


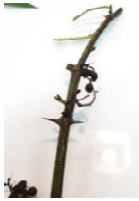






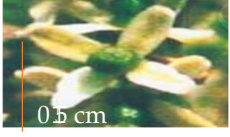

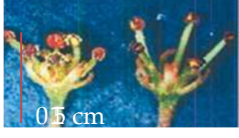







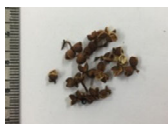


Figure S1. The dendrogram of *Zanthoxylum* spp. in North of Thailand; huajiao (HJ), makwhoung (MKO), MK1 (makhwaen from Mae Tang district), MK2 (makhwaen from Mae Rim district) and MK3 (makhwaen from Song Kwae district) derived by UPGMA from the similarity matrix based on seven morphology data (plant structure, thorn, compound leaf type, petals, anthers, fresh and dry fruit colour).

Table S1

Plant characteristics for taxonomical identification of collected *Zanthoxylum* spp. used in this experiment

Part of Plant for classification	Common names		
	huajiao (HJ)	makwoung (MKO)	makhwaen (MK1-3)
Plant structure			
	Shrub/* ¹	Tree	Tree
Thorn			
	Thorn on leaves	Thorn on tree	Thorn on tree
Leaf type			
	Odd-pinnately compound leaf	Even -pinnately compound leaf	Even-pinnately compound leaf
Number of petals			
	6-9 petals	4 petals	5 petals
Number of anthers			
	4-8 anthers	3-4 anthers	5 anthers
Fresh fruit colour			

	Red ^{*2}	Red	Greenish red
Dry fruit colour			
	Brown	Dark brown	Brown
Scientific name**	<i>Zanthoxylum armatum</i>	<i>Zanthoxylum rhetsa</i>	<i>Zanthoxylum myriacanthum</i>

^{*1} online; https://en.wikipedia.org/wiki/Zanthoxylum_armatum

² online; <https://www.flickr.com/photos/heliconius/15771073680>

** the specimens were taxonomical confirmed by Queen Sirikit Botanic Garden, Chiang Mai, Thailand and as in Sriwichai *et al.*, [5].

Table S2

Floral and fruit characteristics of makhwaen collected from different locations (MK1-3)




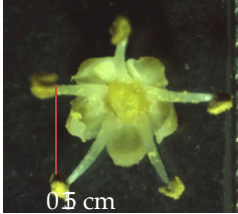
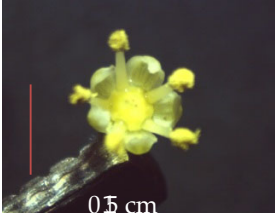
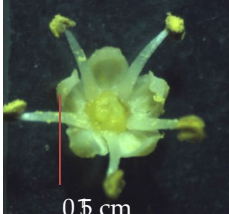
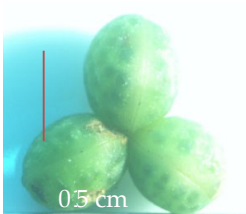
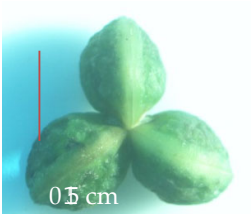
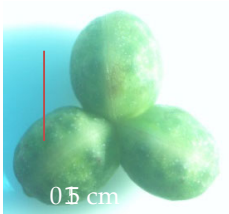

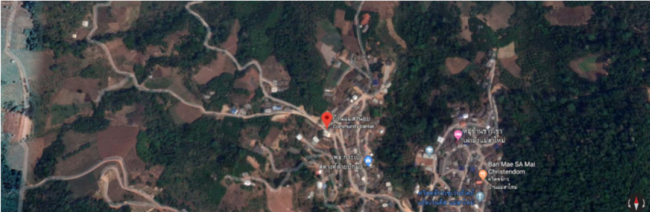

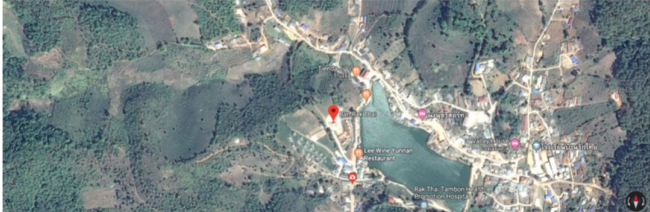
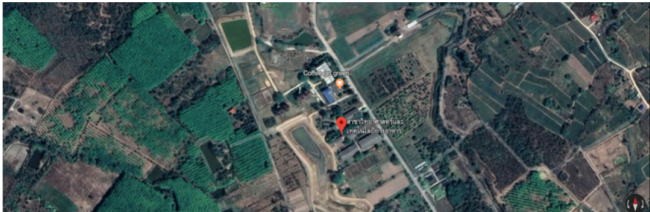
Part of Plant for classification	makhwaen (MK1)	makhwaen (MK2)	makhwaen (MK3)
Number of petals	 5 petals	 5 petals	 5 petals
Number of anthers	 5 anthers	 5 anthers	 5 anthers
Fruit structure	 3 capsules	 3 capsules	 3 capsules

Table S3

Study site the sample collections

Location	Coordinate	Altitude (m)	Picture of area
Papea, Mae Tang district, Chiang Mai province (MK1)	19° 7' 27''N, 98° 42' 14'' E	924	
Pong Yang, Mae Rim district Chiang Mai province, (MK2)	18° 53' 24''N, 98° 49' 53''E	800	
Yod, Song Kwae district, Nan province (MK3)	19° 22' 37''N, 100° 35' 49''E	1,600	
Ban rak Thai Mok Champae, MOUNG district, Mae Hong Sorn province (HJ)	19° 32' 32''N, 97° 53' 35.''E	1,176	
Phichai, Mueang Lampang district, Lampang province (MKO)	18° 22' 11''N, 99° 35' 44''E	294	

* The points of sampling location are presented in red pin.** Satellite images by Google Maps

Table S4

Sequence of RAPD primers

Primer	Sequence	References
S6	TGCTCTGCCCC	[43]
S7	GGTGACGCAG	[43]
S9	GCGTCGAGGG	[43]
OPA01	CAGGCCCTTC	[44]
OPA04	AATCGGGCTG	[44]
OPN05	AGGGGTCTTG	[45]
OPN06	GAGACGCACA	[45]
OPN07	CAGCCCAGAG	[45])
OPN13	AGCGTCACTC	[46]