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**Propagation Management  
Of Herbal and Medicinal Plants**

by

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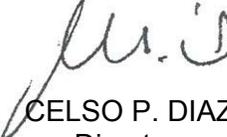
## **Foreword**

This issue contains the first part of a series of information on the propagation management of medicinal plants.

Medicinal plants abound in the country. They used to be sleeping treasure due to lack of knowledge on their importance and uses in alternative health care, limited research on the development of photochemical components of the plants, and other related R & D undertakings on herbal products and medicines.

We have consolidated relevant data and outputs of the training and pilot research conducted by ERDB on the integration of medicinal plants as agroforestry crops in the upland areas to provide useful information for farmers (upland or lowland) cooperatives, corporations, and other interested individuals.

Production of medicinal plants in small or large-scale plantations will provide the pharmaceutical industry enough supply of raw materials. Propagating medicinal plants, especially in upland areas will not only be economically beneficial to the local people, but it will also help maintain a rich biodiversity in the ecosystem.



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## Introduction

The Philippine population grows at an average of 1.7 million each year. One of the concerns that go with population increase is the problem on people's health. The high cost of western medicines and treatment resulted in the growing number of self-medicating people. Many have also resorted to traditional medicines, thus the growing demand for natural products. Aside from financial considerations, people opt for natural products because they have become concerned of what they use as food and medicines. With this situation, the Department of health through the Philippine Institute of Traditional Alternative Health Care (PITAHC) under Republic Act No. 8423 endorsed the use of traditional medicines in the country.

Medical plants abound in nature. Since most of them are available and easily accessible, these medicines are more affordable compared to synthetic drugs. Ten medicinal plants have been endorsed by the DOH-PITAHC, after they have been scientifically validated to ensure safety and efficacy. These are Acapulco, Ampalaya (Makiling variety), Lagundi (five leaflets), Bawang, Bayabas, Sambong, Niyug-niyogan, Tsaang-gubat, Yerba Buena, and Ulasimang bato (pansit-pansitan).

### Uses of 10 scientifically validated medicinal plants

Plant	Uses
1. Lagundi ( <i>Vitex negundo</i> )	Cough and asthma
2. Sambong ( <i>Blumea balsamifera</i> L.)	Anti-urolithiasis (kidney stones)
3. Ampalaya ( <i>Momordica charantia</i> L.)	Lowering blood sugar and anti-diabetes
4. Garlic ( <i>Allium sativum</i> )	Anti-cholesterol
5. Guava ( <i>Psidium guajava</i> )	Oral/skin antiseptic
6. Tsaang-gubat ( <i>Carmona cetusa</i> )	Mouth wash
7. Yerba-Buena ( <i>Mentha arvensis</i> )	Analgesic or anti-pyretic
8. Niyug-niyogan ( <i>Quisqualis indica</i> )	Anti-helminthic
9. Acapulco ( <i>Cassia alata</i> )	Antifungal
10. Ulasimang-bato ( <i>Peperomia pellucida</i> )	Anti-hyperuricemia

Other medicinal plants which is folklorically validated (needs further study for clinical tests and trial) are represented in Table 1.

### Tips of growing herbal and medicinal plants

#### A. Site selection for growing medicinal plants

- Free from pollution such that: Soil – no heavy metals, pesticide residues and high microbial count
- Air-way from road heavily traversed by motorized vehicle
- Air-way from farms using pesticides
- Water – no contamination with microorganisms and pesticides
- Accessible to motorized vehicles
- With reliable and clean water source

## B. General propagation methods for some medicinal plants

Plants	Propagation	
	Sexual	Asexual
Akapulko	1	
Ampalaya	1	
Lagundi		1
Niyog-niyugan	1	1
Sambong		1
Tsaang gubat		1
Ulasimang bato	1	
Yerba buena		1

## C. Harvesting and post handling of some medicinal plants

Plant	Part harvested	Harvesting Frequency	Harvesting How	Duration of air drying (<10% M.C.)	Yield (kg) per plant (garbled)	
1. Akapulco	Leaves	5-6 months after trans-planting (mat) and every 4 months thereafter	<ul style="list-style-type: none"> <li>• Cut all branches 0.75 m from the ground.</li> <li>• Remove all leaves and minor branches.</li> <li>• Leaves 4-5 major branches.</li> </ul>	7 days	14.21 days	<ul style="list-style-type: none"> <li>• 1st harvest 0.50 K fresh leaves.</li> <li>• 2nd harvest 0.70 K fresh leaves.</li> <li>• 3rd harvest 1.0 K fresh leaves.</li> </ul>
2. Ampalaya (Makiling variety)	Leaves	2-3 mat. and every week thereafter	Cut branches 60 cm long from the tip	7 days	14 days	0.40-0.50 kg fresh leaves
3. Bawang	Bulbs	100-120 days after planting drying of leaves	Uproot the whole plant	Tie bulbs together and hang indefinitely		3.23 g dried bulbs or 3.23 tons/ha (Batangas)
4. Bayabas	Leaves	3-4 years after planting	Remove healthy leaves from stems	7 days	14-18 days	<ul style="list-style-type: none"> <li>• 1st harvest (2 years after planting) 1.40 kg fresh leaves</li> </ul>
5. Lagundi	Leaves	7-8 mat. and every 3-5 months thereafter	<ul style="list-style-type: none"> <li>• Cut all branches 0.75 m from the ground.</li> <li>• Remove all leaves and minor branches.</li> <li>• Leaves 4-5 major branches.</li> </ul>	7 days	14-21 days	<ul style="list-style-type: none"> <li>• 1st harvest 0.80-0.90 kg fresh leaves</li> <li>• 2nd harvest 0.95-1.10 kg fresh leaves.</li> <li>• 3rd harvest 1.15-1.30 kg fresh leaves.</li> </ul>

6. Niyog-niyugan	Fruits	2-3 years after planting every summer (March-May) • Fruits have turned golden yellow	Hand pick ripe fruits	14 days	30-45 days	No ample data. Fruiting in UPLB is erratic
7. Tsaang gubat	Leaves	7-8 mat. and every 4-5 months thereafter	<ul style="list-style-type: none"> <li>• Cut all branches 0.75 m from the ground.</li> <li>• Leaves 4-5 major branches and remove minor branches.</li> </ul>	4-5 days	14 days	<ul style="list-style-type: none"> <li>• 1st harvest 0.90-1.00 kg fresh leaves.</li> <li>• 2nd harvest 1.00-1.50 kg fresh leaves.</li> <li>• 3rd harvest 1.50-2.00 kg fresh leaves.</li> </ul>
8. Sambong	Leaves	3-5 mat. and every 3 months thereafter	<ul style="list-style-type: none"> <li>• Remove all mature and healthy leaves.</li> <li>• After 3-4 harvesting, prune plant 0.5 m from the ground</li> </ul>	7 days	14-21 days	<ul style="list-style-type: none"> <li>• 1st harvest 0.80-0.90 kg fresh leaves.</li> <li>• 2nd harvest 0.90-1.00 kg fresh leaves.</li> </ul>
9. Ulisimang bato or Pansit-pansitan	Whole plant minus roots	2.5-3 mat.	Uproot whole plant	30 days	90 days	0.30-0.50 kg fresh leaves and stems
10. Yerba Buena	Leaves	2-3 mat. and 1-2 months thereafter up to 3 harvests	Cut all branches 5 cm from the base	7 days	14 days	<ul style="list-style-type: none"> <li>• 1st harvest 0.20-0.30 kg fresh leaves and stems.</li> <li>• 2nd harvest 0.30-0.40 kg fresh leaves and stems.</li> <li>• 3rd harvest 0.10-0.20 kg fresh leaves and stems.</li> </ul>

#### D. Drying medicinal plant parts

*Before drying the different parts of*

1. Medicinal plants, they undergo some tests to be sure that:

- moisture content of dried materials is <10%;
- not moldy, without other pests, parts of other plants, nor stones and soil particles;
- microbial count and heavy metals are within allowable amounts; poisonous microorganisms are absent;
- no pesticides residues efficacy is almost similar to the standards.

## 2. Microbial test requirement

- Standard plate count - 10 cfu/g
- Coliform plate count - <10 cfu/g
- Molds and yeasts plate count - <10 cfu/g
- *E. coli* - negative
- Salmonella - negative
- *Staphylococcus aureus* - negative

## 3. Heavy metal analysis

- |                 | Allowable Amount |
|-----------------|------------------|
| • Lead (Pb)     | 10.0 ppm         |
| • Cadmium (Cd)  | 0.3 ppm          |
| • Chromium (Cr) | 10.0 ppm         |
| • Argon (Ar)    | 3.0 ppm          |

## E. Additional safety guidelines on using medicinal plants

1. Do not take for granted the identification of the herb.
2. Use only the recommended amount for the recommended period.
3. If you're over 65 and sensitive to drugs, start with low-strength preparation.
4. Be extra cautious if you have chronic diseases.
5. Pay attention to any symptoms of toxicity.
6. Be extra careful when using herb oil.
7. With few exceptions, pregnant and nursing women should not use healing herbs as medicines without doctor's advise.
8. With few exceptions, healing herbs should not be given to children below 2 years old without doctor's advise.

## Role of the Ecosystems Research and Development Bureau, DENR

1. The ERDB with the project on medicinal plants will directly manage and provide technical assistance, as follows:
  - The farmer-beneficiaries will be trained on the production and management of medicinal plants to be spearheaded by ERDB.
  - The research team of ERDB will provide the technology using organic fertilizer, fungicide and pesticides.
  - The farmer-beneficiaries will be trained on the medicinal livelihood options, like herbal soap making, ointment preparation, herbal tea production and planting stock production. At the same time, household use on proper preparation and use of medicinal plants for alternative health care will be taught, such as decoction and other uses of medicinal plants for health care.
2. The farmer's activities will be supervised and monitored by ERDB research team. They will mutually coordinate their plans and directly implement the production management to enhance productivity of the land.

3. The ERDB will be responsible in the overall production and management of high-value and high priority medicinal plants.
4. The ERDB research team will be allowed and given full access to the farmer's land to use their denuded forest land and/or farm lot to promote sustainable development for medicinal plants.
5. To support the poverty alleviation of the upland farmers through livelihood ERDB will provide and assists the cooperators in marketing medicinal products.
  - ERDB will be the conduit to link farmer's medicinal products to the herbal industry, manufacturers and markets.
  - ERDB will be responsible in formulating marketing strategies and other marketing aspects of raw materials and other related products from the medicinal plants.

#### **Role of Farmer-Beneficiaries**

1. The farmer should assign and designate the working force and land to be used for medicinal plant production.
2. They should be willing to plant and cultivate medicinal plants at their own farm lot, such as lagundi, sambong, tsaang-gubat, acapulko, banaba, alagao, ampalaya and other high-value crops with medicinal use.
3. They will plant the herbal and medicinal plants as agroforestry crops in their farm.
4. In cultivating the medicinal plants, the farmer's farm should be free from heavy metals and pollution (soil analysis is required).
5. The farmer should use organic fertilizer, pesticides and fungicide.
6. The farmer should render their shared free labor for the planting, maintenance, and protection of the demonstration farm.
7. There should be at least 10 to 15 interested farmers to venture on medicinal plants farming.

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Table 1. Listing of Philippine herbal and medicinal plants promoted by the DOH.

<b>Common name Folklorically-validated (needs further scientific Studies)</b>	<b>Scientific name</b>	<b>Uses</b>
1. Abukado	<i>Persea americana</i>	Diarrhea/wounds
2. Abutra	<i>Arcangelista flava</i>	Wounds/pruritis
3. Alagaw	<i>Premna odorata</i>	Fever/headache gaseous distention/ cough/aromatic bath
4. Anis	<i>Foeniculum odorata</i>	Gaseous distention dizziness/fainting Hysteria
5. Balanoy	<i>Ocimum basilicum</i>	Dizziness/fainting hysteria/toothache cough/arthritis wounds/antifungal
6. Balatong aso	<i>Cassia occidentis</i>	Antifungal
7. Balimbing	<i>Averrhoa carambola</i>	Antipyretic
8. Bani	<i>Pongamia pinnata</i>	Gaseous distention
9. Banaba	<i>Lagerstroemia speciosa</i>	Kidney and bladder problems
10. Barak	<i>Curcuma zedoaria</i>	Gaseous distention
11. Dalanghita	<i>Citrus nobilis</i>	Dizziness/fainting hysteria/aromatic bath
12. Damong maria	<i>Artemmisa vulgaris</i>	Headache/wounds gaseous distention
13. Dayap	<i>Ditrus aurantifolia</i>	Fever/dizziness fainting/hysteria aromatic bath
14. Dilaw	<i>Curcuma longa</i>	Wounds/gaseous distention
15. Duhat	<i>Syzygium cumini</i>	Swollen gums/wounds
16. Eucalyptus	<i>Eucalyptus</i> sp.	Wounds/cough
17. Gatas-gatas	<i>Euphorbia hirta</i>	Skin antiseptic
18. Gugo	<i>Entada phaseoloides</i>	Hair growth stimulant
19. Gulasiman	<i>Portulaca oleracea</i>	Skin antiseptic
20. Gumamela	<i>Hibiscus rosasinensis</i>	Superficial burns/abscess
21. Ikmo	<i>Piper betle</i>	Gaseous distention sprain/wounds
22. Ipil-ipil	<i>Leucaena leucocephala</i>	Anthelmintic
23. Kabling	<i>Pogostemon cablin</i>	Arthritis/aromatic bath Scabies/sprains/pruritus
24. Kabuyaw	<i>Citrus hystrix</i>	Dizziness/fainting hysteria/aromatic bath
25. Kakawati	<i>Gliricidia sepium</i>	Scabies/sprains/pruritus
26. Kalamansi	<i>Citrus microcarpa</i>	Dizziness/fainting hysteria/aromatic bath
27. Kalantas	<i>Toona calantas</i>	Skin antiseptic
28. Kalatsutsi	<i>Plumiera acuminata</i>	Scabies
29. Kamakamatisan	<i>Solanum nigrum</i>	Skin antiseptic
30. Kamantigi	<i>Impatiens balsamina</i>	Antifungal/abscess
31. Kamote	<i>Ipomea batatas</i>	Constipation
32. Kamoteng kahoy	<i>Manihot esculenta</i>	Constipation/pruritus
33. Kamyas	<i>Averrhoa bilimbi</i>	Antipyretic

34. Kanya pistula	<i>Casia fistula</i>	Antifungal/constipation
35. Kangkong	<i>Ipomea aquation</i>	Constipation
36. Kasoy	<i>Anarcadium occidentale</i>	Swollen gums/constipation
37. Kaymito	<i>Chrysophyllum caimito</i>	Diarrhea/swollen gums
38. Kintsay	<i>Apium graveolensis</i>	Poisoning
39. Kugon	<i>Imperata cylindrical</i>	Diuretic
40. Lantana	<i>Lantana camara</i>	Arthritis/sprain
41. Lanting	<i>Plantago major</i>	Swollen gums/wounds
42. Linga	<i>Sesamum orientale</i>	Constipation
43. Luya	<i>Zingiber officinale</i>	Gaseous distention/cough
44. Mais	<i>Zee mays</i>	Diuretic/pruritus
45. Makabuhay	<i>Moringa oleifera</i>	Scabies/antiseptic
46. Malunggay	<i>Moringa oleifera</i>	Arthritis/scabies wounds/constipation
47. Mangosteen	<i>Garcinia mangostana</i>	Diarrhea/stomach pain
48. Mani	<i>Arachis hypogaea</i>	Constipation
49. Mansanilya	<i>Chrysantenum indicum</i>	Gaseous distention headache/abscesses
50. Manga	<i>Mangifera indica</i>	Aromatic bath/cough fever/vaginal wash
51. Mayana	<i>Coleus blumei</i>	Headache/sprains
52. Niyog	<i>Cocos nucifera</i>	Constipation/oral dehydration
53. Oregano	<i>Coleus amboinicus</i>	Gaseous distention cough/burns
54. Palay	<i>Oryza sativa</i>	Constipation/pruritus
55. Pandan mabango	<i>Pandanus odoratissimus</i>	Analgesic
56. Papaya	<i>Carica papaya</i>	Constipation/wounds
57. Pili	<i>Canarium ovatum</i>	Constipation/abscesses
58. Romero	<i>Rosmarinus officinalis</i>	Gaseous distention aromatic bath
59. Sabila	<i>Aloe barbadensis</i>	Hair growth/stimulant burns/wounds
60. Sampalok	<i>Tamarindus indica</i>	Fever/cough/wounds vaginal wash/aromatic bath
61. Siling labuyo	<i>Capsicum frutescens</i>	Arthritis
62. Sorosoro	<i>Euphorbia neriifolia</i>	Otitis media
63. Suha	<i>Citrus grandis</i>	Fever/dizziness fainting/hysteria aromatic bath
64. Sulasi	<i>Ocimum sanctum</i>	Toothache/dizziness gaseous distention fainting/hysteria/arthritis wounds/anti-fungal aromatic bath
65. Suob kabayo	<i>Hyptis suaveolens</i>	Toothache/headache
66. Talumpanay	<i>Datura metel</i>	Antiasthma/abscess
67. Tangan-tangan	<i>Ricinus communis</i>	Skin antiseptic
68. Tanglad	<i>Andropogon citrates</i>	Gaseous distention mouthwash/aromatic bath
69. Tubang bakod	<i>Jatropha curcas</i>	Sprain

**Source: Department of Health Circular No. 168-A, Series of 1995.**

Table 2. The different ways in which herbal medicine can be practiced and level of technology needed.

<b>Practice of herbal medicine</b>	<b>Technology needed</b>
Traditional/household use	Direct use of plant material: decoction, direct application, etc.
Small-scale production for localized market	Simple drying and packaging
Medium-scale industrial production	Controlled processes: drying, tableting, simple extraction, suspension, etc.
Large-scale industrial production, import and export	Basic quality assurance  Control processes Full quality assurance Wide range of pharmaceutical forms from crude form to extract and pure compound Production in plantation or using biotechnology

Source: Paper presented by Dr. Francis M. Dayrit during the Conference on 1998 BIO-Search, Philippine Trade Center, Manila.