CULTIVATION, COLLECTION, CONSERVATION AND ELABORATION OF MEDICINAL PLANTS PRODUCTS

Workbook

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Cultivation, collection, conservation and elaboration of medicinal plants products

Introduction
This handbook includes class notes and exercises to learn everything about medicinal plants production

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2. Collection

The collection of aromatic and medicinal plants is very different if they are wild species or if it is a crop.

But in no case does the collection take place while it rains or there is dew!

**Wild collection**

Wild collection involves deep knowledge of plants and their correct identification.

There can be no possibility of mistakes and confusion. If a plant is not well recognized, it can not be picked.

The best way for an identification is to be formed or have a person formed when starting this activity, that is, to consult a person with extensive knowledge and experience.

If in doubt, consult university botanists or professionals who can certify the species.

In addition, it is usually a manual collection, with pruning shears, knife, sickle, etc.
2. Collection

For proper identification, detailed information on each plant can be used, in particular:

- Graphic support, photos, drawings, books or morphological descriptions.
- Accompanied by distribution maps of the species and habitat.
- Where it grows habitually and mainly, and if possible, certified ecological areas, locate on a map or GPS.
- Popular names and local synonyms.
- With which other plants can be easily confused and what are the characteristics to avoid error (smell, flower colour, ...).
- Part of the plant to be harvested.
- The period in which the collection is carried out, or establish collection rotations.

**LEARNING ACTIVITY**

Consult native flora web pages

Costa Rica:

Biodiversity atlas - Costa Rica: [http://www.crbio.cr/crbio](http://www.crbio.cr/crbio)


Brasil: [http://floradobrasil.jbrj.gov.br](http://floradobrasil.jbrj.gov.br)


Find the species *Justice pectoralis* and make a sheet.
2. Cultivation, collection, conservation and elaboration of medicinal plants products

2. Collection

To properly plan and collect in a sustainable way, you have to know:

- which plant is completely banned from collection, is in a regulation, or is included in CITES,
- to whom the request for collection (owner, community, administration) must be made,
- material needed: scissors, saw, ladder, basket, sack, ...,
- at what height or level of the plant should be cut,
- maximum allowable amount,
- when a new collection will be possible,
- the maximum percentage of collection of a single plant and a community of plants in a specific area,
- what part of the same plant or plants growing nearby should be protected,
- what should be done immediately after collection (distillation, water cleaning of roots, ...),
- where the collected materials should be placed,
- what is the most appropriate transformation,
- what is the optimal packaging material, etc.

Look for websites about threatened species, ethnobotany and forest use and determine what species are collected, for what and how.

CITES agreement: https://cites.org/esp/disc/how.php
Impact of cultivation and gathering of medicinal plants on biodiversity: http://www.fao.org/docrep/005/Y4586E/y4586e08.htm#P1_0

2.1. Wild collection

2.2. Agricultural harvesting
2. Collection

The maximum recommended percentage of collection of a plant that is not in danger is as follows:

- Roots / bulbs: 20% of the population, only every 3 years
- Leaves: 30% of leaves
- Flowers: 70% in a plant and 80% of the entire population
- Seeds and fruits: 70% of fruits/seeds

If the collection area does not have an ecological area certificate, there may be treatments with pesticides that will become waste, as well as various contaminations in nearby areas, poor hygiene practices during the process or contamination risks.

It is advisable to have a list with all the plants that are collected directly from nature, and its parts (flowers, leaves, roots, ...), a list of approved collectors and facilitate periodic training. During drying, storage and transport the risks of contamination should be minimized.

Consult:
International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP)
http://www.floraweb.de/map-pro/
IMO-Manual for sustainable wild collection practices
FAIRWILD STANDARD http://www.fairwild.org/standard-principles/
See FAIRWILD Standard video: https://youtu.be/nBYXU5ZMygA
2. Collection

Agricultural harvesting

In contrast to wild collection, in agricultural harvesting, it is not necessary to identify the plant, since the main work has been done at the time of obtaining the plant material (seed, cutting) at the beginning of the project. It is advisable, once the crop plants grow, make sure that it is the desired species.

In this case, the collection is usually **not manual but mechanical**.

The time of harvest depends on the part of the plant to be harvested:

- The flowering tops are collected just at the beginning of flowering.
- The leaves of the aromatic plants usually before the flowering and is recommended to do it early in the day.
- The roots, in autumn or winter; or once the plant has given its fruits (to have the seeds).
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2. Collection

In any case, it is recommended to have prior documentation regarding:

- Popular names and local synonyms,
- part of the plant to be harvested,
- the period in which it is carried out, or periods, in the case of several harvests,
- necessary material and equipment,
- at what height or level should the plant be cut,
- what should be done immediately after collection (distillation, water cleaning of roots,...),
- where the collected materials should be placed,
- what is the most appropriate transformation,
- what is the optimal packaging material, ...
- follow good hygiene and cleaning practices during the process,
- reduce contamination risk.

LEARNING ACTIVITY

Consult the WHO Guidelines on Good Agricultural Practices and Collection (GACP) for medicinal plants.

http://apps.who.int/medicinedocs/es/d/Js5527s/

And elaborate a model sheet for the collection control.
LEARNING ACTIVITY

Field activity

Consult the HerbAltas and identify which species are in the wild. Check it on the flora web pages.

Go to the jungle/field and try to find the referred plants.

Cut some plants following wild collection guidelines.

Return to the class and with the help of books / botanical webs, identify if they are the target species.

Let the plants dry (see Part 3. Processing)