ACADÉMIE DE NANTES
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BACCALAUREAT GENERAL ET TECHNOLOGIQUE

EPREUVE SPECIFIQUE MENTION

« SECTION EUROPEENNE OU DE LANGUE ORIENTALE »

Académie de Nantes, binôme : Anglais/SVT

Thème 2 - Enjeux planétaires contemporains

La plante domestiquée

Small Farmers in Mexico Keep Corn's Genetic Diversity Alive
"Campesinos" are driving the evolution of maize in North America

After presenting the document and its content, discuss the use of this method of selection by comparing it to other current methods or technologies you know.


Mexico's 59 native maize varieties

Edilberto García Cuenca started farming the land when he was just a kid. He still grows maize in the small, five-acre plot in the Mexican state of Puebla. He relies on rain to irrigate his crops.

During the rainy season, García Cuenca selects the seeds he stored in the previous cycle, plants them and cares for the seedlings. Multiply that process by the millions of other campesinos in Mexico and you get billions of genetically different maize plants—each exposed to a wide diversity of environments and subjected to unique selection practices.
This evolutionary experiment has been going on for thousands of years. And the efforts of small-scale farmers generate the bulk of corn's genetic diversity in North America. In the face of more aggressive weather threats researchers say the finding comes at a critical time.

The domestication of native maize across a wide range of temperatures, altitudes and slopes has allowed rare mutations to take hold that would otherwise disappear. A scientist notes:"Campesinos* are generating an evolutionary service that is essential for them".

This type of farming, fueled by traditional practices such as saving or sharing seeds from one season to the next, has resulted in Mexico's 59 native maize varieties. This diversity is rarely seen in the U.S.—the world's largest producer of corn. American farmers buy their seeds instead of cultivating their own, "there's no chance for evolution to do its thing," he adds.
Campesinos*: a Spanish term for family farmer

Adapted from: https://www.scientificamerican.com/article/small-farmers-in-mexico-keep-corns-genetic-diversity-alive

FOR THE TEACHER:

The main ideas:

- The maize's selection (based on traditional practices such as saving or sharing seeds from one season to another) made by the small-scale farmers generates an enormous genetic diversity
- Family farmers are not only preserving the genetic diversity of maize, they are contributing more to it.
- The domestication of native maize across a wide diversity of environments allows rare mutations and thus allows the evolution of maize.
- When American farmers buy their seeds, there's no chance for evolution.

Ideas for the discussion:

- Importance of genetic diversity
- Use of hybrid seeds: but they are too expensive and they need more water and attention than the native maize
- Gene banks, secure locations that store plant seeds for use in case of natural or man-made disasters, are not much better places to see evolution in action.