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Title: Genetic diversity of Native maize for the intermediate region in Veracruz state, México

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Introduction

Mesoamérica is one of the centers of primary diversity and the possible origin center and y domestication of maize

Maize in México, presents genetic diversity and it have had an important role in developing the modern landraces. Thus, there were identified landraces in maize; Wellhausen et al. (1951) described 25 and seven without definition; Hernández and Alanis (1970) added five more; Ortega (1991) identified 41 and Sánchez et al., (2000), grouped 59 different landraces. These races have been defined, based on their uses, but also based on their adaptation, from sea level to 4000 meters above sea level, tolerance to biotic and abiotic factors.

Uses

Maize in Mexico have multiple uses as grain, fodder and industrial use, however, the most important use is the direct consumption through the Tortillas, Huchepos, Corundas, Atoles, Totopos, Tlayudas, Pozole, among others.

General objectives:

***To know the Diversity of Native Maize in the intermediate region in Veracruz state**

***To improve the production and conservation capacities of native maize in the intermediate region of Veracruz state, through innovation actions, and increasing productivity.**

Specific Objectives:

***To Collect samples of Native Maize in the Intermediate Region of Veracruz state**

***To identify at race level and to characterize the collected maize samples according to the format of the passport sheets**

***To practice selection of seed in plant and ear in native maize for planting seed plots on farmers' land in the intermediate region of Veracruz**

Methodology

Localization. *Native Maize in the Intermediate Region of the of Veracruz state, is planted in soils of volcanic origin, with irregular topography and with strong acidity problems; The climate is (A)C am according to the Köppen climate classification, modified by (García, 2004) it is cold and with high cloudiness during most of the year, so the crop cycle 10 months, that is, only one planting cycle is sown per year and where farmers are characterized as highly marginalized (Sierra et al., 2013).*

Description of activities. *This project considers training and technology transfer activities through courses, demonstrative events and technical visits, covering topics of utility for farmers, including: Selection of seed in plant and ear, collection, racial identification and characterization of samples in ear and grain according to the format suggested by the passport sheet and sustainable technologies such as the production of organic fertilizers, use of INIFAP Mycorrhizal Biofertilizers, applications of agricultural lime to correct the acidity of soils. Soil analyses were carried out on samples shared by farmers to know the nutritional content and the degree of acidity.*

Results

The seed selection process was carried out in plant and ear; Se capacitó a productores y técnicos sobre el metodo de selección masal en planta y mazorca

Colecta de maíz Nativo
In the Coscomatepec Region, 22 samples of Native Corn were collected in the communities of Zacatla and El Mirador; For the Region of Ixhuacán de los Reyes, Ver., 42 samples of Native corn were obtained, mainly in the communities of Cerro Boludo and Los Rodríguez and in neighboring communities in Ayahualulco, Ver., municipality

Mass selection

Selection of native maize seed for the intermediate region in Veracruz state. In plant maize selection process, the criteria of short ear height, health, vigor and ear size were used, and at harvest time selecting good sized and healthy ears, but, above all, complete ears, this last criterion is an indirect way of selecting native maize with tolerance to acid soils and drought. The selection method practiced was mass selection, in which, the additive portion of the genetic variance present in maize populations is used and consists in accumulating favorable genes or favorable characteristics, which will be part of the seed for the next selection cycle (Sierra et al., 2019)

Racial identification

In the 64 samples collected in the intermediate region of Veracruz state and registered on the passport sheets, 27 samples of the Coscomatepec Race, 6 conical corn, 5 of the Chalqueño race were found; 4 samples identified within the Celaya race, 4 samples of the Yellow Rice race, 3 of the Conico race, 1 Mushito, 1 of the Pepitilla Breed and 1 of the Mouse Breed; Also, mixtures of breeds: 1 Conical-Yellow Rice, 2 Mushito-Coscomatepec, 2 Coscomatepec-Conical, 2 Coscomatepec-Celaya, 2 Coscomatepec-Mushito, 2 Celaya-Coscomatepec, 1 Pepitilla-Celaya, 1 Coscomatepec-Pepitilla and 1 Coscomatepec-Olotillo;

Coscomatepec

Elotes Cónicos

Arrocillo amarillo

Celaya

Cónico

Conclusions

On the 64 maize samples collected in the intermediate region of the state of Veracruz, 27 samples belong to the Coscomatepec Race, 6 to Elotes Cónicos race, 5 to Chalqueño race; 4 samples were identified within the Celaya Race, 4 samples of the Arrocillo amarillo Race, 3 of the Cónico race, 1 Mushito, 1 to Pepitilla race, 1 to the Ratón race and 12 Mixtures of races

Farmers and technicians in the agricultural sector were trained on the practice of selecting native maize in the plant and at harvest time

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