

Agrobiodiversity and participatory plant breeding for an agroecological transformation of agriculture?

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Local seed systems in the Global North and Global South: farmers' practices, choices, and attachments

What is Agrobiodiversity?

The number of varieties in a supermarket

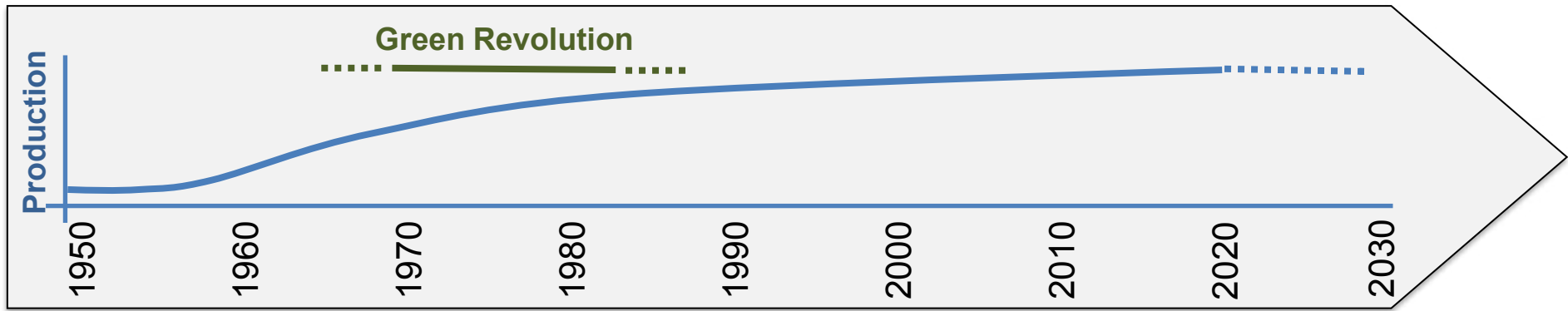


What is Agrobiodiversity?

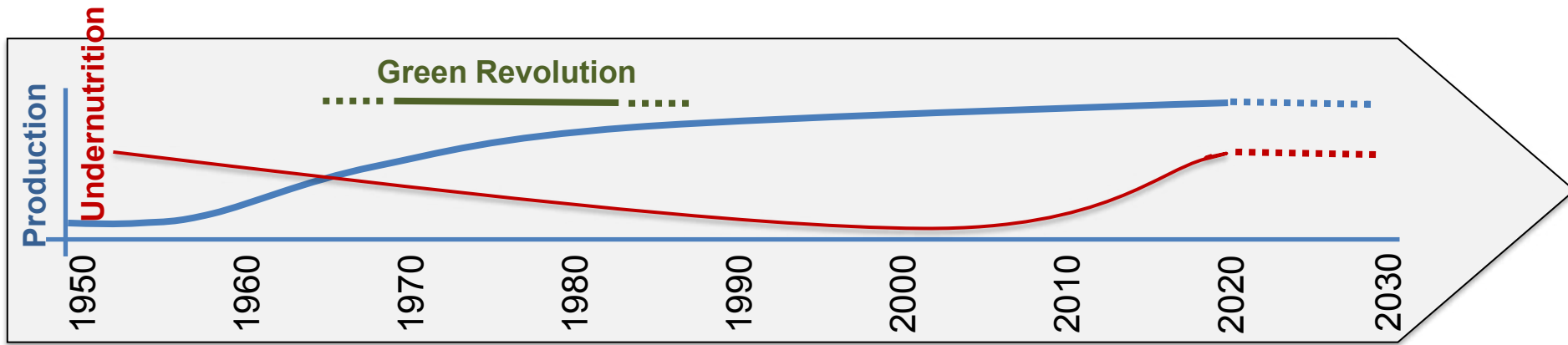
The number of
genotypes of the
same variety in
one field



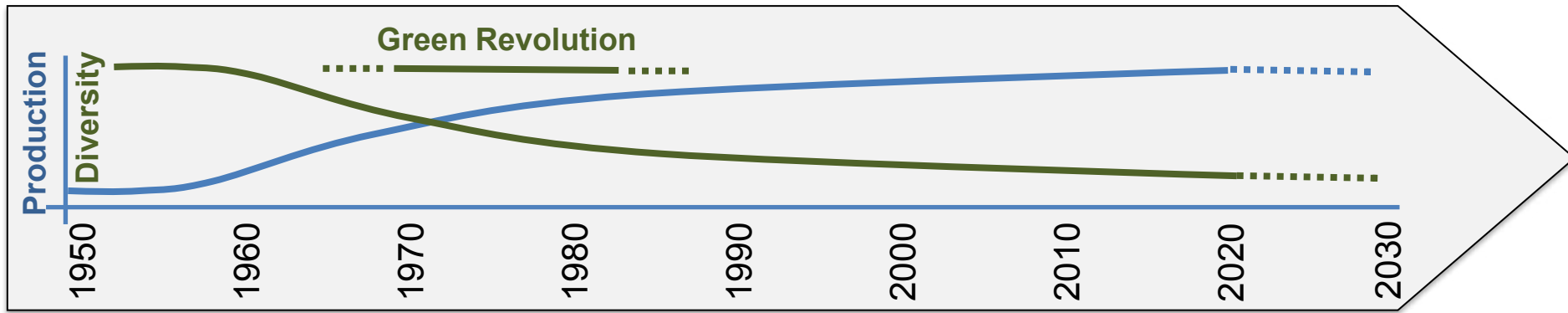
Loss of genetic diversity



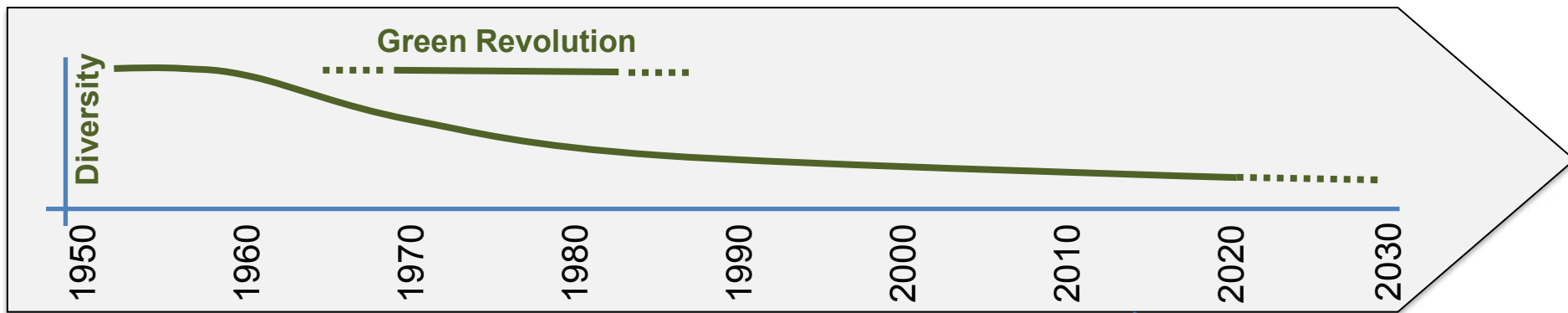
Loss of genetic diversity



Loss of genetic diversity

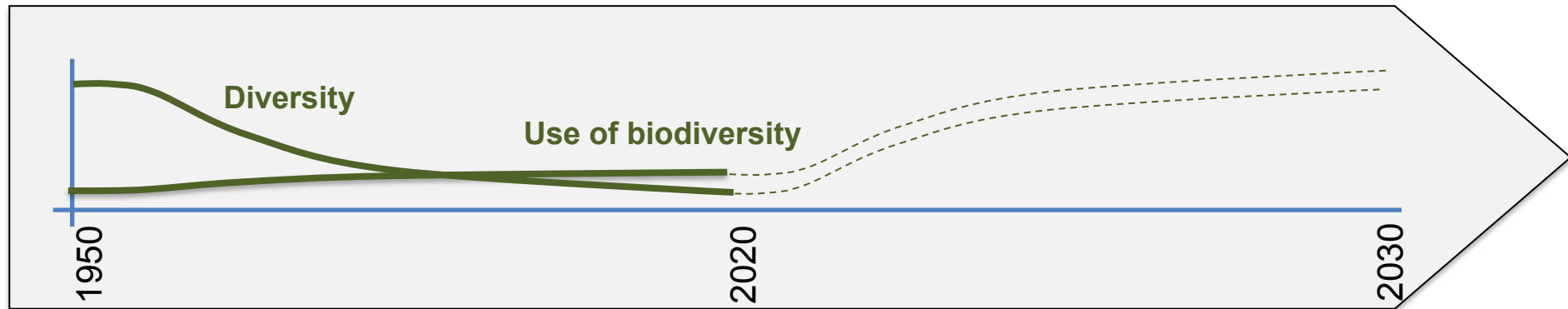


Loss of genetic diversity



Three-quarters of **genetic diversity** has been **lost** (FAO 2019)

Objective: reversing the trend



Central role of landraces

- Limiting conditions (soil, temperatures, rains)
- Climate Change
- Low input / organic agriculture
- New seed regulation in Europe



Agrobiodiversity is an opportunity

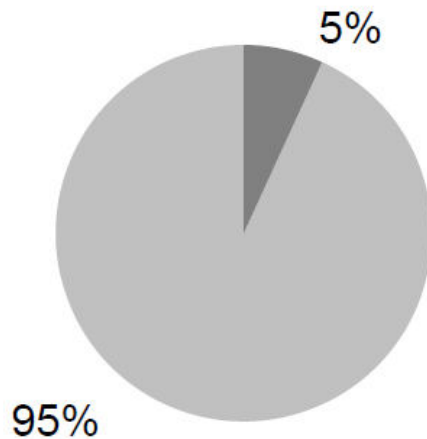
For farmers in developing countries

- Varieties better adapted to their particular environment
- Healthy and affordable nutrition
- Food security

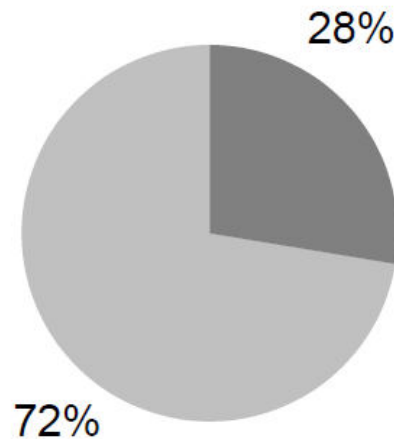


Distribution of maize varieties according to soil types

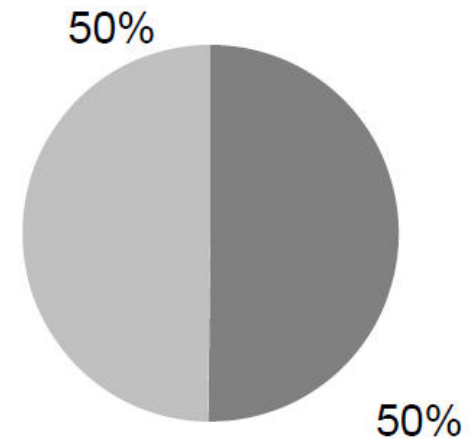
Stony and thin



Very stony



Homogenous



Landraces Modern

Fenzi et al., Plant Genetic Resources 2017

Farmers prefer landraces for stony soils
where modern varieties fail

What is a milpa?

Ceci n'est pas une milpa



Ceci est une milpa





Slash-and-burn





Carl Sauer

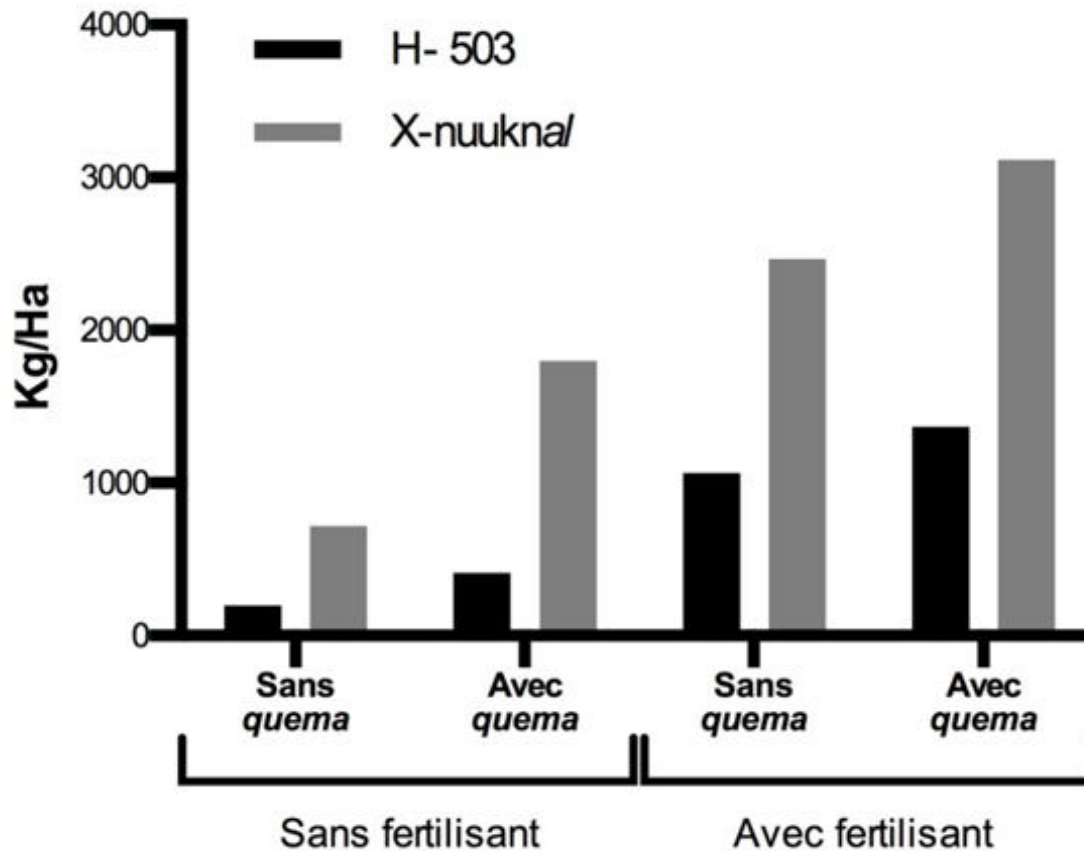
“The **best solution is in the *milpas*** [...] The pressure unfortunately is at present for the introduction of **American methods unsuited** to the country [...] They do need encouragement and help. They need to be encouraged that **their ways are good** and they need protection against exploitation”. (Sauer 1945)



William Vogt

“***Milpa*** is one of the **most devastating means** that man has ever conceived [...]. There is no choice but to change it, because if it continues, the *milpa* system will be a **death sentence** that threatens all Mexicans”. (Vogt 1945)

The superiority of local varieties: a fact since the 1950's



Effect of the *quema* on maize production (Kg/He) for H-503 and X *nuuk nal* in a plot with and without intrants.

“El Cayal”, Campeche [1958].

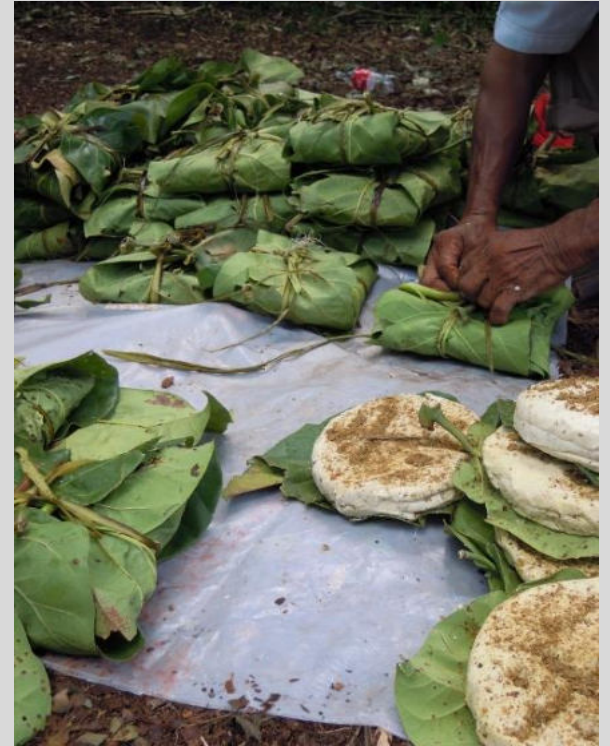
Technoscientific options since 1960



Local

Hybrid

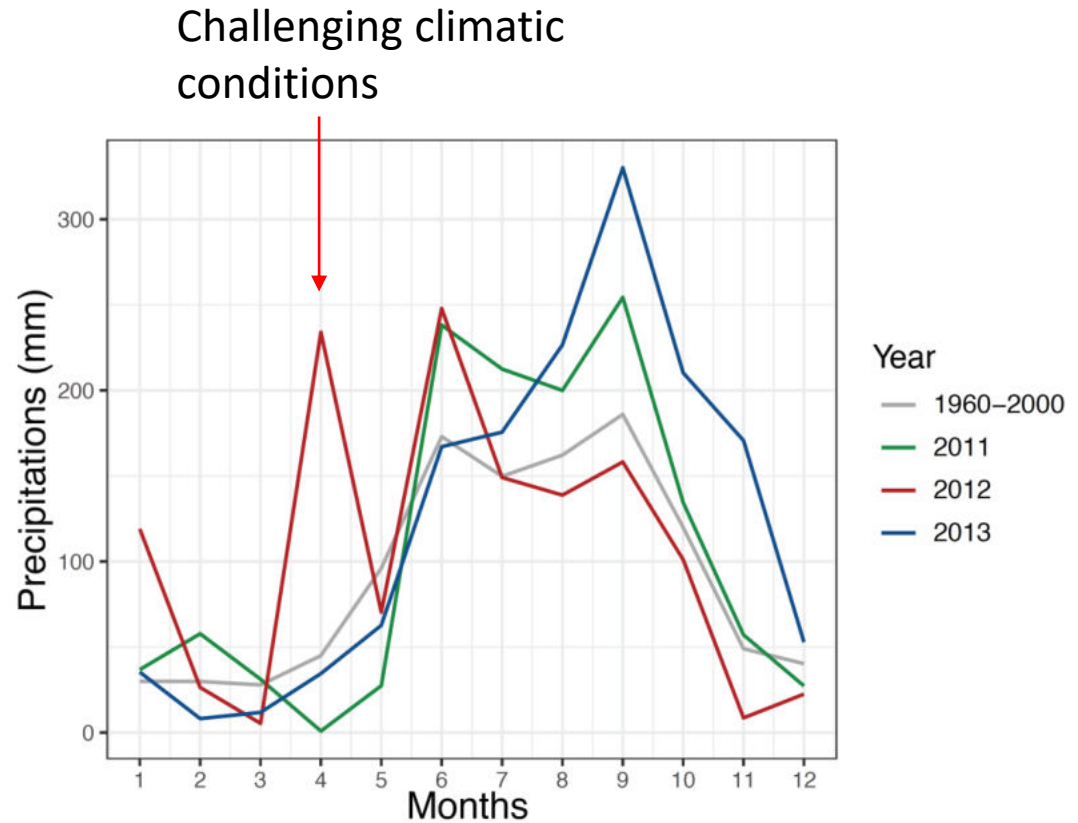
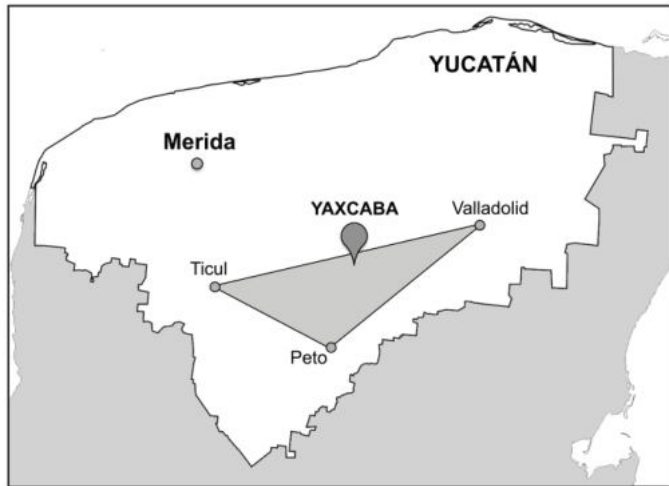
Rockefeller Foundation Archives, Mexico, 1958.



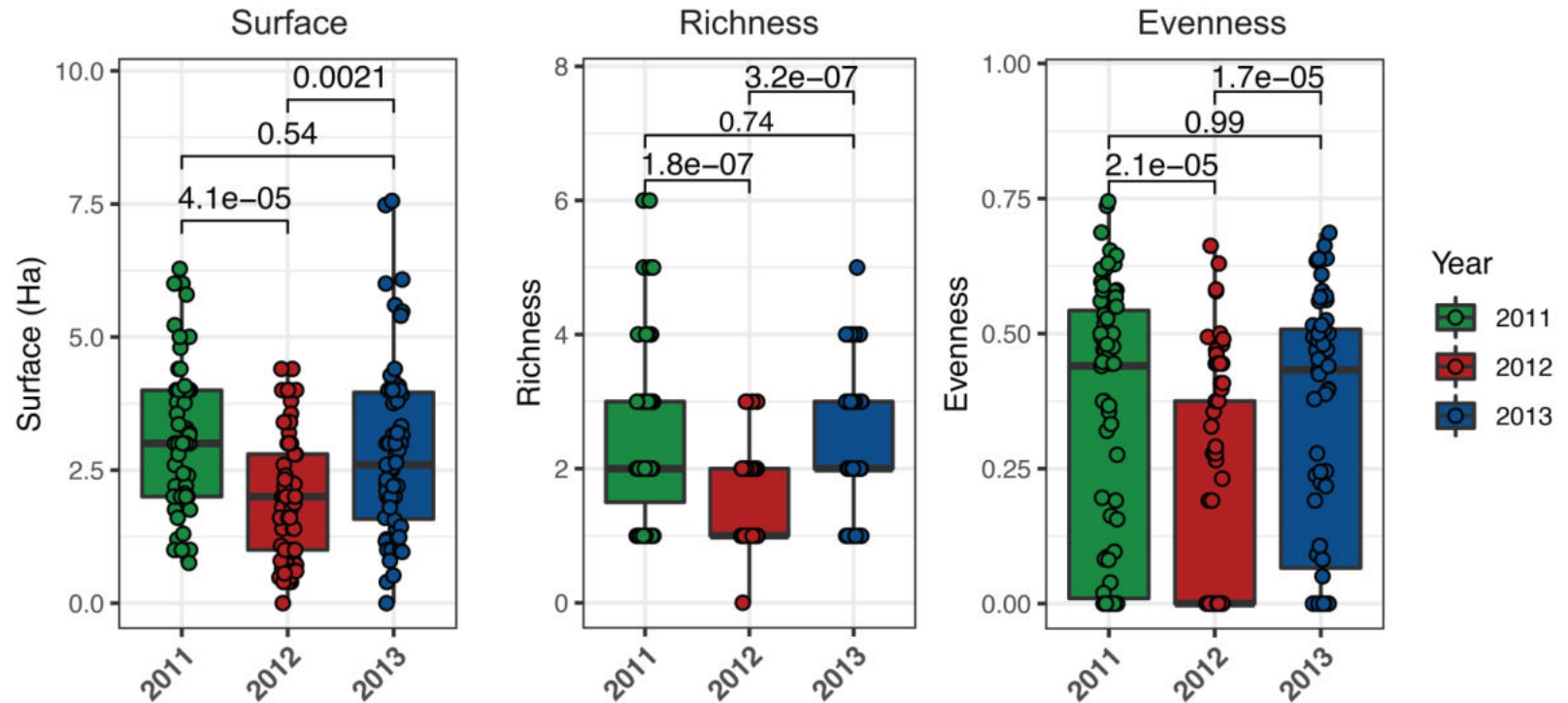
Maize diversity



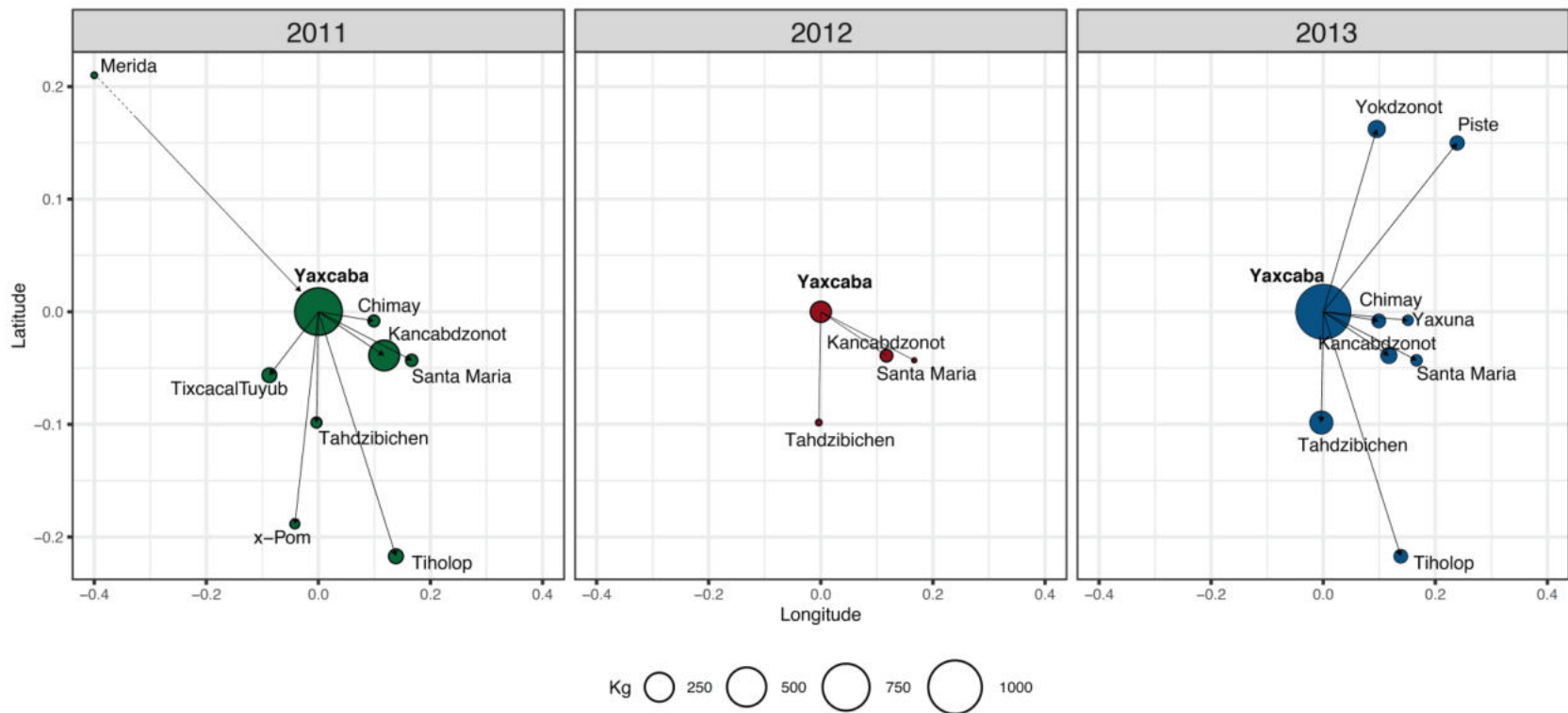
Crop Diversity in an Era of Climate Change



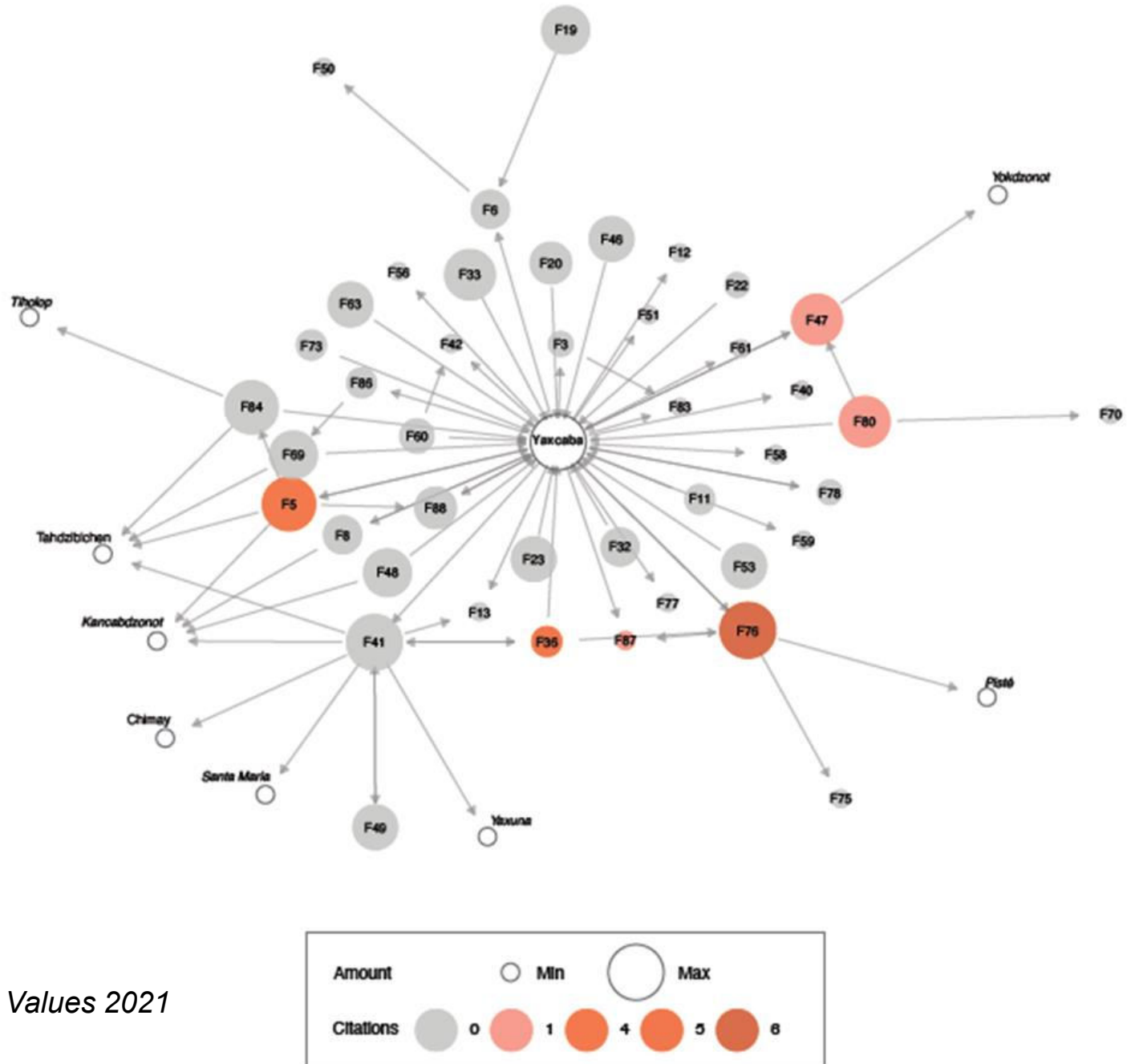
Area Cultivated and Maize Diversity



Seed networks and resilience



Seed
transactions
after a
challenging
climatic event



Gaining

**Genetic
diversity**



**Farmers'
production**



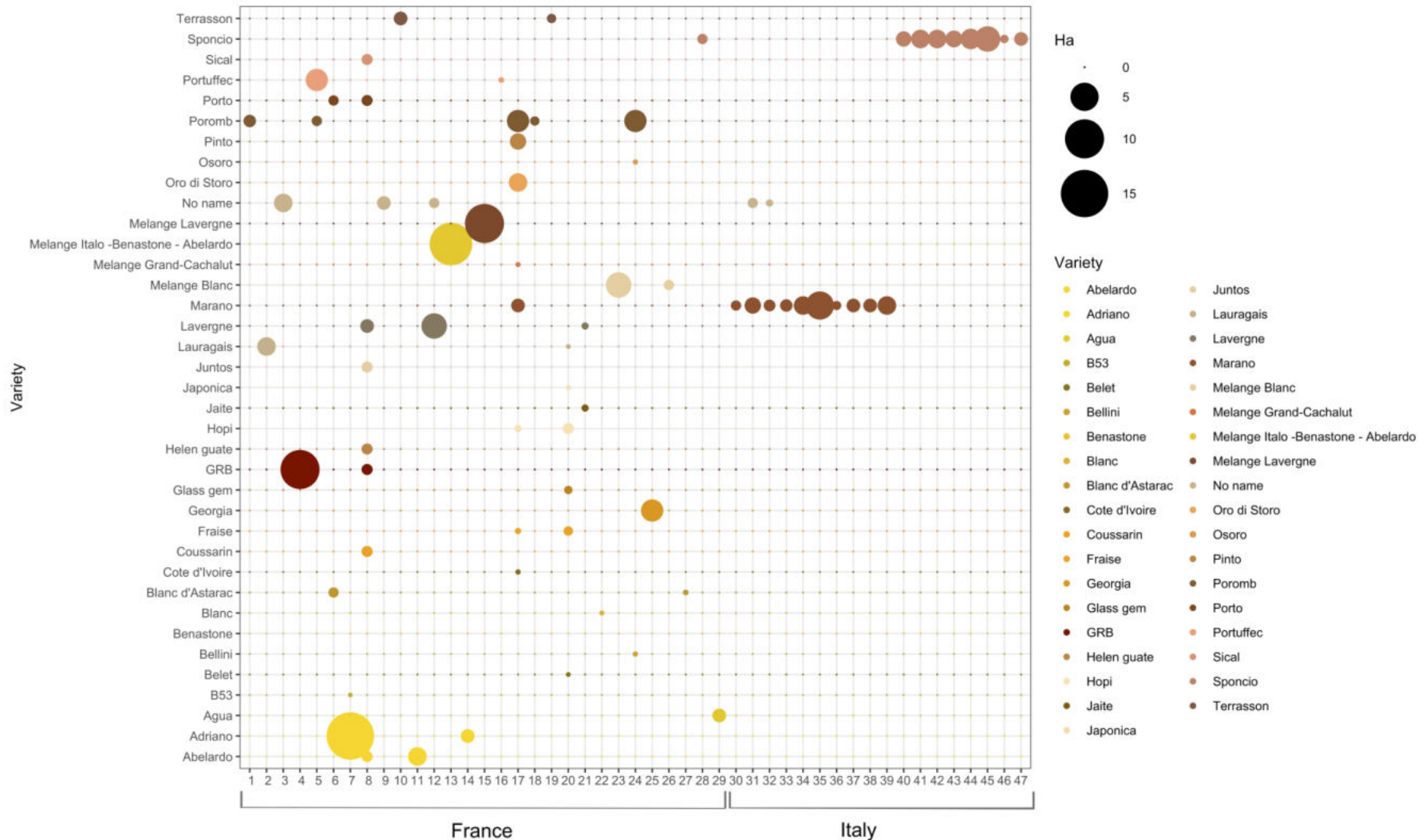
Environment

Agrobiodiversity is an opportunity

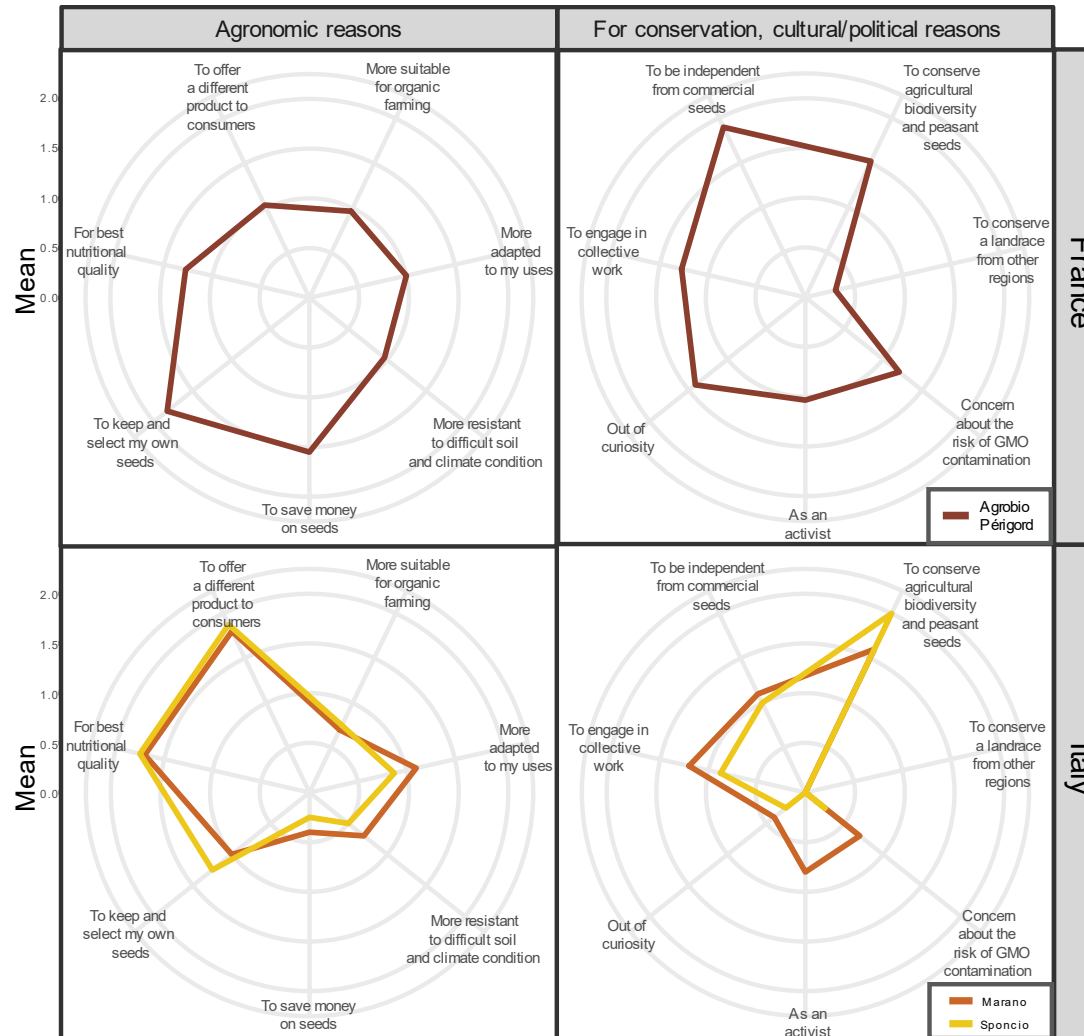
For farmers in Europe



Maize varieties grown by the Aquitaine (France) and Veneto (Italy) groups



Why to grow landraces?



New seed regulation in Europe



Organic seeds are missing



2000 European regulation on organic seed



2014 Evolutionary Populations enter into the seed market 2017 thanks to 2014/150/EU

New seed regulation in Europe



Organic



2000



2014
seed

**EU Farm to Fork
strategy:
to achieve 25%
organic farm area
by 2025
(10% today)**

nic seed

er into the
150/EU

Foster diversity in food systems supporting farmer management of crop diversity



Thank you!



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