



Food and Agriculture Organization
of the United Nations

Quality seeds an imperative for food security and nutrition

Joint ISTA – ISF Forum: Quality seed production for resilient and
sustainable agriculture

ISTA Centenary Annual Meeting 2024 – Cambridge, United
Kingdom of Great Britain and Northern Ireland

5 July 2024

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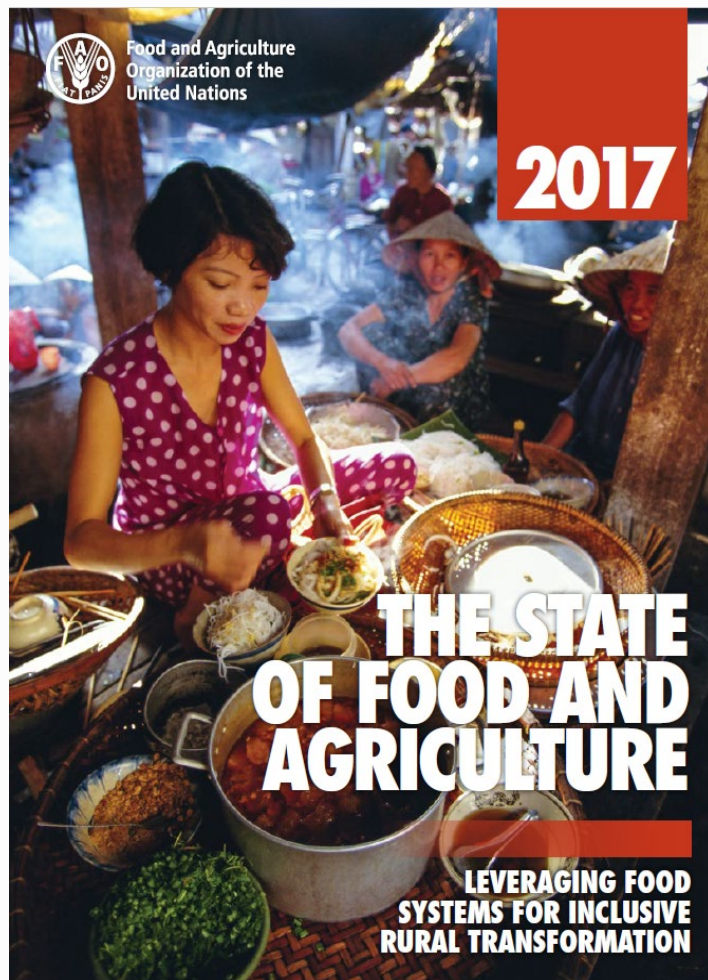


SUSTAINABLE DEVELOPMENT GOALS





The Enormity of the Task



“Feeding humanity will require a 50 percent increase in the production of food and other agricultural products between 2012 and mid-century”.



Food and Agriculture Organization
of the United Nations

The Enormity of the Task

The cover of the 2024 Global Report on Food Crises features a central graphic of a globe surrounded by a semi-circular ring of icons representing various food security challenges: a sun and water drop, a house and waves, a person with a rifle, a person with a walking stick, a person with a ladder, a house with a lightning bolt, a person with a walking stick, a sun, a person with a walking stick, and a person with a walking stick. The text on the cover includes the logos for the Global Network Against Food Crises and the Food Security Information Network (FSIN), and the title '2024 GLOBAL REPORT ON FOOD CRISES' with the subtitle 'JOINT ANALYSIS FOR BETTER DECISIONS'.

Global Network
Against Food Crises
INTEGRATED ACTIONS FOR LASTING SOLUTIONS

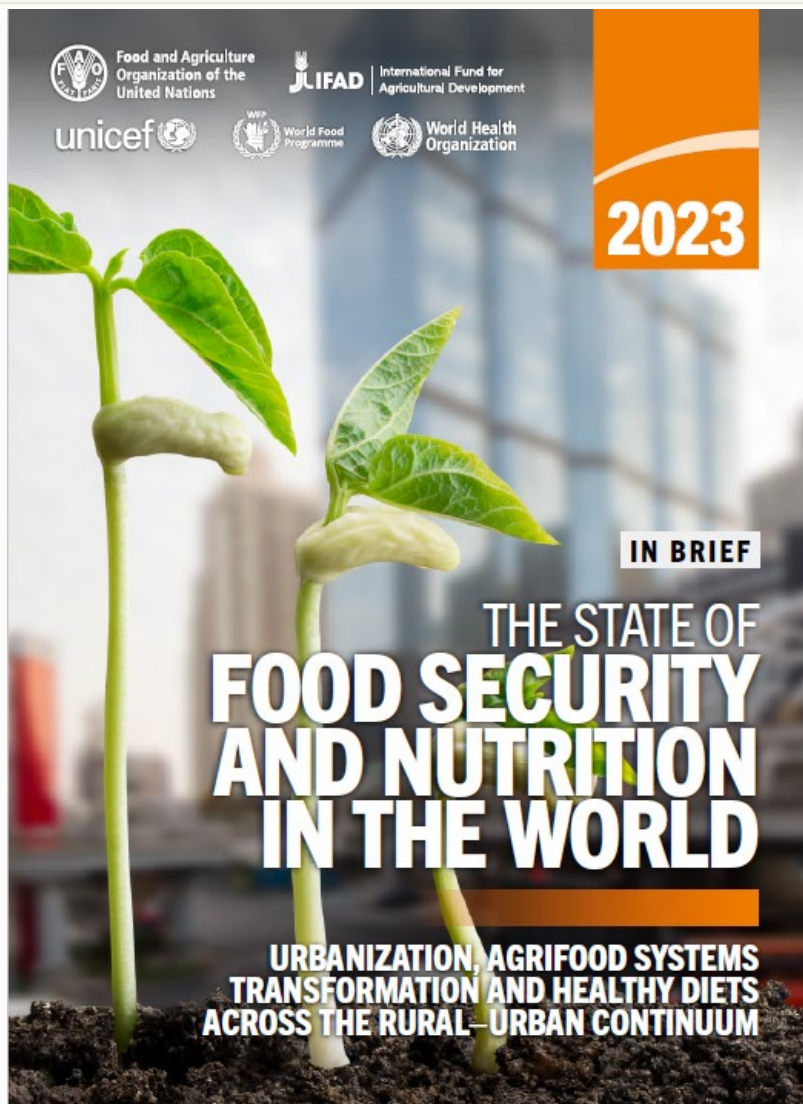
FSIN Food Security Information Network
Joint analysis for better decisions

2024 GLOBAL REPORT
ON FOOD CRISES

JOINT ANALYSIS FOR BETTER DECISIONS

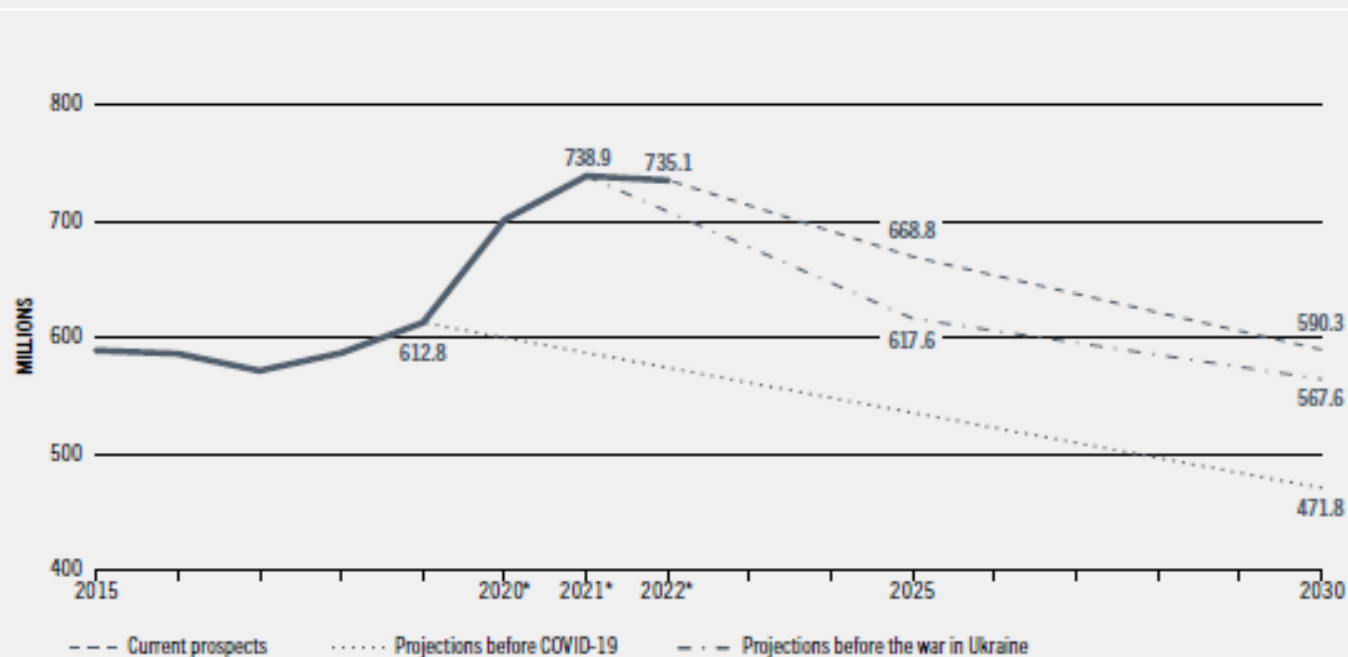


The Enormity of the Task



THE STATE OF FOOD SECURITY AND NUTRITION IN THE WORLD 2023 IN BRIEF

FIGURE 5 PROJECTED NUMBERS OF UNDERNOURISHED INDICATE THAT THE WORLD IS FAR OFF TRACK TO ACHIEVE ZERO HUNGER BY 2030



NOTE: * The 2020, 2021 and 2022 values are based on the projected midranges.
SOURCE: Authors' (FAO) own elaboration.



The Enormity of the Task

United Nations

A/HLPF/2023/L.1



General Assembly

Distr.: Limited
15 September 2023

Original: English

High-level political forum on sustainable development
Convened under the auspices of the General Assembly
18 and 19 September 2023
Item 4 of the provisional agenda*
Adoption of the political declaration of the high-level political
forum on sustainable development

Draft resolution submitted by the President of the General Assembly

**Political declaration of the high-level political forum on
sustainable development convened under the auspices of the
General Assembly**

*The high-level political forum on sustainable development convened under the
auspices of the General Assembly*

1. *Adopts* the political declaration, as annexed to the present resolution;
2. *Recommends* that the General Assembly endorse, at its seventy-eighth session, the political declaration as adopted by the forum.

* A/HLPF/2023/L.1

23-17210 (E) 150923



Please recycle



“The achievement of the SDGs is in peril. At the midpoint of the 2030 Agenda, we are alarmed that the progress on most of the SDGs is either moving much too slowly or has regressed below the 2015 baseline. Our world is currently facing numerous crises. Years of sustainable development gains are being reversed. Millions of people have fallen into poverty, hunger and malnutrition are becoming more prevalent, humanitarian needs are rising, and the impacts of climate change more pronounced. This has led to increased inequality exacerbated by weakened international solidarity and a shortfall of trust to jointly overcome these crises”.



FAO's response: business-as-usual not an option



Strategic Framework 2022-31



BETTER PRODUCTION



Ensure sustainable consumption and production patterns, through efficient and inclusive food and agriculture supply chains at local, regional and global level, ensuring resilient and sustainable agri-food systems in a changing climate and environment



BETTER NUTRITION



End hunger, achieve food security and improved nutrition in all its forms, including promoting nutritious food and increasing access to healthy diets



BETTER ENVIRONMENT



Protect, restore and promote sustainable use of terrestrial and marine ecosystems and combat climate change (reduce, reuse, recycle, residual management) through MORE efficient, inclusive, resilient and sustainable agri-food systems



BETTER LIFE

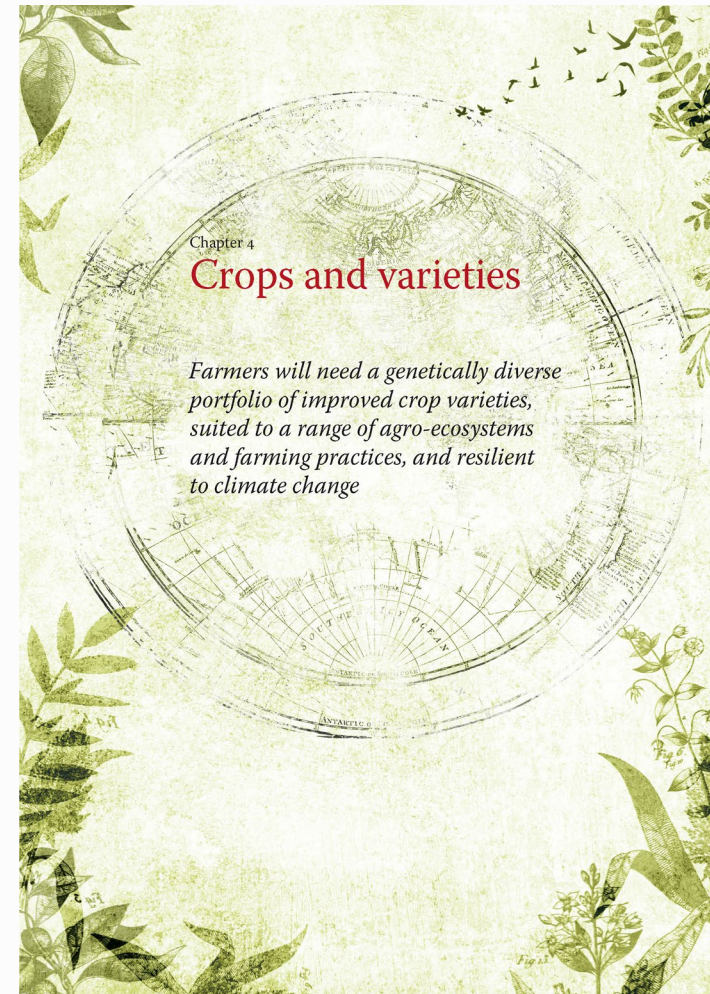
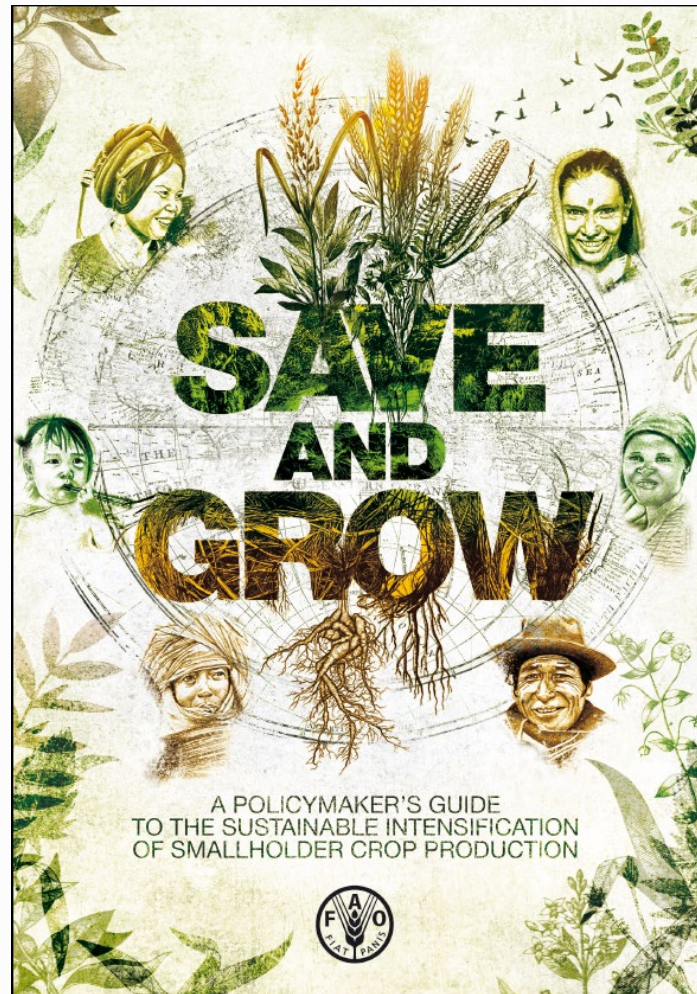


Promote inclusive economic growth by reducing inequalities (urban/rural areas, rich/poor countries, men/women)



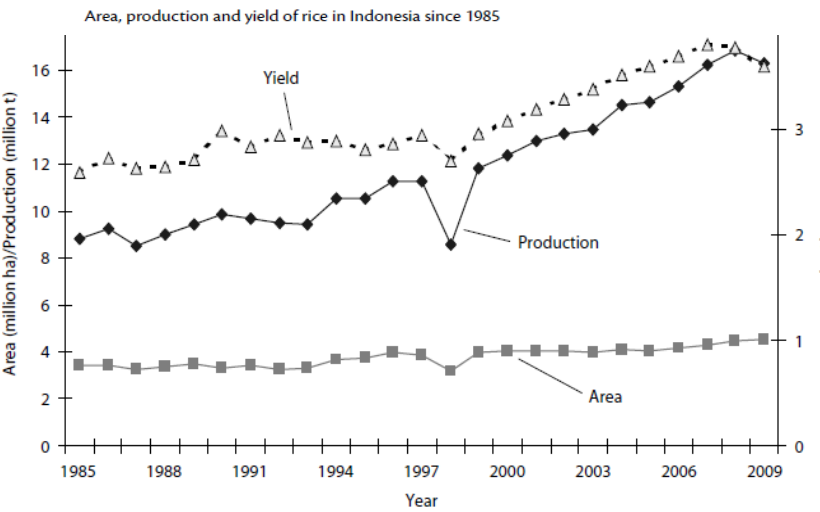
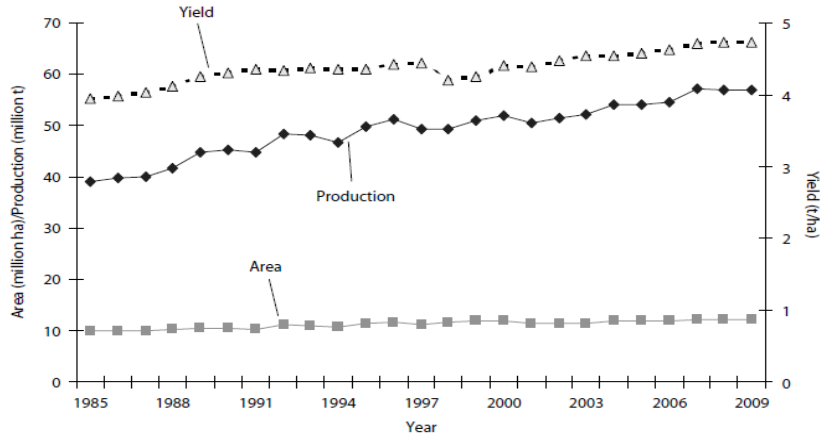


Solution: Crops & Varieties

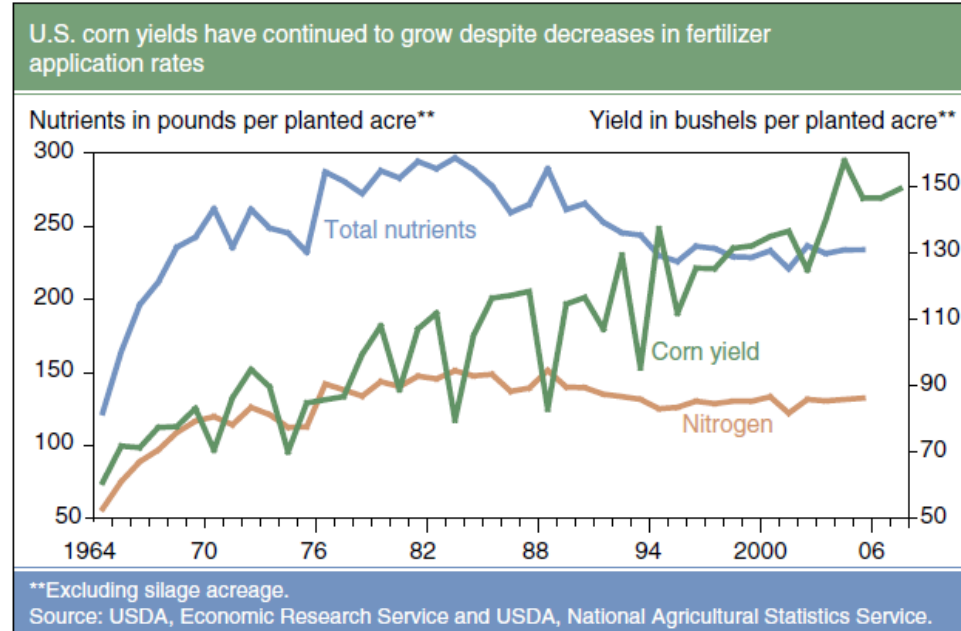




Cause for optimism: Genetic gains



Area, production and yield of rice in the Philippines since 1985



Heisey, P.W. 2009.



The Challenge



Independent
Science and
Partnership
Council

Measuring the Effectiveness of
Crop Improvement Research in
Sub-Saharan Africa from the
Perspectives of Varietal Output,
Adoption, and Change:
20 Crops, 30 Countries, and
1150 Cultivars in Farmers' Fields

July 2014

Table 4.2. Adoption of MVs of food crops in SSA in 2010

Crop	Country observations	Total area (ha)	Adopted area (ha)	% MVs
Soybean	14	1,185,306	1,041,923	89.7
Maize–WCA	11	9,972,479	6,556,762	65.7
Wheat	1	1,453,820	850,121	62.5
Pigeonpea	3	365,901	182,452	49.9
Maize–ESA	9	14,695,862	6,470,405	44.0
Cassava	17	11,035,995	4,376,237	39.7
Rice	19	6,787,043	2,582,317	38.0
Potatoes	5	615,737	211,772	34.4
Barley	2	970,720	317,597	32.7
Yams	8	4,673,300	1,409,309	30.2
Groundnut	10	6,356,963	1,854,543	29.2
Bean	9	2,497,209	723,544	29.0
Sorghum	8	17,965,926	4,927,345	27.4
Cowpeas	18	11,471,533	3,117,621	27.2
Pearl millet	5	14,089,940	2,552,121	18.1
Chickpea	3	249,632	37,438	15.0
Faba bean	2	614,606	85,806	14.0
Lentils	1	94,946	9,874	10.4
Sweetpotato	5	1,478,086	102,143	6.9
Banana	1	915,877	56,784	6.2
Field peas	1	230,749	3,461	1.5
Total/weighted average	152	107,721,630	37,469,577	34.78

Improved crop varieties developed by CGIAR centres account for only about 30% of the acreage of the crops planted by farmers in sub-Saharan Africa.



The Challenge

Food Sec. (2016) 8:179–195
DOI 10.1007/s12571-015-0528-8



ORIGINAL PAPER

Seed systems smallholder farmers use

Shawn McGuire¹ · Louise Sperling²

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Abstract Seed can be an important entry point for promoting productivity, nutrition and resilience among smallholder farmers. While investments have primarily focused on strengthening the formal sector, this article documents the degree to which the informal sector remains the core for seed acquisition, especially in Africa. Conclusions drawn from a uniquely comprehensive data set, 9660 observations across six countries and covering 40 crops, show that farmers access 90.2 % of their seed from informal systems with 50.9 % of that deriving from local markets. Further, 55 % of seed is paid for by cash, indicating that smallholders are already making important investments in this arena. Targeted interventions are proposed for rendering formal and informal seed sector more smallholder-responsive and for scaling up positive impacts.

Keywords Informal and formal seed sectors · Agricultural investment · Markets · Smallholder · Delivery · Access to seed

Introduction

Seed sector development specifically geared to smallholder farmers has attracted substantial investment in recent years.

The writers share first authorship.

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As examples, from 2007 to 2012, the World Bank funded 87 seed sector projects, worth \$ US 513 million, with a strong focus on the vulnerable (Rajalahti 2013) and, in the same period, the Alliance for a Green Revolution in Africa's Program for Africa's Seed Systems (AGRA/PASS) dispensed 112 grants totaling \$35,244,164 and geared to improving smallholder livelihoods (SourceWatch 2012).

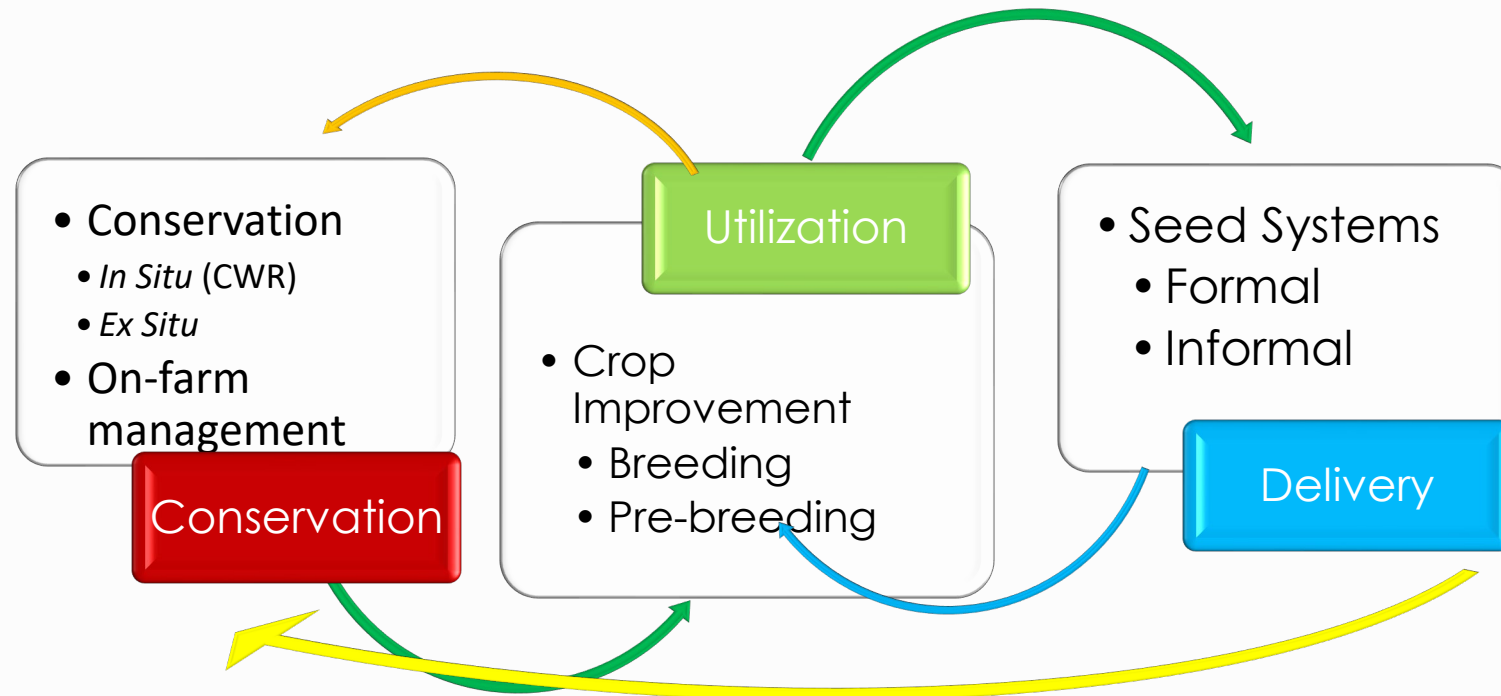
The broad rationale for focusing on seed sector interventions is that seed is a vehicle for delivering a range of advances, all of which can benefit smallholders. Seed can be the conduit for moving new varieties, giving farmers access to more productive, yield-enhancing traits. New seed is linked to strategies for raising nutrition, as with biofortified varieties selected for elevated micro-nutrient levels (Bouis and Welch 2010). Further, in response to climate variation, stress-tolerant varieties or clusters of diverse varieties are promoted as 'good practice' to enhance system resilience: multiple options can allow farmers to shift crop or variety portfolios in response to changing conditions (McGuire and Sperling 2013). Hence, seed is a vehicle linked to promoting productivity, nutrition and resilience: one entry point can potentially move forward multiple goals.

Varied and often opposing philosophies shape seed sector development and much depends on what actors see as the starting point for system entry. Organizations such as AGRA/PASS invest their resources mainly in private sector seed business development, that is, in the promotion of private commercial seed and formal sector input companies. In contrast, select non-governmental organizations (NGOs) and donors have signaled the need to support more locally-driven initiatives and particularly those that organize around what are called informal, farmer-based, local or traditional

Less than 10% of all seeds used by farmers in sub-Saharan Africa is quality-assured



Manage PGRFA as a Continuum





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TOOLS



Tools

Quality declared seed system

ISSN 0250-2517
FAO
PLANT
PRODUCTION
AND PROTECTION
PAPER
185



FAO PLANT PRODUCTION AND PROTECTION PAPER **195**

ISSN 0250-2517

Quality declared planting material

Protocols and standards for vegetatively propagated crops





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ISTA
Seed Quality Assurance

Guidelines for the establishment and management of seed testing laboratories

Joint FAO and ISTA Handbook



2023



Tools



A six-module Seed Toolkit
(English, French and Spanish)

- Development of Small-Scale Seed Enterprises
- Seed Processing
- Seed Quality Assurance
- Seed Sector Regulation
- Seed Marketing
- Seed Storage

Guidelines on Seed
Legislation



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COMMISSION ON
GENETIC RESOURCES
FOR FOOD AND
AGRICULTURE

Voluntary Guide for National Seed Policy Formulation





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FAO'S SUPPORT TO MEMBERS



Strengthening Seed Systems



16 countries

- Enhanced adoption of crop varieties, including biofortified varieties
- Community-level seed production and delivery
- Pre-basic and basic seed production
- Strengthening quality assurance
- Capacity-development of testing labs





Strengthening Seed Systems



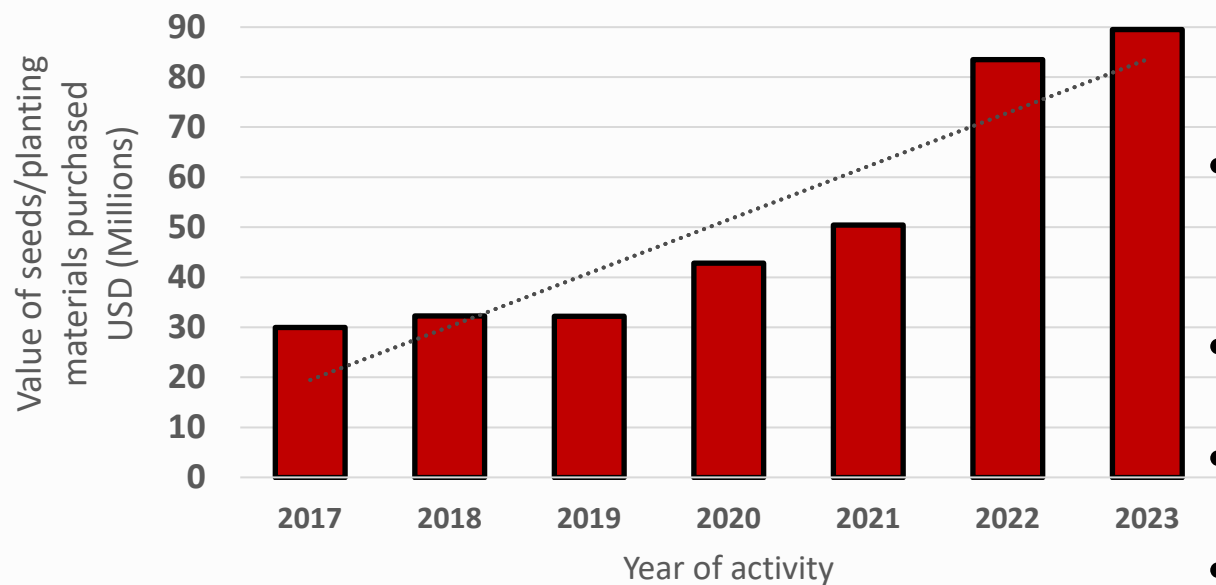
12 countries

Assisted Member Nations to:

- Review existing regulations
- Develop or revise national seed policies
- Develop legislations and regulatory instruments



Rehabilitation of Seed Systems



- Natural hazards, complex emergencies, transboundary pests
- Enhanced farmers' access to quality seeds and planting materials in **70 countries**
- Value of assistance increasing
- Support local production of quality seeds
- Seed security assessments in five countries



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FAO CONVENES MEMBERS & STAKEHOLDERS



Global Conference on Green Development of Seed

Global Conference on Green Development of Seed Industries

4-5 November 2021



- 2 200 participants, 126 countries
- Advanced technologies; PGRFA conservation; crop varietal development and adoption; seed systems
- Proceedings, with 10 recommendations, available



Proceedings of the Global Conference on Green Development of Seed Industries

4–5 November 2021



Recommendations from the Global Conference on Green Development of Seed Industries held at FAO headquarters on 4 and 5 November 2021

1. *Adopt* innovations that harness appropriate scientific and technological advancements, in particular through the convergence of institutions, infrastructures, policies and regulatory frameworks and partnerships along the seed value chain – from the conservation of plant genetic resources for food and agriculture, through their use in breeding progressively superior crop varieties, to the availability and use of affordable quality seeds – as means to develop and deliver context-specific solutions to farmers.
2. *Strengthen* institutional and human capacities for the judicious use of the advances in agricultural biotechnologies – in particular genetic modification, genome editing, induced mutagenesis, high-throughput screening, genomics-assisted breeding, systems biology, synthetic biology, next-generation sequencing and cell biology – and informatics and data analytics to enhance plant breeding and the conservation of crop diversity.
3. *Create* the enabling environment at national, regional and global levels, through appropriate national policies, laws and regulations and regional and international agreements, for enhanced capacities to access and use advanced technologies safely for generating improved crop varieties and safeguarding crop diversity.
4. *Safeguard* crop genetic resources in their natural habitats, in genebanks and through enhanced on-farm diversity; characterize their heritable variations; evaluate them for agronomic performance; and improve associated documentation and data management systems.
5. *Enhance* access to, including through exchanges across national boundaries in keeping with appropriate phytosanitary measures, and use of, crop diversity, especially for research and for breeding progressively superior crop varieties, while enabling the fair and equitable sharing of their benefits.
6. *Breed* a diverse portfolio of well-adapted progressively superior crop varieties, which are more nutritious, produce higher yields with fewer external inputs, are resistant to biotic and abiotic stresses, fit the farming systems and satisfy the needs of consumers and end-users under worsening climate change scenarios.
7. *Disseminate* information on improved crop varieties, create the enabling environment for effective information sharing – through effective policies, laws, regulations and incentives – and strengthen institutional and farmers' capacities for the widespread adoption and use of these elite materials in cropping systems.
8. *Develop* capacities along the seed value chain – from production, through quality assurance, to marketing via diversified seed enterprises and related service providers – so that farmers have timely access to enough quantities of affordable quality seeds and planting materials of the improved crop varieties that are most suited to their production systems and end use.
9. *Enforce* effective national policies, laws and regulatory frameworks and regional and international agreements, and support effective institutions, including in collaboration with relevant international organizations, to incentivize innovations along the seed value chain, in order to enhance the demand for, and supply of, quality seeds and planting materials of preferred crop varieties, including through regional and international trade.
10. *Accord* high priority to the development and strengthening of the seed value chain, especially through the inclusion of sector-specific provisions, for instance 'seed action' – which outlines strategic interventions – in overarching national plans and policies and associated budgetary support and encourage private sector investment across multiple sectors for the development of sustainable agricultural and food systems.

Governments, development partners and all stakeholders along the seed value chain are called upon to implement these strategic actions, publicize them widely through appropriate electronic and print media, incorporate them into advocacy materials and provide feedback to FAO.

For further information and engagement, please contact the Director of FAO's Plant Production and Protection Division: NSP-Director@fao.org



The First FAO Roundtable Forum on “Sustainable Seed Systems Management”, 8 December 2022

Topic	Action	Expected Outcome	Responsibility
Promote the conservation of plant genetic resources for food and agriculture (PGRFA)	<p>Launch the three Practical Guides for the Application of the Genebank Standards for Plant Genetic Resources for Food and Agriculture, which were developed under the auspices of FAO’s Commission on Genetic Resources for Food and Agriculture:</p> <ul style="list-style-type: none"> • Conservation in field genebanks; • Conservation of orthodox seeds in seed genebanks; and • Conservation via in vitro culture. 	<ol style="list-style-type: none"> Supported the achievement of SDG Indicator 2.5.1; Strengthened national, regional and global genebanks; and Enhanced use of PGRFA in plant breeding and genetics 	FAO-NSP; Commission and International Treaty; CGIAR; Global Crop Diversity Trust
Facilitate the genetic improvement of crop varieties	<p>Support the implementations of the:</p> <ul style="list-style-type: none"> • Global action on one country one priority product (OCOP); • Global action on fall armyworm control; and • Global initiative on agroecology. 	<ol style="list-style-type: none"> Demonstrated efficacy of improved crop varieties; and Enhanced adoption of improved crop varieties, especially in food-insecure parts of the world. 	FAO-NSP; CGIAR; African Agricultural Technology Foundation (AATF).
Enhance the production of quality seeds and planting materials	<ul style="list-style-type: none"> • Launch the joint FAO–ISTA publication, ‘Guidelines for the establishment and management of seed testing laboratories’, and disseminate widely, including through multi-lingual webinars and training programmes, to national and regional stakeholders. 	Enhanced use of quality seeds and planting materials of improved crop varieties, especially in food-insecure parts of the world	FAO-NSP; International Seed Testing Association (ISTA) and regional seed associations.
Disseminate innovative seed technologies	<ul style="list-style-type: none"> • Conduct in-country demonstrations on farmers’ fields on precision seeding and seed treatment. 	Optimized use of inputs in, and minimized environmental footprints from, crop production systems	International Seed Federation (ISF) and FAO-NSP
Organize thematic activities and events	<ul style="list-style-type: none"> • Organize multi-stakeholder consultations on: <ul style="list-style-type: none"> ○ Modern plant breeding techniques; and ○ Integrated seed systems. • Organize webinars on: <ul style="list-style-type: none"> ○ Farmers’ varieties/landraces; and ○ Genetic resources for OCOP crops. • Launch the crop calendar and disseminate widely through in-country events. 	<ol style="list-style-type: none"> Disseminated evidence-based knowledge contributing to ‘better production’; and Strengthened communication and collaboration among global seed sector 	FAO-NSP, Commission, International Treaty; CGIAR; and WMO



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There are no good crops without
good seeds!





Thank you very much!!!

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