



Ethnobotanical survey of wild food plants of the Karen and Lawa in Pang Hin Fon sub-district, Mae Chaem district, Chiang Mai province

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“Wild food plants are an important supplement in diets.”

(Vorster and van Rensburg, 2005)



Food security



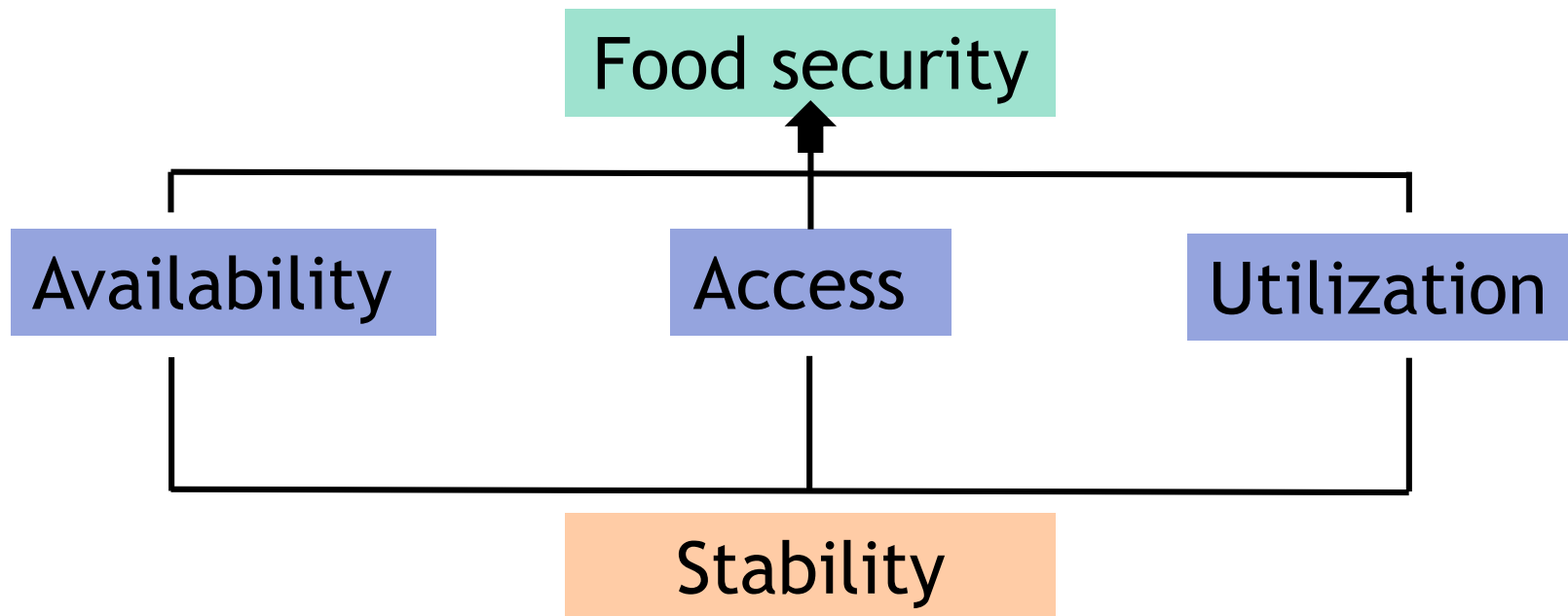
Food shortage buffer

(Shrestha and Dhillion, 2006; Segnon and Achigan-Dako, 2014)

Food security

“Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”

(World Food Summit, 1996)





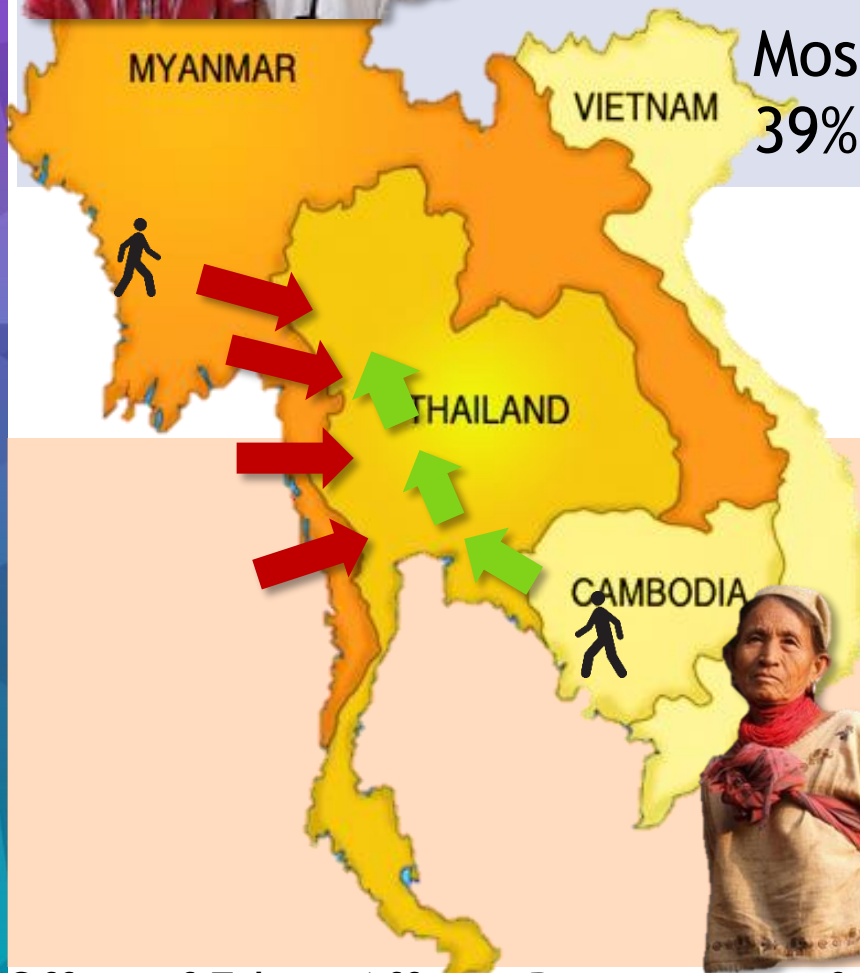
Karen

4

Introduction



They migrated from Myanmar about 200 years ago.



Most of Karen live Chiang Mai.
39% of all highland ethnic group.

Lawa

- The Lawa may be migrate to northern Thailand for 2,000 years ago.



Nutritional status in Karen

1-6 years old



Fat Protein Calcium, Iron
 Omega 3 Omega 6 B1, B2, C, D

85% malnutrition (weight-for-age)

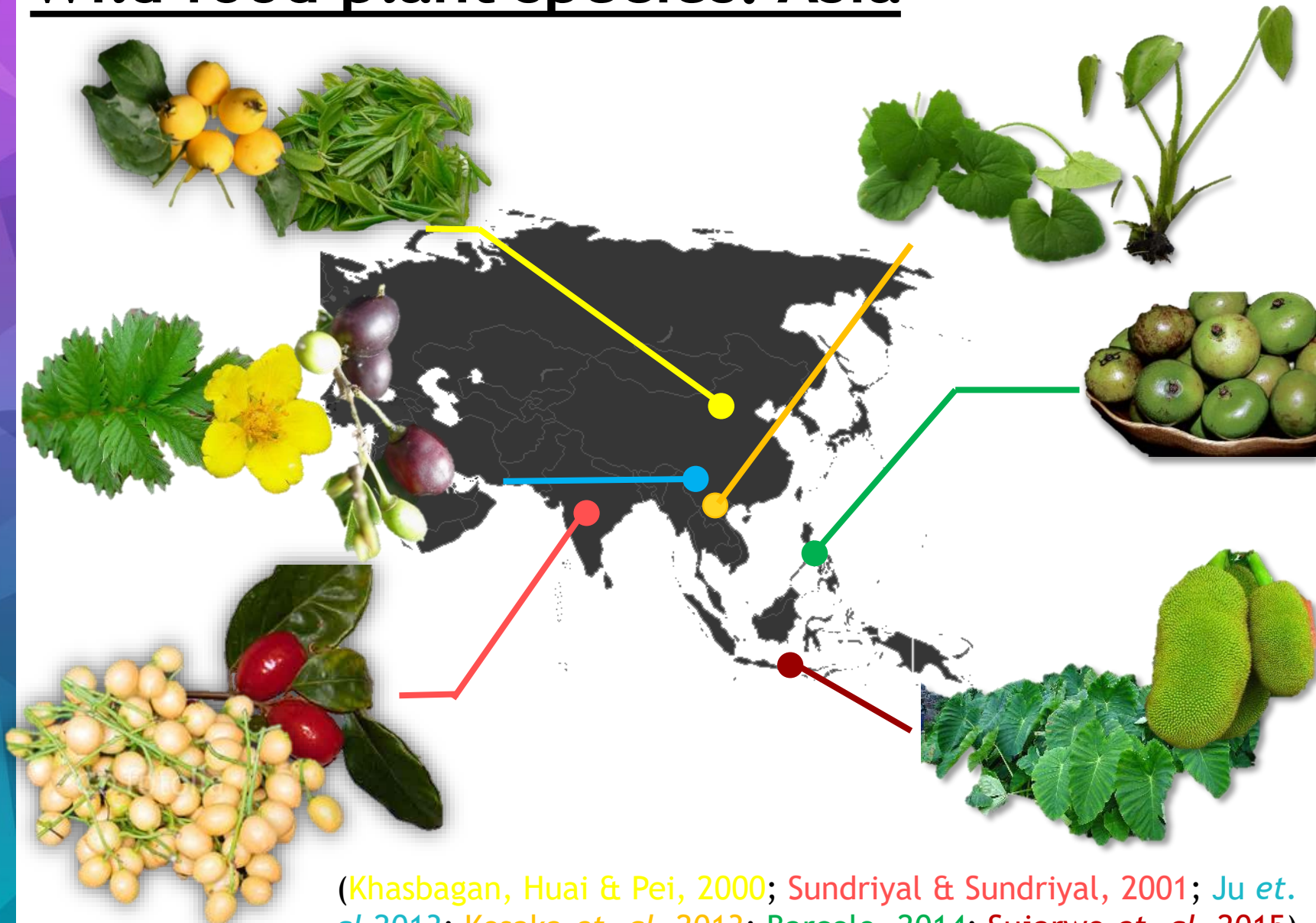
73% malnutrition (height-for-age)

Stunting

12% in preschool Thai

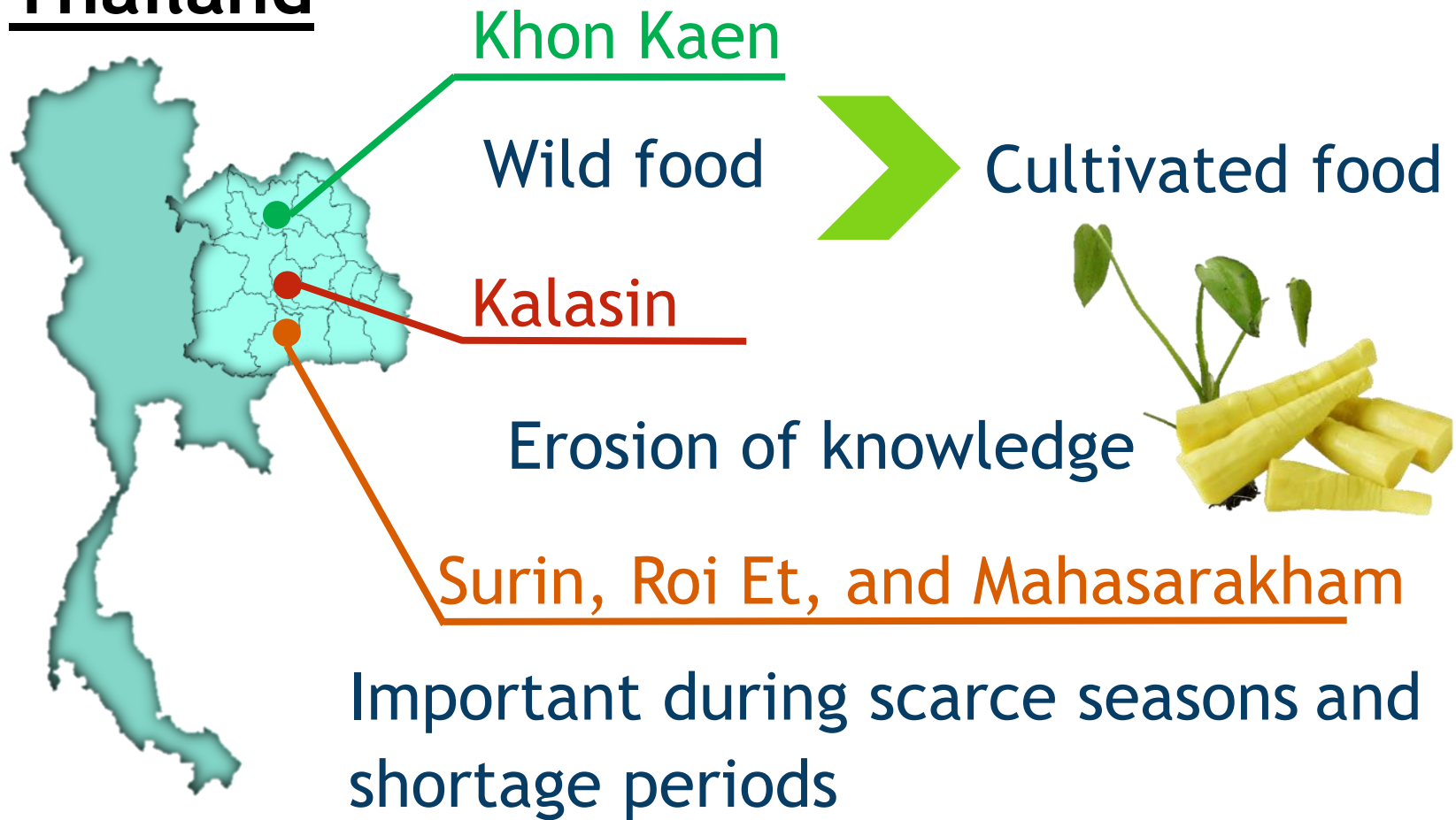


Wild food plant species: Asia



(Khasbagan, Huai & Pei, 2000; Sundriyal & Sundriyal, 2001; Ju *et al.*, 2013; Kosaka *et al.*, 2013; Barcelo, 2014; Sujarwo *et al.*, 2015)

Study of wild food plant species in Thailand



(Somnasang, Mareno & Chusil, 1998; Mareno & Somnasang, 2000; Setalaphruk & Price, 2007)



(Pongamornkul, 2005)

(Trisonthi and Trisonthi, 2009)

(Pongamornkul, 2003)

(Khamfachuea, 2008)

Northern Thailand

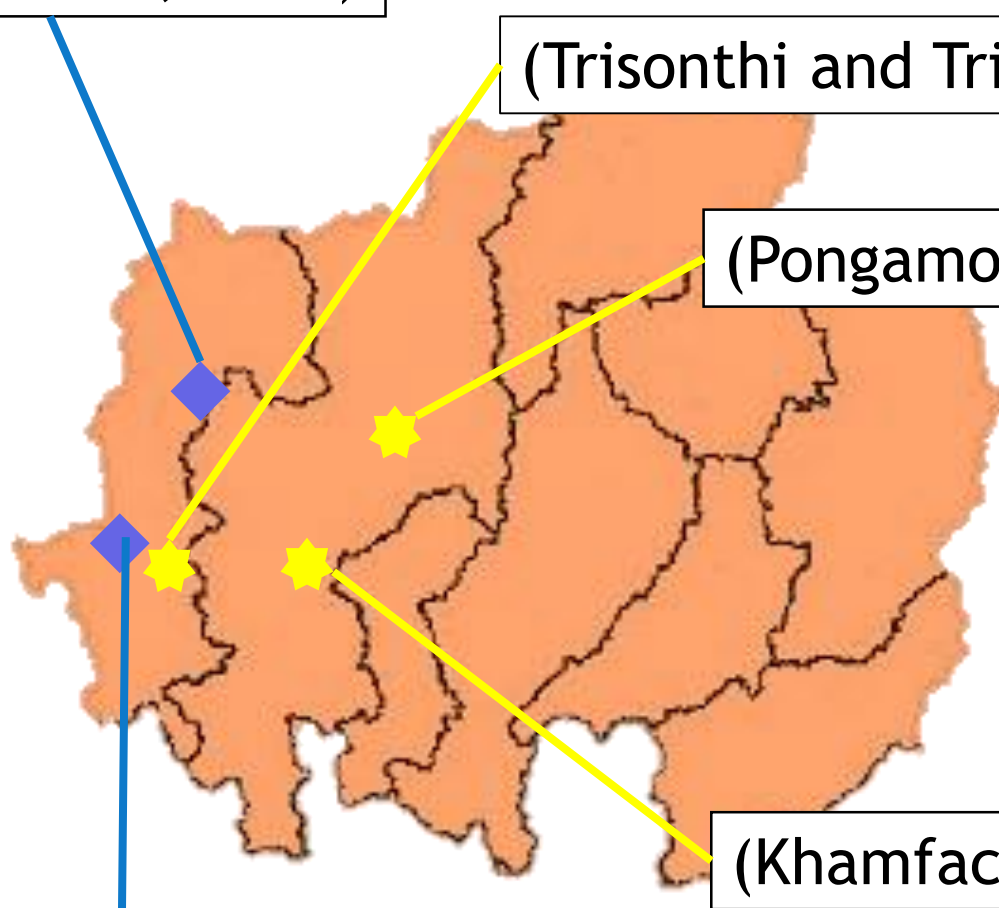
(Moonjai & Inta, 2016)



Lawa



Karen



Research Question

How many wild food plants in Karen and Lawa ethnic groups?



Are there traditional knowledge different between ethnic groups?



Objective

- I. To determine diversity of wild food plants among Karen and Lawa ethnic groups in Chiang Mai Province.
- II. To compare Karen and Lawa traditional knowledge and use of wild food plants in the same geographic area in northern Thailand.





Karen village

Mae Tum



Lawa village

Kok Noi



**Pang Hin Fon sub-district
(145 km from Chiang Mai city)**

Baseline information



Mae Tum	Village	Kok Noi
Christian, Buddism	Religion	Animism- Buddism
1,100	Elevation (m)	950
177	Households	85
293/288	Population (m/f)	141/133
30	Distance to nearest town	32

Key informants interview

- Local names
- Parts used
- Food categories
- Preparations



participatory field collection

Dry herbarium specimens



Data analyses

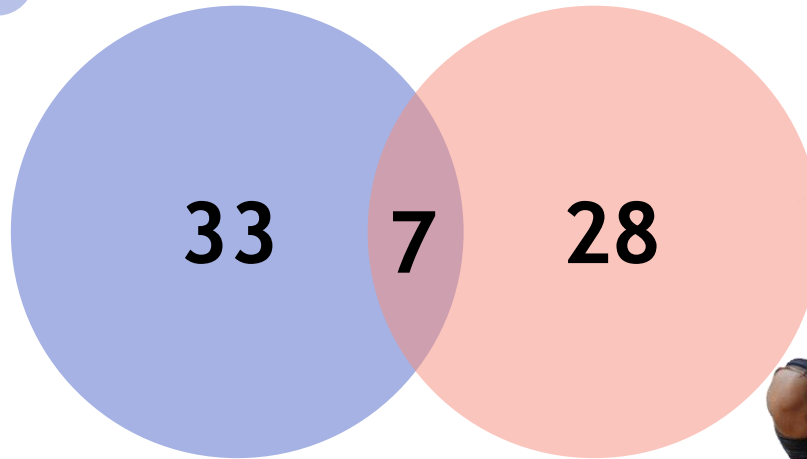
Chi-square test

Jaccard Index (JI)

68 WFPs species in 44 family

Karen
40 species

Lawa
35 species



Family

Family

Anacardiaceae

Fabaceae

Moraceae

Karen's WFPs

Trevesia palmata (Roxb. ex Lindl.) Vis.

Ki li sa



Karen's WFPs

Melastoma malabathricum L.

Se la ple



Fruit



Karen's WFPs

Markhamia stipulata (Wall.) Seem. **Kwae po**



Karen's WFPs

Embelia sessiliflora Kurz

Be blo sa



Karen's WFPs

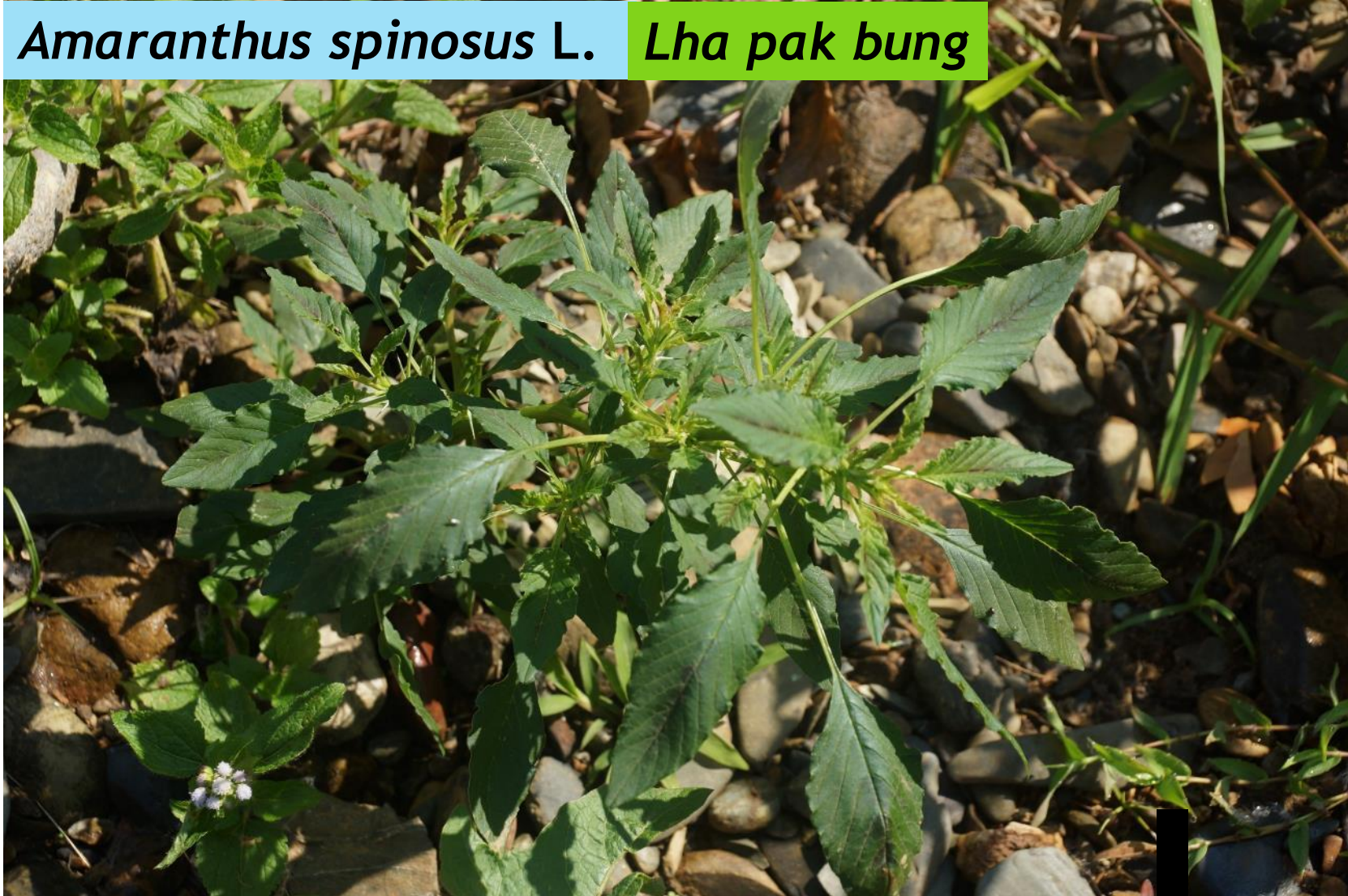
Camellia tenii Sealy

La pa me



Lawa's WFPs

Amaranthus spinosus L. *Lha pak bung*



Lawa's WFPs

Commelina diffusa Burm.f. *Lha la voek*



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Lawa's WFPs

Ficus auriculata Lour. **Mhae**



Lawa's WFPs

Cheilocostus speciosus (J.Koenig) C.D.Specht **Ku ki**



Lawa's WFPs

Senna hirsuta (L.) H.S.Irwin & Barneby **Ti pru**



Karen and lawa's WFPs

Rubus ellipticus var. *obcordatus* (Franch.) Focke



Fruit



O wa sa

Kad se



Karen and lawa's WFPs

Vitex vestita Wall. ex Schauer

Ta ka la

Pe pap

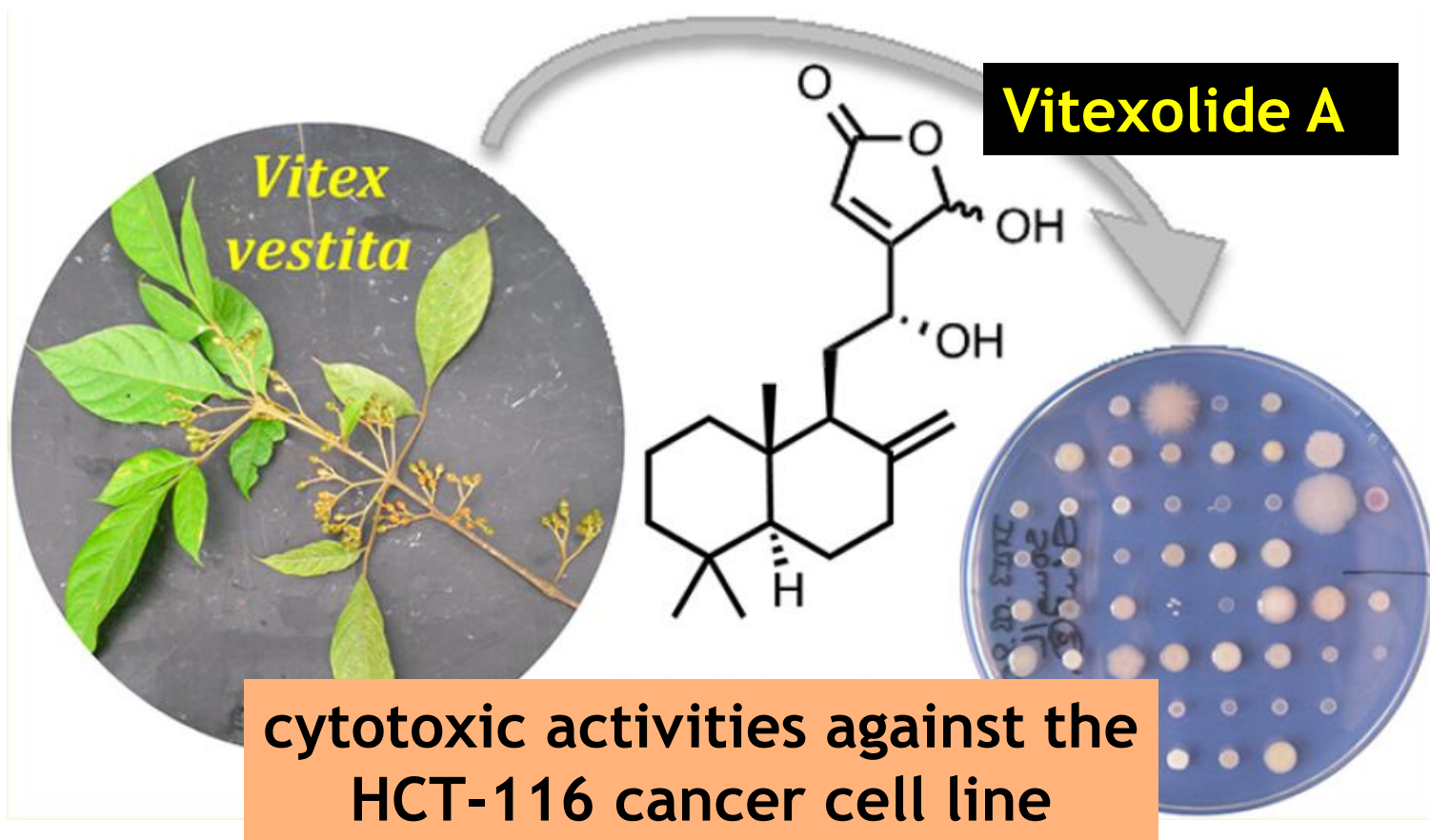


Leaves

Karen and lawa's WFPs

Vitex vestita Wall. ex Schauer

Ta ka la Pe pap

(Corlay *et al.*, 2015)

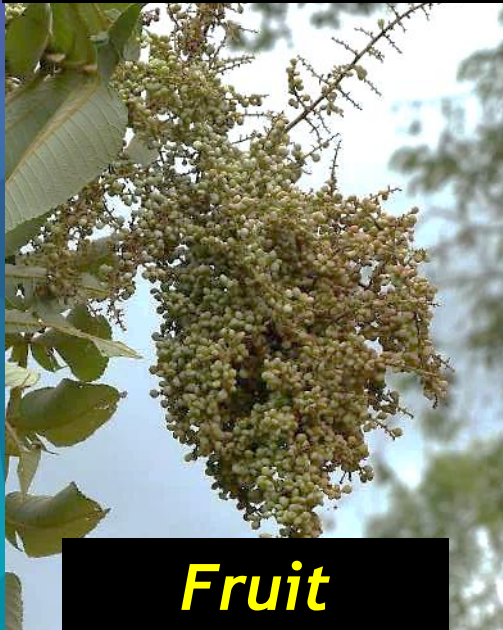
Karen and lawa's WFPs

Rhus chinensis Mill.

Se che Lha yo



Rhus powder



Fruit



Karen and lawa's WFPs

Rhus chinensis Mill.

Se che Lha yo

**Rhus powder**

100 g fruit of *R. chinensis* show some nutrients, such as

Protein 9-11 g

Fat 12-21 g

Mg 95.75 mg (30% RDA)

Cu 1.47 mg (160% RDA)

} Egg

This showed that the fruit of *R. chinensis* has high valued of nutrition.

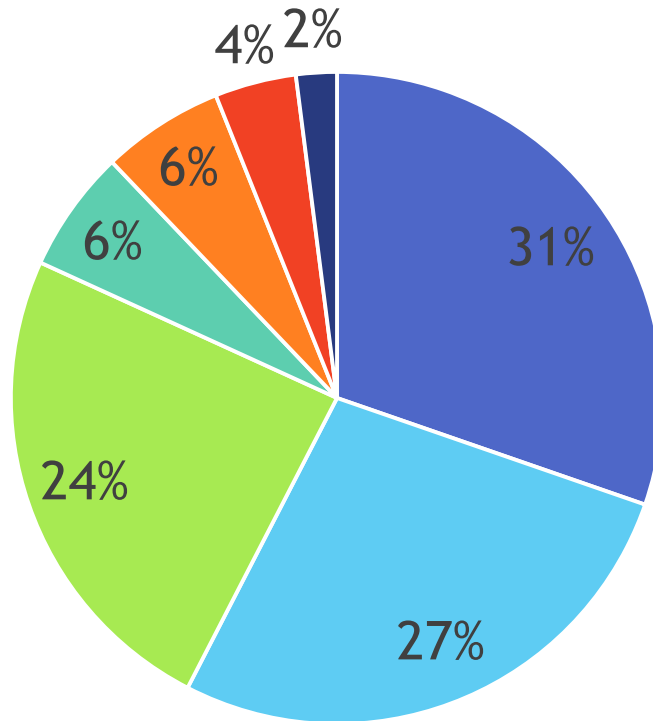
(Chen *et al.*, 2010)

RDA = Recommended Dietary Allowance



68 WFPs species in 44 family

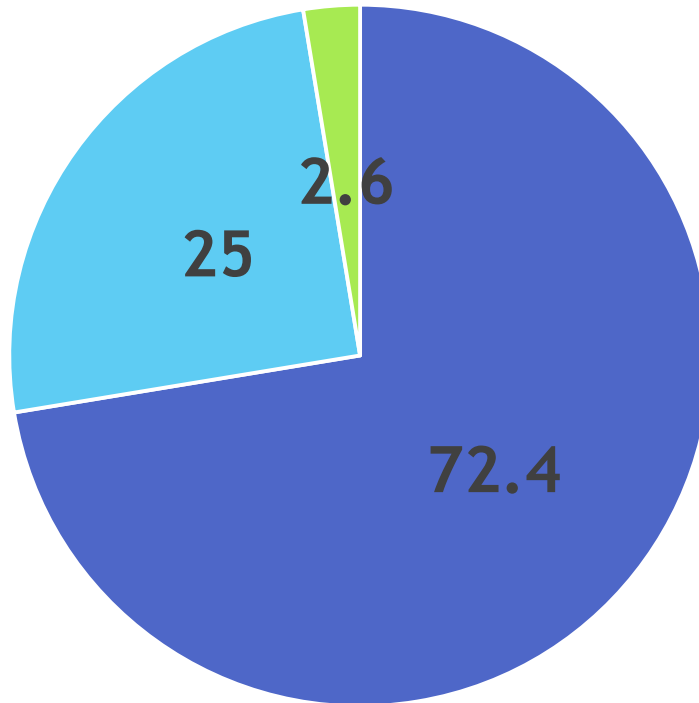
WFPs part used



- Fruit
- Shoot
- Leaves
- Stem
- Flower
- Aerial part
- Bark



WFPs habitat



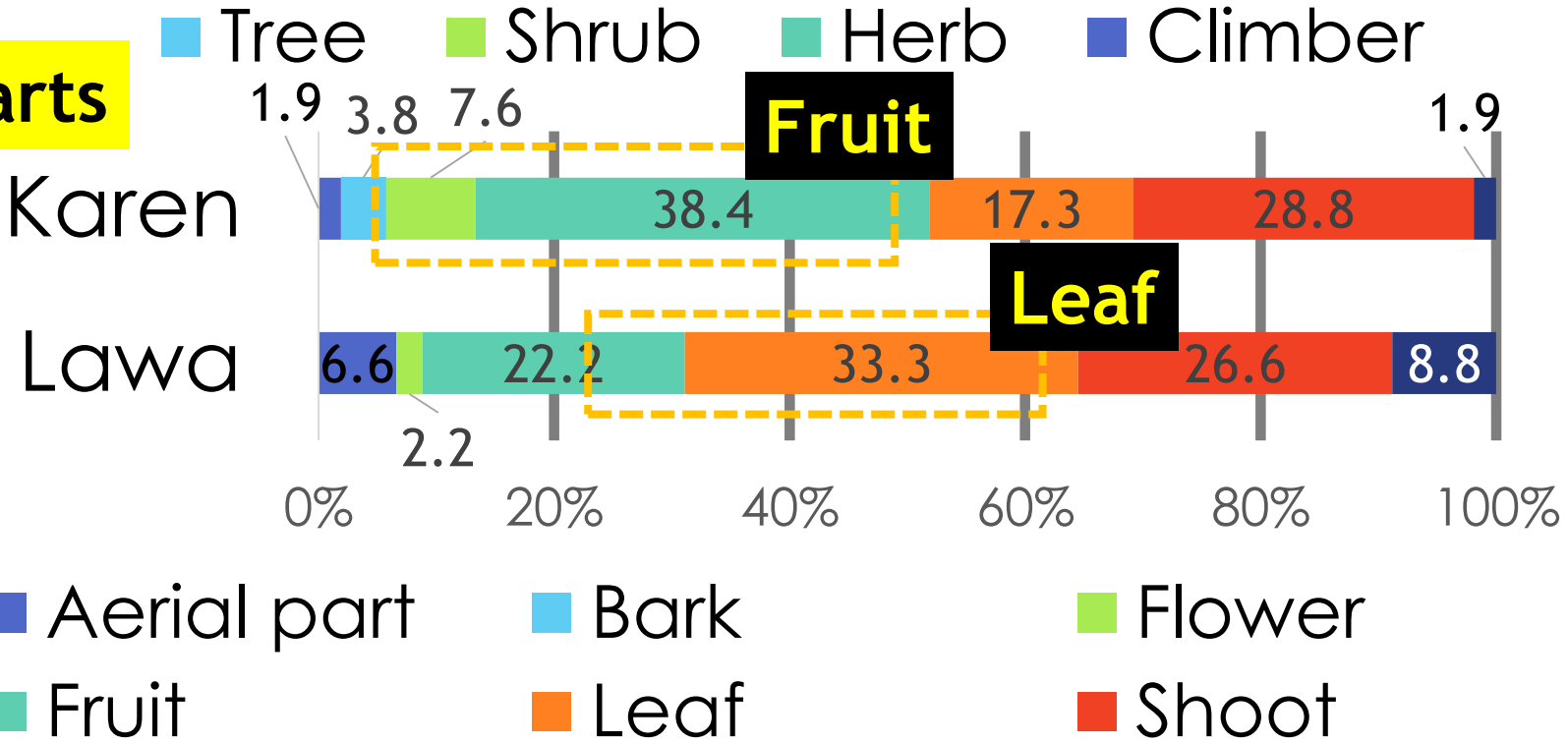
- Forest
- cultivated area
- Both areas



Habit



Parts



5 Decades CMU United for the Nation

North of Thailand

South of Yunnan

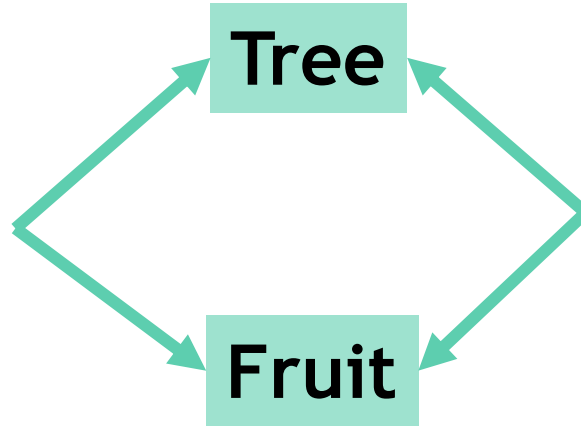
(Ghorbani *et al.*, 2012)



Karen

Tree

Fruit



Han



Hani



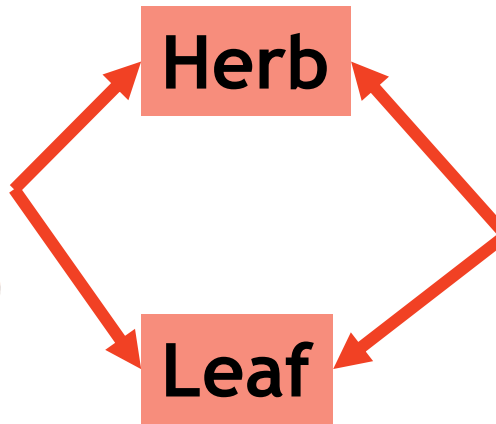
Lahu



Lawa

Herb

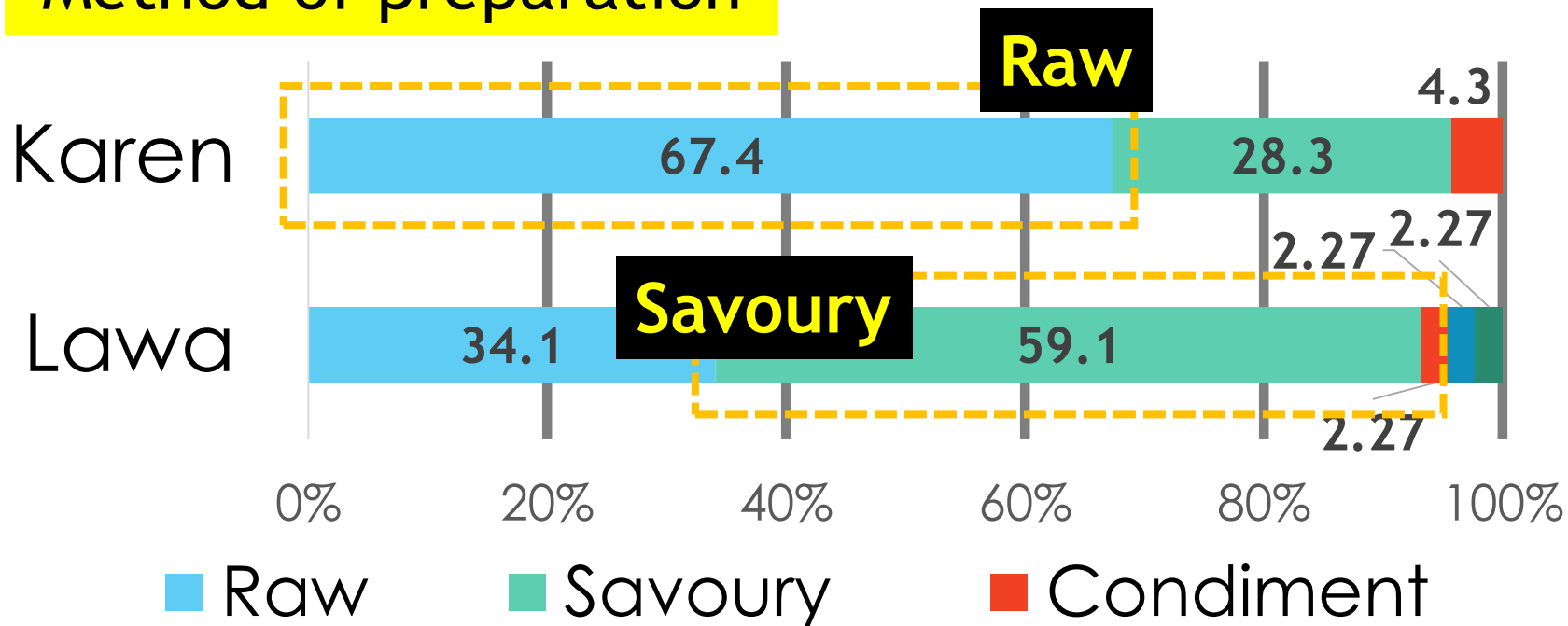
Leaf



Dai



Method of preparation



The commonest preparation in Karen and Lawa is eating raw (fruit) and boiling (leaf) similar to ethnic groups in south Yunnan and central China.



Chi-square test of the differences between two villages

Catagories	DF	χ^2	<i>p</i> -value
Habit	7	23.50	0.001*
Tree		3.842	0.050*
Plant part used	18	86.00	0.000*
Fruit		3.846	0.050*
Method of preparation	5	147.2	0.000*
Raw		4.787	0.029*
Savoury		4.900	0.027*

$$\text{Jaccard's Index} = \frac{A \cap B}{A \cup B} = \frac{7}{68} = 0.103 \quad (10.3\%)$$



- The total 68 species of WFPs were found in Karen and Lawa communities.
- The habit, plant part used, and method of preparation between the Karen and Lawa are significantly different.
- The knowledge of WFPs may be served as baseline data for future studies on nutritional values, and could be part of a strategy in tackling food insecurity.



Future study



Wild food plant mentioned:

Folk name

In which period of the year do you collect this plant?

Which parts of plant do you use?

How do you cook it?

During the collection period, how often do you eat it?

Once a day

Once a week

Once a month

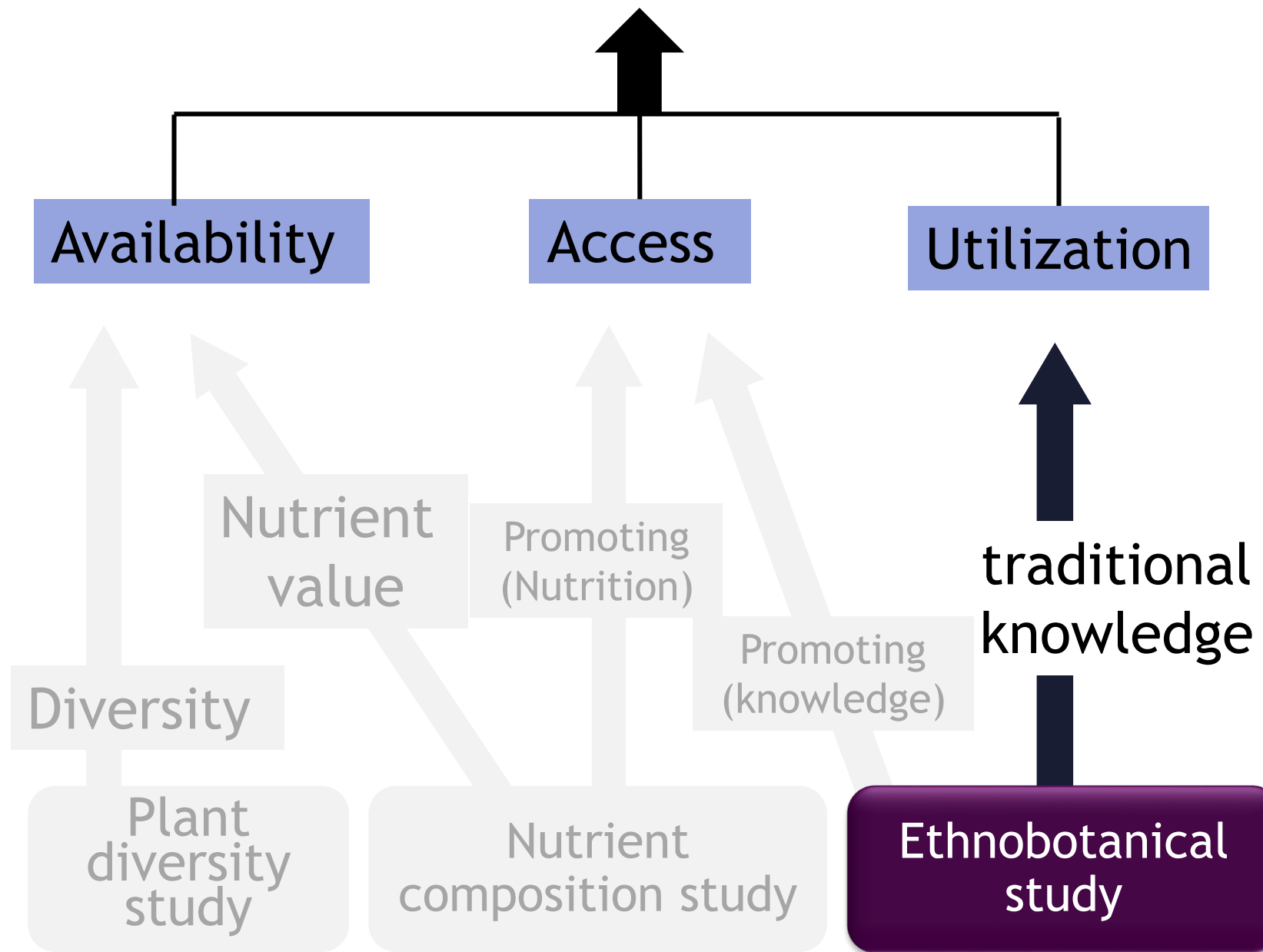
Once a year

Never at present time, only in the past

I've never eaten it, I have only heard about it

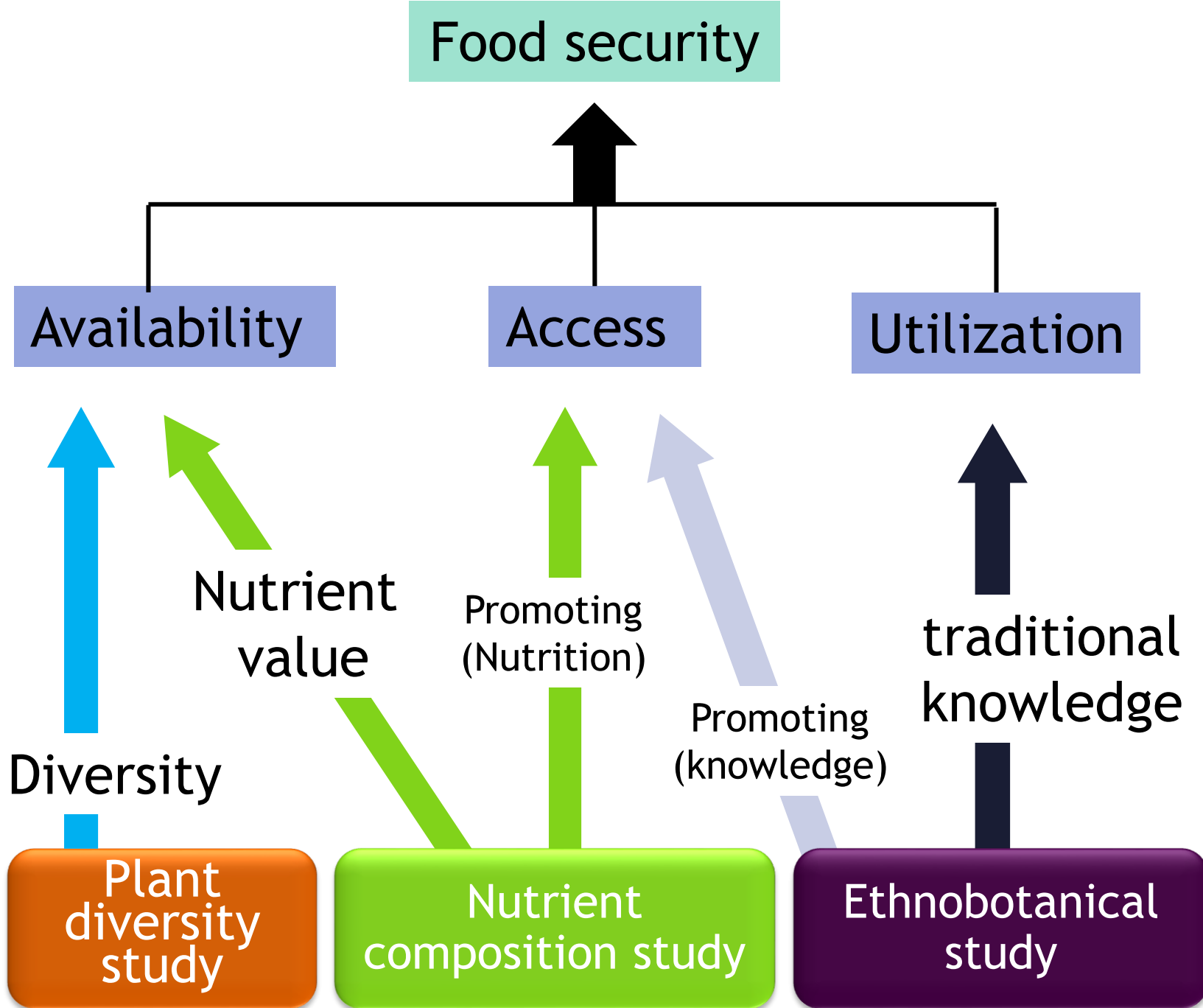


Food security





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Thank you

