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### Introduction

Wild mangoes in Northern Thailand were explored. People in Northern Laos enjoy some kinds of wild mangoes with specific names, also people in Northeast Thailand recognize a better intraspecific variation out of *M. caloneura* (Ueda *et al.*, 2011. Trop. Agr. Develop. 55: 55-67). This study is to clarify the situation of wild mangoes use and discuss the difference among these areas and the neighboring Northern Thailand.

### Materials and Methods

Field survey was conducted from January to February in 2011 and 2012 for floral observation, and May in 2012 for fruit observation, in order to identify *Mangifera* species, in three provinces in Northern Thailand: Nan, Chiang Rai, and Chiang Mai (Fig. 1). Local names for the mangoes were interviewed from the people found near from the trees. One to five fruit were collected per tree, if possible, to record the size, weight, and sugar content. Sugar content (sucrose, glucose, fructose) was determined by HPLC (Shimadzu, RID-10A).

### Results and Discussion

**【Species Identification】** Among 160 trees observed, 96 trees were identified to be *M. laurina*, *M. caloneura*, or *M. sylvatica*. *M. laurina* and *M. caloneura* were found dominantly where people live.

**【Typification】** *M. laurina* was divided into two types: Trees of typical size fruit (*M. laurina*-type A) and bigger fruit (*M. laurina*-type B). The *M. laurina* type-A trees produced fruit of 30.5g (46.4×35.2×33.1 mm), while the *M. laurina*-type B produced comparatively bigger fruit of 51.1g (59.0×39.9×36.6 mm) (Table 1). *M. caloneura* can be also typified into two: One is major type with wavy leaves (*M. caloneura*-type A) in common with those in Northeast Thailand, and another is identical from the flat leaves flushing rather horizontally (*M. caloneura*-type B).

**【Local Name】** Wild *Mangifera* species in Northern Thailand were usually generically called “wild mango” (with every language such as Thai, Karen, Hmong, Lisu, Khamu) (Table 2). Only *muang khai* (egg mango) for *M. caloneura*-type B in Nan was a common specific name.

**【Fruit sugar content and the composition】** The fruit of *M. caloneura*-type B possibly have higher sugar content than *M. caloneura*-type A (Table 3). And the fruit of *M. caloneura* tended not to have fructose, possibly leading to the difference of the taste: *M. caloneura* was sweet like as brown sugar, and *M. laurina* sweet and sour like as plum fruit.

**【Conclusion】** Mountainous area covers Northern Thailand continuously toward Northern Laos where several local names were recorded constantly for wild *Mangifera* species (Ueda *et al.*, 2011). In Northern Thailand, however, generic name was major for them, indicating less use and less consciousness of wild mangoes. This may reflect the distance between people and forest resource.

Table 1. Fruit morphology of three wild *Mangifera* species in Northern Thailand, dividing into five types.

Species	Type	Number of fruit (tree)	Fruit morphology (average ± standard deviation)			
			Length (mm)	Width (mm)	Depth (mm)	Weight (g)
<i>M. laurina</i>	A	47 (11)	46.4 d ± 0.8	35.2 c ± 0.5	33.1 c ± 0.5	30.5 d ± 1.2
	B	21 (5)	59.0 a ± 1.4	39.9 b ± 1.7	36.6 b ± 1.2	51.1 b ± 4.0
<i>M. caloneura</i>	A	23 (5)	53.3 b ± 1.0	44.8 a ± 1.0	40.0 a ± 0.6	59.6 a ± 2.4
	B	10 (2)	49.7 c ± 1.0	39.6 b ± 0.6	37.5 b ± 0.5	43.8 c ± 1.9
<i>M. sylvatica</i>		5 (1)	46.8 ± 1.2	35.2 ± 0.8	33.0 ± 0.5	31.3

\*Same letters are not significantly different (P<0.05) by the Tukey's test.  
\*Weight per fruit was determined from total weight and the number of fruit.

Table 2. Local names and the species of wild *Mangifera* in Northern Thailand. The number in parentheses shows that of interviewees who answered each name.

	<i>M. laurina</i>	<i>M. caloneura</i>	<i>M. sylvatica</i>
Nan	<i>muang paa</i> (5) <i>muang faai</i> (3)	<i>muang khai</i> (5) <i>muang kwaang</i> (3) <i>muang paa</i> (1)	
Chiang Rai	<i>muang paa</i> (2) <i>muang cingriit</i> (1) <i>muang kalon</i> (1) <i>muang khiao</i> (1) <i>muang kluai</i> (1) <i>muang hiip</i> (1)	<i>muang kwaang</i> (3) <i>muang paa</i> (2)	<i>muang priao</i> (2) <i>jii chai khuu</i> <sup>z</sup> (1) <i>muang paa</i> (1) <i>muang yu</i> <sup>y</sup> (1)
Chiang Mai	<i>muang paa</i> (12) <i>sekho beekhrii</i> <sup>x</sup> (2) <i>muang khii yaa</i> (2) <i>muang khai tao</i> (1) <i>muang top</i> (1) <i>mumuseu iku</i> <sup>w</sup> (1) <i>sekho mii</i> <sup>x</sup> (1)	<i>muang paa</i> (2) <i>sekho mii</i> <sup>x</sup> (1) <i>sekho thooboo</i> <sup>x</sup> (1)	

\*Meaning of each Thai word is; cingriit: cricket, faai: cotton, hiip: unknown, kalon: unknown, khai: egg, khai tao: turtle egg, khii yaa: excrement of old woman, kwaang: deer, khiao: green, kluai: banana, muang: mango, paa: wild, priao: sour, top: bitter.

\*Other language and the meaning of each word are; z: Hmong (jii chai khuu: wild mango), y: Khamu (muang yu: wild mango), x: Karen (beekhrii: cotton seed, mii: wild, sekho: mango tree, thooboo: yellow), and w: Lisu (mumuseu iku: wild mango).

Table 3. Fruit sugar composition of three wild *Mangifera* species in Northern Thailand, dividing into five types.

Species	Type	Number of sample	BRIS (°)	Three pattern of sugar composition		
				Sucrose only	Sucrose and glucose	Sucrose, glucose, fructose
<i>M. laurina</i>	A	9	12.9 ± 0.9	5	2	2
	B	4	12.1 ± 1.0	2	1	1
<i>M. caloneura</i>	A	4	13.1 ± 1.0	3	1	0
	B	2	15.5 ± 1.0	0	2	0
<i>M. sylvatica</i>		1	14.7	0	0	1

Fruits from the same tree were mixed to be single sample.



Fig. 1. Location of Nan, Chiang Rai, and Chiang Mai provinces in Northern Thailand.