Germplasm collection 王俊能 台大生命科學系及生態演化所

- 1. Planning a collection
- 2. Collecting strategy
- 3. Maintenance of wild collected material
- 4. Personal training and international collaboration























Iriomote conservation institute http://www.irio-bio.jp





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1. Planning a collection

- · Before collecting considerations (habitat, season)
- · Collecting permits and local contacts
- Collection team assembly & personal training (list of species to be collected)
- · Transports and collecting equipments









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Banana & palm collection- peru (RBGE)





Collecting equipments								
	項目	用途						
1	修枝剪	各人自備,採集、修剪						
2	高枝剪	採集高處與樹冠標本						
3	採集夾	整製標本用・最好有兩組						
4	採集袋	暫時置放標本用						
5	不同大小的塑膠袋	儘可能將不同植物分開放,特別是草本植物						
6	掘根器	挖掘植物,特別是草本植物						
7	種子袋	2集種子						
8	吊牌或立贴	標示採集者、採集號等資料						
9	吸水紙或舊報紙、厚 紙板(瓦愣紙)	歷襲、乾燥標本用						
10	傘帶	捆綁標本						
11	高度計	記錄海拔高度						
12	衛星定位儀(GPS)	記錄採集地之經緯度						
13	奇異筆	在報紙或塑膠袋上記錄						
14	烤架	長天數採集且狀況許可下攜帶,烘乾標本用						
15	入山証	入山許可						
16	採集證	國家公園內必備						
17	化學藥品	植物材料固定或生化分析用						
18	空罐	樣式不拘,裝置小型草本植物,提供保護。例如: 蘭科						

2. Collecting strategy

- Knowing the habitat and finding target species
- · Sampling procedure
- · Make detailed collection record
- · The ways to preserve plant materials







Habitat survey for collection

(2)、重直方向的地理分布: 大多數仍野牡丹科種原生長在不同的開葉林內,茲依在不同森林帶出現的野生種原分別說 明如下: A、榕楠林帶:

A. 6000年前 出現的確認有大野社丹、深山野牡丹、柏拉木、布勒德勝、金石榴、台灣野牡丹藤、 「蘭嶼野牡丹藤、基实斯對社丹、野牡丹、革業羊角扭、金綿香、糙葉耳藥花、台灣厚距花 和東方肉總野牡丹等。
B. 摘儲林帶:

出現的種原有大野社丹、深山野社丹、柏拉木、小金石榴、圓葉布勃德藤、布勒德藤、 金石榴、野牡丹、金錦香、闊葉金錦香、糙葉耳葉花、台灣厚距花、肉穗野牡丹和東方肉 穂野牡丹等・

嚴新富 作物種原野外採集專刊 1997



Sampling strategy: aim at collecting most representative genotype of the species

- Ecotype and geographical unit (> 25 each unit)
- Population size and selections of phenotypic variation (10-15 per population if small sized)
- Random and/or grid sampling (for large area distribution)
- · Local market visiting (with local contacts)











Make details of your collection					
BOTANICAL INVENTORY OF TAIWAN					
FABACEAE					
Pithecelobium lucidum Benth					
額垂豆					
PINGTUNG HSIEN: Shihtzu Hsiang (獅子鄉): on the way from Neiwen (內文) to					
Shouka (赛卡), along Hsien Road 199. Broadleaf forest.					
and at fait P and M first N Flores (60m					
Do semi-shaded spit slope along the road					
Tree 5-6m tall: fruits vellowish-green: seeds blackish-purple at maturity.					
DUPS: TNU, TAIF, TUS, NMNS, MO, PE, CAS, SAN, TNS.					
Determined by Hsin-Fu Yen (January 9,1996)					
Shu-Mei Liu 143 December 6,1995					
with WP. Leu, WH. Hu, HF. Yen & CP. Lu					
HERBARIUM, INSTITUTE OF BOTANY, ACADEMIA SINICA, TAIPEI (HAST)					
彭鐘紛算 作物種原野外採集專刊 1997					





Table 1. Teosinte Plant Introduction (see H. G. Wilkes, Taxon 27:361-363).	samples maintaine Station. Revised 1977. Econ. Bot.	d by the USDA Southern Regional nomenclature is used here 31:254-293; R. McK. Bird, 1978.
Species and Race	Area	Plant Introduction Number
lea luxurians		
Guatemala	SE Guatemala S Honduras	306615, -6, -7, 343231 (343230) only in Plant Inventory, not in the seed bank
Huehuetenango ?	NW Guatemala Guatemala	343232, -3, 355921, -2, -3 311282, -3
Zea mexicana		
Balsas, SE Balsas, C	EC Guerrero N Guerrero	343237, -8, -9, 384061*, -2 331783, -4, 343240, -1, 343245*, 384064 to -074
Balsas, NW Central Plateau	S Michoacan W Mexico	331785, 343242, -3 331786, -7, 384063
	NE Michoacan	331788, -9 343244
	W & S Guanajuato	343234, -6
Nobogame	S Chihuahua	343249
Chalco	SE MEXICO	331//9 to -/82, 343246, -8



























The International Code of Conduct for Plant Germplasm Collecting and Transfer (FAO)

- Responsibilities of Collectors
 Article 9: Pre-collection
 1 line arrival in the host countor collectors should acruated themselves with all research
- 9.1 Upon arrival in the host country, collectors should acquaint themselves with all research results, or work in progress in the country, that might have a bearing on the mission.
- 9.2 Before field work begins, collectors and their national collaborators should discuss, and to the extent possible, decide on practical arrangements including: (i) collecting priorities, methodologies and strategies, (ii) information to be gathered during collection, (iii) processing and conservation arrangements for germplasm samples, associated soil/symbiont samples, and voucher specimens, and (iv) financial arrangements for the mission.

• Article 10: During collection

- 10.1 Collectors should respect local customs, traditions, and values, and property rights and should demonstrate a sense of gratitude towards local communities, especially if use is made of local knowledge on the characteristics and value of germplasm. Collectors should respond to their requests for information, germplasm or assistance, to the extent feasible.
- 10.2 In order not to increase the risk of genetic erosion, the acquisition of germplasm should not deplete the populations of the farmers' planting stocks or wild species, or remove significant genetic variation from the local gene pool.

Variety of wild collections





http://www.ars-grin.gov/npgs

guidelines

- 10.3 When collecting cultivated or wild genetic resources, it is desirable that the local communities an farmers concerned be informed about the purpose of the mission, and about how and where they could request and obtain samples of the collected gemplasm. If requested, duplicate samples should be also reflexible the submitted of the samples and obtain samples of the collected gemplasm.
- be also left with them.
 10.4 Whenever germplasm is collected gempasin trequester dupicate samples should systematically record the passport data, and describe in detail the plant population, its diversity, habitat and ecology, so as to provide curators and users of germplasm with an understanding of its original context. For this purpose, as much as local knowledge about the resources (including observations on environmental adaptation and local methods and technologies of preparing and using the plant) should be also documented; photographs may be of special value.
- 3. Maintenance of wild collected material
- · Quarantine room observation
- · Horticulture staff training
- Green house or field cultivation and their survival rate
- · Research and educational display



Horticulture support





Post collection guideline

- Article 11: Post-collection
- 11.1 Upon the completion of the field mission, collectors and their sponsors should:
- (a) process, in a timely fashion, the plant samples, and any associated microbial symbionts, pests and pathogens that may have been collected for conservation; the relevant passport data should be prepared at the same time;
- (b) deposit duplicate sets of all collections and associated materials, and records of any pertinent information, with the host country and other agreed curators;
- (c) make arrangements with quarantine officials, seed storage managers and curators to ensure that the samples are transferred as quickly as possible to conditions which optimize their viability;

4. Personal training and international collaboration

- Personnel's taxonomy background and identifying ability
- · Exchange of wild collected material
- The role of botanic garden
- · Historical plant hunter

The role of botanic garden

- Scientific research and germplasm conservation
- · Educational display



Rare *Amorphophallus titanum* Draws Worldwide Attention































	1854	R. Fortune	英國	見於文獻記載中最早來臺	英	100
10	1001 1000	D. C I		採集者		
545	1964	R. Swinnoe	英國	金湾仙羽白陳記3匹246種	英	1994
	1972	P. W. Camball	201 202	12 48 000 位	央	100
	1882	W Hangook	75 621	12 時1000日日	*	MG .
	1892-1896	A Honey	76 621	招供 100万 家 新生活 水 水	- XC	104
	1002 1000	A. Montry	Sec and	物目錄出載142000	×	104
-	1886-1905	Forbes & Hemsley	茶園	中國大陸、賽灣、海南島、	205	601
				韓國、琉球、香港等地區之	~	104
				植物目錄·其記載臺灣植物	10	
				種類2000種		
	1896	牧野富太郎	日本	北部採集	в	本
	1906	松村任三及早田文藏	日本	臺灣植物誌,發表32新種及	B	本
錦				2新變種		
	1908-1909	早田文職	日本	臺灣高山植物,記載392種,	B	本
				翌年增至735種		
	1910	川上瀧彌	日本	臺灣植物目錄,記載2369種	B	本
	1911	早田文藏	日本	臺灣植物資料,共記載2666種	B	本
	1917	金平亮三	日本	臺灣樹木誌	日	本
	1911-1921	早田文藏	日本	臺灣植物圖譜記載3658種,	B	本
-				79變種	1.1	
	1922	佐佐木舜一	日本	新高山彙森林植物帶論	林 !	试 所















