

PROGRESS OF THE STUDY ON THE AVOCADO GENETIC RESOURCES  
I. CURRENT STATUS OF AVOCADO GERMPLASM BANKS IN THE MEXICO STATE

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Abstract

The different collects of the *Persea* genus and their wild relatives established in two germplasm banks, in the State of Mexico, were classified to determine its current status. The natural patrimony about genetic diversity preserved is about 180 collections belonging to the *Persea* and *Beilschmiedia* genus. Apart the *Persea* genus in addition to the three races and the local selections considered as hybrids are present the following species: *Persea steyermarkii*, *Persea schiedeana*, *Persea nubigena*, *Persea lingue*, *Persea indica*, *Persea floccosa*, *Persea cinnerascens*, *Persea gigantea* and others classified as *Persea spp.* Among other genus regarding to *Persea* is found *Beilschmidia* with the following species: *Beilschmiedia anay*, *Beilschmiedia miersii*, *Beilschmiedia towa*, and *Beilschmiedia taraire*.

Keywords: *Persea* genus, genetic resources, avocado

1. Introduction

The reserve of germplasm in special plots, is due the labor of explorers who had traveled for many years trough all the world carrying on the collection of vegetative material than will be used to preserve the source of genetic variation, that could help to preserve species economically important how is happening with the *Persea* genus and its relative wilds.

In Mexico thanks to the support of Institutions as GIARA, HAIGUD, UACH, The University of Hohenheim of Germany and the Fundación Salvador Sánchez Colin CICTAMEX,

S.C., the genetic resources of the *Persea* genus have been preserving in two germplasm banks whose accessions are found with different degree of development and growth at the moment.

In this way, the scientific community is able to watch with optimism the expansion of the different materials collected in a sustainable way, leaded toward a genetic improvement of rootstocks and varieties, of the genotypes which production will be more efficient and may shows tolerance to stress conditions, and furthermore, those that gather the new requirements of quality of the market. (Brooks and Borton, 1977, Thompson, 1981).

Therefore the aim of this work is to show the current situation of the germplasm banks of avocado preserved in the state of Mexico.

## 2. Materials and Methods

It is evident that the conservation of the populations in its natural habitat can be one of the most adequate approaches, however, when exist certain limitations as is shown in the present case, is recommended to try to establish collections under similar environmental conditions to its ecological environment. In this way were established the two germplasm banks called high elevation and low elevation.

a) High Elevation: Is located in "El Potrero", Coatepec Harinas, State of Mexico, with 2240 masl, the soil is sandy clay loam, deep, with pH about 6.5. In this place are kept Mexican race and Guatemalan materials and some relative wilds.

b) Low Elevation: is located in "El Salitre", Ixtapan de la Sal, State of Mexico, with 1920 masl, the soil is a little deep with a pH between 7.2 to 7.8, classified as slightly alkaline, the sodium level in the irrigation water is about 375 mg/l, and the electrical conductivity is 761.5 mmhos, In this place have been established materials of the west Indian race and relatives wilds like *Beilsmedia anay* and *Persea schiedeana* among.

Within each germplasm bank has been carried out the data record according to the Germplasm Collection IBPGR Directory (1992) and the Avocado Descriptor. (Barrientos et al. 1991).

## 3. Results

The number of collections is near to 180, in spite of the fact that actually is conserved just a small reservation of diversity, the *Persea* genus and its relatives wilds requires the continuation of the total rescue of the germplasm of local selections which continue under the threats of the increase of the performance varieties.

In table 1 is possible watch the materials preserved with different development stages and among them are also presented the wild species whose diversity is astonishing, on the other hand in table 1 is presented the classification according to *Persea* and *Beilschmiedia* genus.

The material described is product of several explorations and collections trips around regions and ecological niches from Mexico, Guatemala, Honduras, Costa Rica, Ecuador, Chile and New Zealand (Barrientos-Priego, et al.1991; [Ben Ya'acov, 1991](#); López and Ben Ya'acov, 1992, López and Rubi, 1993) some of these subjects are plants very closed to the modern avocado cultivars other plants have not been domesticated yet but are considered descending of those that were used to domesticate cultivars from the three races known (Kopp. 1966).

Respect *Beilschmiedia anay* this comes from the Veracruz State in Mexico, *Beilschmiedia miersii* proceeds from Chile, while, *Beilschmiedia towa* and *B. taraire* proceed from New Zealand.

#### 4. Conclusion

The genetic material with which is counted in the germplasm banks cited constitute an important reservation for future genetic improvement projects in this genus, same that remains within reach of all researchers.

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Table 1. Collection of de *Persea* and *Beilschmiedia* genus, preserved in the germplasm banks of the State of México

	BUDWOOD		SEED	
	WILD	LOCAL SELEC.	WILD	LOCAL SELEC.
<i>Persea americana</i> var. <i>drymifolia</i>	-	24*	-	6
<i>Persea americana</i> var. <i>guatemalensis</i>	3	11	2	18
<i>Persea americana</i> var. <i>americana</i>	-	32	1	20
<i>Persea steyermarkii</i>	2	7	3	6
<i>Persea schiedeana</i>	3	2	4	3
<i>Persea nubigena</i>	2	-	-	-
<i>Persea lingue</i>	-	-	1	-
<i>Persea floccosa</i>	2	-	2	-
<i>Persea meyeniana</i>	-	-	1	-
<i>Persea gigantea</i>	2	-	-	-
<i>Persea</i> spp.	-	-	10	-
<i>Beilschmiedia anay</i>	-	-	7	-
<i>Beilschmiedia miersii</i>	-	-	2	-
<i>Beilschmiedia towa</i>	-	-	2	-
<i>Beilschmiedia taraire</i>	-	-	2	-

\*Collects number