Dypsis lutescens*. Overall, sampled trees have been removing more than 50 metric tons of air pollution per year; storing more than 8.4 thousand metric tons of carbon and sequestering over 7.1 thousand metric tons of carbon per year. They reduced annual runoff in more than 30 thousand cubic meters; and produced more than 18 thousand metric tons of oxygen. The ecosystem services provided by the urban green infrastructure in Dominican Republic have an associated monetary value estimated in more than 244 million of US dollars. This project will provide critical information needed to improve urban planning and to develop urban policies that include green infrastructure solutions. In addition, we have strengthened local capacities thru a series of workshops and field data collection training, so future monitoring can be done by local authorities and stakeholder after the project ends.

Literature cited

Kabisch, N., and M. van den Bosch. 2017. Urban green spaces and the potential for health improvement and environmental justice in a changing climate. Pages 207–220 *in* N. Kabisch, H. Korn, J. Stadler, and A. Bonn, editors. Theory and Practice of Urban Sustainability Transitions. First edition. Springer, Switzerland.

Méndez-Lázaro, P., F. E. Muller-Karger, D. Otis, M. J. McCarthy, and E. Rodríguez. 2018. A heat vulnerability index to improve urban public health management in San Juan, Puerto Rico. International Journal of Biometeorology 62:709–722.

Nowak, D. J., D. E. Crane, and J. C. Stevens. 2006. Air pollution removal by urban trees and shrubs in the United States. Urban Forestry and Urban Greening 4:115–123.

Nowak, D. J., D. E. Crane, J. C. Stevens, R. E. Hoehn, J. T. Walton, and J. Bond. 2008. A Ground-Based Method of Assessing Urban Forest Structure and Ecosystem Services. Arboriculture & Urban Forestry 34:347–358.

Nowak, D. J., and J. F. Dwyer. 2007. Understanding the Benefits and Costs of Urban Forest Ecosystems. Pages 25–46 *in* J.E. Kuser, editor. Urban and Community Forestry in Norheast.

    2nd. Ed. Springer.

Strohbach, M. W., and D. Haase. 2012. Above-ground carbon storage by urban trees in Leipzig, Germany: Analysis of patterns in a European city. Landscape and Urban Planning 104:95– 104.

United Nations, Department of Economic and Social Affairs, and Population Division. 2017. World Population Prospects 2017.