

WPC 2026 KENYA

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Native potatoes: Leveraging biodiversity and tradition for opportunity

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Summary of the presentation

01	Native potato heritage
02	Biodiversity for resilience
03	Opportunities from tradition
04	Global food security implication
05	Five priorities for action
06	International Day of Potato



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Native potato heritage



Andean origins
Domesticated around 8 000 years ago

4 000+ native varieties
Across the Andean highlands

Around 180 wild relatives
Valuable traits for breeding



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Diversity shaped by farmers



High-altitude cultivation
3 500–4 200 metres

Indigenous knowledge
Generations of farmer selection

5 000+ potato varieties
Improved varieties and farmers' landraces



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Biodiversity for resilience



Conservation and innovation

Genetic resources for research and breeding

Climate resilience

Tolerance to heat, water stress and disease

Healthy seed systems

Suitable varieties and healthy planting material



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Conservation and cooperation



Breeding innovation

Varieties for local environments and markets

Complementary conservation

Genebanks and conservation on farms

International cooperation

Access through the International Treaty on Plant Genetic Resources for Food and Agriculture



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Connecting diversity, innovation and opportunity



Shared diversity and innovation

Connecting farmers, genebanks and researchers

Access and benefit-sharing

Over 45,759 samples to 134 countries since 2007

Community conservation

Potato Park and the Benefit-sharing Fund



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Opportunity from potato heritage



Employment and enterprise
Jobs for women and youth

Differentiated markets
Speciality foods, gastronomy and tourism

Traditional preservation
Chuño for longer-lasting food supplies



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Shared benefits for communities



Farmer empowerment

Access to technology and markets

Fair benefit-sharing

Commercial benefits for biodiversity custodians



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Global food security implication

645 million

Global hunger is declining

An estimated 645 million people (7.8%) faced hunger in 2025.

8.6% → 7.8%

Progress remains gradual

Hunger fell from 8.6% in 2022 and 8.1% in 2024 to 7.8% in 2025.

309 million

Africa has the largest number facing hunger

309 million people, or 20% of Africa's population, faced hunger in 2025.

510–520 million

2030 outlook

510–520 million people may still face hunger, with 56% in Africa.

Source: The State of Food Security and Nutrition in the World 2026. 2025 estimate range: 608–696 million.



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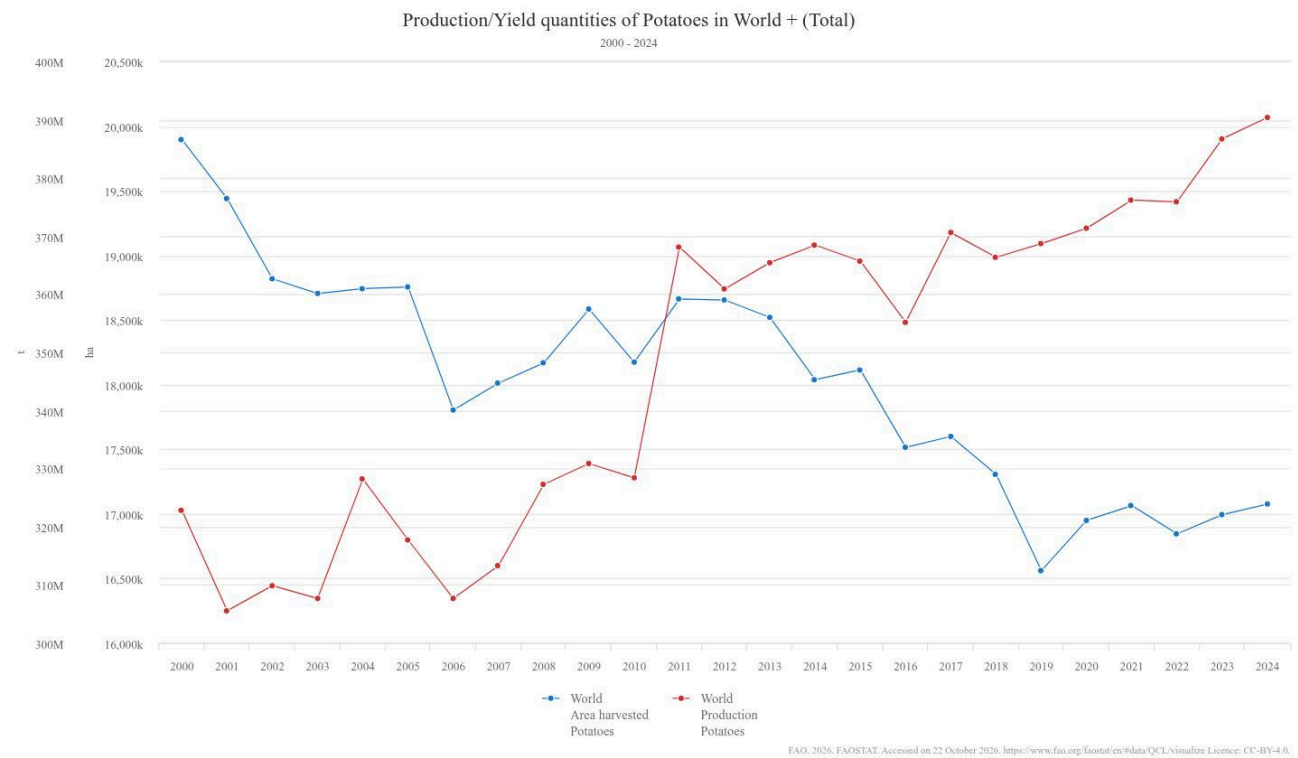
Production is rising on less harvested area



Potato productivity is improving globally, but the yield gap is still wide.

Opportunity for further growth



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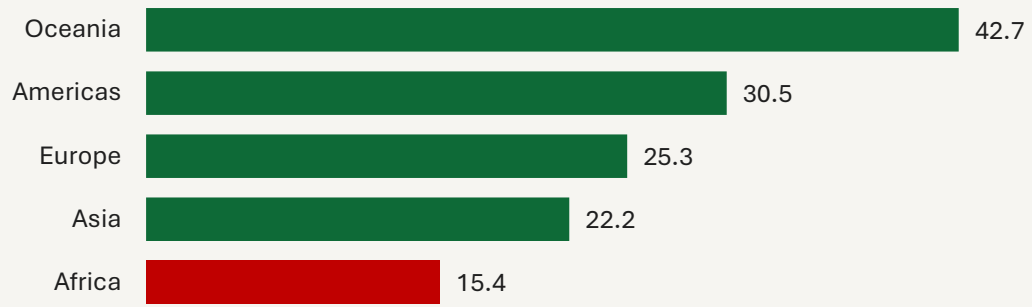
More output on less land; old varieties still dominate

Global trend, 2007–2024

Indicator	2007	2024	Change
Production (Mt)	325.3	390.4	+20%
Area (M ha)	19.3	17.1	–12%
Yield (t/ha)	16.8	22.9	+36%

Average yield by region, 2024 (t/ha)



Varieties: slow turnover, slow genetic gain

53%

of US potato acreage was one variety, Russet Burbank (2013); russets now cover ~70%.

USDA NASS, 2013; USDA ERS, 2024

0.3%/yr

genetic yield gain over 200 years of European cultivars; breeding explains ~half of farm gains.

Ortiz et al., 2022

No gain

in yield potential for US cultivars released after 1950 versus pre-1950 ones.

Douches et al., 1996

Sources: FAO (2008); FAOSTAT 2024 release; USDA NASS/ERS; Ortiz et al. (2022); Douches et al. (1996)



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Four pressures are holding back potato productivity

17.2%

Pests and diseases

of the global harvest is lost to pathogens and pests (range 8.1–21%).

Savary et al., 2019

>€1 billion

Late blight

a year in losses and control in the EU alone; fungicide-resistant strains are spreading.

Haverkort et al., 2008; EuroBlight, 2024

up to −26%

Climate change

in global yields by 2085 without adaptation; worst at high latitudes and in Africa.

Raymundo et al., 2018

20 years

Seed and soil

nematode cysts can survive in soil; informal seed builds up pathogens.

Mburu et al., 2020; Thomas-Sharma et al., 2016

What the evidence supports: resistant and heat-tolerant varieties, quality seed and integrated pest management.

Sources: FAOSTAT (2023); Savary et al. (2019); Haverkort et al. (2008); EuroBlight (2024); Raymundo et al. (2018); Mburu et al. (2020)



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Native varieties are a reservoir for nutrition and resilience

Biodiversity: what the world conserves

4,670
native varieties (landraces) from 18 countries in the CIP genebank, mainly from the Andes.
International Potato Center (CIP)

107
wild potato species, from the southwestern US to the Southern Cone; CIP conserves 2,500+ wild accessions.
Spooner et al., 2014; CIP

4×
range in iron (9–37 mg/kg) across 49 native Andean varieties; zinc 8–20 mg/kg, not lost in cooking.
Burgos et al., 2007

Nutrition: why the potato matters

≈ 50%
of daily vitamin C needs from one medium potato
FAO, 2008

≈ 20%
of the daily value of potassium from one medium potato
FAO, 2008

2.1%
protein (fresh weight), the highest among root and tuber crops
FAO, 2008; Europatat, 2024

85%
of the plant is edible food, compared with about 50% for cereals
FAO, 2008

Implication: native diversity is the raw material to breed potatoes that are more nutritious and more resilient.

Sources: CIP genebank; Spooner et al. (2014); Burgos et al. (2007); FAO (2008); Europatat literature review (2024)



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Five priorities for action

01

Protect biodiversity and traditional knowledge

02

Invest in research and innovation

03

Build inclusive value chains

04

Empower communities and future generations

05

Strengthen partnerships and investment



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What the evidence says: research and innovation

48%

Returns to agricultural research

median annual rate of return across 1,886 estimates from 292 studies.

Alston et al., 2000 (IFPRI)

$2.8–3.7 bn

One variety, one province

estimated benefits (US$) of the C88 potato variety in Yunnan, China, grown on ~400,000 ha by 2009.

CIP, 2017; CGIAR ISPC brief, 2018

>3×

Hybrid potato breeding

yield of the best diploid F1 hybrid over its parents; inbred lines bred in two years, grown from true seed.

Zhang et al., 2021 (Cell)

up to 61%

Better seed management

higher yields in Kenya, where farm yields average below 10 t/ha against 35–40 t/ha in field trials.

Atieno et al., 2026 (Potato Research)

Implication: research pays off when new varieties reach farmers through working seed systems.

Sources: Alston et al. (2000); CIP (2017); CGIAR ISPC (2018); Zhang et al. (2021); Atieno et al. (2026)



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What the evidence says: biodiversity

US$1.04 bn

Genebank diversity in farmers' fields

gross benefits of the Victoria variety in Uganda, 1991–2016; about 72% attributed to CIP genebank material.

Bernal-Galeano et al., 2020 (Food Security)

< 1/10

Genebanks are low-cost insurance

CIP genebank running costs (~US$4 million a year) are under a tenth of Victoria's yearly benefits.

Bernal-Galeano et al., 2020; Crop Trust

45,759

Diversity shared across borders

potato samples sent to 134 countries since 2007 under the International Treaty.

International Treaty on PGRFA

1,345

On-farm conservation

native varieties held by Peru's Potato Park, including 410 repatriated from CIP.

International Treaty on PGRFA; CIP

Gap: breeders still lack systematic strategies to use wild relatives and landraces (Jansky et al., 2013).

Sources: Bernal-Galeano et al. (2020); Crop Trust; International Treaty on PGRFA; CIP; Jansky et al. (2013)



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What the evidence says: inclusive value chains

+159%

Native potatoes reach new markets

growth in the value of native potato sales in Peru, 2000–2011, against +67% for improved varieties.

Devaux et al., 2020

70,000

Smallholders in the chain

Peruvian farmers sell native potatoes; exports rose from US$0.8 million (2010) to US$2.5 million (2015).

Devaux et al., 2020

+25%

Adding value on the farm

more income for Ugandan potato farmers who add value before selling than for those who do not.

RUFORUM Journal, 2018

< 5%

Kenya: seed and losses

of potato area uses certified seed; producer-level losses cost about KSh 14.5 billion a year.

Atieno et al., 2026; IFPRI, 2026

Implication: market links, quality seed and fewer losses turn potato diversity into income for smallholders.

Sources: Devaux et al. (2020); Devaux et al. (2009); RUFORUM (2018); Atieno et al. (2026); IFPRI SFS4Youth WP 16 (2026)



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Conclusion: from heritage to opportunity

01

Diversity is an asset

4,000+ native varieties and ~180 wild relatives already pay off: Victoria alone brought Ugandan farmers ~US$1 billion.

02

The yield gap is the opportunity

Africa averages 15.4 t/ha against a world 22.9 t/ha; Kenyan farms reach under 10 t/ha, trials 35–40 t/ha.

03

Innovation pays when it reaches farmers

Research returns a median 48% a year, yet certified seed covers under 5% of Kenya's potato area.

04

Markets turn heritage into income

Native potato sales in Peru grew 159% in value; adding value on the farm raised Ugandan incomes ~25%.

With 645 million people still facing hunger, potato diversity — conserved, shared and brought to market — is a practical path to **better production, better nutrition, a better environment and a better life, leaving no one behind.**

Sources: as cited in this presentation — SOFI 2026; FAOSTAT; Alston et al. (2000); Bernal-Galeano et al. (2020); Devaux et al. (2020); Atieno et al. (2026)



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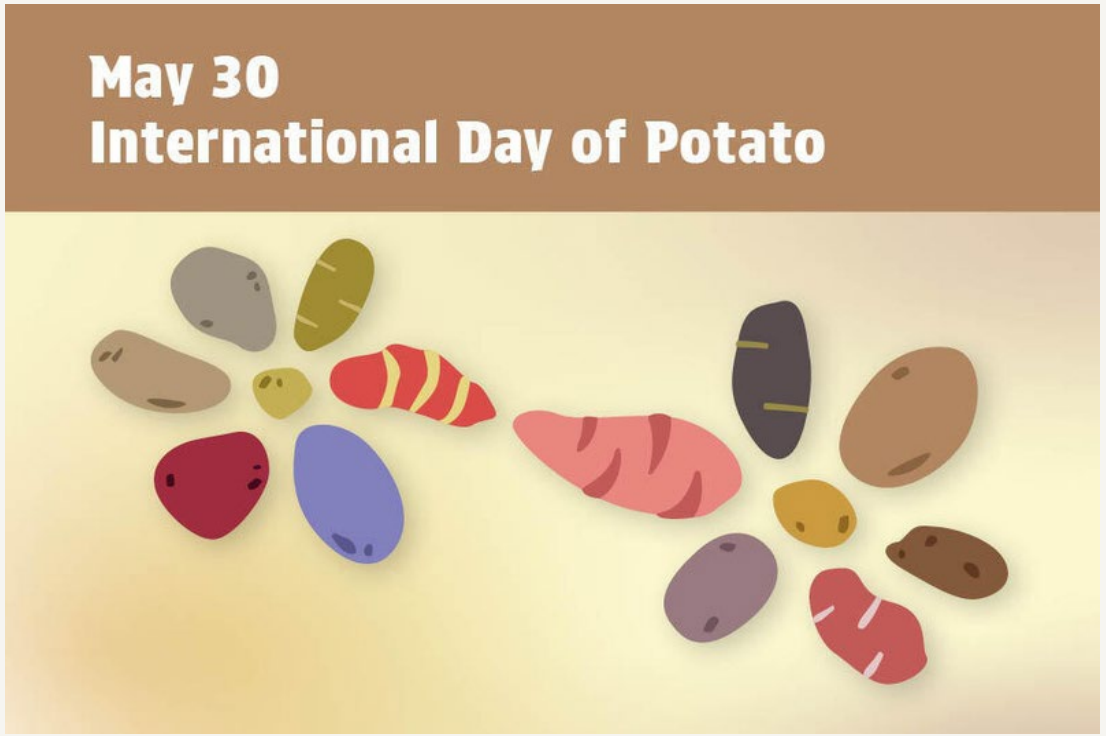

30 May
International Day of Potato

UN recognition in 2023
Food security and sustainable agrifood systems

Biodiversity and livelihoods
Benefits for the farmers who sustain diversity



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Thank You