Medicinal Plants for Livestock Healthcare

WESTERN SARE
Sustainable Agriculture Research & Education

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PARAVETS

LIVESTOCK

HERBAL PLANTS

WESTERN SARE PROFESSIONAL DEVELOPMENT PROGRAM

A Primer on Medicinal Plants for Livestock Healthcare

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MEDICINAL PLANTS FOR LIVESTOCK HEALTHCARE

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OVERVIEW

Western medicines are unavailable in most Pacific islands and their supply is erratic. Imported drugs are expensive. Many producers either underdose to save money, or overdose because they do not understand the instructions for use. The shortage of animal health experts, food safety concerns, particularly antibiotic and chemical residues in livestock produced, the language variations, the cultural differences, the geographical locations, and the loss in indigenous knowledge of medicinal plants for most Western Pacific extension professionals and producers have stimulated renewed interest in alternative methods of promoting livestock health.

Animal raisers in the Pacific would often be better off if they are aware of herbal medicine for veterinary remedies and practices for most of the common diseases. Such remedies and practices are actually present but not maximized, they are adopted to local culture and environmental conditions, and they are inexpensive and locally available.

The herbal applications for most islanders are only confined to humans, however, local veterinary practices in southeast Asia have been recorded and documented for more than many years, but the results have found little application in development efforts. Perhaps, due to non- recognition of potential contribution and little or no information available for recommendation of such practices.

This manual was intended to overcome these constraints. It will create awareness and better understanding not only for the paravets but also to other producers about the availability and potential significance of these natural resources that's been neglected for so many decades. The manuals will demonstrate that herbal applications to livestock contains many valuable, traditional practices which can serve as low-cost and practical alternatives for islanders throughout the Pacific. However, much remains to be done to document, assess and understand the wide range of herbal medicine for livestock across the Pacific. We hope that the compilation of the herbal plants and practices will serve as an inspiration to the veterinary science and the community to undertake studies to validate traditional livestock practices. And, ultimately benefit rural households and communities whose livelihood involves livestock production.

The informational material produced by this project was through field research and of participatory workshops. Such methodology brought together

academics, officials, non-government organization staff, extension personnel and farmers. The project has three objectives and phases. The first objective was able to train the paravets, extension staff, local and federal field officers, farmers and producers in the CNMI, Guam, Palau, FSM and the Marshall Islands for medicinal plants application for animal healthcare available in the tropics. The first phase underwent the Train the Trainers Program that imparted Asian technology transfer on plant medicinal applications and preparations for livestock healthcare from the Philippines to Western Pacific. These empowered individuals performed the second phase and objective, they further educate the extension staff thru workshops and be able to produce sustainable educational materials manuals, cd database, and videos/DVD of the available medicinal plants in the Western Pacific. The information was distributed to the region for all islands to share the knowledge and be able to apply those practical practices to their farm operations in the CNMI, Guam, Palau, FSM, and the Marshall Islands.

"The author would like to emphasize that this booklet is only a compilation of herbal plants with potential medicinal application for livestock in the Western Pacific. Therefore, it does not convey total replacement for commercially available medicine. Further research testing about its pharmacology and drug efficacy must be done first before we reach therapeutic claims for each herbal plants mentioned."

We are expecting that approximately 50% of the producers in each island will understand better about medicinal plants for livestock health. Increased utilization of available plant resources among Pacific Islanders will promote the development of value-added products from plants grown in the Western Pacific. The paravets and producers participating in this project will be the advocates of alternative plant medicine for animal healthcare. Since, alternative plant medicine is considered as highly recommended, economical, and environmentally friendly, it is clear that it will complement sustainable organic farming and improve animal health as well as human health. This project will promote further regional partnership and collaboration through the leadership and empowerment of the participants especially the local paravets.

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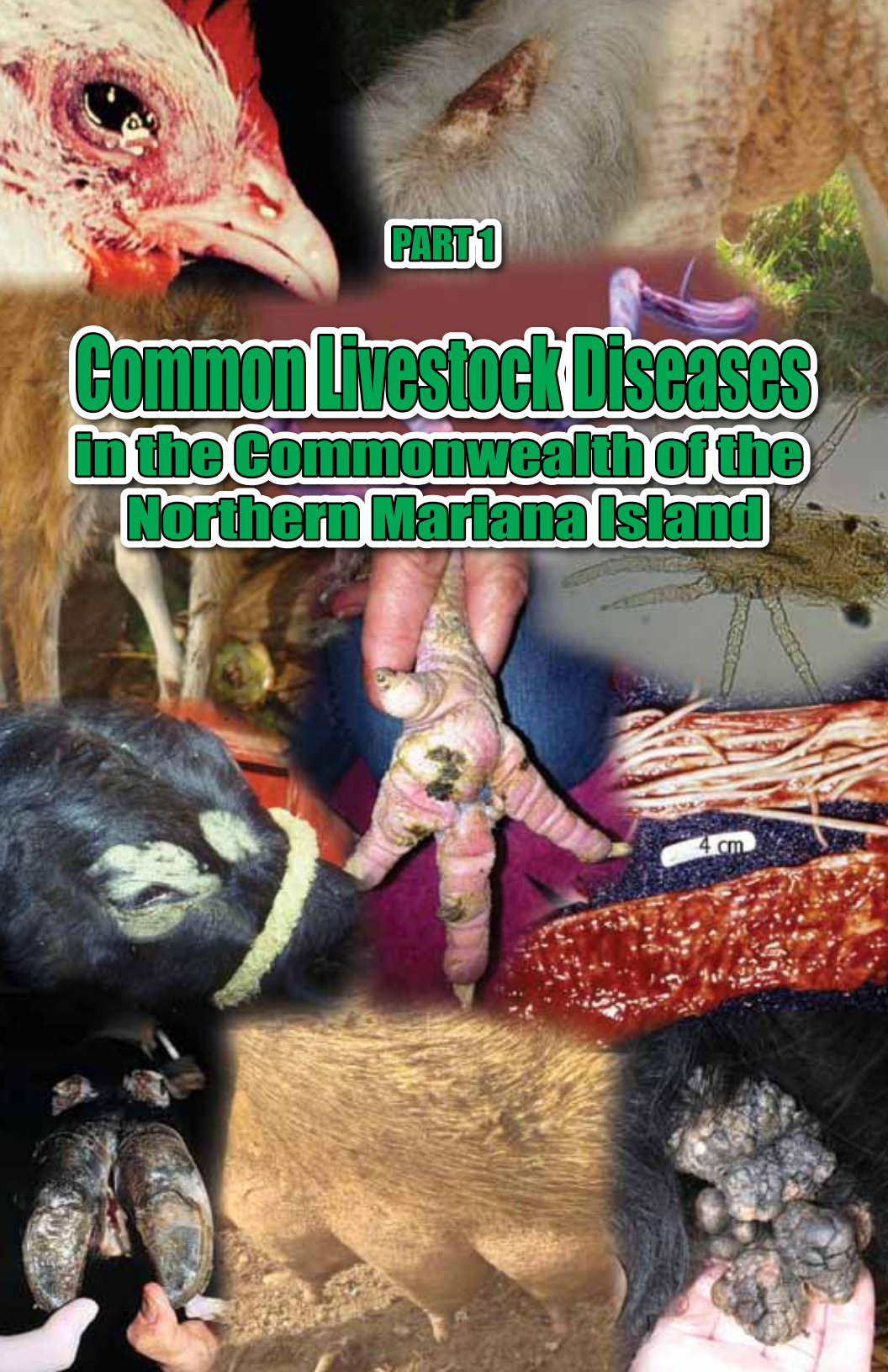
Bureau of Plant and Industry (BPI) - Los Baños, Laguna
Bureau of Animal Industry (BAI) Quezon City



PART 1

Common Livestock Diseases in the Commonwealth of the Northern Mariana Island

Common Livestock Diseases in the CNMI and the Western Pacific Islands

The Agriculture Development in the American Pacific (ADAP, 1996) and USDA Hatch, (2009) sponsored a project that provided basal reference for animal health status in the CNMI and in the Micronesia. This study establishes baseline information of the common diseases encountered by local producers on their livestock. This document was intended to serve as a guide in making simple diagnosis for remote areas without available technical experts. While we do not encourage producers to diagnose on their own, we still encourage them to consult with their local veterinarian.

Based on two animal health surveys conducted on 1996 and 2009, the following diseases emerged as the most reported among local producers;

1. Internal parasitism

Internal parasites such as worms are considered the main culprit of production loss from livestock in the Pacific. Clinically, the parasites causes anemia, scouring, depression and even death. The effects of parasitism usually are insidious and subclinical, such as indigestion and poor feed conversion, less than expected weight gain and (for brood cows) decreased milk production.

According, to Animal Health Survey 1999 and 2009 ADAP and Hatch, the following parasites have been identified present in the region;

	Parasites
Cattle	*Ascaris, Strongyloides spp., Cooperia, Oesophagostomum spp., Bunostomum spp.*(Nematodes), *Fasciola hepatica* (tapeworm, Trematode) *Trichomonas and Giardina (protozoa)*
Swine	*Ascaris, Oesophagostomum* *Stepanurus dentatus, Trichuris* *Cocciodiosis spp*
Poultry	*Ascaridia, Hetrakis, Capillaria* *Eimeria spp.*
Goats	*Haemonchus, Eimeria, Strongyloides* *Trichostrongyloides*

2. **External Parasite infestations**
Livestock in the Pacific are prone to tick infestation that causes anemia. Some species of ticks cause tick paralysis while others cause tick toxicosis. Intense lameness has been noted in goats where ticks are attached around the coronary band.

Another common infestation is Mange or scabies. It is a skin condition caused by microscopic mites in or on the skin. The mites cause intense itching and discomfort which is associated with decreased feed intake and production. Scratching and rubbing results in extensive damage to hides The mange mites which are reported to affect the ruminants and swine include *Sarcoptes scabiei, Psoroptes caprae, P. cuniculi, P. communis, Chorioptes texanus, Demodex* spp and rarely *Notoedres cati.*

Lice infestations of livestock cause intense itching resulting in damage to hides from scratching. Lice are usually host specific and can be divided into blood sucking (Anoplura) and biting (Mallophaga) lice.

	Parasites
Cattle	Ticks, Lice
Swine	Mange (sarcoptes and psoroptes mites) Lice
Poultry	Mites
Goats	Ticks, Mange

3. Fungal infections
Dermatophytosis or Ringworm is a transmissible infectious skin disease caused most often by *Trichophyton verrucosum* and *T. mentagrophytes* in livestock. The fungi that cause parasitic infection (dermatophytes) feed on keratin, the material found in the outer layer of skin, hair, and nails. These fungi thrive on skin that is warm and moist, but may also survive directly on the outsides of hair

shafts or in their interiors. Ringworm is characterized by round, alopecic lesions which expand in a ringed fashion.

4. Warts in cattle are caused by the contagious virus *papillomavirus* (fibro-papilomatosis). Calves are most susceptible with few cases of warts seen in cattle over 2 years of age. Warts appear 1 to 6 months after infection with the virus. Not all animals carrying the virus will have warts. It can be transmitted from the unapparent carrier to the susceptible calf. Warts are usually more of an appearance problem than a physical problem.

5. Mastitis Metristis Agalctia (MMA syndrome) udder diseases

Mastitis refers to the inflammation of the mammary gland and is characterized enlargement of the udder and abnormal milk secretion with or without fever. The disease has a multiple etiology but *Staphylococcus aureus* and *Streptococcus agalactiae* are the commonest bacteria isolated from cases of mastitis in small ruminants. Other bacteria encountered in include *Corynebacterium pyogenes, Klebsiella* spp, *Mycobacterium* spp and *Brucella* spp. After entry through the teat canal the bacteria colonize and multiply in the mammary tissue. Some bacteria produce enzymes and toxins which cause inflammation and damage to the mammary tissue, Pyogenic bacteria cause abscessation and suppuration. These inflammatory changes are associated with abnormalities in milk or no milk secretion known as **agalactia**. The severity of infection may lead to the uterus thus causing **metritis.**

6. Scours - In livestock, diarrhea is called scours. It is defined as an increased frequency, fluidity, or volume of fecal excretion. The feces may contain blood or mucous and be smelly. There are many causes of diarrhea:

Bacterial	*E. coli*
	Salmonella sp.
	Clostridium perfringins
Viral	Rotavirus
	Coronavirus
Protozoa	Cryptosporidia
	Coccidia (*Eimera sp.*)
	Giardia sp.
Parasitic	Gastro-intestinal worms (not *Haemonchus*)

Nutritional	Dietary changes
	Overfeeding
	Simple indigestion
	Poor qualtiy milk replacers
	Inadequate intake of colostrum
	Poor quality colostrum
	Poor quality or stagnant water
	Lush or wet pasture
	Inadequate dry matter intake
	Plant and fungal toxins
	Allergies
Management	Poor environment
	Overstocking/Overcrowding
	Poor sanitation
Stress	Weaning
	Handling
	Weather extremes
	Shipping/Transportation

7. Respiratory diseases - The main infectious agents involved in respiratory disease among livestock in the Pacific are bacteria and virus and the non-infectious agents are the climate and weather. Some of the respiratory diseases identified are:

	Respiratory Diseases
Cattle	Infectious Bovine Rhino tracheitis Mycoplasma and Salmonella
Swine	Pneumonia (pastuerella, haemophilus, Mycoplasma) Swine influenza Actinobacillus
Goats	Pasteurella multocida-shipping fever
Poultry	Mycoplasma

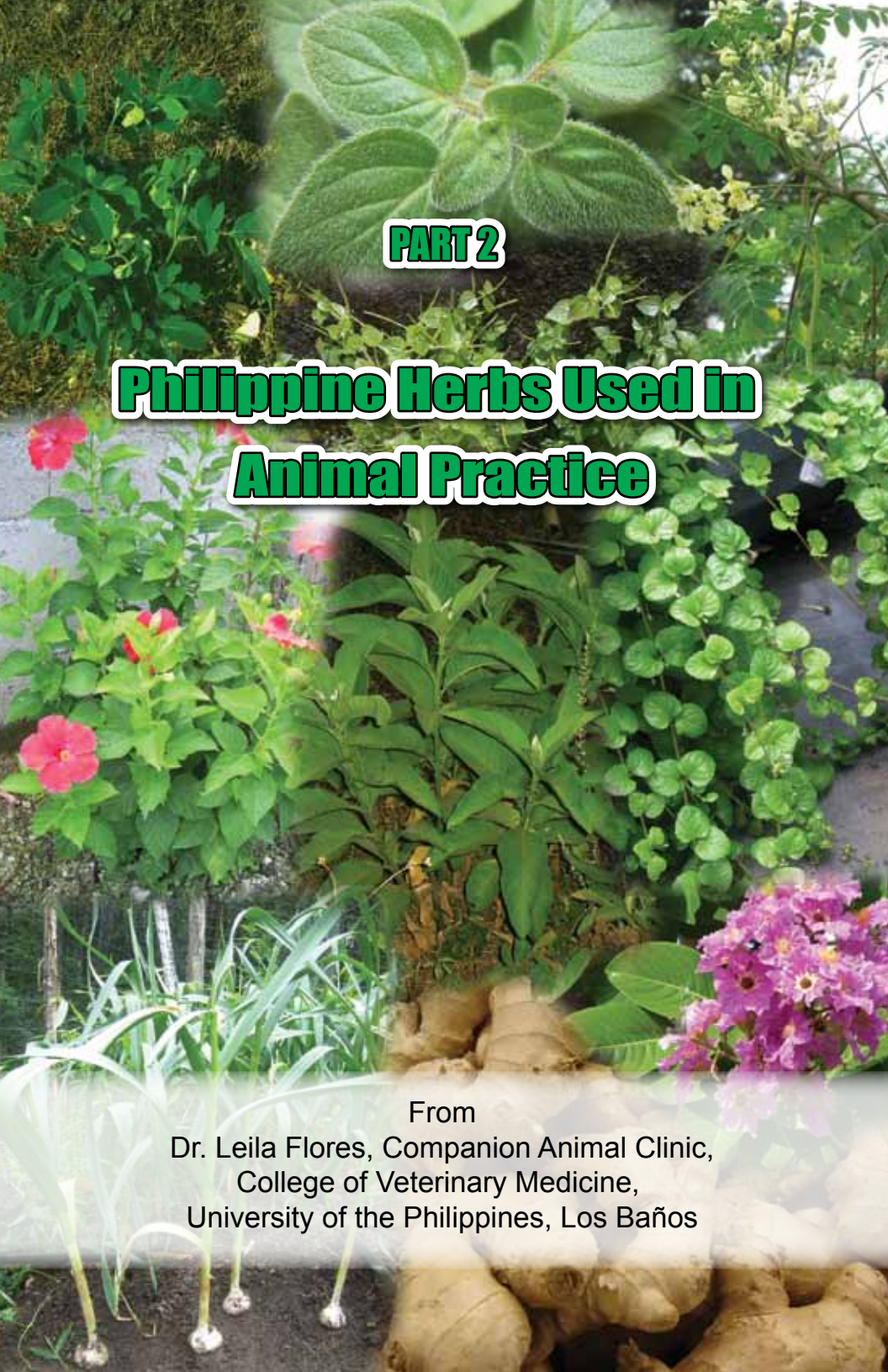
8. Foot rot - Footrot is a contagious infection of the feet characterized by inflammation of the skin-horn junction, under-running of the horn, ulceration and necrosis of the sensitive laminae of the foot and severe lameness. The disease is associated with production losses and sometimes mortality due to starvation. Footrot in goats and cattle is caused by a large Gram-negative rod-shaped bacterium, *Bacteroides nodosus* which is commonly associated with *Treponema*

penortha. Fusobacterium necrophorum and other aerobic or anaerobic bacteria may be isolated together with *B. nodosus* from the footrot lesions.

9. Eye problem - Conjunctivitis
Conjunctivitis is simply an inflammation of the soft tissues surrounding the eye and eyelids. Ruminants such as Cattle and goats affected with conjunctivitis will have reddening of the eyeball and swelling of the inner lining of the eyelid. These animals will have an increased sensitivity to sunlight which is demonstrated by 'squinting' or closing their eyes in bright sunlight. There will usually be a discharge from the eye as well. Although conjunctivitis is not a fatal disease, it can cause severe economic losses to the cattle producer through: reduced growth rates; costs of treatment including labour costs, and; reduced value of affected cattle. The three most common causes of conjunctivitis in cattle would include: 'Pinkeye' or Infectious bovine keratoconjunctivitis (IBK).; Infectious bovine rhinotracheitis (IBR).; and Foreign bodies in the eye such as dust.

10. Other Miscellaneous diseases that was noted during the study were Wounds, abscess and cuts, abrasions, furuncles, bloat, traumatic disease, salt poisoning, heat stroke, ammonia burn in poultry, cannibalism, aflatoxicosis and mycosis.

Disclaimer
The 2000 and 2009 animal health surveys served as a preliminary assessment and basal reference guide for future research endeavor and do not claim to be definitive for the region. It is highly advise that producers consult with their country veterinarian about disease diagnosis, treatment and control measures.



PART 2

Philippine Herbs Used in Animal Practice

From
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INTEGUMENTARY SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Sabila (*Aloe barbadensis*)*	Wounds, burns, abrasions, skin irritation	J/ S: Strip off outer skin and apply mesophyll on affected areas	Acemannan, allantoin, aloeemodin-anthran-C-glycoside, emonin, allantoin	Toxic when ingested (due to anthracoid present in the latex skin); not to be used in pregnant or lactating animals
Comfrey (*Symphytum officinale*)	Wounds, abscess, cuts	J/ S: Bruise the roots and immediately apply topically; or Pt/ Fo: leaves, overnight	Allantoin, tannin, mucous substances	Toxic when ingested (due to pyrrolizidin alkaloids and consolicine present)
Talong (*Solanum melongena*)	Wound, dermatophytes	J/ S: leaves, bid x7d	Alkaloid, tannin	Slight toxicity noted when ingested
Bayabas (*Psidium guajava*)*	Wounds	De/ S: leaves, and irrigate affected area tid x 3d	Tannin, saponin, volatile oil, fixed oil	
Tobacco (*Nicotiana tabacum*)*	Surgical wound (from castration, i.e.) Localized Mange (S, D) Tick infestation	Pt/ S: leaves mixed w/ paminta, betel nut and lime; T/ S: 75 g tobacco dust + 1 li H2O, filter in gauze, + 20 ml 70% isopropyl alcohol, apply bid x 3d; if moderate infestation, apply od x 7d more; Pw, I/ S: 75 gm leaves, soak in 1 li H2O (3d), filter, apply on infected areas, dip paws for 30 min and rinse off with tap water.	Nicotine Nicotine (causes paralysis then death of the parasite)	Toxic when ingested
Aroma (*Acacia farnesiana*)	Skin disease	Pt/ C: Use fresh leaves as rubbing agent		
Atchuete (*Bixa orellana*)	Canine pyoderma, infected wounds	I/ S: Atchuete dye mixed with lime	Maslinic Acid (aka crataegolic acid)	Toxic when ingested
Tanglad (*Cymbopogon citratus*)	Tick infestation, Dermatophytes	J/ S: leaves; or T/ S: leaves in ethanol at 1:3 (v/v) dilution	Citral (an aldehyde in essential oil)	
Kakawate (*Gliricidia sepium*)*	Tick and flea infestation, Mange (S), Dermatophytes	De/ S: 500 gm leaves and young stalks in 1 li H2O apply within 24 hrs, weekly x 6 wks	Coumarin, tannin, anthraquinone, sulfur	
Manga (*Mangifera indica*)	Mange (S)	/S: Mix the gum resin with oil and apply topically	Saponin, tannin, peroxidase, sulfur	
Talisay (*Terminalia catappa*)	Mange (S)	J/ S: young leaves mixed with oil	Tannin, saponin, calcium oxalate, glycosieds	Toxic when ingested (due to punicalagin, a hydrolysable tannin, present)
Elefante (*Heliotropium indicum*), **Atis** (*Anona squamosa*)	Mange (S)	De/ S: leaves	Alkaloid Alkaloid, tannin	Toxic when ingested
Kuchai (*Allium tuberosum*)	Mange (S), Dermatophytes	De/ S: 500 gm leaves in 1 li H2O + 0.5 gm agar; after cooling, + 500 ml cooking oil, shake vigorously and apply to skin weekly x 3wks	Alliin, beta carotene	

Makabuhay (*Tinospora crispa, T. rumphii*)	Mange (S)	J/ S: vine, may + pounded coconut palm leaves, use as rubbing agent to affected areas	Berberine	
Akapulko (*Cassia alata*)*	Ear mites, *Psoroptes cuniculi*, eczema Mange (D)	De/ S: leaves, apply to the ears weekly x 4wks; Pt/ S: leaves	Alkaloids, tannin, saponin, glycoside, calcium oxalate	Slightly toxic when ingested
Niyog (*Cocos nucifera*)*	Dermatophytes	/S: Oil		
Gatas-gatasan (*Euphorbia hirta*)	Dermatophytes (*Trichophyton mentagrophytes, T. simii*)	De/ S: leaves	Alkaloids, tannin, sulfur, amygdalin	Ingenol ester (present in the latex) causes skin irritation & has tumor-promoting activity

GASTROINTESTINAL SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Sabila (*Aloe barbadensis*)	Indigestion, constipation	J/ Dr: leaves with small amount of water	Anthranoids	May interact with heart medication (aloe decreases K+, which increases potency of heart glycosides)
Paragia (*Eleusine indica*)	Diarrhea and stomachache	/Ff: Feed leaves	Tannins, saponins	Toxic when ingested at 3mg/kg of extract
Bayabas (*Psidium guajava*)	Diarrhea, *Giardia* infestation	De/ Dr: leaves, 250 ml bid x 1-2d	Tannin, saponin, protozoa-inhibiting principle, quercetin	
Manga (*Mangifera indica*)	*Giardia*, *E. coli,* Enterobacteria infestation	De/ Dr: leaves	Tannin, saponin, fats, calcium oxalte, peroxidase, glycosides	
Niyog (*Cocos nucifera*)	Bloat, diarrhea, constipation	De/ Dr: 200 ml oil or milk of coconut, bid x 2d	Fats, oils, proteins, CHON, minerals, Vits A, B, C	
Damong maria (*Artemisia vulgaris*)	Gas pain (tympanism)	De/ Dr: 6 leaves in 1 glass H2O	Alkaloids	
Takip-kohol (*Centella asiatica*)	Peptic ulcer	De/ Dr: 30-60 leaves in 1 glass water	Vallarine, asiaticoside (a glycoside)	
Lagnob (*Ficus hauili bianco*)	Food poisoning, indigestion	De/ Dr: 3 young unopened leaves & 1 young soft leaf , give while lukewarm		
Luya (*Zingiber officinale*)	Bloat	Pw/ Ff: Feed raw and crystallized rhizome, q2hrs	Gingerol, shogaol, zingerone	Do not use in pregnant animals nor those with fever, on hypo-glycemic txt or anticoagulant txt; do not use 1 wk prior to and after surgery
Tanglad (*Cymbopogon citratus*)	Flatulence, diarrhea	/Dr: Oil	Citral (an aldehyde in essential oil)	
Bulak ng Paraiso (***Caesalpinia pulcherrima***)	Jaundice	De/ Dr: 5 leaves, 3 fruits and bark		
Rosal (*Gardenia jasminoides, G. florida*)	Jaundice, increased Bilirubin in blood	De/ Dr: fruit or 6-9 gm leaves	Crocin (gardenia), crocetin, mannitol, B-sitosterol	
Mutha (*Cyperus rotundus*)*	Stomach pain/ colic	/Ff: Feed fresh leaves		

INTESTINAL PARASITISM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Bunga (***Areca catechu***)	**Toxocara canis, Ancylostoma caninum, Dipylidium caninum, cestodes**	Pw, J/ Dr: Remove husk, wash and dry nut, grind with mortar and pestle, mix 5 gm (1tsp) to 8 ml of water, squeeze off juice with cheesecloth and give 2 ml/kg BW, PO; repeat after 1 wk	Arecoline, arecaidine	Large doses of areca nut cause vomiting and diarrhea
Pinya (*Ananas comosus*)	Toxocara canis	B/ Ff: sundried (1 wk) leaves, grind, mix 1 gm with 1 gm of molasses, give at 2mg/kg BW	Bromelain	Contraindicated in patients with prolonged bleeding time; and those under anticoagulant medication
Niyog-niyogan (*Quisqualis indica*)	Toxocara canis	/Ff: Roast 4-5 seeds and give PO	L-quisqualic acid	
Balete (*Ficus elastica*)	Trichuris, Toxocara canis	Use the latex of the trunk (1.0 cm3/kg) and give PO	Ficin enzyme, ficosterin, caoutchouc (rubber)	Some toxic side effect: hypotension, vasodilation and direct heart depressant
Pandakaking-tsina (*Ervatamia divaricata*)	Worms	Pt/ Ff: Rub root bark with water and give PO		

RESPIRATORY SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Amarillo (*Tagetes patula, T. erecta*)	Common cough	De/ Dr: leaves and flowers, bid x 1-2d	Fats, volatile oil, quercetagetin	
Sambong ***(Blumea balsamifera), Atis (Anona squamosa)***	Productive cough	De/ Dr: 1c leaves in 2 glasses water, bid x2d	Glycosides, tannin Alkaloids, tannins	
Lagundi (*Vitex negando*)	Kennel cough	Commercially available in capsule-form; or De/ Dr: leaves	Flavonoids, essential oils	May decrease heart rate and amplitude
Bayabas (*Psidium guajava*)	Colds	De/ Dr: leaves, 250 ml bid x 1-2d	Tannin, saponin	
Malunggay (*Moringa oleifera*)	Colds	/Ff: Feed leaves	Calcium oxalate, pectic substances	

REPRODUCTIVE SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Malunggay (*Moringa oleifera*)	Agalactia	/Ff: leaves or Pt/ S: leaves and apply on mammaries	Calcium oxalate, pectic substances	
Gatas-gatasan (*Euphorbia hirta*)	Agalactia	I/ Dr: whole plant	Amygdalin, calcium oxalate	High doses can irritate GIT
Sampaguita (*Jasminum sambac*)	Mastitis	Pt/ Fo: Leaves and flowers, apply on the mammaries (lactifuge)		

URINARY SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Sambong (*Blumea balsamifera*)*	Cystitis, urolithiasis, diuretic	De/ Dr: 1c leaves in 2 glasses H2O, and drench _c tid	Alkaloids, Glycosides, tannin, volatile oil (l-borneol)	
Pansit-pansitan (*Peperomia pellucida*)	Urolithiasis, UTI	/Ff: Feed fresh or De/ Dr: 4-6 inches of the plant in one glass water, tid-qid	Tannins, calcium oxalate, alkaloids, volatile oils	Suppresses peristalsis due to the volatile oil present
Balbas-pusa (*Orthosisphon aristatus*)	UTI	I/ Dr: leaves		

CIRCULATORY SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Niyog (*Cocos nucefera*)	Dehydration	/Dr: Water of 3 young coconuts, + 1c sugar, tid until hydrated; w/o the sugar could be given IV	ECF-like	
Abukado (*Persea Americana*)	Anemia	/Ff: Feed fruit (except fruit peel)	VitB-complex, Phosphate, Fe, K, minerals	
Malunggay (*Moringa oleifera*)	Anemia	/Ff: Feed leaves and flowers	Fe, C, Phosphorus, Vits A&C	
Luya (*Zingiber officinale*)	*Dirofilaria immitis* infection	T/ : Alcoholic extract of rhizome residue, SC	Not yet identified altho has gingerol	Do not use 1 wk prior to and after surgery
Bawang (*Allium sativum*)	Arrhythmia, tachycardia	/Ff: 1 clove/5-15 kg BW/ day	Sulfuric compounds, Aliin	Do not use in anemic animals; NOT with high dose VitE and in 1 wk prior to and after surgery

OPHTHALMIC SYSTEM

Herb	Indication	Preparation and Application	Active Ingredients	Precaution
Sampaguita (*Jasminum sambac*)	Eye infection, eye wound, sore eyes	De/ EyeDrop: flower, q2hr x 3d		
Elepante (*Heliotropium indicum*)	Conjunctivitis	J/ EyeDrop: leaves	Indicin (an alkaloid), calcium oxalate, tannin	
Gatas-gatasan (*Euphorbia hirta*)	Cataract Stye	J/ EyeDrop: sap, one drop od x 7d; One drop only	Amygdalin	High doses taken orally can irritate GIT
Sampalok (*Tamarindus indica*)	Conjunctivitis	J/ EyeDrop: young leaves	Glycosides	
Pandakaking-tsina (*Ervatamia divaricata*)	Ophthalmia	J/ EyeDrop: sap of leaves		

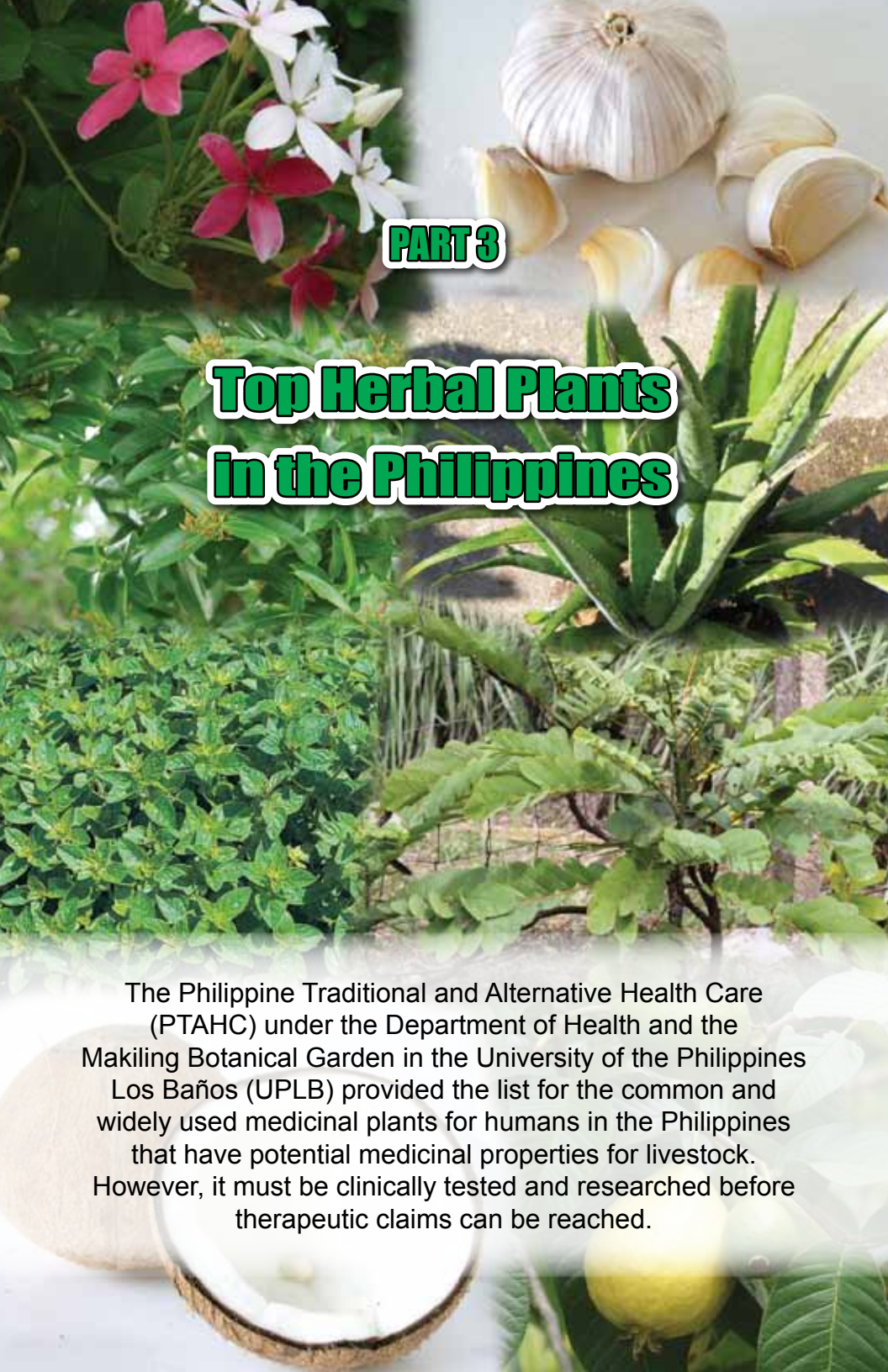
*APPLICATION OF THE HERBAL MEDICINES

Oral

1. ***Drenching (Dr)*** - administration of liquid or semi-liquid preparation through the mouth; may use bamboo tube, soft drink bottle, syringe sans needle, or medicine dropper.
2. ***Force feeding (Ff)*** - application of solid preparation through the mouth.

Topical

1. ***Fomentation (Fo)*** - warm, moist substance (wet cloth) applied to affected parts of the body.
2. ***Compress (C)*** - dry substance applied to affected parts of the body.
3. ***Smudge (S)*** - direct application of herbal preparation on affected parts of the body.



PART 3

Top Herbal Plants in the Philippines

The Philippine Traditional and Alternative Health Care (PTAHC) under the Department of Health and the Makiling Botanical Garden in the University of the Philippines Los Baños (UPLB) provided the list for the common and widely used medicinal plants for humans in the Philippines that have potential medicinal properties for livestock. However, it must be clinically tested and researched before therapeutic claims can be reached.


Ringworm Bush
Cassia alata

Ringworm Bush or Akapulko (Scientific name: *Cassia alata*) - a shrub known to be a diuretic, sudorific and purgative. The medicinal uses of akapulko are to treat scabies, fungal infection of the skin and for the treatment of ringworms in ruminants and swine.

Other scientific names *Herpetic alata* Raf. Adadisi (Ting.) *Senna alata* Akapulko (Sul., Tag.) *Cassia bracteata* Ancharasi (Ig.) *Cassia herpetica* Andadisi (Ilk.)

Parts Utilized
Leaves, bark, seeds/fruit, and flowers.

Uses (Folkloric)
The seeds used for intestinal parasitism. Tincture from leaves reported to be purgative. Decoction of leaves and flowers for cough. Crushed leaves and juice extract used for ringworm, scabies, eczema, tinea infections, insect bites, herpes. Decoction of leaves and flowers used as mouthwash in stomatitis.

Preparation: Pound enough fresh leaves; express (squeeze out) the juice and apply on the affected skin morning and evening. Improvement should be noticed after 2 - 3 weeks of treatment.

In Africa, the boiled leaves are used for hypertension. In South American, used for skin diseases, stomach problems, fever, asthma, snake bites and venereal disease. In Thailand, leaves are boiled and drunk to hasten delivery. As laxative, boil 10-15 dried leaves in water, taken in the morning and bedtime. For wound treatment, leaves are boiled and simmered to one-third volume, then applied to affected areas twice daily.

Ointment preparation
(1) Wash fresh leaves thoroughly and cut in small pieces.
(2) Add one glass of cooking oil or coconut oil to one glass of cut fresh leaves.
(3) Fry until crispy.
(4) Remove from the heat; strain.
(5) Cut 2 white candles (Esperma No. 5) into small pieces.
(6) In a cooking pot, pour the strained oil together with the candle pieces; stir until the candle has melted.
(7) Pour the mixture into a clean container; cover when cool.
(8) Apply the ointment to affected areas twice daily.
(Source: <www.doh.gov.ph/pitahc>)


“Ahus”
Garlic
Allium sativum

Garlic or Bawang (Scientific name: *Allium sativum*) - a specie of the onion family. English name: Garlic. It is used to reduce cholesterol in the blood and thus helps lower blood pressure.

Properties
Antibacterial, antihelminthic, antimycotic, antiviral, antispasmodic, diaphoretic, expectorant, fibrinolytic, hypotensive, promiting leucocytosis, lowering lipids and inhibiting platelet aggregation.

Parts Utilized
Bulbs: Features prominently as a condiment and flavor in Filipino cuisine. Herbalists, with concerns that cooking diminishes medicinal potency, recommends eating raw garlic cloves.

Uses (Folkloric)
After birth, newborn's navel wounds for ruminants. For retained placenta for swine.

Appetizer, coughs, colds, antifungal agent for swine.: Crush several cloves and rub on affected areas.

Headaches: Crush one clove and apply to both temples as poultice.

Insect bites: Crush garlic or cut clove crosswise and rub directly to affected area.

Athlete's foot. And warts surgery.

Decoction of leaves and bulbs for fever and as hypotensive, carminative, expectorant, and antihelmintic.

Juice from freshly crushed garlic used for colds, cough, sore throat, hoarseness, asthma and bronchitis.

Decoction used for tonsillitis.
For nasal congestion - a steam inhalation of chopped garlic and a teaspoon of vinegar in boiling water.

Fresh garlic has been used as a complement to INH therapy for tuberculosis.

Digestive problems and gastrointestinal spasms.
For gas pains, drink an infusion of a peeled broiled clove.

"Abas"

Guava

Psidium guajava

Guava or Bayabas (Scientific name: *Psidium guajava*) - more popularly known as guava, bayabas is a small tree whose boiled leaves are used as an disinfectant to treat wounds. The decoction is also used as a mouth wash to treat gum infection and tooth decay. The bark is also used in children with chronic diarrhea.

Parts Utilized
Leaves

Uses (Folkloric)

For retained placenta in pregnancy and breeding for ruminants

For udder infection and diarrhea in ruminants and swine

Decoction or infusion of fresh leaves used for wound cleaning to prevent infection and to facilitate healing in swine castration.

For diarrhea, boil for 15 minutes 4 to 6 tablespoons of chopped leaves in 18 ounces of water. Strain and cool. Drink 1/4 of the decoction every 3 - 4 hours.

For toothache, chew 2-3 young leaves and put into the tooth cavity;

For gum swelling, chew leaves or use the leaf decoction as mouthwash 3 times daily; chewed leaves.

For skin ulcers, pruritic or infected wounds: Apply decoction of leaves or unripe fruit as wash or the leaf poultice on the wound or use the decoction for wound cleansing. It is also popularly used for the wound healing of circumcision wounds.

Nosebleeds: Densely roll the bayabas leaves and place into the nostril cavity.


Lagundi
Vitex negundo

Lagundi (Scientific name: *Vitex negundo*) - one of the better known of the medicinal plants in the Philippines, lagundi (five-leaved chaste tree) is a shrub with many medicinal uses. It is used for the relief and treatment of coughs, asthma, dyspepsia, worms, colic, rheumatism and boils. The root is known to be an expectorant, tonic and febrifuge. Best propagated by use of mature, leafless stem cuttings.

Parts Utilized
Leaves, bark, roots and seeds. Leaves may be harvested three months after establishment.

Uses (Folkloric)
Leaf decoction for fever, headache, toothache, cough, asthma.
(1) For fever and sprain for ruminnants , boil 6 tbsp of the chopped leaves in 2 glasses of water for 15 minutes; strain and cool. Divide the decoction in 3 parts and take one part every 3-4 hours. Also, bruised leaves may be applied to forehead.
(2) For asthma and cough: Take 1/4 of the decoction three times a day.
Pounded leaves applies on the forehead and temples for headaches.
(3) Aromatic bath or sponge bathing: Boil 4 handfuls of leaves in a pot of water for 5 minutes; use the lukewarm decoction for sponge bathing.
(4) for Wounds, ticks and lice for poultry.

Recent Use
Lagundi has been proven to be an effective analgesic and antitussive (prepared as a pleasant tasting cough syrup) and has been considered as a replacement for dextromethorphan in the public health system.

Preparation
How to make lagundi syrup
• Clean fresh lagundfi leaves and chop.
• In 4 glasses of water, boil 4 tablespoons of minced lagundi leaves for 50 minutes.
• Strain the liquid extract and add 1 part honey to 4 parts extracts.
• Boil in an earthen pot or enamel-lined saucepan for 15 minutes until the desired viscosity is attained; cool.
• Pour the syrup in clear amber-colored bottles.


Niyog-Niyogan
Quisqualis indica L.

Niyog-niyogan (Scientific name: *Quisqualis indica L.*) – English Name Yesterday, today and Tomorrow is a vine that is effective in the elimination of intestinal worms, particularly the Trichina and Ascaris by ingesting its matured dried seeds in poultry and swine. Roasted leaves are also used for fever and diarrhea while pounded leaves are used for skin diseases.

Parts Utilized
Seeds (dried nuts) and leaves.

Properties
Oil from the seeds are purgative. Considered anthelmintic, anti-inflammatory. Study on ascariasis reported the plant to possess anthelmintic properties.

Uses (Folkloric)
• Anthelmintic: Dried seeds preferable for deworming.
• Caution: Adverse reactions - diarrhea, abdominal pain, distention and hiccups more likely if nuts are eaten in consecutive days or when fresh nuts are eaten.
• Roasted seeds for diarrhea and fever.
• Plant used as a cough cure.
• Leaves applied to the head to relieve headaches.
• Pounded leaves externally for skin diseases.
• Decoction of boiled leaves used for dysuria.
• Ifugao migrants use it for headache.
• Ripe seeds roasted and used for diarrhea and fever.
• In Thailand, seeds used as anthelmintic; flowers for diarrhea.
• In India and Ambonia, leaves used in a compound decoction to relieve flatulent distention of the abdomen. Leaves and fruits are reported to be anthelmintic; also used for nephritis.
• In India and the Moluccas, seeds are given with honey as electuary for the expulsion of entozoa in children.
• In Indo-China, seeds are used as anthelmintic and for rickets in children.
• The Chinese and Annamites reported to use the seeds as vermifuge. In China, seeds are also used for diarrhea and leucorrheal discharges of children. Seeds macerated in oil are applied to parasitic skin diseases.
• In Bangladesh, used for diarrhea, fever, boils, ulcers and helminthiasis.


Sambong
Blumea balsamifera

Sambong (Scientific name: *Blumea balsamifera*) - a Philippine medicinal plant used to treat kidney disorders, colds, fever, rheumatism, hypertension and other ailments. As a diuretic, it helps in the excretion of urinary stones. A decoction of leaves is taken internally for treatment. It can also be used as an edema. English name: Blumea Camphor. Propagation by cuttings and layering.

Parts Utilized
Leaves (fresh or dried).
Mature, healthy, fully expanded leaves are harvested while senescent leaves are discarded. Air-dry until they crumble when crushed with the fingers. Store in amber colored bottles in a cool, dry place.

Uses (Folkloric)
Leaves as poultice for abscesses in swine and ruminants.
Decoction of roots and leaves for fevers and cystitis in swine.
Applied while hot over the sinuses. Used for wounds and cuts.
Fresh juice of leaves to wounds and cuts.
Poultice of leaves to forehead for headaches.

Preparations
• Fever: decoction of roots; boil 2 - 4 handfuls of the leaves. Use the lukewarm decoction as a sponge bath.
• Headaches: apply pounded leaves on the forehead and temples. Hold in place with a clean piece of cloth.
• Gas distention: boil 2 tsp of the chopped leaves in 1 cup of water for 5 minutes. Drink the decoction while warm. Also used for upset stomach. • • Postpartum, for mothers' bath after childbirth.
• Boils: Apply pounded leaves as poultice daily.
• Diuretic: Boil 2 tbsp chopped leaves in 2 glasses of water for 15 minutes. Take 1/2 of the decoction after every meal, 3 times a day.

New applications
As a diuretic and for dissolution of renal stones.
- As a diuretic in hypertension and fluid retention. Also used for dissolution of kidney stones.


Wild Tea
Ehretia microphylla Lam.

Wild Tea or Tsaang Gubat (Tagalog) (Scientific name: *Ehretia microphylla Lam.*) This medicinal herb is effective in treating diarrhea, dysentery, gastroenteritis and other stomach ailments

Parts Utilized
Leaves

Uses (Folkloric)
- Leaf decoction or infusion for abdominal colic, cough, diarrhea and dysentery.
- Root decoction used as an antidote for vegetable poisoning.
- For diarrhea: Boil 8 tbsp of chopped leaves in 2 glasses of water for 15 minutes; strain and cool. Use 1/4 of the decoction every 2 or 3 hours. Decoction has also been used as a dental mouthwash.
- Decoction of leaves used as disinfectant wash

"Atis"

Sweet Sop

Anona squamosa L.

Sweetsop or Atis (Scientific name: *Anona squamosa L.*) – custard apple or Sugar apple.

Parts Used/Utilized
Leaves , fruits and seeds

Uses (Folkloric)

The leaves, fruit and seeds are used in the treatment of diarrhea, dysentery and fainting.
Salted bruised leaves used to hasten suppuration.
Bark decoction is used as tonic and to stop diarrhea.
Root has purgative action.
Leaf decoction used for rheumatic baths to alleviate pain.
For fainting and hysteria, crush fresh leaves and place over nose.

For infected insect bites, pound and extract the juice from one unripe fruit and apply the juice directly to the affected areas, 3 times daily.

For lice infestation of the head, atis has a herbal treatment regimen:
Pound 1/2 cup of atis seeds and mix with 1/4 cup of oil. Apply mixture throroughly to the hair. Do daily for 3-5 days.

In Northern India, young leaves are used for diabetes.
In Malaysia, used for skin infections, diarrhea, dysentery and UTIs..


“Floris Rosa”
Hibiscus
Hibiscus rosa-sinensis Linn.

Hibiscus or Gumamela (Scientific name: *Hibiscus rosa-sinensis Linn*) - called China rose or Hibiscus in the West, it is a common ornamental plant in the Philippines. As a medicinal herb, it is used as an expectorant for coughs, cold, sore throat, fever and bronchitis.

Parts Utilized
Flowers, roots, and leaves.
Harvest the roots and leaves anytime of the year.
Wash, cut into slices, and sun-dry.

Uses (Folkloric)
In the Philippines, flower buds, beaten to a paste, applied as poultice to boils, cancerous swellings, and mumps.

Poultice of leaves and flower buds applied externally to swellings; the same mixture, with the addition of lime, hastens the maturation of tumors.

Mumps, infection of the urinary tract: use dried drug materials 15 to 30 gms, boil to decoction and drink.
For abscesses, carbuncles and boils: crush fresh leaves and poultice the infected area.

Decoction of roots also used for coughs.
Infusion or poultice of leaves used for headaches.

Decoction of root used as drops for sore eyes. Seeds used as a stimulant and for cramps. · Decoction of leaves for fevers.

Juice of leaves, along with that of Vernonia cinerea, used by midwives to stimulate the expulsion of the retained placenta

Infusion of flowers and leaves used as expectorant in bronchitis

Hair stimulant: oil made by mixing the juice of fresh petals and olive oil in equal proportions, and boiled till the water has evaporated, used for stimulating hair growth.

In Costa Rica, used as a purgative. Red flowers are purgative; when taken with papaya seeds, may be abortive.

In Venezuela, used to treat tumors.


“Hasngut”
Ginger
Zingiber officinale

Ginger or Luya (Scientific name: *Zingiber officinale*) . It is botanically not a root but a rhizome of the monocotyledonous perennial plant. It has many uses as a medicinal herb with antifungal, anti-inflammatory, antibiotic, antiviral, diuretic and antiseptic properties.

Parts Utilized
Tops, leaves and edible roots.

Uses (Folkloric)
Pounded rhizome, alone or mixed with oil, used for diarrhea in swine and internal parasites for ruminants.

As antiseptic, tincture of dried rhizome prepared with 70% alcohol (not rubbing alchol) and applied on superficial cuts and wounds; or, juice from fresh rhizome used similarly.

As digestive aid and for flatulence and tympanism, decoction of the rhizome drunk as tea.

Ginger juice rubbed on and around the navel is said to cure all kinds of diarrhea.

Poultice of pounded and warmed leaves applied to bruises.

Ginger taken with rock salt before meals is said to clean the tongue and throat and increase the appetite. Chewing ginger is said to diminish biliousness and delirium, relieve sore throat, hoarseness and aphonia, and increases the flow of saliva.

In Indo-China, cataplasm used for furuncles; when mixed with oil is antirheumatic. Rhizomes also used for tuberculosis, general fatigue and uterine affections.

Juice from fresh root used for treatment of burns.


Aloe Vera
Aloe barbadensis miller liquid

Aloe Vera or Sabila (Scientific name: *Aloe barbadensis miller liquid*) - It is a succulent plant used to treat burns, cuts, eczema and other disorders. Aloe vera has antiviral, antifungal, antibiotic, antioxidant and antiparasitic properties.

Parts Utilized
Leaves, pulp, and sap.
Dried juice from leaves.
Harvest mature leaves and rinse with water; remove spines prior to use.

Uses (Folkloric)
For alopecia and falling hair, remove the spines, cut leaves and rub directly on the scalp. The juice of fresh leave may be mixed with gogo and used as a shampoo. Use for dandruff.

Juice from leaves mixed with wine used to preserve the hair.

Juice from leaves mixed with milk used for dysentery and pains of the kidney.

Fresh juice expressed from the leaves is spread on skin burns, scalds, scrapes, sunburn and wounds.

Used for wound healing.

For conjunctivitis, leaf juice is applied to the outer eyelid.

Used for sprains, sore throat.

In small doses, considered stomachic tonic; in large doses, as purgative.

Juice mixed with coconut milk used for dysentery and kidney pains.

For bruises, equal parts of juice and alcohol are applied to affected areas.


"Niyuk"
Virgin Coconut Oil
VCO

Virgin Coconut Oil (VCO) - Although not a medicinal plant, VCO is a product of the coconut tree. VCO is one of the more popular alternative medicine widely used in the Philippines today. It is taken internally for various ailments like diabetes to high blood pressure. Topically, VCO is also applied to the skin and scalp to nourish and heal.

Parts used
Roots, bark, "bloom" of the leaf, the cabbage, flowers, and the fruit (husk, shell, water, endosperm, oil.)

Uses (Folkloric)
- Myriads of use in the traditional systems worldwide: abscesses, asthma, baldness, burns and bruises,, cough and colds, kidney stones, scabies, ulcers, among many others.
- Constipation: Take 1 to 2 tablespoons of gata (cream).
- Dandruff: Massage oil on scalp, leave overnight, and wash hair.
- Diarrhea and/or vomiting: Drink water of young fruit, as tolerated. Water from the young coconut has been used as a substiture for dextrose infusion in emergent situations during World War II.
- Dry skin: Apply oil and massage into affected area.
- Ash of bark used for scabies.
- In New Guinea, young leaves chewed to a past and applied to cuts to stop the bleeding.
- In Java used for dysentery and other intestinal complaints.
- In Amboinia used for coughs.
- Malays use poultice of roots in syphilis and gonorrhea; also, for rheumatism.
- In India, young roots employed as astringent gargle for sore throat. Also, boiled with ginger and salt, used in fevers.
- In the Gold Coast, bark used for curing toothache and earache.
- In India ash of the bark used as dentrifice and as antiseptic. The soft, downy, light-brown substance on the lower surface of the leaves used as styptic. Husk used in the treatment of tapeworms; in Punjab and Cashmere, used for throat inflammation. The tar obtained from burning the shell considered rubifacient; used for ringworm, itches and other parasitic infections.
- In India, a toddy-poultice (fresh toddy and rice flour) used as application for gangrenous ulcerations, indolent ulcers, and carbuncles.
- In Malaya. ash obtained from the coconut shell used for swellings, pains in the stomach, and for rheumatism. Coconut water is also used as diuretic.
- In Mexico, coconut water used as diuretic and anthelmintic.
- Decoction of ground roots drunk in cases of small pox.


Oregano
Origanum vulgare

Oregano (Scientific name: *Origanum vulgare*) - a perennial herb with antioxidant and antimicrobial properties. A decoction of oregano leaves is taken internally for the prevention of degenerative arthritis, relief of cough, osteoarthritis, asthma and upset stomach.

Parts Utilized
Leaves

Uses (Folkloric)
In the Philippines, macerated fresh leaves applied externally to burns.
Leaves are bruised and applied to centipede and scorpion bites. Also, applied to temples and forehead for headache, help in place by a bandage.

The juice of the leaves for dyspepsia, asthma, chronic coughs, bronchits, colic, flatulence, rheumatism·

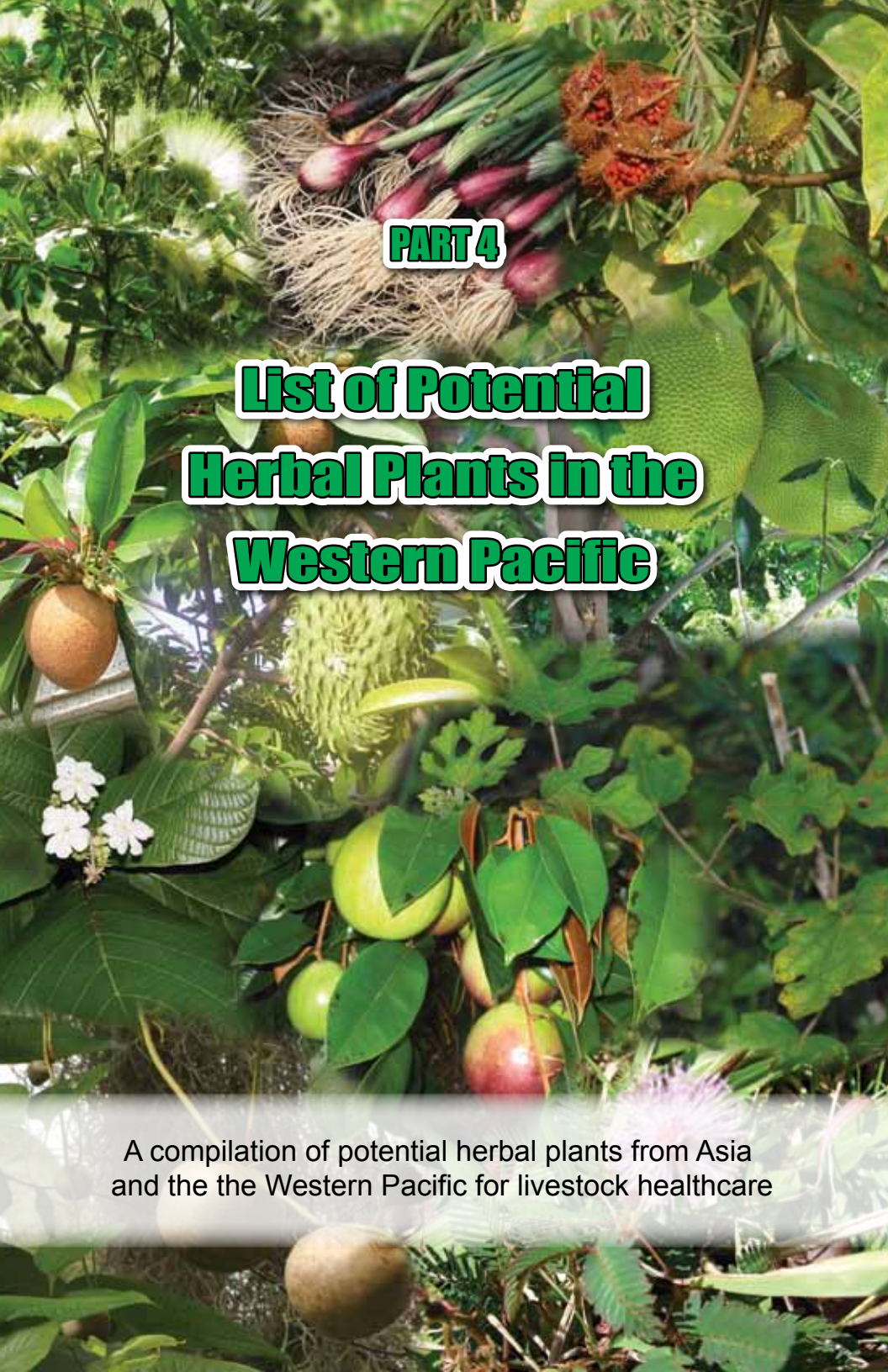
For otalgia (ear aches), pour the fresh, pure juice into the ear for 10 minutes.

For carbuncles, boils, sprains, felons, painful swellings: Apply the poultice of leaves to the affected area, four times daily.

For sore throats, a decoction of two tablespoonfuls of dried leaves to a pint of boiling water, taken one hour before or after meals.

In India, leaves are used traditionally for bronchitis, asthma, diarrhea, epilepsy, nephro-cystolithiasi, fever, indigestion and cough.

Used for bladder and urinary afflictions, and vaginal discharges.
Expressed juice applied around the orbit to relieve conjunctival pain.



PART 4

List of Potential Herbal Plants in the Western Pacific

A compilation of potential herbal plants from Asia and the the Western Pacific for livestock healthcare

"Sesgi"

Lebbeck Tree

Albizzia lebbeck (L.) Benth.

English Name: LEBBECK TREE
Scientific Name*: Albizzia lebbeck (L.)*

Scientific Names	Common Names
Albizzia lebbeck (L.) Benth.	Acacia (Span.)
Albizzia latifolia B. Boivin	Karsin (Chuukese)
Mimosa lebbeck Linn.	Lañgil (Tag.)
Acacia lebbeck (L.) Willd.	Flea tree (Engl.)
Acacia macrophylla Bunge	Lebbeck tree (Engl.)
	Mimosa (Engl.)
	Woman's tongue (Engl.)
	Ho-huan (Chin.)

Distribution
-Philippines, CNMI, Guam and Federated State of Micronesia,
- Native of tropical Asia and Africa.
- Introduced in most tropical countries.

Parts used
Bark.

Uses/Indication (Folkloric)
- Juice of leaves used in ophthalmia.
- Bark and seeds are astringent; used for diarrhea, dysentery and hemorrhoids.
- Powdered bark used for ulcers and snake bite wounds.
- Used for coughs, colds, and flu in swine.
- Flowers are emollient, applied as cataplasm on furuncles, boils.
- Seeds used for ophthalmic diseases.
- Seed oil used for leprosy.
- Seeds are crushed and made into paste and applied to enlarged cervical glands.
- In Ayurveda, bark decoction used for asthma and eczema.
- Powder of the bark used to strengthen spongy and ulcerative gums.
- Decoction of leaves used internally as a remedy for night-blindness.


"Langka"
Jackfruit
Artocarpus heterophyllus Lam.

English Name: JACK FRUIT
Scientific Name: *Artocarpus heterophyllus Lam.*

Scientific Names	Common Names
Artocarpus heterophyllus Lam.	Baramits (Palauan)
Artocarpus philippensis Lam.	Langka (Ilk., Tag., Bis.)
Polyphema jaca Lour.	Nangka (Bis. Tag., Ibn.)
Artocarpus maxima Blanco	Nanka (Bis., Sul.)
Saccus elasticus OK.	Jack fruit (Engl.)
Saccus integer OK.	Bo luo mi (Chin.)
Saccus heterophyllus OK.	
Radermachia integer Thunb.	
Artocarpus integer Merr.	

Distribution
- Cultivated throughout the Western Pacific (Palau, FSM, CNMI and Guam and the Marshall islands)

Parts utilized
· Leaves, Fruit, Seeds

Uses (Folkloric)
·Skin diseases, ulcers and wounds in ruminants: Ash of burnt leaves applied on wounds and ulcers as cicatrizant.

Burnt ashes of leaves (preferably fresh) with coconut oil, and as ointment, also used for ulcers and wounds.

Diarrhea, fever and asthma: A decoction of the root (preferably chopped into small pieces before boiling) of the tree, three to four cups daily.

When mixed with vinegar, it is especially beneficial for glandular swelling and abscesses, promoting absorption and suppuration.

The ripe fruit is laxative; in large quantities, it produces diarrhea.

Starch of seeds given in bilious colic.

Root extract used for asthma, fever and diarrhea. Bark is considered sedative.


Stink Grass
Lantana camara

English Name: STINK GRASS, LANTANA
Scientific Name: *Lantana camara*

Scientific Names	Common Names
Lantana camara Linn.	Bahug-bahug (P. Bis.)
Lantana aculeata Linn.	Baho-baho (P. Bis.)
Lantana viburnoides Blanco	Bangbangsit (Ilk.)
	Diris (Tag.)
	Koronitas (Tag.)
	Kantutay (Tag.)
	Lantana (Tag., Engl, Cham.Chukese)
	Stink grass (Engl.)
	Wild sage (Engl.)

Distribution
CNMI, Guam, Philippines, Palau, FSM

Parts Utilized and Preparation
· Leaves, bark, roots, flowering tops.
· Sun-dry.

Uses (Folkloric)
Influenza, cough, mumps, incessant high fever, malaria, cervical lymph node tuberculosis: use 30 to 60 gms dried roots or 60 to 120 gms fresh roots in decoction.

Fever: Take decoction of bark or infusion of leaves and flowering tops as tea.

Dermatitis, eczema, pruritus: use fresh stems and leaves.

Sprains, wounds, contusions: Use pounded fresh leaves applied as poultice.

Leaf oil used for pruritic skin conditions and antiseptic for wounds.

Decoction of plant used for tetanus, rheumatism, malaria.

Decoction of fresh leaves used as gargle for toothaches.


Plantain
Plantago major Linn.

English Name: PLANTAIN, WAY BREAD, RIBWORT
Scientific Name: *Plantago major Linn.*

Other Scientific Names	Common Names	
*Plantago crenata Blan*co	Lanting (Tag.)	Cart tract plant (Engl.)
Plantago erosa Wall.	Llantin (Span.)	Way bread (Engl.)
Plantago media Blanco	Ribwort (Engl.)	Broad-leaved plantain (Engl.)
	Wild saso (Engl.)	Ch'e-ch'ien (Chin.)
		Plantain (Engl.)

Distribution
Found in cultivation and occasionally on wastelands at medium altitudes.

Parts utilized
· Seeds and leaves.

Uses (Folkloric)
Boils, furuncles, abscesses: Cover the lesion with fresh crushed material.

Severe cough with plenty of phlegm which cannot be smoothly expectorated: Insomnia, bloody urine, urinary lithiasis, nephritic edema, beriberi edema, hypertension, bronchitis: Decoction of 30 to 60 gms of dried or 30 to 90 gms of fresh material.

Reddening and swelling pain of the eye.

For furuncles, eczema and various skin irritation: Poultice of pounded fresh material. Apply decoction over affected area.The powdered seeds may be mixed with oil for treatment of dermatitis.

In **Romania** and **Bulgaria**, used for cuts and scratches.

In **Ayurveda**, used for constipation, diarrhea, dysentery.

In **China**, used for colds and viral hepatitis.

In **Taiwan,** used for treating respiratory, urinary and digestive tract infectious diseases.


Cacao
Gliricidia sepium

English Name: **CACAO / GLIRICIDIA**
Scientific Name: ***Gliricidia sepium***

Other Scientific Names	Common Names
Gliricidia maculata	Kakaoati (Bon.)
Galedupa pungam	Kakauati (Tag.)
Milletia luzoniensis	Kakawate (Tagalog)
Milletia splendidissima	Madrecacao (Tag., Span.)
Robinia sepium	Madrecaco (Tag.)
	Tree of iron (Engl.)

Distribution
The tree is common in the Philippines and have been seen in the CNMI, FSM and Palau

Parts utilized
Leaves, bark, roots.

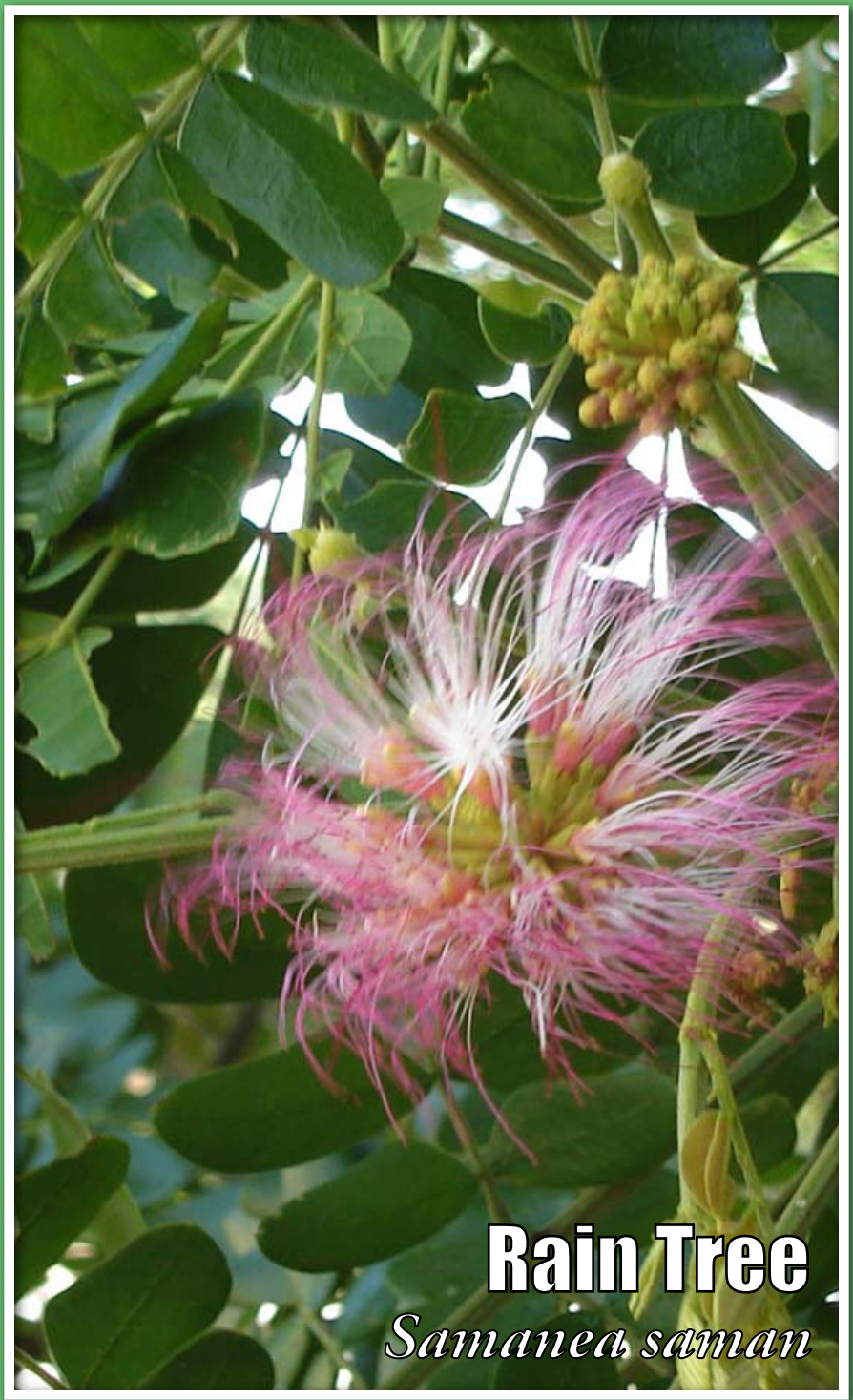
Uses (Folkloric)
Treatment of scabies. Leaves have a fetid smell; crushed, used to rid dogs of fleas and ticks and cattle, of ticks. The juice from leaves is applied to daily for one week to areas affected by external parasites,

Dermatitis, skin itching: Apply juice or decoction of leaves, bark or roots on the skin as antipruritic.

As counterirritant: Crush leaves and apply as poultice for rheumatic pains, sprains and closed fractures.Sap of bark, leaves and roots have been used for wound healing.

Insect repellent: In Latin American, used by farmers to repel insects. Leaves are ground up, mixed with water, and the resulting paste use to bathe animals, and repeated every 7 to 14 days, decreasing the infections from tropical warble fly.

Preparation for scabies treatment
Courtesy of: Dr. Joel Bañez, Section of Dermatology, UERMMH
Ingredients:
1. White candelsticks (4) 2. Coconut oil or any cooking oil: 500 cc
3. Kakawati leaves 250 g
Instructions:
(1). Clean kakawati leaves thoroughly. (2). Chop leaves finely (3). Add 250 g (approximately 1 glass) of finely chopped leaves into 2 glasses of coconut oil. (4). Mix while boiling.(5). Gather leaves on the surface of the oil, then drain using a strainer.(6). Get 4 white candles ('esperma") and chop finely.
(7). Add to the boiled preparation and mix until all chopped candles are melted.


Rain Tree
Samanea saman

English Name: RAIN TREE
Scientific Name: *Samanea saman*

Scientific Names	Common Names
Samanea saman (Jacq.) Merr.	Acacia (Span., Tag.)
Albizia saman	Nam nam Tekia (Chukese)
Mimosa saman Jacq.	Palo de China (Span.)
Inga saman Willd.	False powder puff (Engl.)
Pithecolobium saman Benth.	Rain tree (Engl.)
Enterolobium saman Prain	Saman (Puerto Rico)
	Monkey pod (Engl.)
Acacia is a name shared by many species of Philippine plants, both scientific and common names: (1) Acacia concinna, acacia, a prickly shrub found in La Union, Benguet, and Ilocos Sur provinces of northern Luzon; (2) Albizzia lebbect, acaci, langil, mimosa; (3) Samanea saman, rain tree, acacia, for Acacia concinna; (4) Acacia farnesiana, aroma; (5) Acacia glauca, ipil-ipil; (6) Acacia niopo, kupang; (7) Acacia crassicarpa.	

Distribution
- Throughout the Philippines in waste places along roads and trails in fallow, rice paddies, etc., in the CNMI, FSM, and Palau
- Widely planted as a shade tree.

Parts utilized:
· Entire plant. Rinse and sun-dry.

Uses (Folkloric)
· In the Philippines, a decoction of the inner bark or fresh cambium and leaves is used to treat diarrhea.
· Acute bacillary dysentery, enteritis, diarrhea: use 15 to 30 gms dried material in decoction.
· Also for colds, sore throat, headache.
· A decoction of the inner bark or fresh cambium and leaves is used to treat diarrhea.
· Anaphylactic dermatitis, eczema, skin pruritus: use decoction of fresh material and apply as external wash.
· In Venezuela, rain tree is a traditional remedy for colds, diarrhea, headache, intestinal ailments and stomach ache.
· Root decoction used in hot baths for stomach cancer.
· In the West Indies, the leaf infusion is used as a laxative and seeds chewed for sore throat.
· The alcoholic extract of leaves used for tuberculosis.

Air Potato

Dioscorrea bulbifera Linn.

English Name: AIR POTATO
Scientific Name: *Dioscorrea bulbifera Linn.*

Scientific Names	Common Names
Dioscorrea bulbifera Linn.	Aribukbuk (Ilk.)
Dioscorrea heterophylla Roxb.	Bayag-kabayo (Tag.)
Dioscorrea latifolia Benth.	Dadakan (Bag.)
Dioscorrea oppositifolia Campbell	Pulugan (Bik.)
Dioscorrea sativa Hort.	Ubi-ubihan (Tag.)
Dioscorrea violacea Baudon	Utong-utoñgan (Tag.)
Dioscorrea tamifolia Salisb.	Huang du (Chin.)
Helmia bulbifera (L.) Kunth.	Air potato (Engl.)
	Bitter yam (Engl.)
	Potato yam (Engl.)

Distribution
Philippines, CNMI, Guam, FSM and Palau

Parts used
Tubers.

Uses (Folkloric)

Tubers taken internally as remedy for dysentery and syphilis.

Tubers used as resolvent for boils and as diuretic.

Powdered tubers used as application for sores, piles and to stop diarrhea.

In India, a folk remedy used to cure wounds, leucoderma and boils. Also, used as tonic, expectorant in asthma, as aphrodisiac and anthelmintic.

In Chinese medicine, used to treat diseases of the lungs, kidney, spleen and many types of diarrhea.

"Achoti"

Lipstick Plant

Bixa orellana Linn.

English Name: LIPSTICK PLANT/ANNATTO
Scientific Name: *Bixa orellana Linn. / Bixa katagensis Delpierre*

Common Names	
Achiti (Ilk.)	Asuti (Tag.)
Achote (Tag.)	Atseuete (Tag.)
Achoete (Tagb.)	Atsuite (Ilk.)
Atchuete (Tag., Sbl., Bik., P. Bis., Ilk.)	Chanang (Sul.)
Asoti (Ibn.)	Chotes (S. L. Bis.)
Asiute (Sbl.)	Janang (Sul.)
Apatut (Gad.)	Sotis (C. Bis.)
Asuite (Ilk.)	Annatto (Engl.)
Iron mong (Chuukese)	Lipstick plant (Engl.)

Distribution
Pantropic; planted throughout the Philippines, CNMI, Palau and FSM

Uses (Folkloric)
The achuete dye used with lime for the treatment of erysipelas in swine.

For intestinal worms in poultry

Also used for wound healing, regulation of heavy menses, and thinning hair.

An infusion of the leaves used as purgative.

For small burns: Wash the leaves with soap and water. Boil 10 leaves in 5 glasses of water; cool. Soak the burn area for 10 minues, once a day.

The pulp of the seeds, immediately applied to burns, prevents blistering and scarring.

The seeds are used as antidote for cassava and J. urcas poisoning.

Decoction of leaves for nausea and vomiting.


"Granada"
Pomegranate
Punica granatum

English Name: POMEGRANATE
Scientific Name: *Punica granatum*

Scientific Names	Common Names
Punica granatum Linn.	Dalima (Sul.)
Punica multiflora hort ex. Siebold & Voss	Granada (Span., Tag.)
Punica spinosa Lam.	Pomegranate (Engl.)
	Shi liu (Chin.)

Distribution
Garden plant; nowhere spontaneous.
Present in the CNMI, Guam , Palau and the FSM

Parts used
Roots, flowers, seeds and fruit rinds.

Uses (Folkloric)
Decoction of root bark used for tapeworm in ruminants and intestinal worms in poultry.

Decoction of tender leaves used as gargle for buccal afflictions.

Decoction of roots used for tuberculosis, chronic debility, chronic feverishness.

Decoction of leaves used as eyewash in ruminnats and horse.
Powdered flower buds used for bronchitis.

Decoction of juice of the flower with equal parts of Cynodon dactylon used to stop epistaxis and as gargle.

Decoction of the dried rind of the fruit used for stomach pains and dysentery; infusion used for colitis.

Bark, leaves and immature fruit (tannins) used as astringents for diarrhea, dysentery and hemorrhages.

Dried pulverized flower buds used for bronchitis.
In Indian traditional medicine, use for diarrhea.


“Pugua”
Betel Nut
Areca catechu

English Name: BETEL NUT PALM
Scientific Name: *Areca catechu*

Scientific names	Common names	
Areca alba Rumph.	Areca nut (Engl.)	Lugos (Sul.)
Areca catechu Linn.	Betel nut palm (Engl.)	Luyos (Pamp.)
	Betel quid (Engl.)	Pasa (Yak.)
	Buuch (Palauan)	Takobtob (Bik.)
	Bunga (Tag.)	Va (Ital.)
	Kutacr (Kosraean.)	Ta Fu-p'i (Chin.)
	Hua (It.)	Pin-lang (Chin.)

Distribution
Western Pacific and Southeast Asia

Parts used and preparation
Kernel

Uses (Folkloric)
·Tender seeds used as purgative; grated ripened ones as vermifuge.

Sprains, bruises, contusions - Crush leaves, mix with a little coconut oil, warm and apply on affected area.

Tapeworm infestation: 1 glassful of 5% decoction as enema to be retained for one hour. Also, decoction of kernels boiled 20-30 minutes; for less than 12 years of age, 6 kernels (30 g); over 12 years old, 10-12 kernels (50-60 g); for adults, 16-18 kernels (80-90 g). The bunga may be mixed with kalabasa, boil for 1 hour, maintaining 2-glass volume for oral intake.

In Ayurvedic medicine, the nut is used for headaches, fever and rheumatism.

In China, used to treat parasitic infection. Also, used for dyspepsia, constipation, beriberi and edema. The bark is used for choleraic affections, for flatulence, dropsical and obstructive diseases of the digestive tract.

Ointment made from finely powdered catechu and lard used for chronic ulcerations.

In southern India, dried fruits are powdered and heated with coconut oil and applied topically on burns.


"Alageta"
Avocado
Persea americana

English Name: AVOCADO
Scientific Name: *Persea americana*

Other Scientific Names	Common Names
Persea gratissima Gaertn.	Abokado (Ceb.)
Persea americana Mill.	Afokato (Chuukese.)
Laurus persea Linn.	Bata (Palauan)
	Avocado (Engl.)
	You li (Chin.)

Distribution
- Now extensively cultivated in the Philippines, CNMI, Guam, Palau and the FSM. - Usually grown from seeds, but may be propagated by budding, grafting, and marcotting.

Parts used
Bark, fruit, leaves and seeds.

Uses (Folkloric)
Used for diarrhea and dysentery.

Take decoction of leaves as tea.-used to expel worms

The pulp is used to hasten the suppuration of wounds.

Pulp is applied to shallow cuts, prevents infection.

In different parts of the world, has been recommended for anemia, exhaustion, high cholesterol, hypertension, gastritis and duodenal ulcers. The leaves have been reported effective as antitussive, antidiabetic, antiarthritic and antiinflammatory.

In Mexico, rind of the fruit used as anthelmintic. In the form of a liniment, used in intercostal neuralgia.

Toxicity
• Lactating livestock eating avocado leaves may develop non-infectious mastitis and agalactia.

“Siboyas”

Wild Onion

Allium ascalonicum L.

English Name: WILD ONION
Scientific Name: *Allium ascalonicum L.*

Scientific Name:	Common names	
Allium ascalonicum Linn.	Bawang pula (Tag.)	Shallot (Engl.)
Allium cepa (L.) var *ascalonicum* (L.) Backer.	Lasona (Ilk.)	Garden shallot (Engl.)
	Sibuyas-Bisaya (Bis.)	Baker's garlic (Engl.)
	Sibuyas-tagalog (Tag.)	Huo cong (Chin.)

Distribution
Western Pacific and Southeast Asia

Parts Utilized
Bulb

Uses/Indication (Folkloric)
Used for diarrhea, headaches, laryngitis with hoarseness, coughs, amenorrhea, neuralgic pains.

Used as anthelmintic, stomachic and tonic.

Poultice of bulb for earache; also, juice dropped into canal.

In **Africa**, juice is rubbed on the body for fevers.

In **Malaya**, juice of bulk, with tumeric juice, is used for stomach aches.

In the **Gold Coast**, mixture of bulbs with palm oil and large Capsicums used for fever.


“Piao”
Bamboo
Bambusa spinosa Roxb.

English Name: BAMBOO
Scientific Name: *Bambusa spinosa Roxb.*

Other Scientific Names	Common Names
Bambusa spinosa Blume	Ich (Chuukese.)
Bambusa blumeana Schultes f.	Kauayan (Tag.)
Bambusa pungens Blanco	Baugin (Pamp.)
Bambusa arundo Blanco	Dugian (Bik.)
Bambusa arundinacea F. Vill.	Caña espina (Span.)
Bambusa teba Miq.	Kaaono (Bis.)
	Spiny bamboo (Engl.)

Distribution
Yap, CNMI, Palau and Philippines.

Parts utilized:
Stems, roots, leaves.

Uses (Folkloric)
For retained plecenta in ruminants

Decoction (20 gms for 1 liter of water; 3 cups daily) of stems of young shoots applied externally for inflammed joints.

Decoction of leaves used for intestinal worms.

Poultice of young shoots used for dislodgement of worms from ulcers.

Decoction of roots used for anuria.

Decoction of shoots taken for respiratory ailments.

Poultice of tender shoots used for cleaning wounds. Decoction or juice of leaves applied to wounds.

In **India**, decoction of leaves used for diarrhea for ethnoveterinary use, a handful of leaves once a day for two to three days.

"Sitbinguin Sosa"

Bashful Mimosa

Mimosa pudica Linn.

English Name: BASHFUL MIMOSA
Scientific Name: *Mimosa pudica Linn*

Scientific names	Other common names	
Mimosa asperata Blanco	Mechiuaiu (Palauan.)	Tuyag-huyag (P. Bis.)
Mimosa pudica Linn.	Damohia (Tag.)	Torog-torog (Bik.)
	Fitau (Chuukese)	Bashful mimosa (Engl.)
		Humble plant (Engl.)
		Sensitive plant (Engl.)
		Shame plant (Engl.)
	Makahia (Pang., Tag.)	Tickle-Me plant (Engl.)
		Han xiu cao (Chin.)

Distribution
Common weed widely distributed in the Philippines , CNMI, Guam, FSM and Palau- Introduced from tropical America. Pantropic weed.

Parts utilized
Entire plant.

Uses (Folkloric)
In the Philippines, roots is used in castration wounds in swine, as diuretic, and is used in dysentery

Barks used in sprains in swine and leaves for internal parasites for ruminants

Decoction or infusion of leaves used in asthma; expectorant.

Used for hypertension, menorrhagia, glandular swelling, sore throat and hoarseness.
Powdered seeds applied to wounds and sores, bruises.

Powdered roots and leaves taken with milk for piles and fistula.
Juice applied externally to fistulous sores and for glandular swellings.

Whole plant, crushed, used for itching and scabies.


Beach Gardenia
Melia azedarach Linn.

Common Name: BEACH GARDENIA
Scientific Name: *Guettarda speciosa Linn*.

Scientific names	Common names	
Guettarda speciosa Linn.	Bagaolan (Tag.)	Malasurut (Bik.)
Guettarda vermicularis Blanco	Belau (Palauan.)	Tabon-tabon (Tag.)
Nyctanthes hirsuta Linn.	Mosen (Chuukese)	Tabug (Sul.)
	Banaro (Tag.)	Tambon (P. Bis.)
	Kalumpañgin (Tag.)	Tulatalisai (Bik.)
	Kapagan (Ilk.)	Beach gardenia (Engl.)
	Lagbangan (C. Bis.)	Zebra wood (Engl.)
	Lambon (P. Bis.)	

Distribution
CNMI, Guam, FSM and Palau
Scattered along the seashore throughout the Philippines. Pantropic.

Parts used
Bark, leaves.

Uses (Folkloric)
In the Dutch Indies, bark is used to cure chronic dysentery.

In Indo-China, applied to wounds and abscesses.

In India, the inner bark traditionally used to treat epilepsy; also used in diarrhea.

Leaves are used to treat cough, colds and sore throats.


Bead Tree
Bidens pilosa Linn.

English Name: BEAD TREE
Scientific Name: *Melia azedarach Linn.*

Scientific names	Common names
Melia azedarach Linn.	Paraiso (Span., Tag.)
Melia azedarach L. var. *umbraculifera* Knox	Bead tree (Engl.)
	Cape syringa (Engl.)
	China berry (Engl.)
	Chinese umbrella tree (Engl.)
	Indian lilac (Engl.)
	Pride of India (Engl.)
	K'u Lien (Chin.)

Parts utilized
Fruits, leaves, bark of roots and bark of trunk.
Collect fruits from November to April, leaves from May to October, roots and bark the whole year round. · Remove the outermost bark, rinse, and sun-dry. Cut into sections.

Uses (Folkloric)
For scabies in ruminants
- Root decoction or fluid extract used as anthelmintic.
- Root bark used as vermifuge; also used for intermittent fevers and dysentery.
- Root bark used in America as a cathartic and emetic.
- Leaves used in a variety of forms - poultice, wash, oinment or liniment - as external applications to ulcers and skin diseases
- Crushed leaves used as poultice for boils and sores.
-Decoction of leaves used for hernia; also, for hysteria.
- Decoction of leaves used as astringent, anthelmintic and stomachic.
- In Sidh, poultic of leaves used for sprains.
- Poultice of flowers and leaves applied for nervous headaches.
- Fruit used as purgative and emollient; useful for intestinal worms, urinary affections and piles.
- Fruit is considered both tonic and poisonous, and used for leprosy and scrofula; the fruit pulp used as anthelmintic. (The pulp of the fruit, mixed with grease, is reported to kill dogs.)
- Seeds are emetic, laxative and anthelmintic; in China, used for typhoid fever and urinary retention.
- Oil used as application for erysipelas, scrofula, and various skin diseases; also, as parasiticide in various cutaneous affects as ringworm and scabies.
Others
• **Insecticidal**: Leaf extract has insecticidal properties; repels insects in clothing. Powdered dust of fruit, crude extract of wood and bark are also insecticidal.

Ben Oil Tree

Moringa oleifera Linn.

English Name: BEN OIL TREE
Scientific Name: *Moringa oleifera Linn.*

Other scientific names	Common names
Moringa oleifera Linn.	Malungkai (Palauan)
Moringa nux-ben Perr.	Balungai (P. Bis.)
Moringa pterygosperma Gaertn.	Dool (Bik.)
Guilandina moringa Linn.	Kamalongan (P. Bis.)
	Drumstick tree (Engl.)
	Horse-radish tree (Engl.)
	La mu (Chin.)
	Ben oil tree (Engl.)

Distribution
• CNMI, Palau, FSM and the Philippines in settled areas at low and medium altitudes. • Now pantropic.

Parts utilized
Flowers, leaves, young pods

Uses (Folkloric)
Young leaves, usually boiled, used to increase the flow of breast milk in swine and ruminants. Also for anemia

Pods for intestinal parasitism in swine.

Leaves and fruit used for constipation.

Decoction of boiled roots used to wash sores and ulcers.

Decoction of leaves used for hiccups, asthma, gout, back pain, rheumatism, wounds and sores.

In Java, gum used for intestinal complaints.
Juice of roots is used for otalgia.

Rheumatic complaints: Decoction of seeds; or, powdered roasted seeds applied to affected area.

Juice of the root with milk used for asthma, hiccups, gout, lumbago.

Poultice of leaves applied for glandular swelling. Pounded fresh leaves mixed with coconut oil applied to wounds and cuts.


"Pupulu"
Piper Betle
P. anisodorum

English Name: PIPER BETLE/ BETEL PEPPER
Scientific Name: *Chavica betle*

Other scientific names	Common names
P. anisodorum	Buyo (Bik.)
P. anisumolens	Buyo-anis (Tag.)
P. bathycarpum	Buyo-buyo (Bik.)
Chavica betle	Ikmo (Tag.)
Chavica siriboa	ikmong Iloko (Tag.)
	Betel leaf pepper (Engl.)
	Betel pepper (Engl.)

Distribution
CNMI,Guam, Palau and FSM
Cultivated throughout the Philippines.

Parts utilized and preparation
Vines and leaves may be collected throughout the year.Rinse, cut into pieces, sun-dry.

Uses (Folkloric)
In the Philippines, fresh, crushed leaves used as antiseptic for cuts and wounds.

Leaves, together with lime and betel nut, constitute the Filipino's masticatory. Its use believed to help preserve the teeth and a prophylactic against stomach complaints.

Used for rheumatic bone pains

Flatulence or tympanism: Spread oil on leaf, warm, and apply on abdomen.

In India, leaves are warmed and applied in layers to arrest secretion of milk.

In China, oil used as counterirritant in swellings, bruises, painful sores and enlarged glands.

Used for bronchial asthma.
· Dosage: use 9 to 15 gms dried material or 30 to 60 gms fresh material in decoction.

In India, leaves used for treating eczema, lymphangitis, asthma and rheumatism.
· Paste of crushed leaves applied to cuts and wounds.


"Bilinbinis"
Star Apple
Chrysophyllum cainito Linn.

English Name: STAR APPLE
Scientific Name: *Chrysophyllum cainito Linn.*
Philippine Name: Caimito

Distribution
CNMI, Palau and FSM **c**ultivated for its edible fruit.

Parts used and preparation
Seeds, leaves, bark, fruit.

Uses (Folkloric)
For diarrheal dysentery, foot rot, internal parasites and wounds in ruminants and swine: Decoction of the bark.

Latex is used for abscesses.
Dried latex used as antihelminthic.

In some countries, the fruit is used for diabetes.
Bitter seed sometimes used as tonic, for diarrhea and fevers.

Fruit eaten for inflammation in laryngitis and pneumonia.

In Venezuela, unripe fruit used for intestinal problems.

“Mango”’

Long Tumeric

Curcuma longa Linn.

English Name: LONG TUMERIC
Scientific Name: *Curcuma longa Linn.*

Scientific names	Common names	
Curcuma longa Linn.	Angay (Pamp.)	Lampuyang (P. Bis.)
Curcuma xanthorrhiza Naves	Dilaw (Tag.)	Lawag (Sub.)
	Dulaw (S.L. Bis.)	Luyang-dilaw (Tag.)
	Kuchen afan (Chuuk)	Pangar (Pamp.)
	Kunig (Ilk.)	Long tumeric (Engl.)

Distribution
Widely distributed in the Philippines, FSM, Palau, CNMI and Guam

Part utilized
· Rhizome, leaves.
· Rinse, removes roots, section into pieces, steam and sun-dry.

Uses (Folkloric)
Decoction of rhizome, as tea, used for fevers, dysentery, castration wounds, cough , colds in poultry and ruminants.

Internally, juice of fresh rhizome used as anthelmintic.

Antiseptic for wounds: Crush rhizome and apply to wounds.
Externally, rhizomes are applied to insect bites, ringworm, bleeding.
· Dosage: Decoction of 2 to 6 gms dried material.

For smallpox and chicken pox, coating of tumeric powder or thin paste applied externally to facilitate scabbing.

Paste made from flowers is used for ringworm and other parasitic skin infections.

Decoction of tumeric used for purulent conjunctivitis.


"Suni"
Taro
Colocasia esculenta Linn.

English Name: TARO
Scientific Name: *Colocasia esculenta Linn.*

Other scientific names	Common names	
Arum esculentum Linn.	Kukao (Palau)	Lagbai (Tag.)
Arum colocasia Linn.	Aua (ilk.)	Abalong (Bis., Tag.)
Colocasiua esculentum Linn.	Abalong (Bis.)	Linsa (Bik.)
Colocasia antiquorum Schott	Amoang (Bon.)	Lubingan (If.)
Calla gaby Blanco	Gabi (Tag.)	Natong (Bik.)
Caladium esculentum Vent.	Pising (Bon.)	Taro (Engl.)
Coladium colocasia W. F. Wight.	Dagmai (Bis.)	Kalo (Hawaii)
Coladium violaceum Desf.	Kimpoi (Bis.)	Aro (Span.)

Distribution
CNMI, Guam, Palau and FSM
Pantropic cultivation in the Philippines.

Parts utilized:
Roots and leaves.

Uses (Folkloric)
Juice of petioles sometimes used for earache and otorrhea.

Juice of the corm used in alopecia.

Leaf juice also used for internal hemorrhages, otalgia, adenitis.
Internally, a good laxative. Also, used for piles.

Also, used as antidote for wasp and insect stings.

Heated tubers are applied locally to painful rheumatic joints.
Ash of the tubers, mixed with honey, is used for buccal aphthous stomatitis.
Raw juice of gabi, mixed with sugar, used as febrifuge.

In **Hawaii**, end of petioles used to stop wounds from bleeding.
Stem leaf used on insect bites to prevent swelling and pain.
Juice consumed to reduce fever.

In **Venezuela**, the corm is used as an abortifacient and to treat tuberculosis, pulmonary congestion, crippled extremities, fungal abscesses in animals and as an anthelminthic. The Warao use the stem sap for wasp stings. Poi, a ferment from crom shavings, is used for bathing the sickly to improve muscle tone.


“Laguana”
Sour Sop
Annona muricata

English Name: SOUR SOP
Scientific Name: *Annona muricata*

Scientific names	Common names	
Annona muricata Linn.	Sausab (Palauan)	Guyabano (Tag.)
Annona macrocarpa Werkle	Sasaf (Chuuk)	Labanus (Sul.)
Annona bonplandiana Kunth	Bayubana (Ilk.)	Labanos (Bik.)
Annona cearensis Barb. Rodr.	Gayubano (Ilk., Ibn.)	Prickly custard apple (Engl.)
Guanabanus muricatus M. Gomez	Guabana (Tag.)	Brazilian pawpaw (Engl.)
	Guyabana (Tag.)	Soursop (Engl.)
	Guayabano (Tag.)	Ci guo fan li zhi (Chin.)

Distribution
CNMI, Palau, FSM and Guam

Parts utilized:
Leaves, flowers, fruiit.

Uses (Folkloric)
Decoction of leaves used of head lice and bedbugs.

Flesh of soursop used as poultice to draw out chiggers.

Pulverized seeds and seed oil effective for head lice.

Unripe fruit used for dysentery. Ripe fruit is antiscorbutic.

Decoction of leaves used as compresses for inflammation and swollen feet.
· Poultice of mashed leaves and sap of young leaves used for eczema and skin eruptions.

In Yucatan juice of the fruit is used for dysentery.

In the Peruvian Andes, leaf tea is used for catarrh and crushed seeds for parasitism.

"Tangan-tangan"

Lead Tree

Leucaena glauca Linn.

English Name: LEAD TREE / SANTA ELENA
Scientific Name: *Leucaena glauca Linn.*

Scientific names	Common names	
Mimosa glauca Linn.	Tangan-tangan (Chamo.)	Telengtungd(Palauan)
Acacia glauca Wiild.	Aghog (P. Bis.)	Loyloi (S. L. Bis.)
Leucaena glauca Linn.	Ipel (Tag.)	Santa Elena (Span.)
Leucaena leucocephala Lam.	Ipil-ipil (Tag.)	San Pedro (P. Bis.)
	Kabahero (C. Bis.)	Lead tree (Engl.)

Distribution:
- In settled areas at low and medium altitudes throughout the Philippines.
- Locally gregarious and abundant in the CNMI, Guam, Palalu and FSM
- Introduced from tropical America. - Now pantropic.

Parts utilized
Dried seeds

Uses (Folkloric)
- Used for Intestinal parasitism: ascaris and trichinosis in ruminants and poultry.
- In China, seeds are eaten to rid of round worms.

Others
Leaves: Leaves are high in protein and can be used as feed supplement.
Wood: In the Philippines, popularly used as firewood and in reforestation work. Also, used for carving.
Cover crop: Also much used as a cover crop and exterminator of kogon.
Dye: Produces a brown dye.
Seeds: Occasionally used as coffee substitute; also for decorating bags.

Veterinary concerns
• Leaves reported to be injurious to horses and young cattle who feed on it, causing falling hair from the manes and tails. Goats do not seem to be affected. The effect is attributed to the glucoside mimosine in leaves and seeds.
• Feeding the leaves to breeding animals may also affect reproduction. In poultry, it may cause decrease in production and delay in the birds reaching sexual maturity.


“Kalabasa”
Squash
Cucurbita maxima

English Name: SQUASH
Scientific Name: *Cucurbita maxima*

Other scientific names	Common names
Cucurbita Maxima Duchesne	Calabaza (Sp.)
Curcubita sulcata Blanco	Tongang (Kosrae.)
	Kabasi (Sul.)
	Kalabasa (Tag., Ceb.)
	Squash (Engl.)

Distribution
Grown throughout the Philippines and the Western Pacific as a vegetable produce.

Parts used and preparation
Fruits, seeds, stalk.

Uses (Folkloric)

The fruit pulp is used as poultice for carbuncles, boils and ulcers.

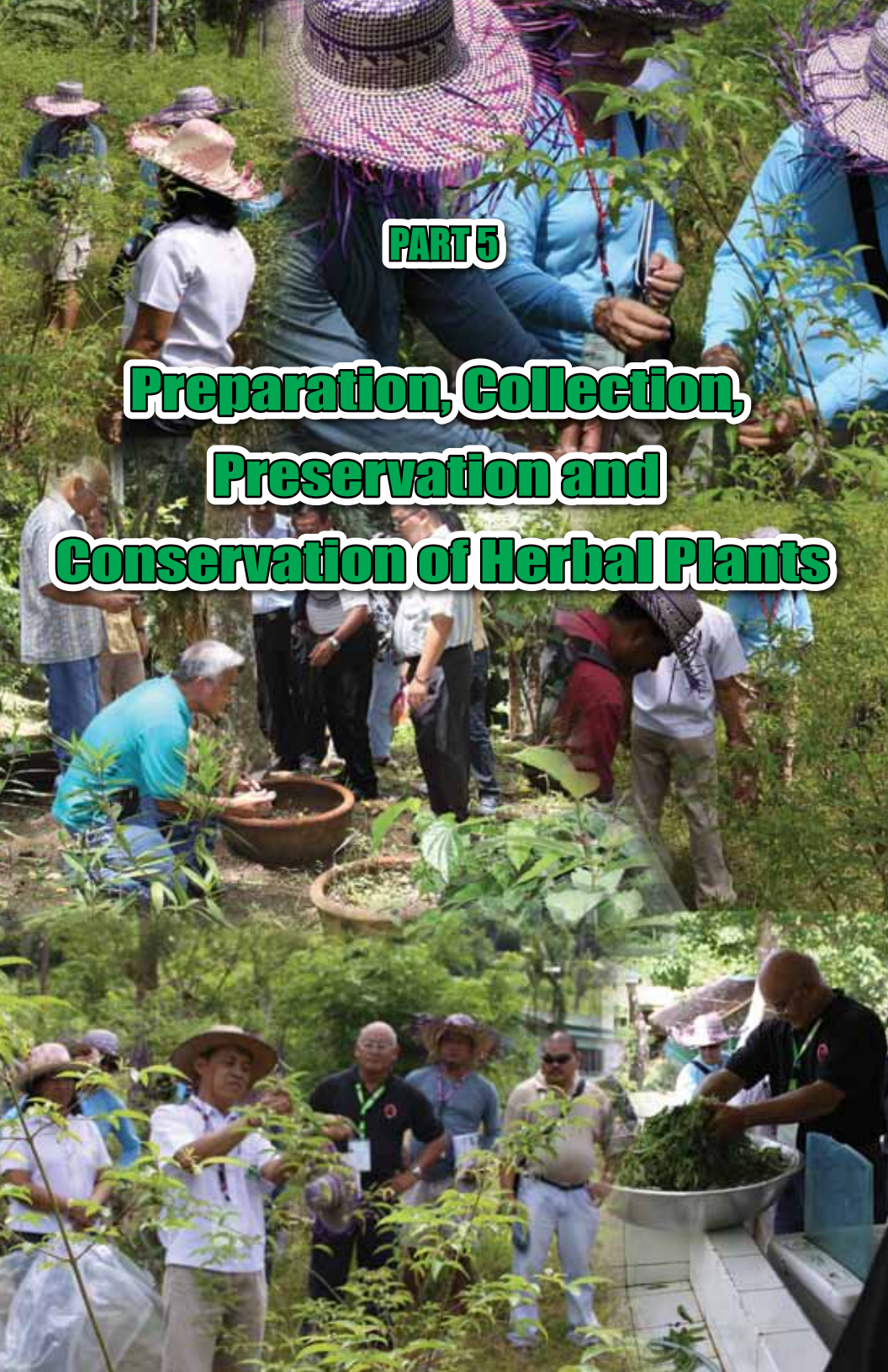
For venomous insect bites, the fruit stalk in contact with the ripe gourd is cut, dried, and made into a paste and applied to venomous insect bites, especially centipedes.

The fresh seeds are used as antihelminthic; seeds are eaten fresh to expel worms from the stomach.

In Brazil, pumpkin seeds are used for stomach pain, as antiinflammatory, antipyretic and anthelminthic.

In China, pumpkin seeds have been used for acute schistosomiasis.

In Thailand, seeds used for kidney stones.



PART 5

Preparation, Collection, Preservation and Conservation of Herbal Plants

PREPARATION OF HERBAL MATERIALS

Decoctions
Decoctions are aqueous preparations of plant parts boiled in water for 15- 20 minutes until the water volume is halved. To prepare, break the plant parts into small pieces before soaking in a given amount of water in an earthenware container (palayok). Metal pans should be enameled; avoid plastic or aluminum containers. Use 500 cc (1 pt) of water for every 30 gm (1 oz) of dried herb. Cover the container and boil for 10-20 minutes, until water volume is halved; strain, cool and refrigerate. Decoctions usually keep for 2-3 days.

Infusions
As in preparing tea, infusions use dried or fresh herbs. Pour hot water into plant material and allow to stand while tightly covered, stand for 10 min; strain; drink hot or iced and cold. Infusions usually prepared fresh for the day's use.

Pills (Honey Pills)
Pills can be made by mixing thoroughly the dry and powdered drug with equal quantity of honey cooked to bright red syrup. The moment the mixture starts to cool off, it can be rolled to desired tubular strands and cut into small pieces. Air dry the pieces of pills in a clean place and bottle them neatly. If honey is not available, a concentrated syrup of cane sugar can be substituted.

Powder
The commonest and easiest way of preparing the drug materials. With a mortar and pestle, the well-dried plant materials are crushed and ground well-dried plant materials into a fine uniform powder; store in clean bottles. Powdered drugs should be as fine as possible so as to ensure faster solubility.

Alcoholic Decoctions (Tinctures)
Place the botanical extracts or plant materials (powdered, fresh or dried) in 40% to 60% proof alcohol (some use 70-80% proof lambanog), one part herb to 5 parts distilled spirits and keep in an airtight container (25 gms of material in 600 cc of spirits). Stir or shake the mixture at least once a day, infusing for a period of 4 to weeks. Alcohol extracts and preserves the essential ingredients for the longest possible time. Strain and store in an airtight dark glass jar. Dosages are usually 5-20 drops, added to water or taken directly.

To facilitate the process, boil the alcohol solution in a water bath until it boils; pour the boiling solution into the container together with the plant extracts or materials; tightly seal. Use the decoction two weeks after the storage. The residue can be used to prepare ointments.

Tablets
Powder the drug material thoroughly. If tablets of small size with high drug concentration is desired, a portion of the dried drug material may be decocted into a thick concentrated solution and them mixed with the other powdered material. In making the tablet, a sufficient amount of starch or rice paste is added to the mixture and is forcefully mixed and kneaded by hands. Make small globular tablets out of the kneaded paste-like material. If excessive water has been placed in the mixture, allow the mixture to stand first in a cool, well-ventilated place, until the right paste-like consistency is attained. Improvised tablet-making devises (i.e., molds) may be constructed from wood or metal.

Syrup
Applicable for children and infants, prrepare a simple syrup by dissolving 850 gms of cane sugar in 450 mL of boiling water. Wait for all the sugar to dissolve, then apply more heat, filter with degreasing cotton, then add more water up to 1000 mL. Place the drug material in water and boil, remove the residual solids afterwards (generally, every mL of the decoction fluid contains 1 gm of the concentrated drug). Add the decoction fluid to the syrup in a 1:1 proportion. If the syrup is not to be added, the decoction should be treated with sufficient amount of fungicide, like benzoic acid, for long storage.

Ointment:
Prepare the necessary drug materials, place inside a glass jar or other suitable container, add oil (peanut oil, bean oil, tea oil, coconut oil, etc.) up to 2 to 3 fingerwidth higher than the level of the powdered drug in the glass jar. Suspend for 5 to 7 days. Then, cook in an iron casserole until drug material chars. Remove the drug residue or dross and extract the oil. This time, the fire should be increased mixing thoroughly while increasing the heat, until smoke forms on the oil surface, and until globules of oil, which is place in water, does not form separated globules anymore. Reduce the heat and add litharge, mixing thoroughly while continuously adding until all of it dissolves. Remove the casserole from fire and let stand to cool, then add camphor or other aromatic substances. Lastly, pour the prepared drug material in cold water, suspend for overnight or longer. Place the mass separated from the liquid on a piece of parchment or cloth. An ointment plaster is thus produced. Observe care in cooking procedure and guard against burning or fire. A close-type of oven (or hooded) is preferable.

An alternative way: Make 1 pt of infusion or decoction, strain and set liquid aside. Pour 3 oz of oil into a pan, add 3 oz of lard fat, a drop of tincture of benzoin for every oz of base, and add the liquid. Simmer until the water has evaporated. To stiffen the mixture, slowly add beeswax or cocoa

butter.

Poultice or Paste

Grind, crush or pound the plant material (dried or preferably fresh) with a little oil, water, molasses or honey. Spread on a square of warm cloth or banana trunk, and applied to the skin. The crushed plant can also be boiled for a few minutes to achieve a pulp. The material is applied directly to the affected areas. They are usually more potent than compresses.

Compresses

An infusion or decoction is used to soak a warm cloth (linen or muslin) or banana trunk and placed on the affected area. They are usually milder than poultices.

Juice

Pound fresh plant materials and filter through a fine piece of cloth or just squeeze the plant parts to extract the juice.

COLLECTION

Time

Therapeutic efficacy varies during different times or seasons of the year. The constituent and active principles vary quantitavely at different seasons of the year and the majority of plant materials are usually best collected during the dry season, when the herbs are at peak maturity and concentration.

Dry as quickly as possible, away from bright sunlight, to preserve the ingredients and prevent oxidation.

Roots and rhizomes: Best collected October to February, when the plants are more vigorously storing food in their underground organs.

Leaves: The most opportune time is when the plant is about to bloom.

Flowers: Buds are preferred, best collected in the morning after the morning dew has evaporated; flowers, just before or shortly after opening. Dry the herbal materials as quickly as possible.

Bark materials and stems: Generally, best gathered in summer time. When the

climate is warm and humid, the bark of any plant usually contains richer nutritive substances including the medicinal metabolites. Preferably, barks and stems should be removed only from fully grown plants. Do not remove all the bark or a band of surrounding bark.

Fruits and seeds: Fully ripened fruits and mature seeds are preferred. Collection of pod fruits is done in the morning to avoid unnecessary opening up of the fruit wall to the detriment of losing the seeds. Turn the fleshy fruit frequently for even drying.

Whole plant: When the whole plant is desired, it is advisable to harvest the plant at the time when the flowers are all in bloom. Old and withering plants are less effective when used as a source of drugs.

Habitat

According to several literatures, Information about the whereabouts of the plants, especially the rare ones, can facilitate the search for them. It saves both time and energy. Low altitudes probably range from sea level to about 300 meters; medium altitudes from about 310 meters to about 1000 meters; and high altitude from about 1000 meters and up.

Storage

Many medicinal plants are seasonal, some not easily accessible, available only in deep forests or mountain peaks. Such restrictions necessitate ways and devices to store them for future use. Dirt and other foreign substances should be removed. If washing is needed, it should be done quickly to minimize deterioration and loss of active substances. As a rule, all parts of the plant collected should be dried as soon as possible to avoid unnecessary waste of the drug materials through natural processes of denaturation, decay and fungal attacks. Some commonly used storage methods used buy the Chinese are as follows:

Sun-drying method: Spread the herbs over the dry beaches, patio or benches that are under the direct scorch of the sun until the materials turn dry and brownish.

Shade-drying method: Some plant materials are preferably dried under shade at room temperature by wind action- because of heat-labile substances that they contain. As such, free circulation of air is important. Drying processes should be shortened, if higher drug contents are to be sought for. Floral and fruit materials should be dried by this method.

Heat-drying method: Some materials may be placed over an oven and dried under the intense heat released or under regulated soft heat. Plants that contain high sugar and starch are best preserved by this method. In places where the rain falls throughout the year, this method is strongly recommended.

Other Special Methods: Succulent materials

are usually washed first in boiling water or steam-cooked in a container before actually drying it. For spiny and hairy materials, remove the unwanted appendages. Some plant materials (ex. succulent materials) may require cutting or sectioning before drying. In general, the moisture content of the dried plant materials should be less than 10% before storage. Moisture content higher than 10% usually leads to growth of microorganisms and pest infestation with consequent drug deterioration.

The dried plant materials should be placed in plastic containers or tightly covered bottles; brown colored bottles are preferred as they minimize deterioration due to sunlight. Dry charcoal (separated from the medicinal plant) may be placed inside the bottles to absorb moisture. The storage place should be dry, well-ventilated, and spacious, lest fungi and insects may invade rampantly. Drug materials (dry ones) after proper processing can be kept in large open wooden shelves. The humidity of the storehouse should then be as low as possible. Materials rich in volatile oils are advised to be kept in airtight containers. Otherwise, their efficacy will decrease as time passes by. If all factors are favorable, the prepared drugs can be used even after years of storage.

Preservation and Conservation

Know how to preserve and conserve plant sources. Complete depletion of all medicinal plants founds in an area should be avoided. Once collected, all the materials should be processed at once for long storage. Well planned activity in the collection of plant materials will always prove to be economical and advantageous in the long run. Cultivation of these medicinal plants should be tried in places where conditions favor because cultivated plants contain higher percentages of the medicinal principles desired.

APPLICATION OF THE HERBAL MEDICINES

Oral

1. **Drenching (Dr)** - administration of liquid or semi-liquid preparation through the mouth; may use bamboo tube, soft drink bottle, syringe sans needle for swine and ruminants and a medicine dropper for poultry. Hold the head level so that the medicine does not go into the lungs.

   For Swine- lie the animal on its front on the ground and tie it down or ask somebody to hold it. Tie the snout with a piece of rope. Hold one end of the

rope tightlt or tie it to a post so the animals mouth is open and it cannot bite your hands or the bottle. Put the end of the battle into the mouth and slowly pour the liquid into the mouth. Make sure the animal swallows the liquid

For Ruminants- Tie the animal to a tree or pole. With small ruminants, mount the animal and hold it between your thighs. With one hand, hold the upper jaw so that the animal opens it mouth. With cattle and buffaloes, you can use a rope through the nose ring to hold the mouth open. With the other hand, put the end of the bottle in the side of the animal's mouth and slowly pour the liquid into the mouth.

For Poultry- Hold the chicken by one hand or by another person. Hold the upper beak with the left thumb or first finger. Push the lower beak down with your finger or the medicine dropper. Hold the head level so the medicine does not go into the lungs. Drop or squirt the medicine into the mouth.

2. **Force feeding (Ff)** - application of solid preparation through the mouth. An example is to force feed the goat is to put solid medicine either into a banana or cooked sweet potatoes and feed to animal.

3. **Mixed with Feed and Water-** mix the medicine thoroughly with a small amount of feed then additionally feed the animal once everything is eaten. For water, either sprinkled the medicine or dissolve in a container of water.

Topical

4. **Poultice (Po)**- usually heated preparation that is applied to a sore or inflammation then tying up with s cloth or strip of banana trunk or coconut leaves.

5. **Fomentation (Fo**)- warm, moist substance (wet cloth) applied to affected parts of the body. It is used to ease pain and inflammation in swine and ruminants.

6. **Compress (C)-** dry substance applied to affected parts of the body.

Direct Application

7. **Smudge (S)-** direct application of herbal preparation on affected parts of the body such as

1) nasal application through vapor,
2) vaginal application,

3) anal application,
4) eye drops

8. **Fumigation or by Hanging boquet**

8. **Paste(P)-** direct application to affected surface

9**. Juice (J)-** extracted liquid out of plant materials

Important Tips to consider on Handling Medicinal Plants / Herbs:

- If possible, buy herbs that are grown organically – without pesticides.
- Medicinal parts of plants are best harvested on sunny mornings. Avoid picking leaves, fruits or nuts during and after heavy rainfall.
- Leaves, fruits, flowers or nuts must be mature before harvesting. Less medicinal substances are found on young parts.
- After harvesting, if drying is required, it is advisable to dry the plant parts either in the oven or air-dried on screens above ground and never on concrete floors.
- Store plant parts in sealed plastic bags or brown bottles in a cool dry place without sunlight preferably with a moisture absorbent material like charcoal. Leaves and other plant parts that are prepared properly, well-dried and stored can be used up to six months.

Important Tips on Preparation for Intake of Herbal Medicines:

- Use only half the dosage prescribed for fresh parts like leaves when using dried parts.
- Do not use stainless steel utensils when boiling decoctions. Only use earthen, enameled, glass or alike utensils.
- As a rule of thumb, when boiling leaves and other plant parts, do not cover the pot, and boil in low flame.
- Decoctions lose potency after some time. Dispose of decoctions after one day. To keep fresh during the day, keep lukewarm in a flask or thermos.

Always consult with a Veterinarian if symptoms persist or if any sign of allergic reaction develops.

PART 6

APPENDICES

UNITS OF MEASUREMENTS

In the Western Pacific islands, measurements are not well practiced and instead approximation is what is commonly used. This section gives some approximate equivalents for commonly available resources. Containers such as cups, spoons, & bottles vary from different areas/country. Here's a standard measurement in the following countries:

FOR LIQUIDS

Cups (Philippines)
1 cup = 16 tablespoon = 1/4 liter approximately
2 cups = 1 pint = ½ liter approximately
4 cups = 1 quart = 1 liter approximately

Cups (teacups, India)
1 teacup = 30 ml = 6 teaspoon

Spoon
1 teaspoon = 5 ml
3 teaspoon = 1 spoon = 15 ml (1 tablespoon)
6 teaspoon = 2 tablespoon = 30 ml

Bottles (Philippines)
1 bottle = 1 liter
1 big bottle = 1.5 liter
4 bottles = 1 gallon

Bottles (India)
1 small bottle = 120 ml
1 big bottle = 200 ml
Bottles are often marked with their volume. Common sizes are 1 liter, 750 ml, 375 and 320 ml

Drinking glass (Philippines)
1 small coke bottle = 237 ml = 1 glass

Drinking glass (India)
South 1 glass = 100 ml
West India 1 glass = 250 ml
North India 1 glass = 450 ml

Dropper
60 drops = 5 ml = 1 teaspoon = 5 grams

FOR POWDER
1 small matchbox = 50 grams
1/4 palm = 5 grams
½ palm = 10 grams
¾ full palms = 25 gram
1 full palm of grain = 50 grams

20 peanuts = 10 grams

Chopped Leaves
150-200 leaves of *Azadirachta indica* = I handful
300 leaves of *Ocimum sp*= 1 handful
15-25 leaves of Eucalyptus tereticornis = 1 handful
10 leaves of Areca catechu= 1 handful

ESTIMATING LIVE WEIGHT OF ANIMALS

How To Measure Your Beef Cattle:

Stand the animal with head in normal position and with the four legs set squarely under the body.

Pass the tape tightly around the body just at the back of the shoulders at the smallest circumference.

It is recommended that the animal be kept off feed and water for 12 hours before measuring. An overnight shrink is enough.

How To Measure Your Hogs:

Measure the hog's Length in inches from a point mid-way between the ears to the base of its tail. Keep the tape centered on the top of the back with the hog standing squarely, head in normal position.

Measure the hog's Heart Girth in inches just at the back of the front legs and pull the tape tight enough to depress the flesh slightly

The Following Table Indicates Beef Cattle Weight:

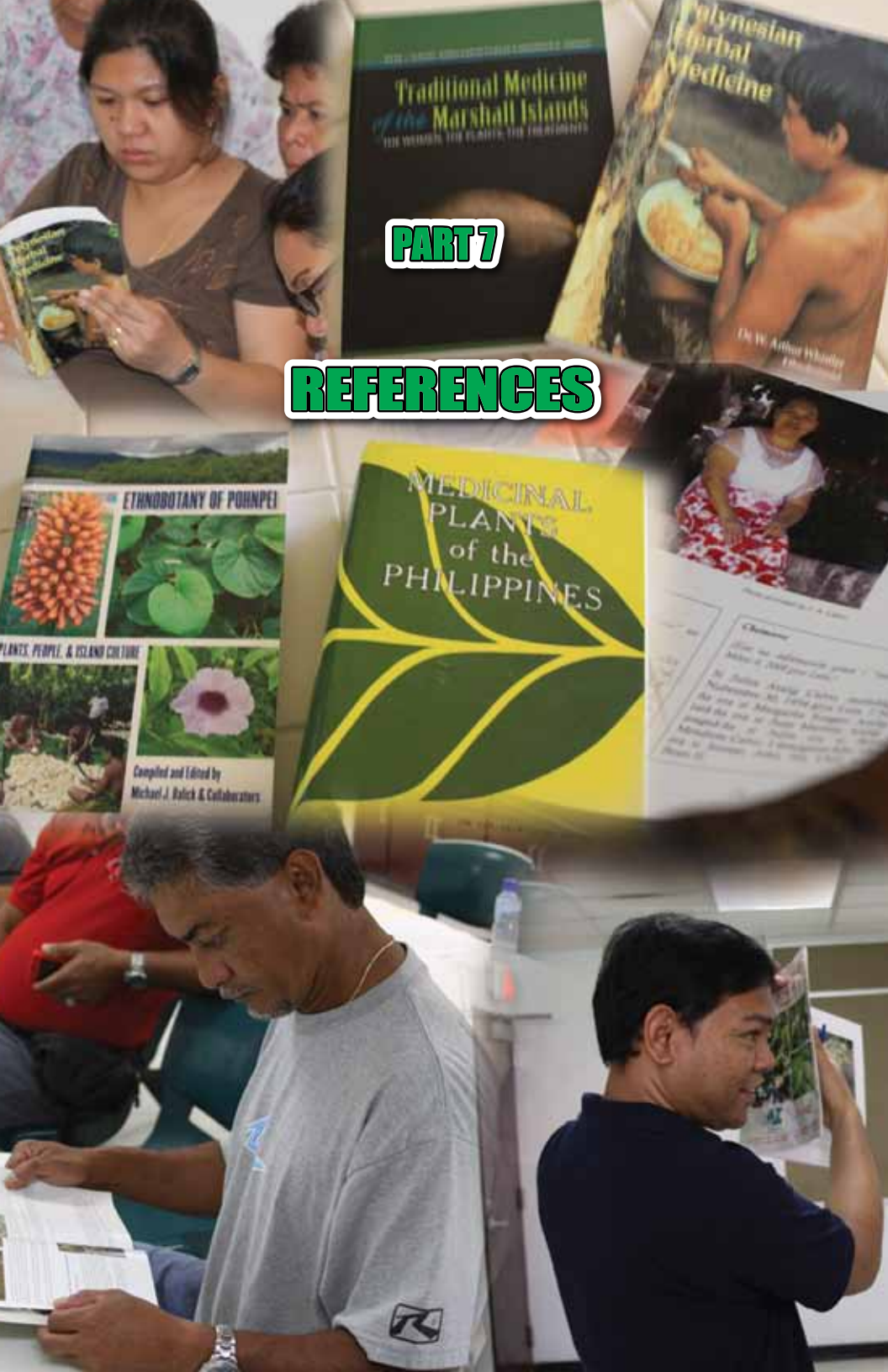
Heart Girth Inches	Weight In Pounds		Heart Girth Inches	Weight In Pounds		Heart Girth Inches	Weight In Pounds		Heart Girth Inches	Weight In Pounds		Heart Girth Inches	Weight In Pounds
30	91		42	236		54	484		66	834		78	1288
30½	95		42½	244		54½	496		66½	850		78½	1310
31	99		43	253		55	509		67	869		79	1332
31½	103		43½	262		55½	522		67½	886		79½	1353
32	108		44	271		56	535		68	903		80	1374
32½	113		44½	279		56½	548		68½	921		80½	1396
33	118		45	288		57	562		69	939		81	1418
33½	123		45½	297		57½	575		69½	957		81½	1440
34	128		46	307		58	589		70	975		82	1463
34½	133		46½	317		58½	603		70½	993		82½	1485
35	139		47	327		59	618		70	1011		83	1508
35½	145		47½	337		59½	632		71½	1030		83½	1531
36	151		48	347		60	647		72	1049		84	1555
36½	157		48½	358		60½	661		72½	1068		84½	1578
37	163		49	369		61	676		73	1087		85	1601
37½	169		49½	379		61½	691		73½	1107		85½	1624
38	176		50	390		62	707		74	1127		86	1648
38½	183		50½	401		62½	722		74½	1147		86½	1672
39	190		51	412		63	737		75	1167		87	1697
39½	197		51½	424		63½	753		75½	1186		87½	1721
40	205		52	436		64	770		76	1205		88	1745
40½	212		52½	448		64½	786		76½	1226		88½	1770
41	220		53	460		65	802		77	1247		89	1796
41½	228		53½	472		65½	818		77½	1267		89½	1821

**North American Piedmontese Association (NAPA)*

The Following Table Indicates Hog Weight:

Heart Girth Inches	**Long** Hogs Length in Inches	Weight in Pounds	**Medium** Weight in Pounds	**Short** Hogs Length in Inches	Weight in Pounds
31	38	115	105	34	100
31½	38	120	110	34	104
32	39	125	115	35	109
32½	39	130	120	35	112
33	39	135	125	35	118
33½	40	140	129	37	123
34	40	145	134	37	128
34½	40	150	140	37	132
35	41	156	146	38	137
35½	41	160	154	38	144
36	42	172	162	39	152
36½	42	190	168	39	157
37	42	193	175	39	162
37½	42	195	177	39	165
38	43	197	180	40	170
38½	43	199	184	40	173
39	44	200	188	40	176
39½	44	202	190	41	178
40	44	204	192	41	180
40½	45	207	194	41	183
41	45	210	198	42	187
41½	45	214	200	42	191
42	45	219	206	42	195
42½	46	224	2100	43	199
43	46	230	215	43	204
43½	46	235	221	43	209
44	46	240	227	43	215
44½	47	245	233	44	220
45	47	250	239	44	225
45½	47	255	244	44	230
46	47	260	249	44	235
46½	47	265	254	44	240
47	47	270	259	44	245

**Jackson Frozen Food Lockers*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PART 7
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ETHNOBOTANY OF POHNPEI
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MEDICINAL PLANTS of the PHILIPPINES

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