Project Update: December 2020

September - December 2020

Micropropagation of species for cultivation in communities.

The multiplication of plants implies the disinfection of the biological material and the establishment under aseptic conditions. Subsequently, preparation of culture media and experimentation with different concentrations of growth regulators. Since plants are obtained on a large scale, rooting and maturation are encouraged for their acclimatization in the greenhouse.

- Permission procedures and links with the botanical gardens for the transfer of biological material.
- First workshop in the communities for the training and donation of plants.
- Report of the material generated and development of in vitro plants.

According to the calendar, we have made the best effort to follow and achieve the proposed objectives. We recognise that at this time it is difficult to carry out the plans and practices indicated in the project; however, our work team has adapted to the "new normal" and we have created strategies to continue advancing and fulfilling our duty as scientists, therefore, the first report of our project is presented.

Permission procedures and links with the botanical gardens for the transfer of biological material

We have carried out an extensive search of the records of the species under study in the country, so far, the collaboration by the Botanical Gardens and communities has been favorable since the transfer of specimens for their establishment and authorisation for their study have been performed in all species.

First workshop in the communities for the training and donation of plants

Due to the restrictions and health measures implemented by the pandemic, the visit to the Oaxaca community was suspended (rescheduled for next year), however, a series of specialised programmes were carried out in the genus *Agave*, where cultural, biological and agronomic issues were discussed. This material is available for the access of local people in the community.

Link: https://www.facebook.com/SemillasJs/videos/654401481876117

Link: https://www.facebook.com/SemillasJs/videos/394481971686516



<u>Report of the material generated and development of in vitro plants.</u> We have obtained biological material of five agave species:

Scientific name	Common name	IUCN Status
Agave karwinskii	Cachitún	Vulnerable
Agave victoriae-reginae	N/A	Least Concern
Agave titanota	Rabo de león cenizo	Endangered
Agave peacockii	Maguey de las Tunas	Vulnerable
Agave cupreata	Maguey Papalote	Endangered

In addition, we have material in stock for the micropropagation of the material *in vitro* lab experiments.

Firstly, the *in vitro* establishment of the three species will be required; A. peacockii, A. victoria reginae, A. titanota.

- a) Select rhizomatous shoots or bulbs (about 10 cm in length) already a plant on their one when detached from the parent plant with vigorous and healthy appearance.
- b) After extracting the shoots, wrap the samples in brown paper with collection data for transport.
- c) In the laboratory, clean, rinse with running water and defoliate, leaving only the initial two leaves.
- d) With pruning shear, excise roots and leaves distal part and only a segment of the basal part and stem use.
- e) Rhizomatous shoots and bulbs will be rinsed with in a solution with systemic fungicide and washing subsequently in continuous agitation.

- f) For disinfection, the plants will be passed to a $1: 1 \vee / \vee$ chlorine solution in sterile water, stirring continuously under laminar flow conditions.
- g) Then rinsed three times in containers with sterile water.
- h) Finally, the tissue damaged by chlorine will be cut off with scalpel.

Growth and rooting process

- a) Verify that the material is not contaminated.
- b) Separate shoots on petri dish and cut distal part for stimulate growth.
- c) Remove oxidation parts and old leaves.
- d) Transfer to the modified MS medium without growth regulator.
- e) Close and seal the lid with parafilm, record date, medium type and genotype.



Agave peacockii, Ethnobotanical Garden "Santo Domingo" © Lourdes Delgado



Agave pecockii in vitro © Lourdes Delgado