



UEBT
SOURCING®
WITH RESPECT

REGENERATION

CENTELLA ASIATICA IN MADAGASCAR

A Regeneration Study



Centella asiatica or *C. asiatica*

The Facts

- An herbaceous, perennial flowering plant and one of the main non-timber forest products exported from Madagascar
- Called 'Talapetraka' in Madagascar
- Known for its healing and antioxidant properties
- Three varieties in existence: Asiatic Malagasy, Abyssinica and Floridana; the first two are found in Madagascar
- Wild collection takes place throughout the country, except for the southeast
- Most collection occurs in the Alaotra-Mangoro region
- Demand increasing among buyers
- Awareness increasing on the need to study its availability
- Plant's ecology, diversity, population and reproduction might be affected by collection, habitat degradation and climate alterations

Study objectives

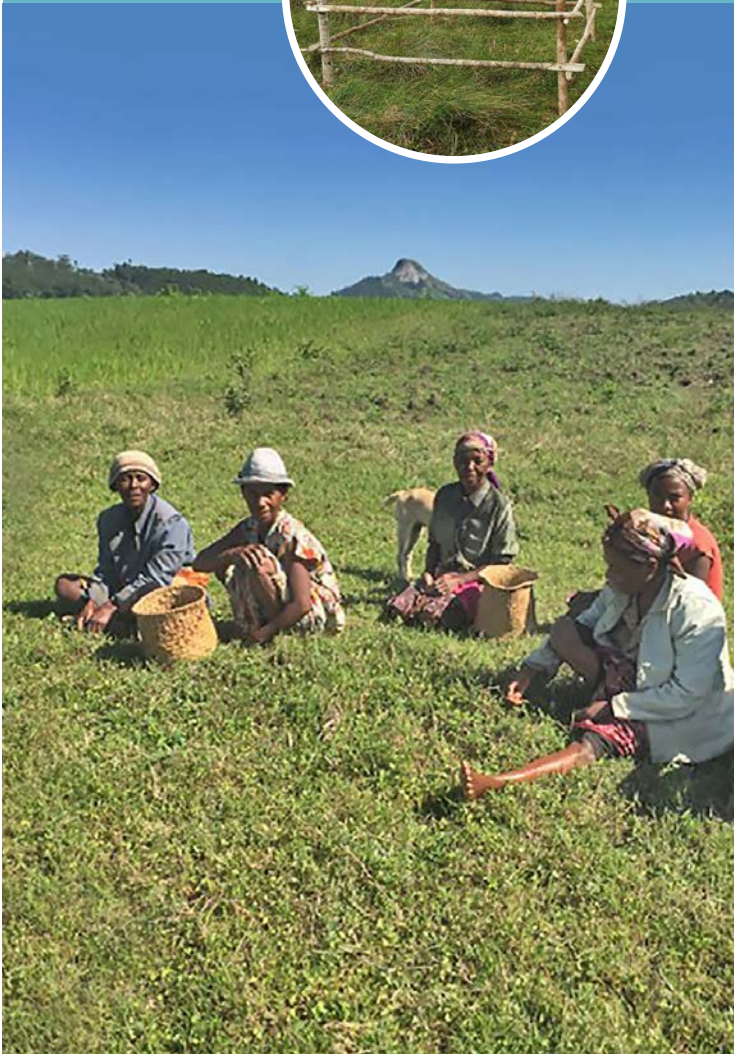
- A one-year study was conducted from August 2017 to August 2018.
- The objective was to investigate how the regeneration of *Centella asiatica* could be ensured over time in one of the most important areas of collection.
- The focus was on answering three questions:
 - If the survival of the species is in danger
 - If environmental factors influence its presence and its biomass¹
 - If its collection and other human activities influence its presence and biomass

How does land use affect regeneration?

We isolated three types of plots (1m² in size) in the study areas to detect possible differences in regeneration rates and biomass of the *Centella asiatica*:

- **'Intact' plots** where no collection occurs
- **'Semi-intact' plots** where collection occurs and follows UEBT practices
- **'Under pressure' plots** where livestock feeds

Right: A fenced-off isolation area



ABOUT THE METHODOLOGY

We selected five sites in a main collection area

Each site had the following characteristics:

- Collection was taking place in that site.
- Collection practices were following the UEBT standard.
- *Centella asiatica* was present and the areas were accessible.
- The area was large enough to take plant samples three times over the one-year study period.

We analysed the relationship between ecological characteristics and *Centella asiatica* regeneration rates and biomass production:

- **Ecological characteristics** we looked at:
 - Physical aspects – altitude, habitat, sites slope and topographic position
 - Type of vegetation and distribution
 - Soil properties and conditions
- **Regeneration rates** were based on counting all individual *Centella asiatica* plants:
 - In each surveyed plot
 - Per each survey conducted
- **Biomass production** was determined through:
 - Collecting fresh leaves in the plots
 - Taking three collections (samplings) over the study, one every four months
 - Weighing the leaves when fresh, and then again once dried

We also isolated specific plots to look at differences in use and how it affected regeneration rates of the *Centella asiatica*.

See 'Land use & regeneration' box, left.

RESULTS

- The regeneration rate was greater than 100% in most of the sites, plots and months observed. This regeneration rate is considered to be 'good'.²
- The regeneration was less than 100% in plots and sites 'under pressure' where livestock feeding occurred and in plots with poor soil conditions.
- The regeneration rate varied from month to month.
- No-collection areas ('intact') and collection areas where UEBT practices were being followed ('semi-intact') mostly showed similar regeneration rates.
- Plots with livestock feeding showed a better regeneration rate in certain months when other vegetation flourished, giving alternative food to animals and allowing the *Centella asiatica* to recover.
- Leaves were at their peak in the rainy season (when collection was also less likely to occur), showing that the plants were able to better regenerate during this time of higher-growth and lower-collection.

CONCLUSION

***Centella asiatica's* availability is not in danger and risk of extinction is not foreseen in the study area.**

However, its regeneration and biomass production are influenced by:

- **Seasons**—the rainy season has the highest regeneration rate and biomass due to the beneficial effects of rain and the reduced collection rate.
- **Degraded soil (particularly if too dry)**—this type of soil does not ensure the resources necessary for *Centella asiatica* to grow.
- **The presence of other plants**—they protect *Centella asiatica* from herbivores because they offer alternative sources of food.

Do UEBT practices help?

The study found that *Centella asiatica's* availability is not in danger in the study area. Regeneration rates in most of the sites were good.

Areas where UEBT practices were followed showed similar regeneration rates to areas where no collection took place.



The Alaotra-Mangoro in Madagascar

The study took place in the **Alaotra-Mangoro region** of Madagascar, located in the central eastern part of the country.

The region gets its name from the Alaotra Lake and the Mangoro River. Many crops are harvested throughout the region including coffee, pepper, vanilla, fruits and more.



How UEBT contributes

Collection practices in the area where this study was conducted were based on the UEBT standard that requires companies to:

- Monitor the regeneration rate of species collected and interdependent species
- Adopt collection practices that ensure long-term survival of -both species
- Adapt collection practices and species selection to emerging climatological conditions

This regeneration study was elaborated in context of the Centella asiatica Solidarity Sourcing Project of L'Oréal, Indfrag Biosciences, Ravina, and UEBT.

Notes

¹ Measuring the weight or 'biomass' of a plant is important for regenerative studies because it tells if the same amount of land is producing the same amount of the raw material and in which season the production rate of raw material per hectare is at its peak. In addition, when a plant has a larger biomass, fewer plants need to be collected to meet production needs, thus leaving more plants able to regenerate.

² Regeneration rate is expressed in per cent from 0–300% and higher, with 100–300% considered 'good' and more than 300% considered 'very good'. The rate is determined by the number of individual plants (producing or not producing seeds) in an area, divided by all the individual plants producing seeds in that same area, multiplied by 100.

Picture references

FRONT PAGE, OVERLEAF: INDIAN PENNYWORT OR GOTU KOLA (*CENTELLA ASIATICA*). THE PLANT IS USED AS A CULINARY VEGETABLE AND AS A MEDICINAL HERB IN TRADITIONAL MEDICINE. HARVESTING *CENTELLA ASIATICA*. ABOVE: MALAGASY COLLECTOR OF *CENTELLA ASIATICA* © UEBT



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