

The Rufford Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

| Grant Recipient Details | |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Your name | Thiago Henrique de Almeida Gramigna |
| Project title | How the Altitudinal Variation and the Seed Mass Affect the Initial Establishing of Tree <i>Euterpe edulis</i> Used for Agroforestry Systems and Reforestation Programs? |
| RSG reference | 21631-1 |
| Reporting period | May/2017-May/2018 |
| Amount of grant | £4012 |
| Your email address | graminex@bol.com.br |
| Date of this report | 26 th May 2018 |

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

| Objective | Not achieved | Partially achieved | Fully achieved | Comments |
|-----------------------------------------------------------------------------------|--------------|--------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analyse the survival and development of saplings by a year | | | | Due to the delay of rain period I could to analyse the saplings by a minor period but near a year. |
| Compare the survival of local population and transplanted population in each area | | | | I compared and observed differences between survival in each area and the survival of seedlings/saplings from Regua population had been bigger than Parnaso. |
| Compare the herbivory pressure in each area and its effect for each local | | | | The herbivory pressure exists in both areas and had impact on survival, yet the survival was higher inside the cages than outside. But herbivory pressure was bigger in the Regua where the survival was minor. |
| Analyse and compare the seeds' reserves use | | | | There wasn't a difference in reserve mass use of seeds between the populations. Probably the photosynthesis compensates the reserves use to keep by more time this reserves. |
| Analyse the mass effects of seeds for the survival | | | | The mass effect exists and the seedlings from big seeds survival more than small seeds. |

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The mainly difficulty was the rain period variation and consequently the beginning *Euterpe edulis* fruit season alteration. With the delay of rain, the time to execute the project has been shorter. Although the execution period was near to a year (10 months) we could to analyse the survival and responses during the dry and rain periods (considering that the tropical region hasn't the four year seasons well defined).

3. Briefly describe the three most important outcomes of your project.

3.1 The survival of saplings inside of forests in the first stages is low. In the Parque Nacional da Serra dos Órgãos (PARNASO) located at 1200 m the survival was higher than Reserva Ecológica de Guapiaçu (Regua) at 200 m. On Parnaso the survival of

both populations was similar according to seed size in each area. For the big seeds the survival was bigger than the small seeds and the same occurred in the Reserva Ecologica de Guapiaçu (Regua).

3.2 There wasn't difference between the both populations survival in each locality. Although the seeds of Regua always generate saplings more vigorous, with larger size and biomass when compare to those from Parnaso. The mass effect was secondary but existent. The big seeds generate bigger saplings than small seeds in both populations.

3.3 Between both areas also there were differences of survival. On Parnaso the survival was bigger than Regua. The herbivore pressure in the Regua was superior that from Parnaso and responsible by increase of the mortality of seedlings/saplings of *E. edulis* as to major mortality of those from small seeds in both areas. As Regua as Parnaso, the survival inside of cages was bigger than outside the cages. There were differences for use of reserves of seeds.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

This study has been realised in conservation areas but the people that work in the areas and help us show interest about the *E. edulis* for forestall enrichment because the most of them live in rural areas. As they observe the execution of this fieldwork they learn how to do it. The knowledge has been transmitted of limited form but it is just the beginning.

5. Are there any plans to continue this work?

I pretend to continue this work with a different form. I want to study if those seeds from Atlantic Forest from Rio de Janeiro State can be used to reforestation in degraded areas from interior of Brazil in elevated zones far from sea influence and to test if exist differences as to altitudinal population origin

6. How do you plan to share the results of your work with others?

I plan to create a website or blog to highlight this study with a direct language for people more simple with low formal instruction that generally live in Brazil rural zones, with an approach more practical for plant the *E. edulis* culture inside a forest. I want to show them the advantages of use the *E. edulis* to produce "juçai" from fruits and not to extract palm heart that is destructive for the tree. I asked the Embrapa and SOS Mata Atlântica NGO to share the results from this study and use this knowledge is their programmes of restoration and conscious food production for communities. This study also is a part of my study for obtains the PhD degree so I will write a scientific article and submit it for a scientific journal.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

The grant was used between May/2017-April/2018. The period was the same but due to delay of fruit season, the 2 initial months were used to observe the beginning of ripen fruit and to prepare the soil to plant the germinated seeds.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

| Item | Budgeted Amount | Actual Amount | Difference | Comments |
|-------------------------------------------------------------------------------|-----------------|---------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transportation Rio de Janeiro/Cachoeiras de Macacu, Brazil for 13 months | 442 | 650 | -208 | I went more twice time to accompany the beginning fruit season due to delay of rain season. The bus to Cachoeiras de Macacu doesn't access to Regua and I had to pay more by transportation to Regua (~£10,00 that's R\$41,00) |
| Transportation Rio de Janeiro/Teresópolis, Brazil for 13 months | 494 | 494 | 0 | I went more twice time to accompanied the beginning fruit season due to delay of rain season |
| Provisions for stay in field for 58 days | 2320 | 2200 | +120 | Some times the price of provisions did variate and at final it costs less than planned. |
| Accommodation for research in Parque Nacional da Serra dos Orgãos for 58 days | 232 | 232 | 0 | |
| Accommodation for research in Reserva Ecológica de Guapiaçu for 58 days | 522 | 522 | 0 | |
| Plastic bags to bring the fruits to laboratory | 2 | 2 | 0 | |
| Total | 4012 | 4100 | -88 | The £ sterling rate of exchange to real (Brazilian money) is 1:4, 12. |

9. Looking ahead, what do you feel are the important next steps?

Is important to divulge this possibility of plant *E. edulis* to “juçai” production and assist the rural communities to realise this culture inside forests by government.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did The Rufford Foundation receive any publicity during the course of your work?

I used The Rufford Foundation logo in many shows required to my doctorate degree inside the natural course of the post-graduate programme from Universidade Federal do Rio de Janeiro (UFRJ). I also received an email invitation to submit the project for the Premio America Latina Verde (Latin America Green Award) that recognises social and environment projects for the region being an important way for publicise this project. I submit this project using The Rufford Foundation logo and the name of the foundation as supporter of this project.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Another member of my team is the **Eduardo Arcoverde de Mattos** that sometimes help me on field and adviser to execution of this project. The other people that help me are employees of the conservation areas (**Peterson** to Parnaso and **Rildo** to Regua) and I had to pay by assistance.

12. Any other comments?

I'm grateful to The Rufford Foundation for the grant to execute this study.