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Where Are the Young Umbuzeiros? How Managed Areas Influence the Recruitment of *Spondias tuberosa* Câm. in Northeastern Brazil

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Abstract

Spondias tuberosa Arr. Cam. is an endemic fruit-bearing tree of the Brazilian semiarid region with great socioeconomic and environmental importance. This species is a source of sustenance for small-plot farmers during the dry season, creating a close relationship between these human and plant populations. Adult individuals of this species are tolerated in heavily altered human landscapes. However, there is a lack of seedling recruitment in their natural environment, which has been attributed to seed predation, low seed germination and establishment, and the irregularity of rainfall in the region. Furthermore, land use change and overexploitation have been hypothesised to cause a risk of extinction in this species. In this study, we aimed to assess the population trends, seed's production and predation, as well as the germination in greenhouse, of *S. tuberosa* from agricultural (AGR) and protected (PA) areas in a sazonal tropical dry forest, Northeastern Brazil. We selected 25 adult individuals and from each tree we measured the diameter. Under the canopy, we counted and collected the seeds of the current season. In a greenhouse, these seeds were germinated and had their growth accompanied. Our results showed that in AGR all the diameter size-class were represented while in PA the first two size-class showed a lack of individuals. The production of seeds was not difference between these two areas although the number of seed m^{-2} was higher in AGR. Trees located in AGR usually occurred isolated, which may explain the fact that the rate of seed's predation was more intense in these areas. Seed's size also were bigger in AGR and the seedlings from these seeds were more vigorous than the ones from PA. We found seedlings exclusively in agricultural areas, probably due to abundance of water and soil nutrients and to absence of wild or domesticated animals. Our results clearly show that somehow the species depends on human action to its regeneration. Thus, researchers and stakeholders (local people) should combine efforts to develop strategies for species conservation.

Keywords: Brazilian seasonal tropical dry forest, population dynamics, regeneration