

A Study of Avocado Germplasm Resources, 1988-1990. II. Findings from the Central Part of Mexico

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Abstract. Several explorations were made in the central area of Mexico, including the states of México, Puebla, Querétaro, Morelos and Guanajuato, with the aim to locate specimens of avocado (*Persea americana* Mill.) and related species of the genus *Persea* with outstanding characteristics of vegetative growth, pest and disease resistance, adaptation to unfavorable environmental conditions, good fruit quality and phylogenetic importance for selection and breeding purposes. The current status of this research is presented.

Mexico is a center of origin and dispersal of avocado (Popenoe, 1935; Smith, 1966). Within its borders is a great diversity of types, which constitutes a valuable germplasm resource that must be explored, collected, preserved and evaluated. The great avocado genetic diversity in Mexico, resulting from thousands of years of evolution is an excellent base for a selection and breeding program. However, forest over-exploitation, establishment of other crops and urban development are hastening the elimination of Mexican race and other avocados, causing genetic erosion.

We initiated this study of the avocado genetic resources with exploration and collection activities. We searched for outstanding types, taking into account vegetative growth, fruit quality, productivity and resistance to adverse conditions. We looked also for wild and semi-wild species related to the *Persea* genus.

The area of exploration included the states of México, Querétaro, Guanajuato, Puebla, Hidalgo, Tlaxcala, Morelos and Aguascalientes.

Materials and Methods

To study avocado genetic resources, the first step is to characterize agroecologically the areas that will be surveyed. Afterwards the exploration activities begin by identifying trees of interest for selection, breeding and conservation of germplasm. From these trees, propagative material (budwood or seeds) is collected and a discussion of the morphological characteristics is recorded.

Results

To date, twenty-two explorations have been made in the states of México, Puebla, Guanajuato, Querétaro and Guerrero.

In the state of Mexico, the municipalities of Tenancingo, Villa Guerrero, Malinalco, Temascaltepec, Coatepec Harinas, Joquicingo, Almoloya de Alquisiras, Texcaltitlan, Valle de Bravo and Donato Guerra were explored.

Among the most outstanding types found in this region can be cited: "Aguacate Mantequilla", "Aguacate Dulce", "Aguacate Tecomatudo" and "Aguacate Calabazudo".

In Puebla state, the surveyed areas were Tochimilco and Atlixco. Propagative wood from the local selections "Principe Negro", "Tochimilco", "Pellejo" and "Pahua" was collected.

In Guanajuato state, a vast Mexican creole avocado population was found at "Los Lorenzos", "El Paxhtle" and "La Palma" localities. This region is important because of its thin and lightly alkaline soils. Also in Guanajuato, in the municipality of Comonfort, were located the high fruit quality selections "Tia Ines", "Don Pedro" and "Huevo de Toro".

In the states of Querétaro and Guerrero just one exploration has been carried out, so it is necessary to return to locate outstanding types.

We have established two germplasm banks where we have planted more than four hundred avocado trees selected from several parts of Mexico.

One germplasm bank located at Coatepec Harinas has avocado trees of the Mexican and Guatemalan races (Fig. 1). The West Indian race germplasm bank is at "El Salitre", Ixtapan de la Sal, Mexico.

Discussion

In the central region of the Mexican Republic are many local selections and outstanding trees, which must be surveyed and collected immediately in view of the permanent danger of extinction caused by forest fires, new crops and urban growth.

Due to the necessity of preserving avocado genetic resources and to the high costs of maintenance of germplasm banks, there needs to be an agreement among avocado producing countries to support this program to benefit the world avocado industry.

Literature Cited

- Popenoe, W. 1935. Origin of the cultivated races of avocados. Calif. Avocado Assn. Yrbk. pp. 184-194.
- Smith, C.E., Jr. 1966. Archaeological evidence for selection of avocados. Econ. Bot. 20:269-275.



Fig. 1. Mexican and Guatemalan avocado germplasm bank at Coatepec Harinas, Mexico.