Food and Agriculture Organization of the United Nations

2021 ANNUAL REPORT

Plant Production and Protection

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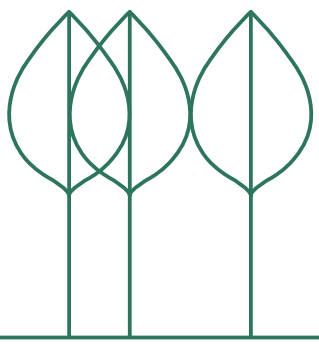

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Welcome message

Beth Bechdol,
Deputy Director-General, Food and Agriculture Organization of the United Nations (FAO)

I am delighted to share the 2021 Annual Report for the FAO Plant Production and Protection Division (NSP).

In 2021, COVID-19 continued to severely disrupt our ways of living. Billions of people experienced extreme difficulties as a result of the ongoing pandemic – to their lives, health and welfare – and our agrifood systems and value chains were affected too. Plant production was seriously threatened by biotic and abiotic constraints, including diminishing areas of arable land, water scarcity, decreasing biodiversity, increasing occurrences of plant pests and diseases, and extreme weather events.

These were unmistakable challenges. As an Organization, we recognized the urgency for action and increased impact to achieve the goals set in the United Nations 2030 Agenda for Sustainable Development. And, as a result, the Forty-second Session of the FAO Conference endorsed the FAO Strategic Framework 2022–2031.

2021 became a milestone year for FAO.

The Strategic Framework seeks to support the 2030 Agenda through the transformation to MORE efficient, inclusive, resilient and sustainable agrifood systems, for better production, better nutrition, a better environment and a better life, leaving no one behind.

NSP and its wider global community have a fundamental role to play in achieving these four betters. One area in which NSP's work will specifically deliver is "better production", contributing to its mission of *enabling the transition to more efficient, inclusive, resilient and sustainable crop production and protection through optimization and minimization*.

We have developed 20 priority programme areas (PPAs) – with five for better production, five for better nutrition, four for a better environment, and six for a

better life, to address critical gaps and guide our programmes to support Members in attaining the Sustainable Development Goals (SDGs). For better production, NSP is leading the PPA "Innovation for Sustainable Agriculture Production" (BP1), and additionally contributing to 14 PPAs that cover all four of the betters.

2021 was an important year for NSP. Under its annual theme, *Ensuring food security and nutrition through sustainable plant production and protection*, contributing to SDG 2, it achieved key activities, such as organizing the FAO Global Conference on Green Development of Seed Industries and delivering the International Year of Fruits and Vegetables (IYFV 2021).

It also led the development and launch of the FAO Global Action on Green Development of Special Agricultural Products: One Country One Priority Product (OCOP). OCOP will help countries leverage their unique potential and identify the special agricultural products adapted to their specific agroecological production systems and national or cultural heritage, ensuring improved access to stable markets. It will deliver technical support to countries across various stages of the value chain – production, storage, processing and marketing.

Significant progress was made in promoting and disseminating production technologies last year, covering agroecology, plant nutrition, climate smart agriculture, urban and peri-urban agriculture and sustainable mechanization. Protection technologies included those for monitoring and controlling desert locust in the Horn of Africa and Yemen, the prevention and control of fall armyworm in Asia and the Pacific, Africa, the Near East and southern Europe, and supporting the development of national plans on pesticide risk reduction in Africa, the Caribbean and the Pacific.

Plans for 2022 are already well underway. Framed by its annual theme, *Promoting sustainable plant production through optimization and minimization*, contributing to SDG 2 and SDG 12, NSP is leading key initiatives, including organizing the first-ever FAO Global Conference on Sustainable Plant Production, focusing on innovation, efficiency and resilience.

I am pleased with NSP's continued achievements in what have been challenging years. I am eager to see how the Division's renewed objectives translate into even greater tangible results and enhance our impact, and I truly look forward to working together to build back better in 2022 and beyond.

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Foreword

Jingyuan Xia,
Director, Plant Production and Protection Division (NSP)

I am very pleased to introduce the 2021 Annual Report of FAO's Plant Production and Protection Division (NSP).

Despite the ongoing challenges brought by the COVID-19 pandemic in 2021, the Division continued to function in an adaptive, responsive and agile manner to mitigate the disruptive impacts of the pandemic. The Division made decisive steps towards building "One Dynamic NSP" with a shared direction, mission and responsibilities, operating in a harmonious manner.

2021 was the first year the Division was fully operational after its acronym changed from AGP (Plant Production and Protection Division of the Agriculture Department) to NSP (under the Natural Resources and Sustainable Development Stream) following the transformation of the Organization. The entire Division started its new journey towards building the centre of excellence for technological promotion and transformation for MORE efficient, inclusive, resilient and sustainable plant production and protection through optimization and minimization.

2021 was also the first year NSP put into action one of the annual themes of its five-year communication strategy (2021–2025): 2021 – *Ensuring food security and nutrition through sustainable plant production and protection in line with SDG 2*. A series of activities were carried out to highlight the theme, including the organization of the FAO Global Conference on Green Development of Seed Industries, the delivery of the International Year of Fruits and Vegetables (IYFV 2021), and the publication of the first edition of an NSP factsheet on the annual theme.

A remarkable achievement in 2021 was the Division's active engagement in developing the FAO Strategic Framework 2022–2031, which was endorsed by the Forty-second Session of the FAO Conference. The Strategic Framework aims to promote the "four betters" (better production, better nutrition, a better environment and a better life) through the implementation of 20 priority programme areas

(PPAs). NSP has led the development of the PPA for Better Production on Innovation for Sustainable Agriculture Production (BP1) and contributed to 14 other PPAs (three for better production, four for better nutrition, four for a better environment and three for a better life).

To support the implementation of the "four betters", NSP has led the development and launch of the FAO Global Action on Green Development of Special Agricultural Products: One Country One Priority Product (OCOP) (2021–2025). OCOP is the key initiative for implementing BP1 through the integration, demonstration, extension and dissemination of green technologies for production, storage, processing and marketing.

Important technical activities conducted in 2021 include facilitating capacity development in 33 countries through the application of Tools for Agroecology Performance Evaluation (TAPE); promoting climate-smart agriculture in Sri Lanka and Zambia; protecting cultivation in the Caribbean; promoting the resilience of city region food systems in Africa; supporting desert locust control in the Horn of Africa and Yemen and fall armyworm prevention and control in over 80 countries in Asia and the Pacific, Africa, the Near East and southern Europe; and supporting the development of national plans on pesticide risk reduction in six countries in Africa, the Caribbean and the Pacific. Outstanding progress in communication and partnerships was made in 2021, including the start of the NSP Seminar Series with three seminars organized, publication of the first edition of the NSP Annual Report, strengthened cooperation with the International Fertilizer Association (IFA) through the signing of a memorandum of understanding, and the first virtual meeting of the FAO Plant Health team.

The Division also achieved tangible results in internal management in 2021. These include the reorganization of the Director's Office by setting up five coordination lines (programmes/projects, technologies, communications, operations and general services), the completion of the first edition of the NSP Operational Manual with over 30 standard operating procedures and templates, and the promotion of teamwork through the work of NSP task forces for communication and advocacy, planning and finance management, and strategic development and implementation.

Together, we achieved much in 2021, leading to significantly increased internal solidarity and external visibility. I would like to express my sincere gratitude to each of you for your active engagement, excellent performance and positive contribution.

I look forward to your continued strong support and dedication to the NSP vision for developing sustainable crop production systems for a world free from hunger.

Jingyuan Xia

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Abbreviations and acronyms

A	**ACP**	African, Caribbean and Pacific
	ACT	African Conservation Tillage
	AFD	Agence Française de Développement
C	**CCA**	Caucasus and Central Asia / climate change adaptation
	CFI	FAO Investment Centre
	CLCPRO	Commission for controlling the Desert Locust in the Western Region
	CIRAD	French Agricultural Research Centre for International Development
	COAG	FAO Committee on Agriculture
	COLEACP	Europe-Africa-Caribbean-Pacific Liaison Committee
	COP	Conference of the Parties
	CPLP	Community of Portuguese Language Countries
	CPM	Commission on Phytosanitary Measures
	CRC	Chemical Review Committee
F	**FFS**	Farmer Field School
	F-SAMA	Framework for Sustainable Agricultural Mechanization in Africa
G	**GEF**	Global Environment Facility
	GIS	Geographic information system
H	**HHPs**	Highly hazardous pesticides
I	**Icipe**	International Centre of Insect Physiology and Ecology
	IFA	International Fertilizer Association
	IFAD	International Fund for Agricultural Development
	IFOAM	International Federation of Organic Agriculture Movements
	INRAE	French National Research Institute for Agriculture, Food and Environment
	IPM	Integrated pest management
	IPPC	International Plant Protection Convention
	ISF	International Seed Federation
	IYFV	International Year of Fruits and Vegetables
	IYPH	International Year of Plant Health

J	**JMPR**	Joint Meeting on Pesticide Residues
	JMPS	Joint Meeting on Pesticide Specifications
M	**MOU**	Memorandum of understanding
	NGO	Non-governmental organization
	NSPCD	Pest and Pesticide Management
	NSPED	Ecosystem approach to crop production intensification
N	**NSPGD**	Plant Genetic Resources and Seeds
	NSPLD	Rural and Urban Crop and Mechanization Systems
	NSPMD	Locusts and Transboundary Plant Pests and Diseases
	NSPRD	Rotterdam Convention
	PGRFA	Plant Genetic Resources for Food and Agriculture
	PIC	Prior informed consent
P	**POP**	Persistent organic pollutant
	PPA	Programme Priority Area
	PSU	Pennsylvania State University
	SAM	Sustainable agricultural mechanization
S	**SDG**	Sustainable Development Goal
	SOP	Standard operating procedures
T	**TAPE**	Tool for Agroecology Performance Evaluation
U	**UNEP**	United Nations Environment Programme
	WBD	World Bee Day
W	**WHO**	World Health Organization
	WPD	World Pulses Day

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Acknowledgements

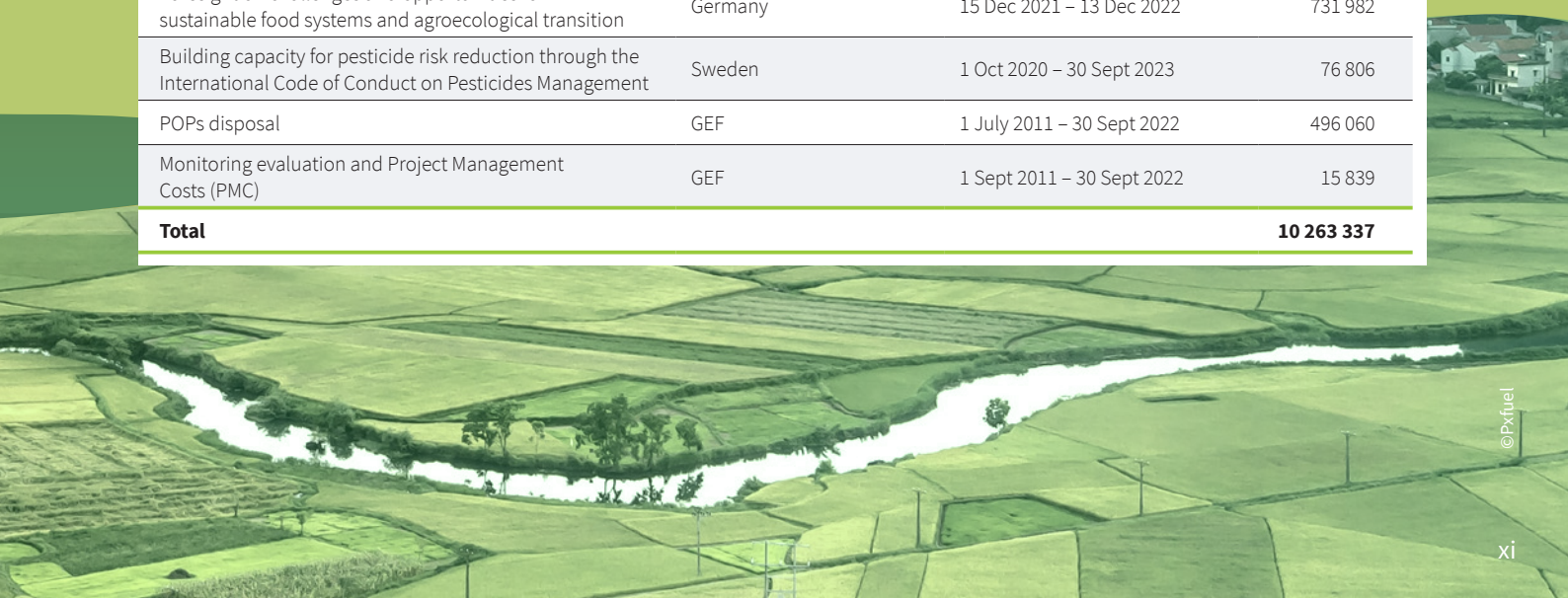
The FAO Plant Production and Protection Division (NSP) would like to acknowledge all partners for their participation in, and positive contribution to, the NSP work programme, including technical, knowledge and technological partners, project partners, research and academia, global and regional organizations, governments, farmers and farmers' organizations, media, the NSP community and FAO decentralized offices.

Project implementation in 2021

NSP recognizes the support from resource partners that made it possible to successfully implement the following projects in 2021. In addition, NSP provided technical support to over 150 projects from various sources.

DONOR	PROJECT TITLE	PERIOD	DELIVERY 2020 (USD)
AVACLIM: Agroecology ensuring food security and sustainable livelihoods while mitigating climate and restoring land in dryland region (MSP) (FSP)	GEF	1 Oct 2019 – 31 Mar 2023	27 146
AVACLIM: Agroecology ensuring food security and sustainable livelihoods while mitigating climate and restoring land in dryland region (MSP) (FSP)	GEF	1 Oct 2019 – 31 Mar 2023	110 721
Disposal of POPS waste and Obsolete Pesticides in Mozambique (FSP)	GEF	1 Jul 2011 – 30 Sept 2022	511 899
Implementing Sustainable Low and Non Chemical Development in SIDS (ISLANDS)/FAO Component (PPG)	GEF	23 Oct 2019 – 30 June 2022	7 952
Participatory assessment of land degradation and sustainable land management in grassland and pastoral systems (FSP)	GEF	1 Feb 2017 – 5 May 2022	282 861
Celebration of the World Pulses Day	Global Pulse Confederation	7 Feb 2020 – 30 June 2022	13 788
Strengthening Multistakeholder Cooperation on Agroecological Approaches for Sustainable Agriculture	McKnight Foundation	1 Dec 2015 – 31 May 2023	185 704
FAO/UNEP Secretariat to the Rotterdam Convention 2020–2021	UNEP	1 Jan 2020 – 31 Dec 2021	1 149 352
Letter of Agreement on the continuation of the Joint FAO/UNEP Secretariat Arrangements for the Rotterdam Convention	UNEP	1 Jul 2005 – 31 Dec 2023	90 582
Capacity Building Related to Multilateral Environmental Agreements in ACP Countries – Phase III	European Union	15 Oct 2019 – 14 Apr 2024	568 556
IOMC Toolbox for decision making in chemicals management – Phase III: From design to action	European Union	1 Jan 2018 – 31 Dec 2020	69 724

DONOR	PROJECT TITLE	PERIOD	DELIVERY 2020 (USD)
FAO Commission for Controlling the Desert Locust in the Central Region (CRC)	Multidonor	15 Jun 2018 – 31 Dec 2023	915 248
FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC)	Multidonor	15 Jun 2018 – 31 Dec 2023	14 739
FAO Commission for Controlling the Desert Locust in the Western Region (CLCPRO)	Multidonor	15 Jun 2018 – 31 Dec 2023	162 397
FAO Desert Locust Control Committee (DLCC)	Multidonor	15 Jun 2018 – 31 Dec 2023	19 880
HORTIVAR: Horticulture Cultivars Performance Information System	Multidonor	1 May 2013 – 31 Dec 2020	7 361
Sustainable Management of the Fall Armyworm (FAW) FAO Programme for Action in Africa, North Africa and the Middle East	Multidonor	8 Nov 2018 – 31 Oct 2022	530 475
Supporting the joint FAO/WHO scientific advice programme: JMPR, JEMRA, JEMNU	Canada	27 Mar 2017 – 30 Jun 2021	5 532
Ms Jiang Shangchuan, Associate Professional Officer for Sustainable Mechanization and Conservation Agriculture	China	1 Mar 2019 – 28 Feb 2022	93 429
Building the basis for implementing the Save and Grow approach: Regional strategies on sustainable and climate-resilient intensification of cropping systems	Germany	1 May 2016 – 30 Jun 2022	160 996
Building climate resilience in city region food systems through adapted production systems	Germany	1 Dec 2018 – 30 June 2023	465 996
Climate-Smart Crop and Mechanization Systems Scaling-up (CSCS)	Germany	1 Jun 2019 – 31 Dec 2021	97 935
Project for Improvement of Locust Management (Phase 2)	Japan	28 Jul 2020 – 30 Jun 2025	1 235 136
Smart Farming for the Future Generation	Republic of Korea	25 Jun 2020 – 24 Jun 2024	216 765
Support for Horticulture Programme Development	Republic of Korea	14 Apr 2006 – 31 Jul 2021	215 959
Locust disaster risk reduction in Caucasus and Central Asia (CCA)	United States of America	28 Sep 2018 – 30 Sep 2021	90 095
Global Action for Fall Armyworm Control	Multilateral	1 July 2021 – 31 Dec 2021	199 923
Strengthening preventive measures and developing operational research on desert locust	France	1 Jan 2021 – 31 Dec 2024	822 919
Scaling-up the sustainable management of fall armyworm in Africa, the Near East and Asia	European Union	21 Jan 2021 – 31 Dec 2022	456 868
Regional fund for managing locust risk (FRGRA)	Multilateral	15 June 2018 – 31 Dec 2021	68 316
Support to FAO work on the Joint Meeting on Pesticide Residues (JMPR)	United States of America	20 Sept 2017 – 31 Dec 2021	163 114
Sustainable Plant Protection Transition: A Global Health Approach (SPRINT) – Horizon 2020	European Union	1 Sept 2020 – 31 Aug 2025	8 428
Foresight on challenges and opportunities for sustainable food systems and agroecological transition	Germany	15 Dec 2021 – 13 Dec 2022	731 982
Building capacity for pesticide risk reduction through the International Code of Conduct on Pesticides Management	Sweden	1 Oct 2020 – 30 Sept 2023	76 806
POPs disposal	GEF	1 July 2011 – 30 Sept 2022	496 060
Monitoring evaluation and Project Management Costs (PMC)	GEF	1 Sept 2011 – 30 Sept 2022	15 839
Total			**10 263 337**



Key collaborators

NSP is particularly grateful for the support received from many strategic and technical partners to carry out global work in promoting sustainable crop production and protection.

African Conservation Tillage Network (ACT)

ACT is an indigenous, not-for-profit organization (NGO) registered and based in Nairobi, Kenya, with regional hubs across Africa. The mission of ACT is to enhance agricultural productivity, sustainable land management and environmental conservation through the promotion of conservation agriculture and sustainable agricultural mechanization. ACT has a long-standing relationship with FAO in support of conservation agriculture and sustainable agricultural mechanization (SAM) practices. This includes advocacy and policy advice in addition to practical capacity development and training, both virtually and face to face.

African Union Commission (AUC)

The continued collaboration with AUC led to increased participation of African countries in the operationalization of the Framework for Sustainable Agricultural Mechanization in Africa (F-SAMA). A total of six webinars were organized in 2021 on the operationalization of F-SAMA, attracting 1 178 participants from Africa and beyond. A range of topics was discussed, including innovative financing for mechanization, the role of women and youth, and enhancing stakeholders and networking among countries for improved mechanization in Africa. Countries such as Mali and Sierra Leone embarked on the development of mechanization strategies, while Nigeria, Togo, United Republic of Tanzania and Zambia have expressed interest to revise or formulate mechanization strategies.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

CSIRO served as scientific advisor for the FAO/IPPC Technical Working Group on Fall Armyworm prevention and preparedness. Their active contribution enriched the preparation of the prevention, preparedness and response guidelines for fall armyworm and the delivery of the IPPC webinar series "FAW, a global threat to prevent".

Europe-Africa-Caribbean-Pacific Liaison Committee (COLEACP)

FAO and COLEACP signed a three-year memorandum of understanding (MoU). The MoU will provide a framework for collaboration to further shared goals and objectives in regard to enhancing global food security and increasing sustainable agricultural productivity, protecting the environment from the impacts of plant pests, and facilitating safe trade and economic growth. The agreement aims at developing national phytosanitary capacities in African, Caribbean and Pacific (ACP) countries, and developing global capacities through training materials, workshops, communication and advocacy.
The IPPC Secretariat will coordinate FAO implementation of the agreement.

Agricultural Machinery Industry Association (CEMA).

CEMA is the association representing the European agricultural machinery industry. With 11 national member associations, the CEMA network represents both large multinational companies and numerous small and medium enterprises. The industry comprises about 7 000 manufacturers, producing more than 450 different types of machines with an annual turnover of about EUR 40 billion (EU28, 2016) and 150 000 direct employees. CEMA companies produce a large range of machines that cover any activity in the field from seeding to harvesting, as well as equipment for livestock management. Through the existing MoU, CEMA support's FAO's efforts to implement the Framework for Sustainable Agricultural Mechanization in Africa.

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French Development Agency (AFD)

AFD funded a project to strengthen preventative measures and develop operational research on desert locust, which began in 2021. The project has three main components: technological innovation; adaptation of prevention tools to climate change; and better preservation of the environment through the development of more respectful control methods. There is also a fourth component for CRC support. A workshop on implementation of the fourth project component was organized by CRC and CLCPRO in Cairo, Egypt, in September 2021, where a four-year work plan was developed.

French Agricultural Research Centre for International Development (CIRAD)

NSP co-published with CIRAD a book entitled *Fruit and vegetables: Opportunities and challenges for small-scale sustainable farming*, launched in time to celebrate the International Year of Fruits and Vegetables in 2021. The book highlights the importance of sustainable horticultural production to improve the environment, livelihoods and nutrition for all.

Global Pulses Confederation (GPC)

NSP has been collaborating with GPC since the United Nations designated 2016 as the International Year of Pulses. Over the past six years, GPC has been a vital partner in organizing yearly World Pulses Day events, including the event in 2021 that focused on the theme "Pulses for sustainable food systems and healthy diets".

International Fertilizer Association (IFA)

FAO and IFA recently signed a MoU and will cooperate through global dissemination events and regional workshops on the implementation of the Fertilizer Code and its principles, focusing on regional needs and priorities, to evaluate feasibility, practicality and implementation of the Code's provisions within specific regions. They will also cooperate on promoting uptake of the Fertilizer Code by IFA members. In 2021 in collaboration with IFA, NSP hosted a series of webinars on the use of microbials in plant nutrient management, improving water and nutrient use efficiency, and advancing nutrient recycling and recovery in agriculture.

International Seed Federation (ISF)

ISF has collaborated with FAO over several decades in enhancing the access of farmers to quality seeds of well-adapted crop varieties. In 2021, FAO and the ISF jointly organized a webinar on "Seed applied technologies: a contribution to sustainable agriculture", while ISF leadership contributed to the success of the Global Conference on Green Development of Seed Industries, in particular through serving on its Steering Committee and by providing a keynote address. ISF has collaborated with FAO over several decades in enhancing the access of farmers to quality seeds of well-adapted crop varieties. In 2021, FAO and ISF jointly organized a webinar on "Seed applied technologies: a contribution to sustainable agriculture", while ISF leadership contributed to the success of the Global Conference on Green Development of Seed Industries, in particular through serving on its Steering Committee and by providing a keynote address.

International Society for Horticultural Science (ISHS)

FAO's long-standing partnership with ISHS was boosted through a MoU. ISHS is the world's largest network of horticultural experts, comprising over 67 000 individuals, universities, governments, institutions, commercial companies and 50 member countries. The MoU provides a roadmap for collaboration to support the FAO Strategic Framework to attain the SDGs by improving food and nutrition security through sustainable horticultural production systems that generate income, protect the environment and create social equity. Exchange of technologies and knowledge adapted to the needs of small-scale producers in low- and middle-income countries began with the All African Horticultural Congress in 2021.

Japan International Cooperation Agency (JICA)

2021 was the first year of a five-year project for the improvement of locust management (Phase II) in Central Asia, funded by JICA. Support was provided both at regional and national levels, allowing human and operational capacities to be strengthened, especially through the provision of large-scale training efforts, the delivery of survey and control equipment, and promotion of the use of the locust geographic information system (GIS) entitled "Caucasus and Central Asia Locust Management System".

McKnight Foundation

The McKnight Foundation has supported FAO's work in agroecology since 2015. This long-term support has been instrumental to mainstreaming the 10 Elements of Agroecology framework to provide guidance to transitions towards sustainable agriculture and food systems. It has strengthened the capacity of the Agroecology Knowledge Hub as a central platform for sharing and managing data, knowledge, information and research relevant to agroecology. It has also enabled the dissemination of, and data generation for, the Tool for Agroecological Performance Evaluation (TAPE). McKnight's commitment to FAO has also been key in soil health and carbon restoration efforts towards the development of normative tools to support the sustainable use and management of organic resources and to facilitate agroecological transitions.

Pennsylvania State University (PSU)

PSU has worked with FAO to develop and deploy mobile applications and cloud-based solutions to track the spread of fall armyworm larvae on maize, red palm weevil on palm trees and desert locust.

School of Agriculture Foundation, University of Buenos Aires

The Foundation has provided timely support with high-quality products that have led to reports on the environmental risk and human health assessment of carbaryl in Argentina, and to recommendations for risk management measures for the use of carbaryl in Argentina.

Scriptoria

Scriptoria provided support with Locust Data Cube services and maintenance. They developed a cloud-based Locust Data Cube to act as a centralized hub for all data coming from national survey and control teams in countries affected by desert locust. Scriptoria continues to work closely with other partners to ensure that the Locust Data Cube will be fully integrated into the new modernized cloud-based version of SWARMS, which will replace the outdated procedures, applications and databases currently being used. The collaboration supports FAO ability to provide better and more timely early warning.

United States Agency for International Development (USAID)

USAID, a staunch supporter of the locust preventive strategy promoted by FAO, has been a partner of the Programme to improve national and regional locust management in Caucasus and Central Asia since its inception in 2011. In 2021, a project in support of regional cooperation and capacity strengthening wound down, and a new three-year project was approved, focusing on disaster risk reduction in the Caucasus and on up-to-date control methods and biopesticides in both the Caucasus and Central Asia.

World Agroforestry Center (ICRAF)

ICRAF contributed actively to the FAO Global Action on Fall Armyworm Control in their capacity as a member of its technical committee. It contributed to the development of the Global guidelines for developing a regional integrated pest management (IPM) strategy against fall armyworm and supported the implementation of the global action in southern Africa. Together with FAO and other partners, ICRAF also spearheaded the organization of an online conference entitled "Developing smallholder-oriented IPM strategies for fall armyworm management".

In addition to the partners mentioned above, a total of 31 FAO partners generously contributed USD 211 million to support FAO's Desert Locust Upsurge: Global Response Plan in 2021. The Response Plan has been technically coordinated by NSP to curb the desert locust upsurge, safeguard livelihoods and promote early recovery, regional and national coordination, and preparedness.

Plant production and protection community

A brief history

FAO's Plant Production and Protection Division is almost as old as FAO itself! First established on 22 June 1947 as the Plant Industry Branch, by 1959 it was a full division focusing on crop production, improvement and protection.
During the 1960s–1980s, the Division was broadly structured on crop and grasslands production services, plant protection services, and crop ecology and genetic resources.
In 1980s–2000s, there was an increased emphasis on fruits and vegetables. And, in 2020, the Division acronym changed from AGP to NSP, with a renewed focus on sustainable production and protection through optimization and minimization.

Vision, mission and strategic objectives

Vision:

developing sustainable crop production systems for a world free from hunger.

Mission:

enabling the transition to more efficient, inclusive, resilient and sustainable crop production and protection through optimization and minimization.

Strategic objectives:

- ensuring food security and nutrition;
- enhancing food quality and safety;
- protecting the environment and biodiversity; and
- facilitating safe trade and economic growth.

Core activities:

- sustainable plant genetic resource and seed system management;
- sustainable plant production system management;
- sustainable plant pest management;
- sustainable pesticide management; and
- sustainable technology promotion and support

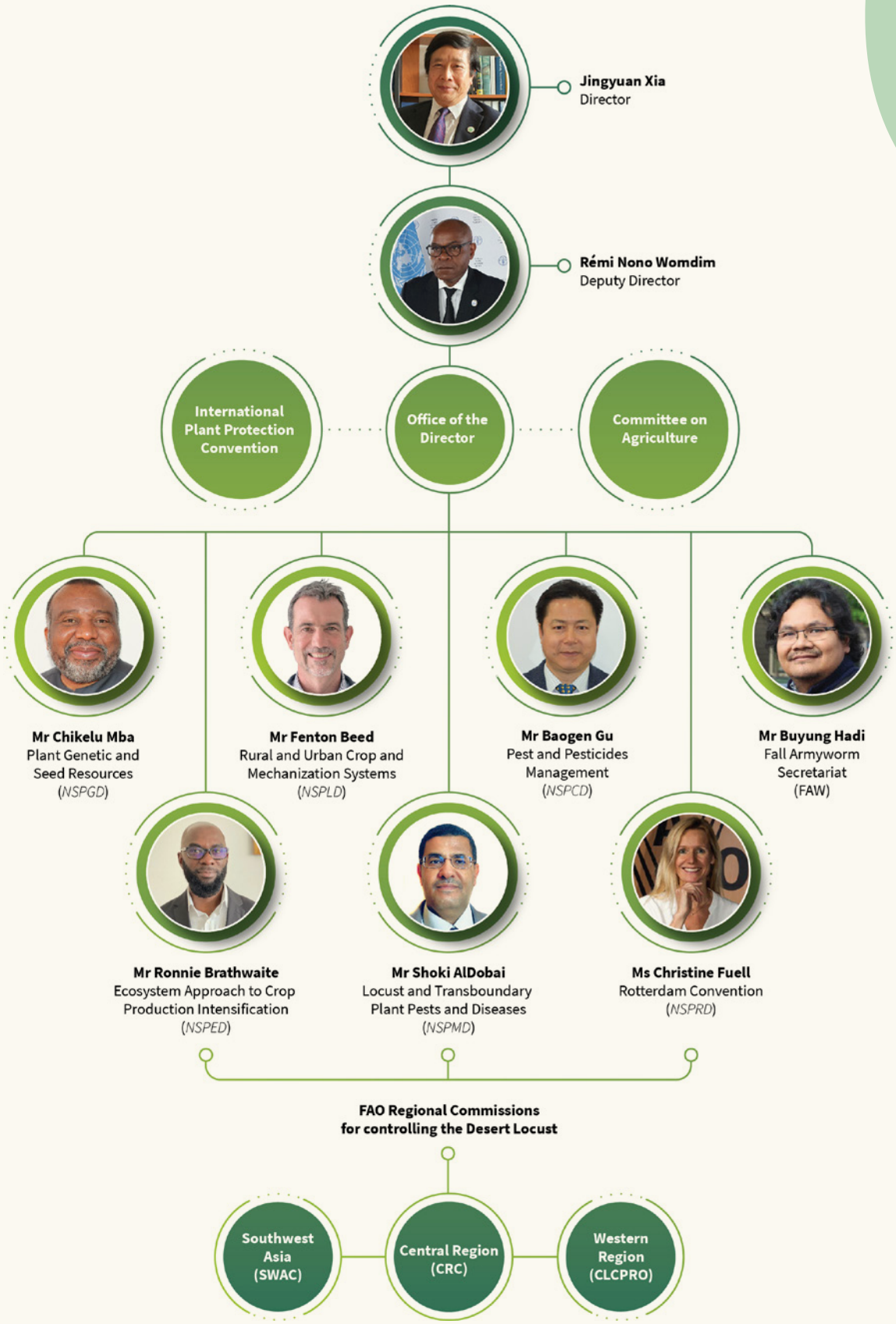
A global community

As of 31 December 2021, 155 FAO staff were working to promote sustainable crop production and protection, of whom 133 are in FAO headquarters and 22 in decentralized offices.

These include the NSP Director's Office and six teams specialized in various areas of plant production (NSPGD, NSPED and NSPLD) and protection (NSPMD, NSPCD and NSPRD), as well as the secretariats of the International Plant Protection Convention (IPPC) and three desert locust commissions managed by the NSPMD team.

It also includes the Secretariat of the Committee on Agriculture (COAG), FAO's main technical advisory committee on agriculture, which provides overall policy and regulatory guidance on issues relating to agriculture, livestock, food safety, nutrition, rural development and natural resource management.

Structure of FAO Plant Production and Protection Division



Executive summary

2021 was a remarkable year for the global plant production and protection community. Director Jingyuan Xia led NSP's transformation, promoting a new vision towards One Dynamic NSP.

Under the leadership of FAO Director-General Qu Dongyu and through the reporting line of Deputy Director-General Ms Beth Bechdol, the year marked the start of preparations to implement the FAO Strategic Framework 2022–2031, which seeks to support the 2030 Agenda through the transformation to MORE efficient, inclusive, resilient and

sustainable agrifood systems for better production, better nutrition, a better environment and a better life, leaving no one behind.

NSP continued advocating for plant production and protection, through activities related to seeds, ecosystem-based approaches to agriculture, sustainable crop production, technology promotion, sustainable mechanization, protection against transboundary pests such as desert locust and fall armyworm, and reduction of risks related to pesticides, fertilizers and other chemicals.

NSP contributed to initiating the transition to the FAO Strategic Framework 2022–2031 and the four betters. In particular, the Division led the development of the narrative and implementation framework for the Programme Priority Area on Better Production (BP) 1 – Innovation for Sustainable Agriculture Production.

Due to the ongoing COVID-19 pandemic, all major events and initiatives were held virtually, with lessons learned and capacities strengthened in the organization and dissemination of main divisional outcomes.

Thanks to the strong support from a broad range of stakeholders, and the hard work and commitment of NSP employees and the NSP community around the globe, the Division still managed to deliver in the highest professional manner and serve its partners globally, regionally and nationally. It also made significant progress in many areas of work.

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Achievements in 2021

Programme priority area development

NSP contributed to initiating the transition towards the FAO Strategic Framework 2022–2031 and the four betters. In particular, the Division led the development of the narrative and implementation framework for the programme priority area (PPA) on Better Production (BP) 1 – Innovation for Sustainable Agriculture Production, with 11 FAO divisions and 5 regional offices engaged in the process. In addition, NSP has been participating in working groups for 14 other PPAs supporting the implementation of the FAO Strategic Framework.

Global Action on OCOP

The FAO Global Action on Green Development of Special Agricultural Products: One Country One Priority Product (OCOP) was launched by FAO Director-General Qu Dongyu at a successful event on 7 September 2021, while the first Meeting of the Steering Committee took place on 26 October, endorsing its terms of reference and discussing the way forward. The Global Action on OCOP aims to develop green and sustainable value chains for special agricultural products, support small and family farmers in reaping the full benefits of a global market and, ultimately, help the transformation of current agrifood systems and the achievement of the Sustainable Development Goals (SDGs).

FAO Global Conference on Green Development of Seed Industries

FAO organized the Global Conference on Green Development of Seed Industries as a virtual event on 4 and 5 November 2021 – a twelve-year interval since the last conference was held. The conference was opened by the FAO Director-General and featured plenary keynote addresses and a high-level ministerial segment. Over 2 200 participants from 126 FAO Members and organizations attended the conference, which resulted in 10 recommendations to strengthen the seed value chain.

Scaling up agroecology

FAO championed agroecology throughout 2021, acting as a key contributor in the elaboration of the Committee on World Food Security Policy Recommendations on Agroecological and Other Innovative Approaches endorsed in June 2021 by 133 Member Nation. Through the United Nations Food Systems Summit, FAO contributed to the creation of the Coalition for Food System Transformation through Agroecology, composed of 27 countries and 42 organizations. The enhanced Agroecology Knowledge Hub hosted by FAO fostered dynamic peer-to-peer exchanges and learning activities reaching 1 million views in 2021.

Emergency control of desert locust

A significant decline in the desert locust upsurge in the Horn of Africa and Yemen was achieved by the end of 2021. FAO worked to control desert locust with ground and aerial operations controlling over 728 000 hectares and surveying nearly 790 000 km^2 in 2021 in the affected countries. These collective efforts averted over 1.4 million metric tons of crop losses and secured food for nearly 13 million people.

Global Action for Fall Armyworm Control

In 2021, the FAO Director-General recognized the Fall Armyworm Secretariat for its outstanding performance and impact through the implementation of the FAO Global Action for Fall Armyworm Control. In 2021, FAO organized two meetings of the Steering Committee and two meetings of the Technical Committee of the Global Action for Fall Armyworm Control, and several coordination meetings at regional, subregional and national levels.

Technical support and capacity development was provided for countries involved in fall armyworm (FAW) control activities. At global level, this included technical webinars with over 2 600 participants, at regional level, technical training for more than 360 participants was carried out, and at national level, practical technical training was provided for almost 6 000 farmers and extension actors.

IPPC ePhyto Solution

As of 31 December 2021, 104 IPPC contracting parties were registered with the IPPC ePhyto Solution, with 65 countries using the system in a business-as-usual context.
In 2021, the ePhyto Solution passed the mark of one million ePhyto certificates exchanged, with an average of over 100 000 certificates being exchanged each month.

International Year of Fruits and Vegetables

2021 was the International Year of Fruits and Vegetables (IYFV). Key activities included the launch of the FAO–CIRAD publication *Scientific partnerships to promote fruit and vegetable production*, the CactusNetwork webinar series on cactus pear, the FAO–IFOAM webinar on "How to build sustainability and prosperity in Fruits and Vegetables food systems", and various activities at regional and national levels.

Plant Production and Protection Annual Report

The first edition of the NSP Annual Report (2020) was published in 2021, marking a historic milestone in the promotion of FAO work on plant production and protection.

Partnerships

NSP liaised with about 200 partner organizations. These include signing of a new memorandum of understanding (MoU) with the Europe-Africa-Caribbean-Pacific Liaison Committee (COLEACP) and renewed MoUs with the European Agricultural Machinery Association (CEMA), the International Fertilizer Association (IFA) and the International Society for Horticultural Science (ISHS).

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Governance activities

Conference of the Parties to the Rotterdam Convention

The online segment of the tenth meeting of the Conference of the Parties to the Rotterdam Convention (COP-10) adopted a set of prioritized and time-sensitive decisions aimed at continuing the work of the Convention in 2022. The theme of the meetings was Global Agreements for a Healthy Planet: Sound management of chemicals and waste. The meetings were attended by approximately 1 300 participants from over 160 parties. During the online segment, parties adopted an interim work programme and budget for 2022, agreed to resume the meeting at an in-person segment in Geneva, Switzerland, from 6 to 17 June 2022, and to continue intersessional work under the Convention in 2022.

FAO Committee on Agriculture (COAG)

In 2021, the Bureau of the FAO Committee on Agriculture (COAG) held nine meetings to review progress on the decisions stemming from the Twenty-seventh Session of COAG and emerging issues, and to prepare the Twenty-eighth Session of COAG to take place in July 2022, in close collaboration with a wide range of technical divisions. In particular, the COAG Sub-Committee on Livestock was operationalized under the lead of the FAO Animal Health division (NSA).

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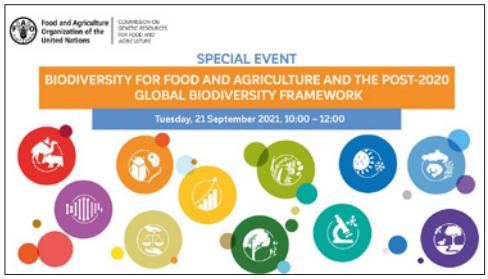
Commission on Phytosanitary Measures

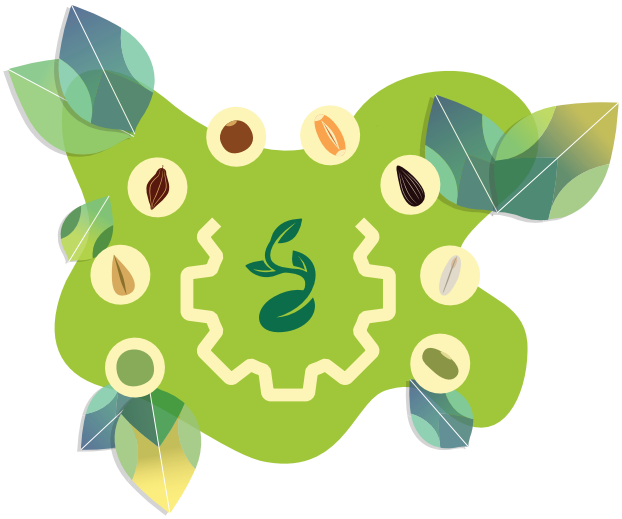
The Sixteenth Session of the Commission on Phytosanitary Measures (CPM-15) took place virtually on 16 March, 18 March and 1 April 2021. More than 350 participants from over 122 countries and 40 observer organizations attended the first-ever virtual edition of the IPPC governing body meeting, and contributed to defining key priorities and actions for the global plant health community in the coming years, including via the adoption of the IPPC Strategic Framework 2020–2030.

Commission on Genetic Resources for Food and Agriculture

The Tenth Session of the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (PGRFA) took place virtually on 22 to 24 June 2021 and was attended by 274 delegates and observers. FAO work was then presented to the Eighteenth Regular Session of the Commission on Genetic Resources for Food and Agriculture from 27 September to 1 October 2021. The Commission commended FAO for its activities and requested FAO to continue providing technical and policy support to Members. Over 100 countries reported to FAO on the state of conservation and sustainable use of their PGRFA in support of the preparation of the Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture.



Seed technology

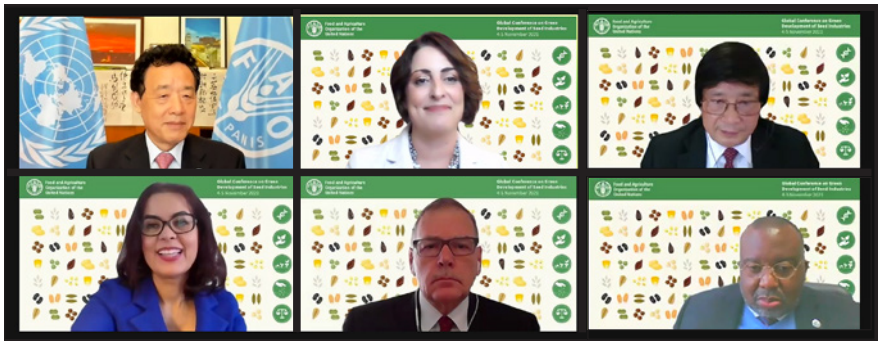


Crop varietal development

FAO strengthens capacities for developing well-adapted crop varieties that are suited to local agroecologies and farming systems. In 2021, FAO assisted 37 Members with regard to breeding superior crop varieties and producing early-generation seeds. For example, NSP provided support to the Republic of Moldova for breeding improved varieties of berries and to Uganda for enhancing smallholder farmers' access to quality seeds and planting materials of multiple local crops and their varieties.

Seed sector development

FAO continued to support countries in developing national seed policies, legislations and/or regulatory frameworks, including countries in Africa (Mozambique and Sierra Leone), Asia and the Pacific (Mongolia), Europe and Central Asia (Armenia, Georgia, Kyrgyzstan, North Macedonia and Tajikistan), and Latin America and the Caribbean (Costa Rica, Cuba and Nicaragua). In Mongolia, for instance, a recently developed seed law was approved in parliament, and FAO is providing support for the preparation of associated regulatory documents. Seed value chains, encompassing seed production, certification and marketing, were strengthened in Georgia, Mozambique, Rwanda, Seychelles, Sri Lanka and Yemen.



Conservation of PGRFA

The First International MultiStakeholder Symposium on Plant Genetic Resources for Food and Agriculture (PGRFA) was held on 29 and 30 March 2021, and was attended by over 800 people. The symposium focused on the *in situ* conservation and on-farm management of PGRFA. In 2021, FAO provided support to 18 countries for the conservation of PGRFA *in situ*, on-farm and *ex situ*. The 2021 report for monitoring progress towards SDG Target 2.5 was published through the FAO SDG portal. 5.7 million accessions of PGRFA were conserved under medium- or long-term conditions in 831 gene banks in 114 countries and 17 regional and international research centres.

Seed security

Natural disasters, migratory pests, protracted crises and COVID-19 have increased the vulnerability of millions of small-scale farmers, many of whom lack access to critical inputs, such as quality seeds. In 2021, emergency provision of seeds worth over USD 40 million in 47 countries was supported through 186 projects. For instance, quality seeds of improved varieties of staple crops were supplied to 1.3 million households in various countries, including South Sudan (directly benefiting 7 million people), 199 000 households in Afghanistan (2.6 million people), 67 000 in Madagascar, 50 000 in Ethiopia, and 13 000 in Yemen. Other countries that received large-scale seed assistance throughout the year included Central Africa Republic, Chad, Iraq, Lesotho, Mali, Mozambique, Myanmar, Nigeria, Sudan, Syrian Arab Republic and Uganda.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Plant production

Agroecology

Under the Scaling up Agroecology Initiative, FAO promoted knowledge and innovations, supported policy processes and fostered connections for transformative change. Agroecological knowledge and innovations were disseminated at 24 learning events. FAO and its partners launched a regional platform to mainstream agroecology in academia and research institutions in Asia, supported by three policy briefs. A massive online open course on agroecology was launched in Latin America and the Caribbean, with more than 7 000 enrolments by the end of 2021.

An online learning platform, ConectAgroecologia, was launched with the Community of Portuguese Language Countries (CPLP), along with the establishment of a Training Centre for Agroecology in Sao Tome and Principe for the CPLP community. In collaboration with the Latin American Parliament, FAO produced guidelines to promote legislation on agroecology in the region. In Uruguay, FAO supported the participatory elaboration and endorsement of a national plan on agroecology.

Plant nutrition

Sustainable use and management of fertilizers was a high priority for FAO in partnership with the International Fertilizer Association (IFA). FAO renewed a MoU with IFA in December 2021, after a full year of collaboration to raise awareness on the International Code of Conduct for the Sustainable Use and Management of Fertilizers (Fertilizer Code). This included education and knowledge transfer through three global webinars jointly held by the two organizations with industry stakeholders to promote microbials as a new tool to better manage availability of plant nutrients, fertigation and advancing nutrient recycling and recovery in agriculture. These capacity-building events contributed to FAO's commitment to the sustainable use and management of plant nutrition products to optimize production and to minimizing environmental degradation.

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Horticulture

The IYFV 2021 provided momentum for the sustainable production of fruit and vegetables by small-scale producers in low- and middle-income countries, and the creation of employment in all stages of the value chain. In line with this, technical guidance was provided to projects, regions and countries to ensure dissemination of good agricultural practices – including protected cultivation – and to reach the full potential of these economically and nutritionally valued crops under various climatic and seasonal circumstances.

The Green Cities Initiative was actively supported by the City Region Food Systems programme and promoted resilient urban and peri-urban horticulture as well as short and efficient value chains for the supply of safe, nutritious and affordable fruits and vegetables to urban dwellers. The cities involved in 2021 include Antananarivo (Madagascar), Kigali (Rwanda), Kisimu (Kenya), Nairobi (Kenya), Praia (Cabo Verde) and Quelimane (Mozambique).

Protected cultivation

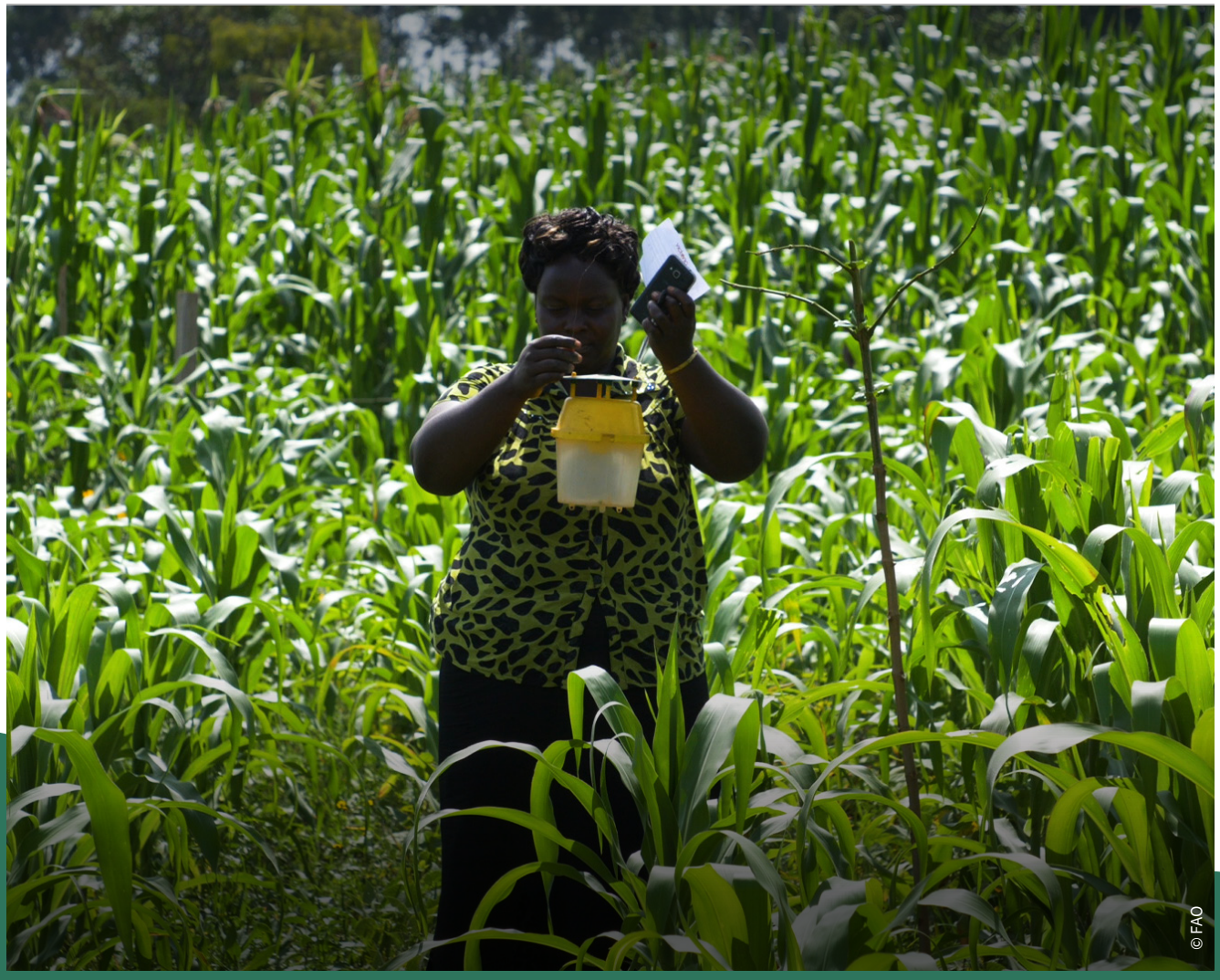
The global Smart Farming for the Future Generation Project launched in Uzbekistan and Viet Nam, following project agreements with respective governments. As a part of the project's capacity-building component, extensionists from Uzbekistan's Ministry of Agriculture were trained on sustainable crop production under protected cultivation systems, and beneficiaries have been selected to optimize value chains for vegetable crops such as tomatoes, sweet peppers and cucumber produced under greenhouse technologies.

A technical package for optimization was defined based on field assessment in consultation with local authorities, farmer experiences and the private sector. The subregional Innovative Protected Cultivation in the Caribbean Project was launched in Antigua and Barbuda, Barbados, Grenada and Saint Kitts and Nevis, with the participation of 130 farmers, extensionists and representatives from the private sector and national institutions.

Plant protection

Fall armyworm control

The Fall Armyworm Monitoring and Early Warning System (FAMEWS) smartphone app was used for field-scale scouting in three target regions, and helped produce 15 490 reports on FAW scouting and traps from 49 countries. FAW data sets were made available on both FAW and Hand-in-Hand platforms in near-real time. National task forces were established in the eight demonstration countries and 54 pilot countries, which were also supported in developing workplans and IPM packages, and in capacity development. As a result, infested areas were reduced in size and yield losses were reduced in some pilot and demonstration countries – China and Philippines, for example, reported yield losses below 5 percent, well within Global Action goals.



Migratory locust control

At the start of 2021, African migratory locust outbreaks continued to affect five countries. More than 8.8 million ha were surveyed, and 365 929 ha were controlled due to FAO support. In April 2021, a major migratory locust outbreak was declared in the Grand Sud region in Madagascar. FAO worked with the Ministry of Agriculture to develop a joint action plan for the 2021–2022 locust campaign worth USD 6.8 million. Treatment of 400 000 ha started, of which 65 percent with insect growth regulators and biopesticides.

Pesticide risk reduction

Activities in 2021 included support to national plans on pesticide risk reduction and mainstreaming biodiversity in 6 countries, life cycle management in more than 20 countries, national strategies or schemes for empty container management in 3 countries, and environmentally sound disposal of more than 500 tonnes of obsolete pesticides. Awareness-raising activities and data collection on highly hazardous pesticides was carried out in the Near East and North Africa, in South Asia and in ACP countries in collaboration with regional offices.

HHP management

The Secretariat of the Rotterdam Convention worked on highly hazardous pesticide management. This included technical assistance through targeted capacity-building activities for approximately 2 520 participants covering ten different topics (e.g. alternatives, severely hazardous pesticide formulations (SHPF), import responses), reaching five regions and 147 countries. Two relevant letters of agreement with Argentina and the Plurinational State of Bolivia were successfully implemented.

Technology promotion

Mechanization

Sustainable agricultural mechanization (SAM) experts developed innovative business models for agricultural machinery hire services and national agricultural mechanization strategies in Africa (Benin and Sierra Leone) and Asia (Sri Lanka and Timor-Leste). Technical support to field programmes, for procurement of agricultural tools, equipment and machinery were provided (259 requests from 62 countries).

To reach as many beneficiaries as possible, five e-learning courses were launched on small-scale agricultural mechanization hire services as a business enterprise in English and French, with certification provided by the FAO E-learning Academy. The Framework for SAM (F-SAMA) was promoted through six webinars with 1 178 participants from 75 countries (45 from Africa). The FAO-CFI publication Business Models for Investing in Sustainable Mechanization was launched at the Eighth World Congress on Conservation Agriculture to promote links with SAM.

Digitalization

To promote digitalization, precision agriculture and mechanization, a joint webinar was organized with the International Telecommunications Union on “Agricultural Robotics for Climate-Resilient Food Production”.

The Locust Commissions, CRC and CLCPRO successfully supported their countries by providing technical support and survey equipment, such as GPS and mobile devices, and all-terrain vehicles. Drones were also used for the first time (two drones to the Locust Centre in Saudi Arabia and three to Sudan).

Scaling up farmer field schools

The Global Farmer Field School (FFS) Platform has continued to grow and raise awareness, reaching more than 1 600 practitioners in 136 countries. Over the past year, the platform has supported more than 45 countries to assure quality FFS through capacity development, project formulation and backstopping. The Farmer Field School approach was presented at key high-level events, such as the 2021 United Nations Climate Change Conference (COP26), the Farmer-centric On-Farm Experimentation Conference and the Adaptation Future Conference 2021. The Global FFS Platform has also continued its efforts to empower the community of practice through the development of reference documents and support tools, including two FFS e-learning courses, guidance documents on climate change and soil health, and a webinar on promoting nutrition-sensitive agriculture through farmer field schools.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Evaluating agroecological performance

By the end of 2021, the Tool for Agroecology Performance Evaluation (TAPE) was used in over 30 countries, in all regions, and on over 4 000 farms to assess their overall multidimensional sustainability by NGOs, governments, researchers and producer organizations. TAPE has started to gain traction as a monitoring and evaluation tool for projects such as those funded by GEF, World Bank and IFAD.


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Normative work

Phytosanitary measures

During CPM-15, IPPC contracting parties adopted 11 International Standards for Phytosanitary Measures (ISPMs), 2 CPM Recommendations and the IPPC Strategic Framework 2020–2030. The IPPC Strategic Framework 2020–2030 defines priorities and actions for the global plant health community. It will support national plant protection organizations in tackling emerging challenges linked to e-commerce, pest outbreak alert and response systems, climate change impacts to plant health and global research coordination.

Pesticide notifications

The Seventeenth Meeting of the Chemical Review Committee (CRC) was held online on 20 to 24 September 2021, with the participation of 30 CRC members and 115 representatives from parties and observers. The Committee reviewed numerous notifications of final regulatory actions and recommended the listing of the pesticides iprodione and terbufos in Annex III. Major intersessional work for CRC-18 also began.

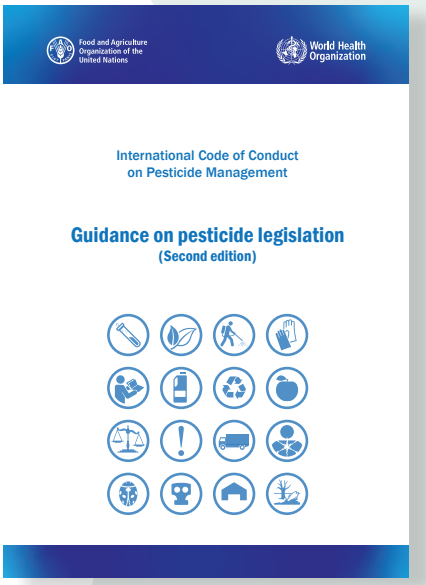
Pesticide regulation

FAO set up new record of 470 international standards, guidelines and tools on pesticide management.

172 Final Regulatory Actions and 190 Import Responses of pesticides and hazardous chemicals from 38 countries were published to ensure the operation of the Prior Informed Consent (PIC) procedure and the exchange of information between parties. In June and December 2021, the Rotterdam Convention Secretariat published PIC Circular 53 and PIC Circular 54, distributed to over 250 designated national authorities.

Code of Conduct on Pesticides Management

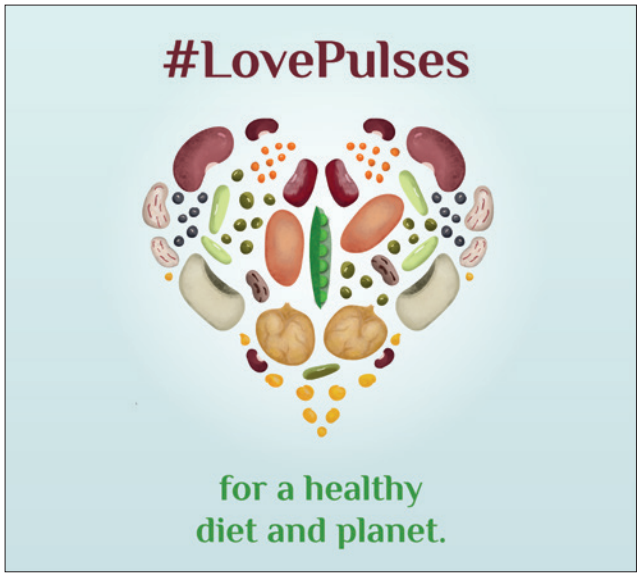
The joint meetings on pesticide management, pesticide residues and pesticide specifications (JMPM, JMPS, JMPR) revised the Guidance on Monitoring the Observance and Implementation of the FAO/WHO Code of Conduct on Pesticide Management and the FAO/WHO Manual on development. They also finalized the use of specifications for chemical pesticides, established 60 new specifications and equivalences, evaluated 45 pesticides, and estimated about 400 new maximum residue levels.



Communication and advocacy

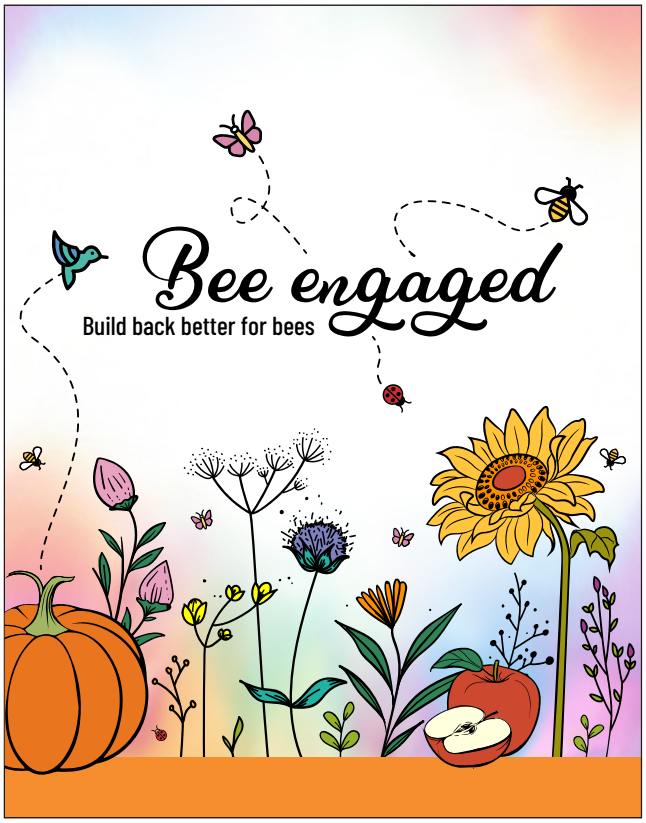
International Year of Plant Health

The International Year of Plant Health (IYPH) 2020 was extended into 2021 due to the impacts of the COVID-19 pandemic, with a high-level closing ceremony attended by the FAO Director-General and several ministers held on 1 July 2021. The IYPH concluded with a rich legacy, including the *Scientific review of the impact of climate change on plant pests*, the proposal for the International Day of Plant Health and the youth declaration on plant health.



World Pulses Day

FAO led World Pulses Day (WPD) celebrations, culminating in a high-level event opened by the FAO Director-General on 12 February 2021. The annual theme for 2021 WPD celebrations was “#LovePulses for a healthy diet and planet”. In 2021, WPD recognized the nutritional benefits of pulses and their environmental contribution to sustainable food systems and a world without hunger. WPD 2021 was the most widely followed ever, reaching some 95.5 million social media users during the week from 8 to 14 February.



World Bee Day

FAO observed World Bee Day (WBD) on 20 May 2021 under the theme “Bee engaged – Build Back Better for Bees”. WBD 2021 was celebrated during the International Year of Fruits and Vegetables. In highlighting the role of pollinators for fruits and vegetables, FAO Director-General Qu Dongyu recalled that the value of pollination services to global food production is worth up to USD 600 billion annually.

Newsletters

After the successful launch of the Plant Production and Protection Newsletter in late 2020, six more issues were published and distributed widely to inform and engage the global plant production and protection community. In 2021, the Fall Armyworm Control in Action Newsletter on measures being taken to address the threat of FAW was issued on a bimonthly basis. NSP also continued to publish the FAO Agroecology Newsletter every month in English, French and Spanish, as well as its bulletins on desert locust. In addition, in 2021 NSP published two issues of the ACP MEAs 3 Project Newsletter and seven issues of the IYPH Newsletter, later becoming the IPPC Newsletter.

NSP seminars

The NSP Seminar series was launched in 2021 with tree webinars, spearheading global collaboration and interactive dialogue on technical topics related to sustainable plant production and protection:

- **6 July 2021:** Transformation to MORE efficient, inclusive, resilient and sustainable plant production and protection through optimization and minimization;
- **28 October 2021:** Coming together to combat an invasive pest: multistakeholder perspectives on the Global Action for Fall Armyworm Control;
- **18 November 2021:** Towards sustainable management of obsolete stocks and pesticide packaging through multistakeholder cooperation.

Partnerships and network

NSP cooperates with over 200 different external partners and organizations to create synergies and achieve common goals. We are grateful to all our partners for the invaluable support they provide. The following is a list of our leading partners by category.

12 United Nations Organizations

- Codex Alimentarius Commission (CAC)
- Convention on Biological Diversity (CBD)
- International Atomic Energy Agency (IAEA)
- International Fund for Agricultural Development (IFAD)
- International Treaty on Plant Genetic Resources for Food and Agriculture
- United Nations Centre for Sustainable Agricultural Mechanization (UN-CSAM)
- United Nations Development Programme (UNDP)
- United Nations Environment Programme (UNEP)
- United Nations Resident Coordinator Office (UNRCO)
- World Health Organization (WHO)
- World Meteorological Organization (WMO)
- World Trade Organization (WTO

28 International/ Regional Organizations

- African Union (AU)
- African Agricultural Technology Foundation (AATF)
- Caribbean Agricultural Research and Development Institute (CARDI)
- Caribbean Community (CARICOM) Secretariat
- Collaborative International Pesticides Analytical Council (CIPAC)
- East African Community (EAC)
- Europe-Africa-Caribbean-Pacific Liaison Committee (COLEACP)
- European Commission Directorate-General for International Partnerships (INTPA)
- Global Crop Diversity Trust.
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)
- International Cooperation for Development and Solidarity (CIDSE)
- International Coconut Community (ICC)
- International Seed Testing Association (ISTA)
- International Union for the Protection of New Varieties of Plants (UPOV)
- International Seed Federation (ISF)
- International Fertilizer Development Center (IFDC)
- International Union for Conservation of Nature (IUCN)
- Islamic Organization for Food Security
- North American Pollinator Protection Campaign (NAPPC)
- Organisation for Economic Co-operation and Development (OECD)
- Organization of African, Caribbean and Pacific States (OACPS)
- Plant Genetic Resources Centre, Southern African Development Community
- Sasakawa Africa Association
- Secretariat for the Pacific Community, Fiji (SPC)
- Secretariat of the Pacific Regional Environment Programme (SPREP)
- Southern African Development Community (SADC)
- Promote Pollinators (Coalition of the Willing on Pollinators)
- SWISSAID

91 Academic and research organizations

- Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, China
- Africa Rice Center
- African Forum for Agricultural Advisory Services
- AgroScope
- Arizona State University, United States of America
- Australian Department of Agriculture, Water and Environment
- Bangladesh Agricultural Research Institute (BARI)
- Bioversity International

- Brazilian Agricultural Research Corporation (EMBRAPA)
- Caribbean Agriculture Research and Development Institute (CARDI)
- Centre for Agriculture and BioScience International (CABI)
- Centre for Pacific Crops and Trees (CePaCT)
- Centre for Pesticide Suicide Prevention (CPSP), University of Edinburgh
- China Agricultural University, Beijing, China
- Climate Prediction and Applications Centre (ICAPC/ IGAD)
- Columbia University International Research Institute for Climate and Society, United States of America
- Conservation Tillage Research Center (CTRC)
- Cornell University, United States of America
- ETH Zurich
- European Centre for Medium-Range Weather Forecasts (ECMWF)
- European Confederation of Soil Science Societies
- Federal University of Rio Grande do Sul (UFRGS), Brazil
- French Agricultural Research Centre for International Development (CIRAD)
- French National Research Institute for Agriculture, Food and Environment (INRAE)
- Global Crop Diversity Trust
- Global Minor Use Foundation
- Global Soil Biodiversity Initiative
- Haramaya University, Ethiopia
- Institut Supérieur d'Agriculture et d'Agroalimentaire Rhône-Alpes (ISARA)
- Institute of Biometeorology of the National Research Council (IBIMET)
- Institute of Plant Protection, Chinese Academy of Agricultural Sciences (CAAS)
- Institute of Space Technique and Technology (ISTT), Kazakhstan
- Instituto de Investigaciones en Ecosistemas y Sustentabilidad, Universidad Nacional Autónoma de México (UNAM)
- International Center for Agricultural research in the Dry Areas (ICARDA)
- International Center for Biosaline Agriculture (ICBA)
- International Centre for Research in Agroforestry (ICRAF)
- International Center for Tropical Agriculture (CIAT)
- International Centre of Insect Physiology and Ecology (ICIPE)
- International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)
- International Institute of Tropical Agriculture (IITA)
- International Livestock Research Institute (ILRI)
- International Maize and Wheat Improvement Center (CIMMYT)
- International Potato Center (CIP)
- International Rice Research Institute (IRRI)
- International Water Management Institute (IWMI)
- Joint Research Centre – European Commission (JRC-EC)
- Lancaster University – Insect and Parasite Ecology Group (iPEG)
- Latin American Scientific Society of Agroecology (SOCLA)
- Leeds University, United Kingdom of Great Britain and Northern Ireland
- Leibniz Institute DSMZ
- Lund University, Sweden
- Michigan State University, United States of America
- Ministry of Environment and Forest Resources (Environment Department), Togo
- National Agricultural Technology Institute (INTA), Argentina
- Nordic Genetic Resource Center
- North-West University, South Africa
- Oregon State University, United States of America
- Pennsylvania State University, United States of America
- Pesticide Action Network (PAN UK)
- San Diego Botanic Garden
- School of Agriculture Foundation, University of Buenos Aires, Argentina
- School of Life Sciences, Chongqing University, China
- SERVIR, NASA
- Sorbonne University, France
- Sudan University of Science and Technology, Sudan
- Stellenbosch University, South Africa
- TMG Research GmbH
- Tokyo University of Agriculture and Technology, Japan
- Transformative Partnership Platform (TPP)
- Trinity College Dublin, Ireland
- Tropical Agricultural Research and Higher Education Center (CATIE)
- United States Department of Agriculture (USDA/ARS)
- Universidad de Guadalajara, Mexico
- Université Catholique de Louvain, Belgium
- University of Belize
- University of Cambridge, United Kingdom of Great Britain and Northern Ireland
- University of Cape Town, South Africa
- University of Florida, Belle Glade, United States of America
- University of Hamburg, Germany
- University of Konstanz, Germany
- University of Valencia
- University of Zambia
- Vietnam Academy of Agricultural Sciences (VAAS)
- Wageningen University, Netherlands
- Warwick University, United Kingdom of Great Britain and Northern Ireland

- Wilfred Laurier University, Canada
- World Agroforestry Centre (ICRAF)/Center for International Forestry Research (CIFOR)
- World Vegetable Center
- Zambia Agriculture Research Institute (ZARI)

63 Industry and NGO Partners

- 51 Degrees
- Access Agriculture
- African Conservation Tillage Network (ACT)
- AGRHYMET Regional Center
- Agriterra
- AgroCare
- Agronomes et Veterinaires Sans Frontières
- Associação para a Cooperação e o Desenvolvimento (ACTUAR)
- Association pour la recherche et la formation en agro-ecologie (ARFA)
- Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean (BCRC–Caribbean)
- Bioprotection global
- Biovision
- CARE International
- Coalition of the Willing on Pollinators (Promote Pollinators)
- CropLife International
- CSA Alliance, China
- Dan Church Aid (DCA)
- Digital Green
- Eastern Africa Field Schools Hub
- Eclosio
- ENDA Pronat
- Esri
- European Agricultural Machinery (CEMA)
- European Conservation Agriculture Federation (ECAF)
- Foundation PLAGBOL (Plaguicidas Bolivia)
- Garmin
- Global Food Security Cluster
- Global Pulse Confederation (GPC)
- Google
- HEMAV Foundation
- Iles de Paix
- Indian Meteorological Department
- Institute for Research and Promotion of Alternatives in Development (IRPAD)
- Instituto de Intervenciones Situadas (IN SITU)
- International Biocontrol Manufacturers Association (IBMA)
- International Federation of Organic Agriculture Movements (IFOAM)
- International Fertilizer Association (IFA)
- International Organization of Wine and Vine
- International Seed Federation (ISF)
- Lobelia/isardSAT
- Louvain Cooperation
- Mercy Corps
- Micron
- National Oceanic and Atmospheric Administration (NOAA)
- North American Pollinators Protection Campaign
- Novacom
- Oxfam
- Pesticide Action Network (PAN-UK), United Kingdom of Great Britain and Northern Ireland
- Prescient Weather, World Climate Service
- reNature, Kenya
- Regenerate Earth Limited
- Rikolto
- RUAF
- Rural Self-Help Development Association (RSDA)
- Scientific Animations Without Borders (SAWBO)
- Schola Campesina
- Scriptoria
- Slow Food
- Standards for Supporting Agricultural Livelihoods in Emergencies (SEADS)
- United Kingdom Meteorological Office
- Urgenci
- VITO
- Vulcan / AI2

22 Resource organizations

- Africa Development Bank Group (AfDB)
- Africa Solidarity Trust Fund
- Bill and Melinda Gates Foundation
- CORAF-WECARD
- Danida
- Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)
- Directorate-General for Health and Food Safety (DG SANTE)
- Directorate-General for International Cooperation and Development (DG INTPA)
- Ecosystem Services Partnership (ESP)
- European Union (EU)
- FAO–Turkey Partnership programme
- French Development Agency (AFD)
- Global Environment Facility (GEF)
- Japan International Cooperation Agency (JICA)
- Kuwait Fund for Arab Economic Development
- Louis Dreyfus Foundation
- Mastercard Foundation
- McKnight Foundation
- National Agricultural Research and Extension Institute (NAREI), Guyana
- Norwegian Agency for Development Cooperation (NORAD)
- Swedish Chemical Agency (KemI)
- United States Agency for International Development (USAID)
- World Bank

Way forward

Dear Reader,

I hope you enjoyed reading about our many achievements in 2021. I am particularly proud of the NSP staff who, despite ongoing challenges caused by the COVID-19 pandemic, continued operating in an efficient, effective and professional manner.

2022 will be an extraordinary year for FAO, starting with the implementation of its Strategic Framework 2022–2031 and its "four betters" (better production, better nutrition, a better environment, and a better life, leaving no one behind). NSP will play a crucial role in supporting the "four betters" by jointly leading BP1 (Innovation for Sustainable Agriculture Production) and contributing to 14 Priority Programme Areas (PPAs). In particular, NSP will focus on implementing the FAO Global Action on Green Development of Special Agricultural Products: One Country One Priority Product (OCOP).

The NSP annual theme for 2022 is: Promoting sustainable plant production through optimization and minimization, in line with SDG 2 and SDG 12. Key activities for disseminating this annual theme will include the organization of the first-ever FAO Global Conference on Sustainable Plant Production, with the theme of Innovation, Efficiency and Resilience, and the NSP Seminar series on the theme, the celebration of the first-ever International Day of Plant Health (IDPH) on 12 May 2022, and the preparations for delivering the International Year of Millets (IYM) in 2023.

Starting from 2022, we will prioritize our professional activities on integration, demonstration, extension and dissemination of five key technologies to support the transformation towards sustainable plant production and protection through optimization and minimization. These are: sustainable plant genetic resources and seed system management, sustainable plant production system management, sustainable plant pest management, sustainable pesticide management and sustainable technical promotion and support.

To do so, we will focus on integration and extension of green production and green protection technologies, including pest-resistant and stress-tolerant crop varieties, biopesticides and biofertilizers, resource-saving cropping, conservation farming, precision seeding (irrigating, pesticide application and fertilizing), climate-smart agriculture, low-carbon production and protection, as well as digital production and protection.

We will also further strengthen our normative work through the successful organization of relevant governance meetings, including the 28th Session of the FAO Committee on Agriculture (COAG-28), the 16th Session of the Commission on Phytosanitary Measures (CPM-16) of the International Plant Protection Convention (IPPC) and the 10th Meeting of the Conference of the Parties (COP-10) to the Rotterdam Convention.

The Division will continue to organize the NSP Seminar Series and to publish the NSP Annual Report series for 2021. We will also continue to strengthen cooperation with NSP partners by organizing the first-ever NSP Partner Conference and establishing the NSP partnership platform.

To further optimize internal management, we will publish the first edition of the NSP Operational Manual (2022), strengthen quality control, move towards "One Dynamic NSP" through building "One Dynamic Team", and motivate teams and staff by recognizing their outstanding contributions.

As always, we will rely on the continuous dedication of all our staff and the continuous support of all our partners to achieve extraordinary results over the coming year.

Jingyuan Xia, NSP Director

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