Crop Diversity in the Sustainable Development Goals
Eradicating hunger & malnutrition

The biggest challenge of our time

Agricultural biodiversity is a prerequisite for sustainable agriculture and food security
Facing its biggest challenge ever, due to population growth and climate change

- IPPC: 2% reduced agricultural output per decade
- FAO: 50% increase in cereals required before 2050

We have to find a way out
Pests and Diseases

• The Irish Potato Famine
• The Southern Corn Leaf Blight
• Genetic uniformity the primary cause

➢ New challenges due to climate change
Rice

- Plus 1°C could result in a decrease of yield by 10%
- Plus 2°C is potentially catastrophic

- We need to make crops climate ready
Rice

- More tolerant to submergence
- More tolerant to salinity
- More nutritious
- Higher yields

➢ Not possible without crop diversity
Diversity

- 200,000 varieties of rice
- 120,000 varieties of wheat
- 4,000 varieties of potatoes
- 35,000 varieties of finger millet
- 3,000 varieties of coconut

➢ All are important because *one* might have the trait to increase nutritious value, fight disease, adapt to new climates, or produce higher yields
Loss of diversity

• Spain: had 400 melon varieties in 1970, only 12 today
• Germany: all apples grown now originate from only 6 varieties
• China: lost 90% of rice varieties since 1950
• Mexico: lost 80% of corn varieties since 1900
• India: lost 90% of rice varieties since 1900
• USA: lost 90% of fruit and vegetable varieties since 1900
The Future

We can’t retrieve what we have lost, but we can protect what we have and make it available
The Green Revolution is running out...

Diversity is available in:

- Farmers’ fields
- Plant gene banks

- International crop collections are located mainly in the South
Interdependence

• No country is self-sufficient in crop diversity
• The US has only 10% of the crop variety found in the world’s plant gene banks in its own collections
• Soybean does not originate from Brazil, yet Brazil has the second largest production of soybean in the world
• Wheat variety ‘Veery’: bred with genetic resources from 26 countries

➢ Crop Diversity – a true global common good
Reasons for Optimism

Crop Wild Relatives

• Tough — with traits we don’t don’t find in domesticated varieties

➢ We broaden the genetic basis where we can search for traits
Reasons for Optimism

Big data

- Sequencing of the plant DNA, physically characteristics, and passport data
- We get faster to results and speed up breeding processes substantially
Transfer of Technology

CGIAR centers should be viewed as repositories not only of seeds but of technology, which is publicly generated, available to everybody in the service of agricultural development.
Crop diversity

A prerequisite for a sustainable food system which brings about livelihoods and more and more nutritious food in spite of climate change
Goals and Targets

Recognize the importance of crop biodiversity as a basis for food security and sustainable agricultural development

- General target: Crop diversity be urgently and effectively conserved
Aichi Biodiversity Target 13:

**Target 13.** By 2020, the genetic diversity of cultivated plants and (farmed and domesticated animals and) of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.
Goals and Targets

Target 9 of the Global Plant Conservation Strategy:

**Target 9.** (That by 2020) 70% of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge.
Goals and Targets

By 2018, the crop diversity collections under Article 15 of the International Treaty on Plant Genetic Resources for Food and Agriculture are permanently secured

It is doable!
Thank you