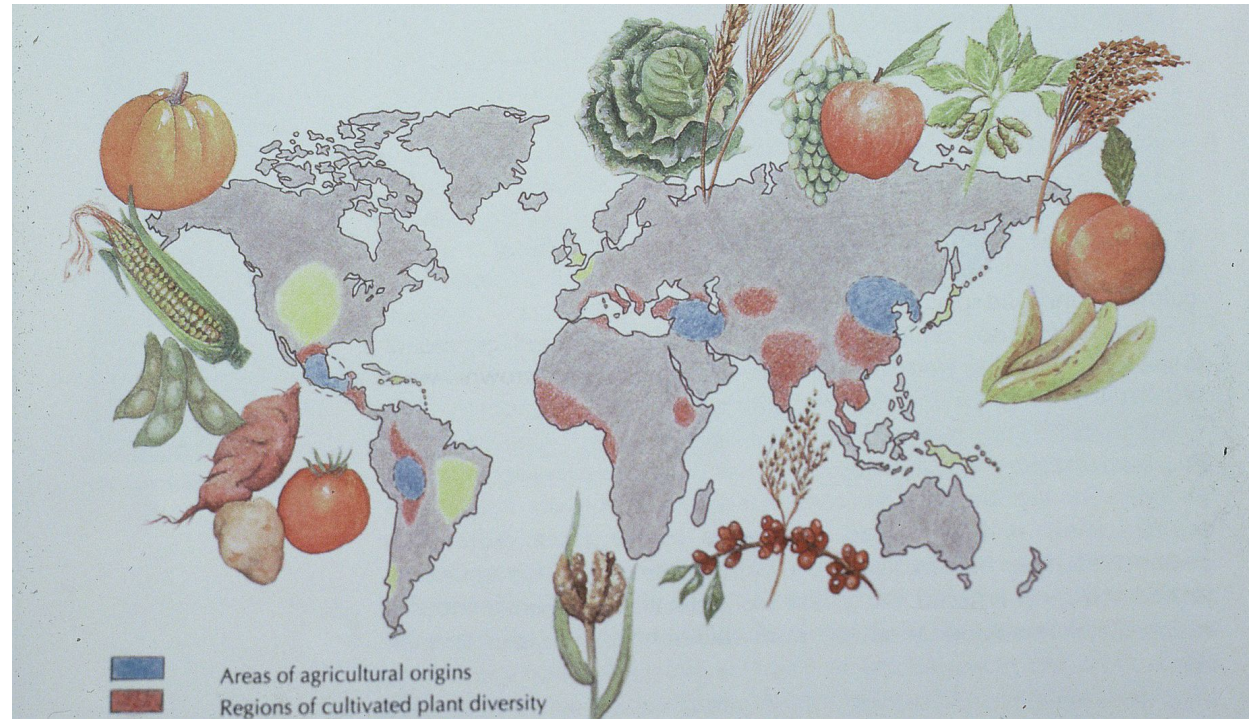


# Genetic Resources Conservation and Manipulation: The case of wild cassavas, *Manihot* spp.



By  
Nagib M. A. Nassar

# First: Theory and Principles

## 1. Definition of the term genetic resources



## 2. History of the movement and the pioneers

### 2.1 Vavilov 1920's



## 2.2 Bennett, Frankel



Course by Nagib Nassar

## 2.2 Harlan and Swaminathan movement, 1969

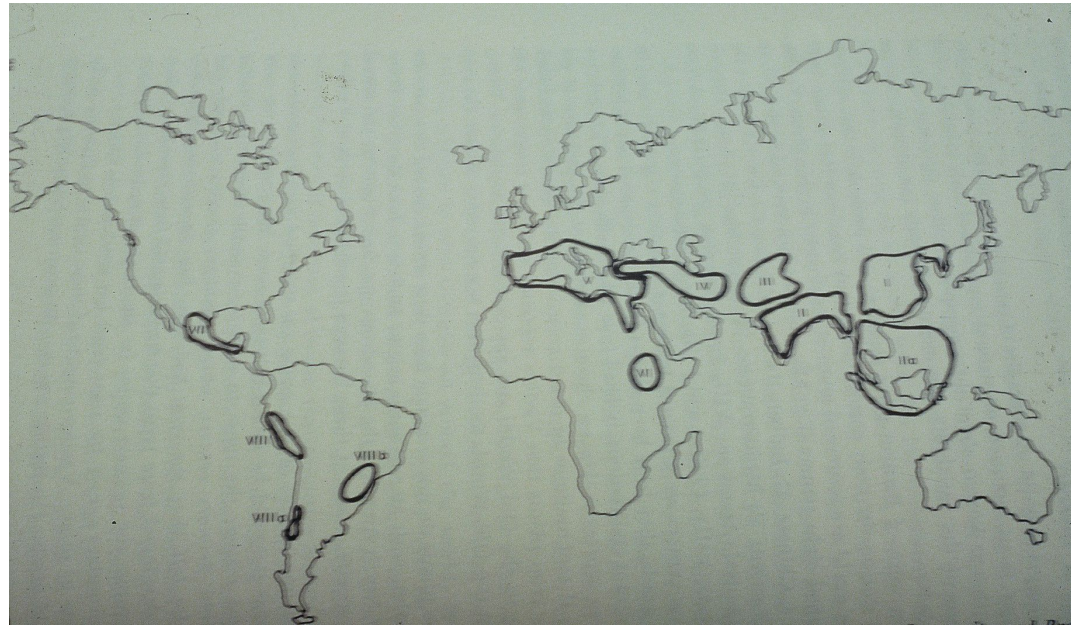


**2.3 Unit on genetic resources, FAO, 1970's**

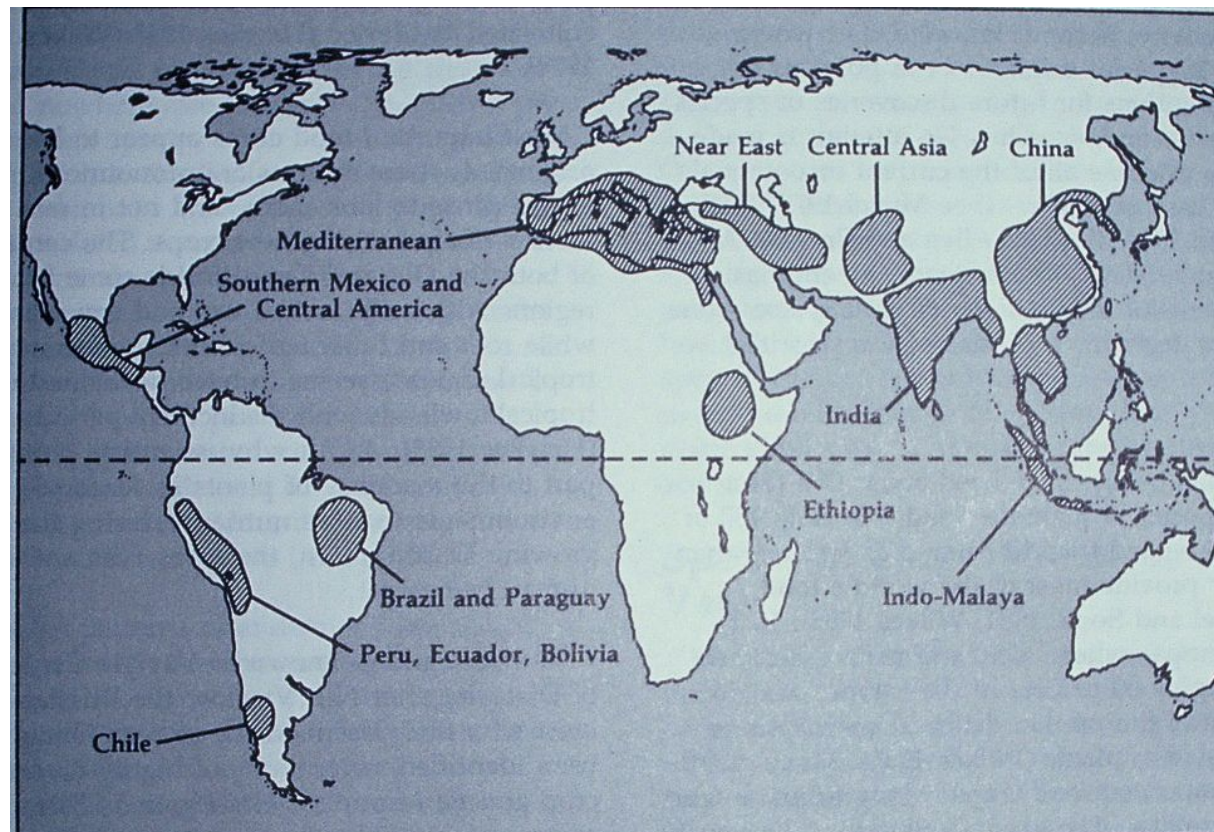
**2.4 International Agricultural Centers, late 1970's**



### 3. Centers of Diversity: 3.1 Vavilovian concept and map of the centers

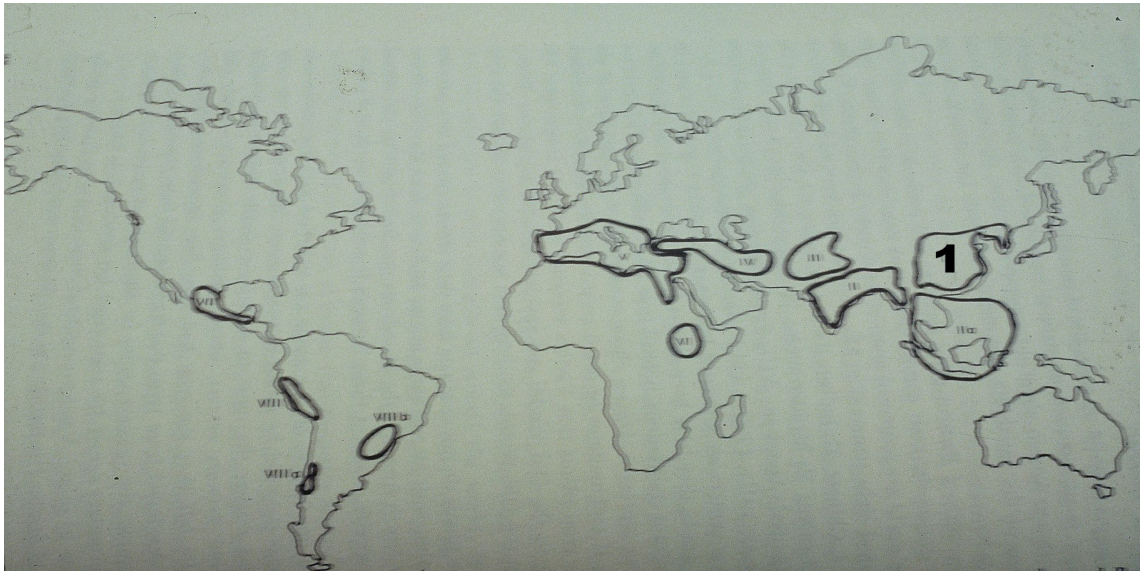


## 4. Centers of Origin and centers of Diversity in details





# 1. The Chinese Center



**-Tea (chá)**  
*Camellia sinensis*



**-Soybean  
(Soja)**  
*Glycine hispida*



**- Bean  
(Vagem)**  
*Phaseolus vulgaris*



**- Orange  
(Laranja)**  
*Citrus sinensis*



**-Apricot  
(Damasco)**  
*Prunus armeniaca*



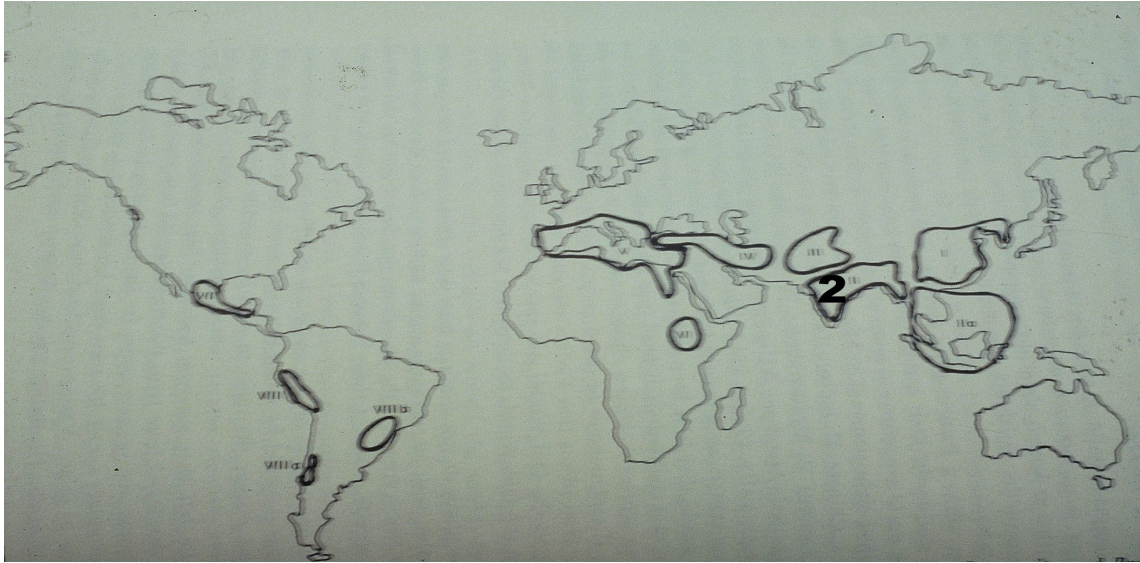
**-Peach  
(Pêssego)**  
*Prunus persica*



**-Sesame  
(Gergelim)**  
*Sesamum indicum*



## 2. The Indian Center



**-Tree cotton  
(Algodão)**  
*Gossypium arboreum*



**-Rice (Arroz)**  
*Oryza sativa*



**-African millet  
(Eleusine coracana)**



**-Chick pea  
(Grão de Bico)**  
*Cicer arietinum*



**-Egg plant  
(Beringela)**  
*Solanum melongena*



**-Taro yam  
(Colocasia antiquorum)**

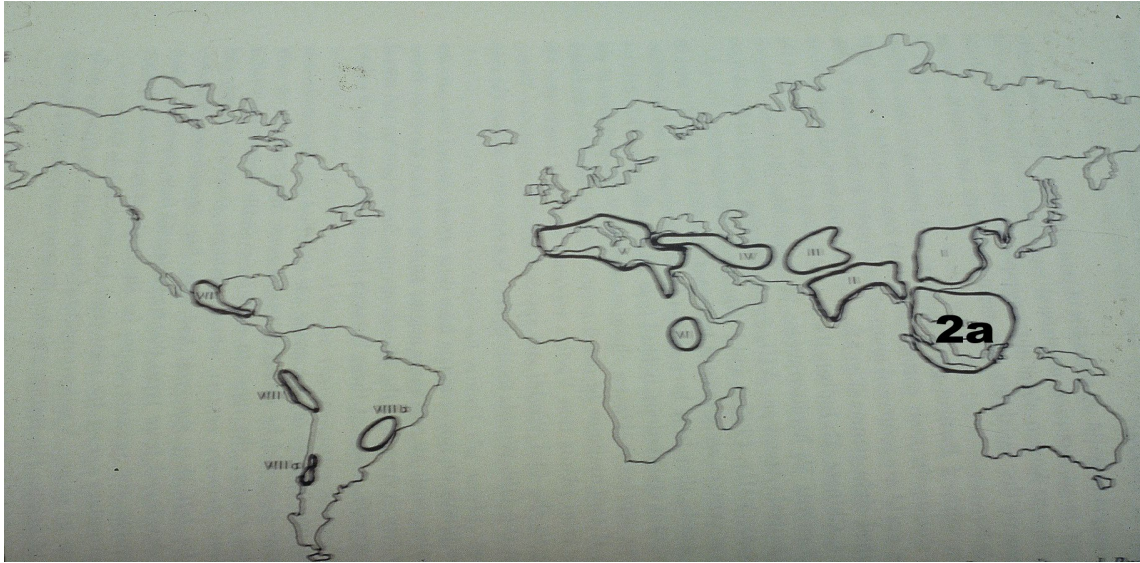


**-Cucumber  
(Pepino)**  
*Cucumis sativus*





## 2a. The Indo-Malayan Center



**-Yam**

*Dioscorea spp.*



**-Coconut**

**(côco)**

*Cocos nucifera*



**-Pomelo**

*Citrus maxima*

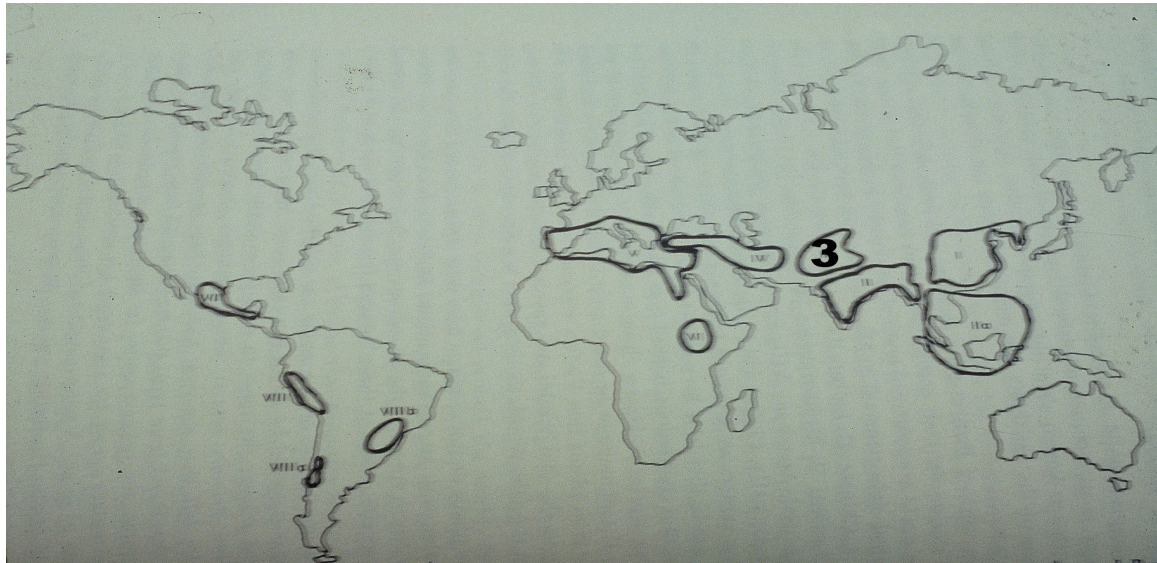


**-Banana**

*Musa spp.*



### 3. The Central Asiatic Center



**-Pear  
(Pêra)**  
*Pyrus communis*



**-Bread wheat  
(Trigo)**  
*Triticum aestivum*



**-Chick Pea  
(Grão-de-bico)**  
*Cicer arietinum*



**-Pea  
(Ervilha)**  
*Pisum sativum*



**-Safflower  
(Açafrão)**  
*Carthamus tinctorius*



**-Lentil  
(Lentilha)**  
*Lens esculenta*

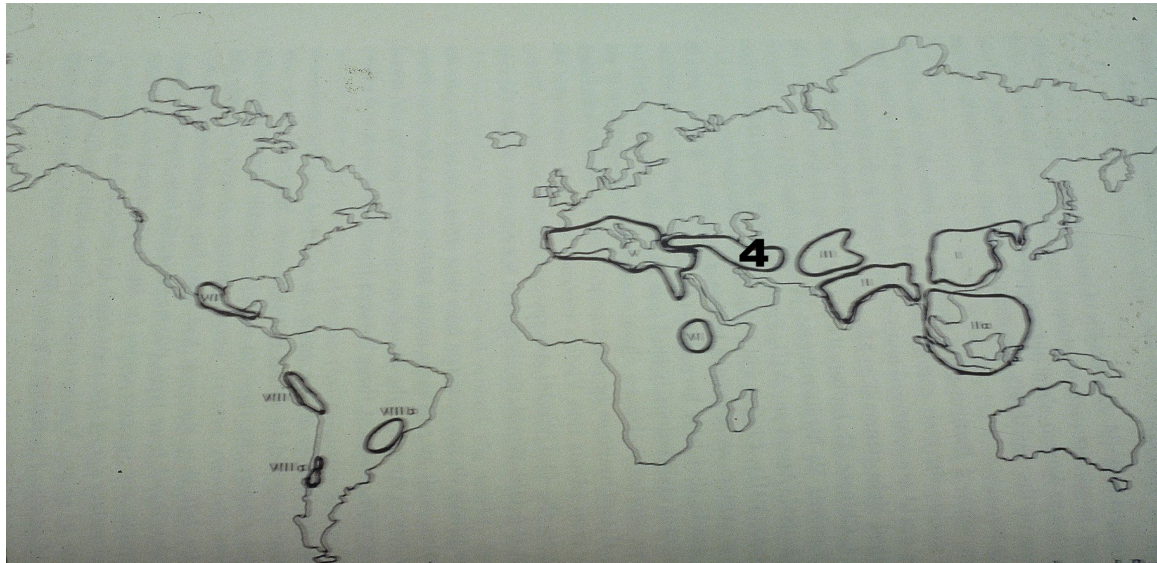


**-Radish  
(Rabanete)**  
*Raphanus sativus*





## 4. The Near Eastern Center (Asia Mener)



**-Melon  
(Melão)**  
*Cucumis melo*



**-Fig  
(Figo)**  
*Ficus carica*



**-Grape  
(Uva)**  
*Vitis vinifera*



**-Durum wheat**  
*Triticum durum*



**-Bread wheat**  
*Triticum aestivum*



**-Chick pea  
(Gão-de-bico)**  
*Cicer arietinum*



**-Lentil  
(Lentilha)**  
*Lens esculenta*



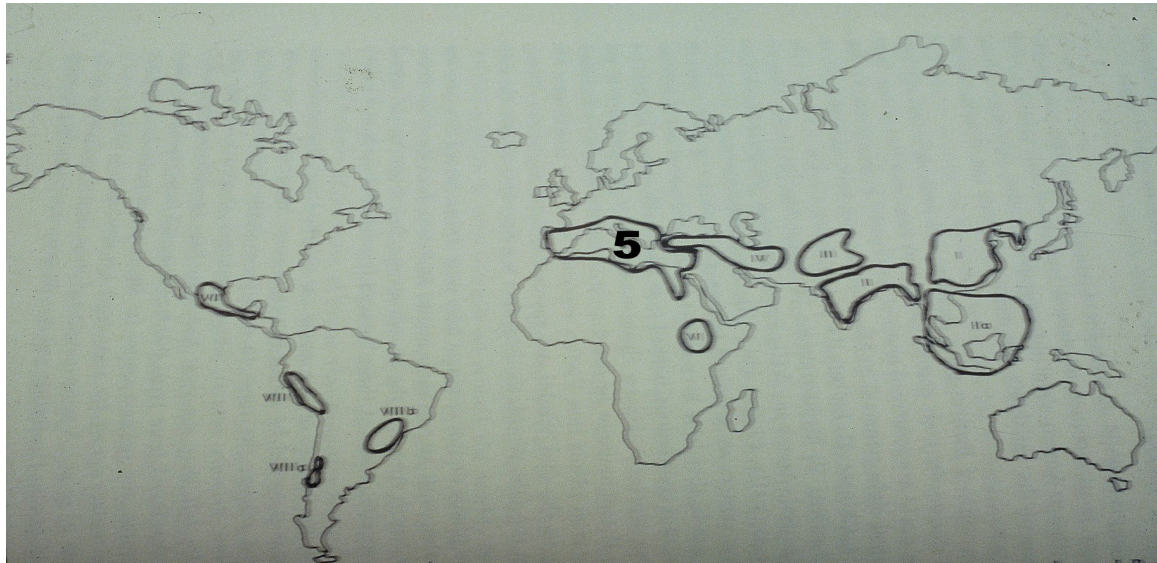
**-Pea  
(Ervilha)**  
*Pisum sativum*



**-Blue Alfalfa  
(Alfalfa)**  
*Medicago sativa*



## 5. The Mediterranean Center



**-Lettuce  
(Alface)**  
*Lactuca sativa*



**-Oats  
(Aveia)**  
*Avena strigosa*



**-Durum wheat**  
*Triticum durum*



**-Cabbage  
(Couve)**  
*Brassica oleracea*



**-Broad bean  
(Fava)**  
*Vicia faba*



**-Olive  
(Azeitona)**  
*Olea europea*

