

Pesticide residues in food 2012

**Joint FAO/WHO Meeting
on Pesticide Residues**

**FAO
PLANT
PRODUCTION
AND PROTECTION
PAPER**

216

EVALUATIONS 2012

PART I - RESIDUES



**World Health
Organization**



**Food and Agriculture
Organization of
the United Nations**

Pesticide residues in food 2012

Evaluations

Part I - Residues

FAO
PLANT
PRODUCTION
AND PROTECTION
PAPER

216

Sponsored jointly by FAO and WHO

Joint meeting of the
FAO Panel of Experts on Pesticide Residues
in food and the Environment
and the
WHO Core Assessment Group
Rome, Italy 11-20 September 2012

Monographs containing summaries or residue data and toxicological data considered at the 2012 JMPR, together with recommendations, are available upon request from FAO or WHO under the title:

Pesticide residues in food 2012

Evaluations

Part I: Residues

FAO Plant Protection Paper 216

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

This report contains the collective views of two international groups of experts and does not necessarily represent the decisions or the stated policy of the Food and Agriculture Organization of the United Nations or of the World Health Organization.

INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY

The preparatory work for the toxicological evaluation of pesticide residues carried out by the WHO Expert Group on Pesticide Residues for consideration by the FAO/WHO Joint Meeting on Pesticide Residues in Food and the Environment is actively supported by the International Programme on Chemical Safety (IPCS).

IPCS is a joint venture of the United Nations Environment Programme, The International Labour Organization and the World Health Organization. One of the main objectives of IPCS is to carry out and disseminate evaluations of the effects of chemicals on human health and the quality of the environment.

ISBN 978-92-5-107558-6

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to the Chief, Publishing and Multimedia Service, Information Division, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy or by e-mail to copyright@fao.org.

© FAO 2013

CONTENTS

	pages
List of participants	iii
Abbreviations.....	vi
Use of JMPR Reports and Evaluations by registration authorities.....	x
Introduction	xi
AMETOCTRADIN (253) ^{2/}	1
AZOXYSTROBIN (229).....	153
BUPROFEZIN (173)	159
CARBOFURAN (096)	175
CHLORFENAPYR (254) ^{2/}	181
CHLOROTHALONIL (081)	251
CYCLOXYDIM (179) ^{1/}	261
CYFLUTHRIN (157)/BETA-CYFLUTHRIN (228).....	385
CYROMAZINE (169).....	403
DICHLORVOS (025) ^{1/}	413
DICOFOL (026) ^{1/}	465
DINOTEFURAN (255) ^{2/}	477
DITHIOCARBAMATES (105).....	591
FENVALERATE (119) ^{1/}	595
FLUDIOXONIL (211).....	603
FLUOPYRAM (243)	617
FLUXAPYROXAD (256) ^{2/}	659
GLUFOSINATE AMMONIUM (175) ^{1/}	937
IMIDACLOPRID (206).....	1183
MCPA (257) ^{2/}	1195
METHOXYFENOZIDE (209)	1337
PENTHIOPYRAD (253).....	1365
PHORATE (112)	1653
PICOXYSTROBIN (258) ^{2/}	1659
SEDAXANE (259) ^{2/}	1827
SPINETORAM (233)	1919
THIAMETHOXAM (245) and CLOTHIANIDIN (238)	2033
TRIFLOXYSTROBIN (213).....	2037

^{1/} Evaluated for the Periodic Review Programme of the Codex Committee on Pesticide Residues.

^{2/} New compound.

List of participants

2012 Joint FAO/WHO Meeting on Pesticide Residues

ROME, 11–20 SEPTEMBER 2012

FAO Members

Dr Ursula Banasiak, Department of Chemicals Safety, Federal Institute for Risk Assessment, Max-Dohrn-Strasse 8-10, 10589 Berlin, Germany

Professor Eloisa Dutra Caldas, Pharmaceutical Sciences Department, College of Health Sciences, University of Brasilia, Campus Universitário Darci Ribeiro, 70919-970 Brasília/DF, Brazil (*FAO Rapporteur*)

Mr David Lunn, Principal Advisor (Residues and Plants), Import and Export Standards, Ministry for Primary Industries, PO Box 2835, Wellington, New Zealand

Dr Dugald MacLachlan, Residues and Microbiology Policy, Export Standards, Food Division, Department of Agriculture, Fisheries and Forestry, GPO Box 858, Canberra, ACT 2601, Australia (*FAO Chairman*)

Mr Christian Sieke, Unit Residue Assessment of Pesticides and Biocides, Department of Chemicals Safety, Max-Dohrn-Strasse 8-10, 10589 Berlin, Germany

Dr Yukiko Yamada, Director-General for Technological Affairs, Chief Scientific Officer, Ministry of Agriculture, Forestry and Fisheries, 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8950, Japan

WHO Members

Professor Alan R. Boobis, Centre for Pharmacology & Therapeutics, Division of Experimental Medicine, Department of Medicine, Faculty of Medicine, Imperial College London, Hammersmith Campus, Ducane Road, London W12 0NN, England

Dr Les Davies, Australian Pesticides & Veterinary Medicines Authority, PO Box E240, Kingston, ACT 2604, Australia

Dr Vicki L. Dellarco, Office of Pesticide Programs (7501P), United States Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460, United States of America (USA) (*WHO Rapporteur*)

Dr Douglas B. McGregor, Toxicity Evaluation Consultants, Aberdour, Scotland

Professor Angelo Moretto, Department of Biomedical and Clinical Sciences Luigi Sacco, University of Milan, International Centre for Pesticides and Health Risk Prevention, Luigi Sacco Hospital, Via G.B. Grassi 74, 20157 Milan, Italy (*WHO Chairman*)

Dr Roland Solecki, Chemical Safety Division, Steering of Procedures and Overall Assessment, Federal Institute for Risk Assessment, Max-Dohrn-Strasse 8-10, 10589 Berlin, Germany

Dr Maria Tasheva, Associate Professor Toxicologist, Sofia, Bulgaria

Secretariat

Ms Catherine Adcock, Head, Toxicology Section 2, Health Effects Division II, Health Evaluation Directorate, Pest Management Regulatory Agency, 2720 Riverside Drive, Address Locator: 6605E, Ottawa, Ontario, Canada K1A 0K9 (WHO Expert)

Professor Árpád Ambrus, National Food Chain Safety Office, 1143 Budapest, Tábornok u 2, Hungary (FAO Temporary Adviser)

Mr Kevin Bodnaruk, 26/12 Phillip Mall, West Pymble, NSW 2073, Australia (FAO Editor)

Ms Gracia Brisco, Food Standards Officer, Joint FAO/WHO Food Standards Programme, Food and Agriculture Organization of the United Nations (FAO), Viale delle Terme di Caracalla, 00153 Rome, Italy (Codex Secretariat)

Ms Marloes Busschers, Board for the Authorisation of Plant Protection Products and Biocides, Stadsbrink 5, 6707 AA Wageningen, the Netherlands (WHO Expert)

Dr Ian Dewhurst, Chemicals Regulation Directorate, Mallard House, King's Pool, 3 Peasholme Green, York YO1 7PX, England (WHO Expert)

Dr William Donovan, Health Effects Division, Office of Pesticide Programs, Office of Chemical Safety and Pollution Prevention, United States Environmental Protection Agency, MC 7509C, 1200 Pennsylvania Avenue NW, Washington, DC 20460, USA (FAO Temporary Adviser)

Dr Yi Bing He, Department of Science and Education, Ministry of Agriculture, No. 11 Nong Zhan Guan Nanli, Chaoyang District, Beijing 100125, China (FAO Temporary Adviser)

Dr Paul Humphrey, Australian Pesticides and Veterinary Medicines Authority, PO Box 6182, Kingston, ACT 2604, Australia (FAO Temporary Adviser)

Mr Makoto Irie, Agricultural Chemicals Office, Plant Products Safety Division, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries, 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8950, Japan (FAO Temporary Adviser)

Dr Debabrata Kanungo, Chairman, Scientific Panel on Residues of Pesticides and Antibiotics, Food Safety and Standard Authority of India, Nityakshetra, 294/Sector-21D, Faridabad 121005, India (WHO Expert)

Professor Mi-Gyung Lee, Department of Food Science and Biotechnology, College of Natural Science, Andong National University, No. 1375 Gyeongdong-ro, Andong-si Gyeongsangbuk-do, 760-749, Republic of Korea (FAO Temporary Adviser)

Dr Samuel Margerison, Pesticides Program, Australian Pesticides and Veterinary Medicines Authority, PO Box 6182, Kingston, ACT 2604, Australia (FAO Temporary Adviser)

Dr Francesca Metruccio, International Centre for Pesticides and Health Risk Prevention, Luigi Sacco Hospital, Via G.B. Grassi 74, 20157 Milan, Italy (WHO Expert)

Dr Matthew Joseph O'Mullane, Food Standards Australia New Zealand, PO Box 7186, Canberra BC, ACT 2610, Australia (WHO Expert)

Dr Rudolf Pfeil, Toxicology of Pesticides and Biocides, Federal Institute for Risk Assessment, Max-Dohrn-Strasse 8-10, 10589 Berlin, Germany (WHO Expert)

Dr Xiongwu Qiao, Shanxi Academy of Agricultural Sciences, 2 Changfeng Street, Taiyuan, Shanxi 030006, China (CCPR Chairman)

Dr Prakashchandra V. Shah, Chief, Inert Ingredient Assessment Branch, Registration Division, Office of Pesticide Programs, United States Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460, USA (WHO Expert)

Ms Marla Sheffer, 1553 Marcoux Drive, Orleans, Ontario, Canada K1E 2K5 (WHO Editor)

Ms Trijntje van der Velde-Koerts, National Institute for Public Health and the Environment (RIVM), PO Box 1, 3720 BA, Bilthoven, the Netherlands (FAO Temporary Adviser)

Dr Philippe Verger, Department of Food Safety and Zoonoses, World Health Organization, 1211 Geneva 27, Switzerland (WHO JMPR Secretariat)

Dr Gerrit Wolterink, Centre for Substances and Integrated Risk Assessment, National Institute for Public Health and the Environment (RIVM), Antonie van Leeuwenhoeklaan 9, PO Box 1, 3720 BA Bilthoven, the Netherlands (WHO Expert)

Ms YongZhen Yang, Plant Production and Protection Division, Food and Agriculture Organization of the United Nations (FAO), Viale delle Terme di Caracalla, 00153 Rome, Italy (FAO JMPR Secretariat)

Dr Midori Yoshida, Chief of the Second Section, Division of Pathology, Biological Safety Research Centre, National Institute of Health Sciences, Ministry of Health, Labour and Welfare, 1-18-1 Kamiyoga, Setagaya-ku, Tokyo 158-8501, Japan (WHO Expert)

Abbreviations

(Well-known abbreviations in general use are not included. Specific abbreviations for pesticide degradation products, etc., may be used in the monographs and these are either identified where first used or in a table within the monograph. Two-letter codes for pesticide formulations are given in the Manual on development and use of FAO and WHO specifications for pesticides, 1st Ed., FAO Plant Production and Protection Paper 173, FAO, Rome, 2002.)

ACN	Acetonitrile
ADI	acceptable daily intake
ai	active ingredient
AR	applied radioactivity
ARfD	acute reference dose
asp gr fn	aspirated grain fraction
AU	Australia
BBCH	B iologischen Bundesanstalt, B undessortenamt und C hemische Industrie
bw	body weight
CAC	Codex Alimentarius Commission
CAS	Chemical Abstracts Service
CCN	Codex classification number (for compounds or commodities)
CCPR	Codex Committee on Pesticide Residues
CIPAC	Collaborative International Pesticides Analytical Council
C_{\max}	maximum concentration
CXL	Codex MRL
CYP	cytochrome P450
DALA	Days after last application
DAP	days after planting
DAT	days after treatment
DM	dry matter
DMA	dimethylamine
DT ₅₀	time required for 50% dissipation of the initial concentration
dw	dry weight
ECD	electron capture detector
EHC	Environmental Health Criteria monograph
EHE	ethylhexyl ester
EPO	early post-emergence
EU	European Union

FAO	Food and Agriculture Organization of the United Nations
fw	fresh weight
GAP	good agricultural practice
GC	gas chromatography
GC-ECD	gas chromatography with electron capture detection
GC-FPD	gas chromatography with flame photometric detection
GC/MS	gas chromatography/mass spectrometry
GC/MSD	gas chromatography/mass selective detector
GC-NPD	gas chromatography coupled with nitrogen-phosphorus detector
GD	gestation day
GEMS/Food	Global Environment Monitoring System – Food Contamination Monitoring and Assessment Programme
GI	gastrointestinal
GLC	gas liquid chromatography
GLP	good laboratory practice
GPC	gel permeation chromatography
HPLC	high performance liquid chromatography
HR	highest residue in the edible portion of a commodity found in trials used to estimate a maximum residue level in the commodity
HR-P	highest residue in a processed commodity calculated by multiplying the HR of the raw commodity by the corresponding processing factor
IEDI	international estimated daily intake
IESTI	international estimate of short-term dietary intake
IR	Infrared Regions
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
JMPR	Joint FAO/WHO Meeting on Pesticide Residues
JP	Japan
LC	liquid chromatography
LOD	limit of detection
LOQ	limit of quantification
MOA	mode of action
MPA	2-methylphosphinico-acetic acid
MPB	4-methylphosphinico-butanoic acid
MPP	3-[hydroxy(methyl) phosphinoyl]propionic acid (= 3-methylphosphinico-propionic acid)
MRL	maximum residue limit
MS	mass spectrometry

MS/MS	tandem mass spectrometry
NAG	<i>N</i> -acetylglufosinate
ND	non-detect - below limit of detection
NMR	Nuclear Magnetic Resonance
NOAEC	no-observed-adverse-effect concentration
NOAEL	no-observed-adverse-effect level
OECD	Organisation for Economic Co-operation and Development
PAG3	2-(2-hydroxymethylphenyl)-2-oxoacetic acid
PAM	1-methyl-3-trifluoromethyl-1H-pyrazole-4-carboxamide
PB	3-phenoxybenzoic
PBI	plant back interval
PCA	1-methyl-3-trifluoromethyl-1H-pyrazole-4-carboxylic acid; 4-chloroaniline
PES	Post-extraction solid
Pf	processing factor
PH	pre-harvest
PHI	pre-harvest interval
ppm	parts per million
PRE	pre-emergence
RAC	raw agricultural commodity
RSD	relative standard deviation
RTI	re-treatment interval
SC	suspension concentrate
SL	soluble liquid
SPE	solid phase extraction
STMR	supervised trials median residue
STMR-P	supervised trials median residue in a processed commodity calculated by multiplying the STMR of the raw commodity by the corresponding processing factor
TAR	total administered radioactivity
TF	transfer factor
TLC	thin-layer chromatography
TPMA	2,2,3,3-tetramethylcyclopropane carboxylic acid
TRR	total radioactive residues
TTC	threshold of toxicological concern
UK	United Kingdom
USA	United States of America
US/CAN	United States of America and Canada
USEPA	United States Environmental Protection Agency
US-FDA	USA – Food and Drug Administration

UV/VIS	Ultraviolet-visible spectroscopy
WG	wettable granule
WHO	World Health Organization
WP	wettable powder

Use of JMPR Reports and Evaluations by registration authorities

Most of the summaries and evaluations contained in this report are based on unpublished proprietary data submitted for use by JMPR in making its assessments. A registration authority should not grant a registration on the basis of an evaluation unless it has first received authorization for such use from the owner of the data submitted for the JMPR review or has received the data on which the summaries are based, either from the owner of the data or from a second party that has obtained permission from the owner of the data for this purpose.

Introduction

A Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group (JMPR) was held at FAO Headquarters, Rome (Italy), from 11 to 20 September 2012. The Panel Members of FAO met in preparatory sessions on 6–10 September.

The Meeting was opened by Dr Gavin Wall, Director, OiC, Plant Production and Protection Division (AGP), FAO. On behalf of FAO and WHO, Dr Wall welcomed and thanked the participants for providing their expertise and for the significant time and effort put into such an important activity, noting that there were 40 participants from 17 countries. He also expressed gratitude to the respective national authorities, institutes and organizations that have allowed their experts to contribute to this important work on pesticide residues.

The long history and key role played by the JMPR in the establishment of global residues standards was highlighted by Dr Wall. In particular, the importance of the JMPR pesticide risk assessments and the provision of scientific advice in helping to ensure the supply of safe food to consumers and the facilitation of fair international trade. Activities closely aligned with a fundamental principle of the UN, i.e., that all people should have access to sufficient and safe food to meet their needs via an efficient and fair food trade system.

In this context Dr Wall referred to the zero hunger campaign, recently launched by the Secretary-General of the UN at the time of the Rio+20 event. He pointed out that eradication of hunger could not be achieved without consumers having access to safe, affordable food. He highlighted that as the hungry and the sick are more vulnerable to the impacts of food contaminants there was a broader need to ensure that safe food should go hand in hand with safe water and improved sanitation, further underlining the importance of the work undertaken by the JMPR.

The issue of JMPR resourcing and its importance were also commented upon by Dr Wall. He mentioned that the issue had recently been discussed by the Codex Alimentarius Commission with member countries acknowledging their responsibility to ensure JMPR was sufficiently funded to enable the efficient provision of high quality scientific advice continued in a sustainable and timely manner. To this end Dr Wall indicated that the CAC had established a working group to identify short and longer term solutions to the current resource constraints.

Dr Selma Doyran, Chief Secretary, Codex Alimentarius Commission Joint FAO/WHO Food Standards Programme, also addressed the Meeting. She commented on the importance of scientific advice and how this had been raised at a recent the WTO SPS committee meeting. She also thanked the participants for their commitment and hard work in undertaking the activities of the JMPR.

The Meeting was held in pursuance of recommendations made by previous Meetings and accepted by the governing bodies of FAO and WHO that studies should be undertaken jointly by experts to evaluate possible hazards to humans arising from the occurrence of residues of pesticides in foods. The reports of previous Joint Meetings (see Annex 5) contain information on acceptable daily intakes (ADIs), acute reference doses (ARfDs), MRLs and the general principles that have been used for evaluating pesticides. The supporting documents (residue and toxicological evaluations) contain detailed monographs on these pesticides and include evaluations of analytical methods.

During the Meeting, the FAO Panel of Experts was responsible for reviewing residue and analytical aspects of the pesticides under consideration, including data on their metabolism, fate in the environment and use patterns, and for estimating the maximum levels of residues that might occur as a result of use of the pesticides according to good agricultural practice (GAP). Maximum residue levels and supervised trials median residue (STMR) values were estimated for commodities of animal origin. The WHO Core Assessment Group was responsible for reviewing toxicological and related data in order to establish ADIs, and ARfDs, where necessary.

The Meeting evaluated 31 pesticides, including 7 new compounds and 7 compounds that were re-evaluated within the periodic review programme of the CCPR, for toxicity or residues, or both.

The Meeting allocated ADIs and ARfDs, estimated maximum residue levels and recommended them for use by the CCPR, and estimated STMR and highest residue levels as a basis for estimating dietary intake.

The Meeting also estimated the dietary intakes (both short-term and long-term) of the pesticides reviewed and, on this basis, performed a dietary risk assessment in relation to their ADIs or ARfDs. Cases in which ADIs or ARfDs may be exceeded were clearly indicated in order to facilitate the decision-making process of the CCPR. The rationale for methodologies for long- and short-term dietary risk assessment are described in detail in FAO Manual on the submission and evaluation of pesticide residue data for the estimation of MRLs in food and feed (2009).

The Meeting considered a number of current issues related to the risk assessment of chemicals, the evaluation of pesticide residues and the procedures used to recommend maximum residue levels.

- 1 Horticulture: a select bibliography, 1976 (E)
- 2 Cotton specialists and research institutions in selected countries, 1976 (E)
- 3 Food legumes: distribution, adaptability and biology of yield, 1977 (E F S)
- 4 Soybean production in the tropics, 1977 (C E F S)
- 4 Rev.1 Soybean production in the tropics (first revision), 1982 (E)
- 5 Les systèmes pastoraux sahéliens, 1977 (F)
- 6 Pest resistance to pesticides and crop loss assessment – Vol. 1, 1977 (E F S)
- 6/2 Pest resistance to pesticides and crop loss assessment – Vol. 2, 1979 (E F S)
- 6/3 Pest resistance to pesticides and crop loss assessment – Vol. 3, 1981 (E F S)
- 7 Rodent pest biology and control – Bibliography 1970-74, 1977 (E)
- 8 Tropical pasture seed production, 1979 (E F** S**)
- 9 Food legume crops: improvement and production, 1977 (E)
- 10 Pesticide residues in food, 1977 – Report, 1978 (E F S)
- 10 Rev. Pesticide residues in food 1977 – Report, 1978 (E)
- 10 Sup. Pesticide residues in food 1977 – Evaluations, 1978 (E)
- 11 Pesticide residues in food 1965-78 – Index and summary, 1978 (E F S)
- 12 Crop calendars, 1978 (E/F/S)
- 13 The use of FAO specifications for plant protection products, 1979 (E F S)
- 14 Guidelines for integrated control of rice insect pests, 1979 (Ar C E F S)
- 15 Pesticide residues in food 1978 – Report, 1979 (E F S)
- 15 Sup. Pesticide residues in food 1978 – Evaluations, 1979 (E)
- 16 Rodenticides: analyses, specifications, formulations, 1979 (E F S)
- 17 Agrometeorological crop monitoring and forecasting, 1979 (C E F S)
- 18 Guidelines for integrated control of maize pests, 1979 (C E)
- 19 Elements of integrated control of sorghum pests, 1979 (E F S)
- 20 Pesticide residues in food 1979 – Report, 1980 (E F S)
- 20 Sup. Pesticide residues in food 1979 – Evaluations, 1980 (E)
- 21 Recommended methods for measurement of pest resistance to pesticides, 1980 (E F)
- 22 China: multiple cropping and related crop production technology, 1980 (E)
- 23 China: development of olive production, 1980 (E)
- 24/1 Improvement and production of maize, sorghum and millet – Vol. 1. General principles, 1980 (E F)
- 24/2 Improvement and production of maize, sorghum and millet – Vol. 2. Breeding, agronomy and seed production, 1980 (E F)
- 25 Prosopis tamarugo: fodder tree for arid zones, 1981 (E F S)
- 26 Pesticide residues in food 1980 – Report, 1981 (E F S)
- 26 Sup. Pesticide residues in food 1980 – Evaluations, 1981 (E)
- 27 Small-scale cash crop farming in South Asia, 1981 (E)
- 28 Second expert consultation on environmental criteria for registration of pesticides, 1981 (E F S)
- 29 Sesame: status and improvement, 1981 (E)
- 30 Palm tissue culture, 1981 (C E)
- 31 An eco-climatic classification of intertropical Africa, 1981 (E)
- 32 Weeds in tropical crops: selected abstracts, 1981 (E)
- 32 Sup.1 Weeds in tropical crops: review of abstracts, 1982 (E)
- 33 Plant collecting and herbarium development, 1981 (E)
- 34 Improvement of nutritional quality of food crops, 1981 (C E)
- 35 Date production and protection, 1982 (Ar E)
- 36 El cultivo y la utilización del tarwi – Lupinus mutabilis Sweet, 1982 (S)
- 37 Pesticide residues in food 1981 – Report, 1982 (E F S)
- 38 Winged bean production in the tropics, 1982 (E)
- 39 Seeds, 1982 (E/F/S)
- 40 Rodent control in agriculture, 1982 (Ar C E F S)
- 41 Rice development and rainfed rice production, 1982 (E)
- 42 Pesticide residues in food 1981 – Evaluations, 1982 (E)
- 43 Manual on mushroom cultivation, 1983 (E F)
- 44 Improving weed management, 1984 (E F S)
- 45 Pocket computers in agrometeorology, 1983 (E)
- 46 Pesticide residues in food 1982 – Report, 1983 (E F S)
- 47 The sago palm, 1983 (E F)
- 48 Guidelines for integrated control of cotton pests, 1983 (Ar E F S)
- 49 Pesticide residues in food 1982 – Evaluations, 1983 (E)
- 50 International plant quarantine treatment manual, 1983 (C E)
- 51 Handbook on jute, 1983 (E)
- 52 The palmyrah palm: potential and perspectives, 1983 (E)
- 53/1 Selected medicinal plants, 1983 (E)
- 54 Manual of fumigation for insect control, 1984 (C E F S)
- 55 Breeding for durable disease and pest resistance, 1984 (C E)
- 56 Pesticide residues in food 1983 – Report, 1984 (E F S)
- 57 Coconut, tree of life, 1984 (E S)
- 58 Economic guidelines for crop pest control, 1984 (E F S)
- 59 Micropropagation of selected rootcrops, palms, citrus and ornamental species, 1984 (E)
- 60 Minimum requirements for receiving and maintaining tissue culture propagating material, 1985 (E F S)
- 61 Pesticide residues in food 1983 – Evaluations, 1985 (E)

62	Pesticide residues in food 1984 – Report, 1985 (E F S)	93/1	Pesticide residues in food 1988 – Evaluations – Part I: Residues, 1988 (E)
63	Manual of pest control for food security reserve grain stocks, 1985 (C E)	93/2	Pesticide residues in food 1988 – Evaluations – Part II: Toxicology, 1989 (E)
64	Contribution à l'écologie des aphides africains, 1985 (F)	94	Utilization of genetic resources: suitable approaches, agronomical evaluation and use, 1989 (E)
65	Amélioration de la culture irriguée du riz des petits fermiers, 1985 (F)	95	Rodent pests and their control in the Near East, 1989 (E)
66	Sesame and safflower: status and potentials, 1985 (E)	96	Striga – Improved management in Africa, 1989 (E)
67	Pesticide residues in food 1984 – Evaluations, 1985 (E)	97/1	Fodders for the Near East: alfalfa, 1989 (Ar E)
68	Pesticide residues in food 1985 – Report, 1986 (E F S)	97/2	Fodders for the Near East: annual medic pastures, 1989 (Ar E F)
69	Breeding for horizontal resistance to wheat diseases, 1986 (E)	98	An annotated bibliography on rodent research in Latin America 1960-1985, 1989 (E)
70	Breeding for durable resistance in perennial crops, 1986 (E)	99	Pesticide residues in food 1989 – Report, 1989 (E F S)
71	Technical guideline on seed potato micropropagation and multiplication, 1986 (E)	100	Pesticide residues in food 1989 – Evaluations – Part I: Residues, 1990 (E)
72/1	Pesticide residues in food 1985 – Evaluations – Part I: Residues, 1986 (E)	100/2	Pesticide residues in food 1989 – Evaluations – Part II: Toxicology, 1990 (E)
72/2	Pesticide residues in food 1985 – Evaluations – Part II: Toxicology, 1986 (E)	101	Soilless culture for horticultural crop production, 1990 (E)
73	Early agrometeorological crop yield assessment, 1986 (E F S)	102	Pesticide residues in food 1990 – Report, 1990 (E F S)
74	Ecology and control of perennial weeds in Latin America, 1986 (E S)	103/1	Pesticide residues in food 1990 – Evaluations – Part I: Residues, 1990 (E)
75	Technical guidelines for field variety trials, 1993 (E F S)	104	Major weeds of the Near East, 1991 (E)
76	Guidelines for seed exchange and plant introduction in tropical crops, 1986 (E)	105	Fundamentos teórico-prácticos del cultivo de tejidos vegetales, 1990 (S)
77	Pesticide residues in food 1986 – Report, 1986 (E F S)	106	Technical guidelines for mushroom growing in the tropics, 1990 (E)
78	Pesticide residues in food 1986 – Evaluations – Part I: Residues, 1986 (E)	107	Gynandropsis gynandra (L.) Briq. – a tropical leafy vegetable – its cultivation and utilization, 1991 (E)
78/2	Pesticide residues in food 1986 – Evaluations – Part II: Toxicology, 1987 (E)	108	Carambola cultivation, 1993 (E S)
79	Tissue culture of selected tropical fruit plants, 1987 (E)	109	Soil solarization, 1991 (E)
80	Improved weed management in the Near East, 1987 (E)	110	Potato production and consumption in developing countries, 1991 (E)
81	Weed science and weed control in Southeast Asia, 1987 (E)	111	Pesticide residues in food 1991 – Report, 1991 (E)
82	Hybrid seed production of selected cereal, oil and vegetable crops, 1987 (E)	112	Cocoa pest and disease management in Southeast Asia and Australasia, 1992 (E)
83	Litchi cultivation, 1989 (E S)	113/1	Pesticide residues in food 1991 – Evaluations – Part I: Residues, 1991 (E)
84	Pesticide residues in food 1987 – Report, 1987 (E F S)	114	Integrated pest management for protected vegetable cultivation in the Near East, 1992 (E)
85	Manual on the development and use of FAO specifications for plant protection products, 1987 (E** F S)	115	Olive pests and their control in the Near East, 1992 (E)
86/1	Pesticide residues in food 1987 – Evaluations – Part I: Residues, 1988 (E)	116	Pesticide residues in food 1992 – Report, 1993 (E F S)
86/2	Pesticide residues in food 1987 – Evaluations – Part II: Toxicology, 1988 (E)	117	Quality declared seed, 1993 (E F S)
87	Root and tuber crops, plantains and bananas in developing countries – challenges and opportunities, 1988 (E)	118	Pesticide residues in food 1992 – Evaluations – Part I: Residues, 1993 (E)
88	Jessenia and Oenocarpus: neotropical oil palms worthy of domestication, 1988 (E S)	119	Quarantine for seed, 1993 (E)
89	Vegetable production under arid and semi-arid conditions in tropical Africa, 1988 (E F)	120	Weed management for developing countries, 1993 (E S)
90	Protected cultivation in the Mediterranean climate, 1990 (E F S)	120/1	Weed management for developing countries, Addendum 1, 2004 (E F S)
91	Pastures and cattle under coconuts, 1988 (E S)	121	Rambutan cultivation, 1993 (E)
92	Pesticide residues in food 1988 – Report, 1988 (E F S)	122	Pesticide residues in food 1993 – Report, 1993 (E F S)
		123	Rodent pest management in eastern Africa, 1994 (E)
		124	Pesticide residues in food 1993 – Evaluations – Part I: Residues, 1994 (E)
		125	Plant quarantine: theory and practice, 1994 (Ar)
		126	Tropical root and tuber crops – Production, perspectives and future prospects, 1994 (E)
		127	Pesticide residues in food 1994 – Report, 1994 (E)

128	Manual on the development and use of FAO specifications for plant protection products – Fourth edition, 1995 (E F S)	162	Grassland resource assessment for pastoral systems, 2001, (E)
129	Mangosteen cultivation, 1995 (E)	163	Pesticide residues in food 2000 – Report, 2001 (E)
130	Post-harvest deterioration of cassava – A biotechnology perspective, 1995 (E)	164	Seed policy and programmes in Latin America and the Caribbean, 2001 (E S)
131/1	Pesticide residues in food 1994 – Evaluations – Part I: Residues, Volume 1, 1995 (E)	165	Pesticide residues in food 2000 – Evaluations – Part I, 2001 (E)
131/2	Pesticide residues in food 1994 – Evaluations – Part I: Residues, Volume 2, 1995 (E)	166	Global report on validated alternatives to the use of methyl bromide for soil fumigation, 2001 (E)
132	Agro-ecology, cultivation and uses of cactus pear, 1995 (E)	167	Pesticide residues in food 2001 – Report, 2001 (E)
133	Pesticide residues in food 1995 – Report, 1996 (E)	168	Seed policy and programmes for the Central and Eastern European countries, Commonwealth of Independent States and other countries in transition, 2001 (E)
134	(Number not assigned)		
135	Citrus pest problems and their control in the Near East, 1996 (E)	169	Cactus (<i>Opuntia</i> spp.) as forage, 2003 (E S)
136	El pepino dulce y su cultivo, 1996 (S)	170	Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed, 2002 (E)
137	Pesticide residues in food 1995 – Evaluations – Part I: Residues, 1996 (E)	171	Pesticide residues in food 2001 – Evaluations – Part I, 2002 (E)
138	Sunn pests and their control in the Near East, 1996 (E)	172	Pesticide residues in food, 2002 – Report, 2002 (E)
139	Weed management in rice, 1996 (E)	173	Manual on development and use of FAO and WHO specifications for pesticides, 2002 (E S)
140	Pesticide residues in food 1996 – Report, 1997 (E)	174	Genotype x environment interaction – Challenges and opportunities for plant breeding and cultivar recommendations, 2002 (E)
141	Cotton pests and their control in the Near East, 1997 (E)	175/1	Pesticide residues in food 2002 – Evaluations – Part 1: Residues – Volume 1 (E)
142	Pesticide residues in food 1996 – Evaluations – Part I Residues, 1997 (E)	175/2	Pesticide residues in food 2002 – Evaluations – Part 1: Residues – Volume 2 (E)
143	Management of the whitefly-virus complex, 1997 (E)	176	Pesticide residues in food 2003 – Report, 2004 (E)
144	Plant nematode problems and their control in the Near East region, 1997 (E)	177	Pesticide residues in food 2003 – Evaluations – Part 1: Residues, 2004 (E)
145	Pesticide residues in food 1997 – Report, 1998 (E)	178	Pesticide residues in food 2004 – Report, 2004 (E)
146	Pesticide residues in food 1997 – Evaluations – Part I: Residues, 1998 (E)	179	Triticale improvement and production, 2004 (E)
147	Soil solarization and integrated management of soilborne pests, 1998 (E)	180	Seed multiplication by resource-limited farmers - Proceedings of the Latin American workshop, 2004 (E)
148	Pesticide residues in food 1998 – Report, 1999 (E)	181	Towards effective and sustainable seed-relief activities, 2004 (E)
149	Manual on the development and use of FAO specifications for plant protection products – Fifth edition, including the new procedure, 1999 (E)	182/1	Pesticide residues in food 2004 – Evaluations – Part 1: Residues, Volume 1 (E)
150	Restoring farmers' seed systems in disaster situations, 1999 (E)	182/2	Pesticide residues in food 2004 – Evaluations – Part 1: Residues, Volume 2 (E)
151	Seed policy and programmes for sub-Saharan Africa, 1999 (E F)	183	Pesticide residues in food 2005 – Report, 2005 (E)
152/1	Pesticide residues in food 1998 – Evaluations – Part I: Residues, Volume 1, 1999 (E)	184/1	Pesticide residues in food 2005 – Evaluations – Part 1: Residues, Volume 1 (E)
152/2	Pesticide residues in food 1998 – Evaluations – Part I: Residues, Volume 2, 1999 (E)	184/2	Pesticide residues in food 2005 – Evaluations – Part 1: Residues, Volume 2 (E)
153	Pesticide residues in food 1999 – Report, 1999 (E)	185	Quality declared seed system, 2006 (E F S)
154	Greenhouses and shelter structures for tropical regions, 1999 (E)	186	Calendario de cultivos – América Latina y el Caribe, 2006 (S)
155	Vegetable seedling production manual, 1999 (E)	187	Pesticide residues in food 2006 – Report, 2006 (E)
156	Date palm cultivation, 1999 (E)	188	Weedy rices – origin, biology, ecology and control, 2006 (E S)\
156 Rev.1	Date palm cultivation, 2002 (E)	189/1	Pesticide residues in food 2006 – Evaluations – Part 1: Residues, Volume 1 (E)
157	Pesticide residues in food 1999 – Evaluations – Part I: Residues, 2000 (E)	189/2	Pesticide residues in food 2006 – Evaluations – Part 1: Residues, Volume 2 (E)
158	Ornamental plant propagation in the tropics, 2000 (E)	190	Guidance for packing, shipping, holding and release of sterile flies in area-wide fruit fly control programmes, 2007 (E)
159	Seed policy and programmes in the Near East and North Africa, 2000		
160	Seed policy and programmes for Asia and the Pacific, 2000 (E)		
161	Silage making in the tropics with particular emphasis on smallholders, 2000 (E S)		

191	Pesticide residues in food 2007 – Report, 2007 (E)
192	Pesticide residues in food 2007 – Evaluations – Part 1: Residues, 2008 (E)
193	Pesticide residues in food 2008 – Report, 2008 (E)
194	Pesticide residues in food 2008 – Evaluations, 2008 (E)
195	Quality declared planting material – Protocols and standards for vegetatively propagated crops, 2009 (E)
196	Pesticide residues in food 2009 – Report, 2009 (E)
197	Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed, 2009 (E)
198	Pesticide residues in food 2009 – Evaluations – Part 1: Residues, 2010 (E)
199	Rearing codling moth for the sterile insect technique, 2010 (E)
200	Pesticide residues in food 2010 – Report, 2010 (E)
201	Promoting the Growth and Development of Smallholder Seed Enterprises for Food Security Crops
202	Seeds in Emergencies: a technical guide
203	Sustainable wheat rust resistance – Learning from history
204	State of knowledge on breeding for durable resistance to soybean rust disease in the developing world
205	The FAO/IAEA Spreadsheet for Designing and Operation of Insect Mass Rearing Facilities
206	Pesticide Residues in food 2010 – Evaluations – Part 1
207	Plant breeding and seed systems for rice, vegetables, maize and pulses in Bangladesh
208	The dynamic tension between public and private plant breeding in Thailand
209	The strategic role of plant breeding in Uruguay: analysis through an agricultural innovation system framework
210	Evolving a plant breeding and seed system in sub-Saharan Africa in an era of donor dependence
211	Pesticide residues in food 2011 – Report, 2011 (E)
212	Pesticide Residues in food 2011 – Evaluations – Part 1
213	Evaluation of pesticide residues - Training Manual
214	Agricultural handtools; Guidelines for Field Officers and Procurement
215	Pesticide residues in food 2012 – Report, 2011 (E)
216	Pesticide Residues in food 2012 – Evaluations – Part 1

Availability: January 2013

Ar – Arabic	Multil – Multilingual
C – Chinese	* Out of print
E – English	** In preparation
F – French	
P – Portuguese	
S – Spanish	

The FAO Technical Papers are available through the authorized FAO Sales Agents or directly from Sales and Marketing Group, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy.

1	Horticulture: a select bibliography, 1976 (E)	26	Pesticide residues in food 1980 – Report, 1981 (E F S)
2	Cotton specialists and research institutions in selected countries, 1976 (E)	26 Sup.	Pesticide residues in food 1980 – Evaluations, 1981 (E)
3	Food legumes: distribution, adaptability and biology of yield, 1977 (E F S)	27	Small-scale cash crop farming in South Asia, 1981 (E)
4	Soybean production in the tropics, 1977 (C E F S)	28	Second expert consultation on environmental criteria for registration of pesticides, 1981 (E F S)
4 Rev.1	Soybean production in the tropics (first revision), 1982 (E)	29	Sesame: status and improvement, 1981 (E)
5	Les systèmes pastoraux sahéliens, 1977 (F)	30	Palm tissue culture, 1981 (C E)
6	Pest resistance to pesticides and crop loss assessment – Vol. 1, 1977 (E F S)	31	An eco-climatic classification of intertropical Africa, 1981 (E)
6/2	Pest resistance to pesticides and crop loss assessment – Vol. 2, 1979 (E F S)	32	Weeds in tropical crops: selected abstracts, 1981 (E)
6/3	Pest resistance to pesticides and crop loss assessment – Vol. 3, 1981 (E F S)	32 Sup.1	Weeds in tropical crops: review of abstracts, 1982 (E)
7	Rodent pest biology and control – Bibliography 1970-74, 1977 (E)	33	Plant collecting and herbarium development, 1981 (E)
8	Tropical pasture seed production, 1979 (E F** S**)	34	Improvement of nutritional quality of food crops, 1981 (C E)
9	Food legume crops: improvement and production, 1977 (E)	35	Date production and protection, 1982 (Ar E)
10	Pesticide residues in food, 1977 – Report, 1978 (E F S)	36	El cultivo y la utilización del tarwi – <i>Lupinus mutabilis</i> Sweet, 1982 (S)
10 Rev.	Pesticide residues in food 1977 – Report, 1978 (E)	37	Pesticide residues in food 1981 – Report, 1982 (E F S)
10 Sup.	Pesticide residues in food 1977 – Evaluations, 1978 (E)	38	Winged bean production in the tropics, 1982 (E)
11	Pesticide residues in food 1965-78 – Index and summary, 1978 (E F S)	39	Seeds, 1982 (E/F/S)
12	Crop calendars, 1978 (E/F/S)	40	Rodent control in agriculture, 1982 (Ar C E F S)
13	The use of FAO specifications for plant protection products, 1979 (E F S)	41	Rice development and rainfed rice production, 1982 (E)
14	Guidelines for integrated control of rice insect pests, 1979 (Ar C E F S)	42	Pesticide residues in food 1981 – Evaluations, 1982 (E)
15	Pesticide residues in food 1978 – Report, 1979 (E F S)	43	Manual on mushroom cultivation, 1983 (E F)
15 Sup.	Pesticide residues in food 1978 – Evaluations, 1979 (E)	44	Improving weed management, 1984 (E F S)
16	Rodenticides: analyses, specifications, formulations, 1979 (E F S)	45	Pocket computers in agrometeorology, 1983 (E)
17	Agrometeorological crop monitoring and forecasting, 1979 (C E F S)	46	Pesticide residues in food 1982 – Report, 1983 (E F S)
18	Guidelines for integrated control of maize pests, 1979 (C E)	47	The sago palm, 1983 (E F)
19	Elements of integrated control of sorghum pests, 1979 (E F S)	48	Guidelines for integrated control of cotton pests, 1983 (Ar E F S)
20	Pesticide residues in food 1979 – Report, 1980 (E F S)	49	Pesticide residues in food 1982 – Evaluations, 1983 (E)
20 Sup.	Pesticide residues in food 1979 – Evaluations, 1980 (E)	50	International plant quarantine treatment manual, 1983 (C E)
21	Recommended methods for measurement of pest resistance to pesticides, 1980 (E F)	51	Handbook on jute, 1983 (E)
22	China: multiple cropping and related crop production technology, 1980 (E)	52	The palmyrah palm: potential and perspectives, 1983 (E)
23	China: development of olive production, 1980 (E)	53/1	Selected medicinal plants, 1983 (E)
24/1	Improvement and production of maize, sorghum and millet – Vol. 1. General principles, 1980 (E F)	54	Manual of fumigation for insect control, 1984 (C E F S)
24/2	Improvement and production of maize, sorghum and millet – Vol. 2. Breeding, agronomy and seed production, 1980 (E F)	55	Breeding for durable disease and pest resistance, 1984 (C E)
25	<i>Prosopis tamarugo</i> : fodder tree for arid zones, 1981 (E F S)	56	Pesticide residues in food 1983 – Report, 1984 (E F S)
		57	Coconut, tree of life, 1984 (E S)
		58	Economic guidelines for crop pest control, 1984 (E F S)
		59	Micropropagation of selected rootcrops, palms, citrus and ornamental species, 1984 (E)
		60	Minimum requirements for receiving and maintaining tissue culture propagating material, 1985 (E F S)
		61	Pesticide residues in food 1983 – Evaluations, 1985 (E)

62	Pesticide residues in food 1984 – Report, 1985 (E F S)	93/1	Pesticide residues in food 1988 – Evaluations – Part I: Residues, 1988 (E)
63	Manual of pest control for food security reserve grain stocks, 1985 (C E)	93/2	Pesticide residues in food 1988 – Evaluations – Part II: Toxicology, 1989 (E)
64	Contribution à l'écologie des aphides africains, 1985 (F)	94	Utilization of genetic resources: suitable approaches, agronomical evaluation and use, 1989 (E)
65	Amélioration de la culture irriguée du riz des petits fermiers, 1985 (F)	95	Rodent pests and their control in the Near East, 1989 (E)
66	Sesame and safflower: status and potentials, 1985 (E)	96	Striga – Improved management in Africa, 1989 (E)
67	Pesticide residues in food 1984 – Evaluations, 1985 (E)	97/1	Fodders for the Near East: alfalfa, 1989 (Ar E)
68	Pesticide residues in food 1985 – Report, 1986 (E F S)	97/2	Fodders for the Near East: annual medic pastures, 1989 (Ar E F)
69	Breeding for horizontal resistance to wheat diseases, 1986 (E)	98	An annotated bibliography on rodent research in Latin America 1960-1985, 1989 (E)
70	Breeding for durable resistance in perennial crops, 1986 (E)	99	Pesticide residues in food 1989 – Report, 1989 (E F S)
71	Technical guideline on seed potato micropropagation and multiplication, 1986 (E)	100	Pesticide residues in food 1989 – Evaluations – Part I: Residues, 1990 (E)
72/1	Pesticide residues in food 1985 – Evaluations – Part I: Residues, 1986 (E)	100/2	Pesticide residues in food 1989 – Evaluations – Part II: Toxicology, 1990 (E)
72/2	Pesticide residues in food 1985 – Evaluations – Part II: Toxicology, 1986 (E)	101	Soilless culture for horticultural crop production, 1990 (E)
73	Early agrometeorological crop yield assessment, 1986 (E F S)	102	Pesticide residues in food 1990 – Report, 1990 (E F S)
74	Ecology and control of perennial weeds in Latin America, 1986 (E S)	103/1	Pesticide residues in food 1990 – Evaluations – Part I: Residues, 1990 (E)
75	Technical guidelines for field variety trials, 1993 (E F S)	104	Major weeds of the Near East, 1991 (E)
76	Guidelines for seed exchange and plant introduction in tropical crops, 1986 (E)	105	Fundamentos teórico-prácticos del cultivo de tejidos vegetales, 1990 (S)
77	Pesticide residues in food 1986 – Report, 1986 (E F S)	106	Technical guidelines for mushroom growing in the tropics, 1990 (E)
78	Pesticide residues in food 1986 – Evaluations – Part I: Residues, 1986 (E)	107	Gynandropsis gynandra (L.) Briq. – a tropical leafy vegetable – its cultivation and utilization, 1991 (E)
78/2	Pesticide residues in food 1986 – Evaluations – Part II: Toxicology, 1987 (E)	108	Carambola cultivation, 1993 (E S)
79	Tissue culture of selected tropical fruit plants, 1987 (E)	109	Soil solarization, 1991 (E)
80	Improved weed management in the Near East, 1987 (E)	110	Potato production and consumption in developing countries, 1991 (E)
81	Weed science and weed control in Southeast Asia, 1987 (E)	111	Pesticide residues in food 1991 – Report, 1991 (E)
82	Hybrid seed production of selected cereal, oil and vegetable crops, 1987 (E)	112	Cocoa pest and disease management in Southeast Asia and Australasia, 1992 (E)
83	Litchi cultivation, 1989 (E S)	113/1	Pesticide residues in food 1991 – Evaluations – Part I: Residues, 1991 (E)
84	Pesticide residues in food 1987 – Report, 1987 (E F S)	114	Integrated pest management for protected vegetable cultivation in the Near East, 1992 (E)
85	Manual on the development and use of FAO specifications for plant protection products, 1987 (E** F S)	115	Olive pests and their control in the Near East, 1992 (E)
86/1	Pesticide residues in food 1987 – Evaluations – Part I: Residues, 1988 (E)	116	Pesticide residues in food 1992 – Report, 1993 (E F S)
86/2	Pesticide residues in food 1987 – Evaluations – Part II: Toxicology, 1988 (E)	117	Quality declared seed, 1993 (E F S)
87	Root and tuber crops, plantains and bananas in developing countries – challenges and opportunities, 1988 (E)	118	Pesticide residues in food 1992 – Evaluations – Part I: Residues, 1993 (E)
88	Jessenia and Oenocarpus: neotropical oil palms worthy of domestication, 1988 (E S)	119	Quarantine for seed, 1993 (E)
89	Vegetable production under arid and semi-arid conditions in tropical Africa, 1988 (E F)	120	Weed management for developing countries, 1993 (E S)
90	Protected cultivation in the Mediterranean climate, 1990 (E F S)	120/1	Weed management for developing countries, Addendum 1, 2004 (E F S)
91	Pastures and cattle under coconuts, 1988 (E S)	121	Rambutan cultivation, 1993 (E)
92	Pesticide residues in food 1988 – Report, 1988 (E F S)	122	Pesticide residues in food 1993 – Report, 1993 (E F S)
		123	Rodent pest management in eastern Africa, 1994 (E)
		124	Pesticide residues in food 1993 – Evaluations – Part I: Residues, 1994 (E)
		125	Plant quarantine: theory and practice, 1994 (Ar)
		126	Tropical root and tuber crops – Production, perspectives and future prospects, 1994 (E)
		127	Pesticide residues in food 1994 – Report, 1994 (E)

128	Manual on the development and use of FAO specifications for plant protection products – Fourth edition, 1995 (E F S)	162	Grassland resource assessment for pastoral systems, 2001, (E)
129	Mangosteen cultivation, 1995 (E)	163	Pesticide residues in food 2000 – Report, 2001 (E)
130	Post-harvest deterioration of cassava – A biotechnology perspective, 1995 (E)	164	Seed policy and programmes in Latin America and the Caribbean, 2001 (E S)
131/1	Pesticide residues in food 1994 – Evaluations – Part I: Residues, Volume 1, 1995 (E)	165	Pesticide residues in food 2000 – Evaluations – Part I, 2001 (E)
131/2	Pesticide residues in food 1994 – Evaluations – Part I: Residues, Volume 2, 1995 (E)	166	Global report on validated alternatives to the use of methyl bromide for soil fumigation, 2001 (E)
132	Agro-ecology, cultivation and uses of cactus pear, 1995 (E)	167	Pesticide residues in food 2001 – Report, 2001 (E)
133	Pesticide residues in food 1995 – Report, 1996 (E)	168	Seed policy and programmes for the Central and Eastern European countries, Commonwealth of Independent States and other countries in transition, 2001 (E)
134	(Number not assigned)		
135	Citrus pest problems and their control in the Near East, 1996 (E)	169	Cactus (<i>Opuntia</i> spp.) as forage, 2003 (E S)
136	El pepino dulce y su cultivo, 1996 (S)	170	Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed, 2002 (E)
137	Pesticide residues in food 1995 – Evaluations – Part I: Residues, 1996 (E)	171	Pesticide residues in food 2001 – Evaluations – Part I, 2002 (E)
138	Sunn pests and their control in the Near East, 1996 (E)	172	Pesticide residues in food, 2002 – Report, 2002 (E)
139	Weed management in rice, 1996 (E)	173	Manual on development and use of FAO and WHO specifications for pesticides, 2002 (E S)
140	Pesticide residues in food 1996 – Report, 1997 (E)	174	Genotype x environment interaction – Challenges and opportunities for plant breeding and cultivar recommendations, 2002 (E)
141	Cotton pests and their control in the Near East, 1997 (E)		
142	Pesticide residues in food 1996 – Evaluations – Part I Residues, 1997 (E)	175/1	Pesticide residues in food 2002 – Evaluations – Part 1: Residues – Volume 1 (E)
143	Management of the whitefly-virus complex, 1997 (E)	175/2	Pesticide residues in food 2002 – Evaluations – Part 1: Residues – Volume 2 (E)
144	Plant nematode problems and their control in the Near East region, 1997 (E)	176	Pesticide residues in food 2003 – Report, 2004 (E)
145	Pesticide residues in food 1997 – Report, 1998 (E)	177	Pesticide residues in food 2003 – Evaluations – Part 1: Residues, 2004 (E)
146	Pesticide residues in food 1997 – Evaluations – Part I: Residues, 1998 (E)	178	Pesticide residues in food 2004 – Report, 2004 (E)
147	Soil solarization and integrated management of soilborne pests, 1998 (E)	179	Triticale improvement and production, 2004 (E)
148	Pesticide residues in food 1998 – Report, 1999 (E)	180	Seed multiplication by resource-limited farmers - Proceedings of the Latin American workshop, 2004 (E)
149	Manual on the development and use of FAO specifications for plant protection products – Fifth edition, including the new procedure, 1999 (E)	181	Towards effective and sustainable seed-relief activities, 2004 (E)
150	Restoring farmers' seed systems in disaster situations, 1999 (E)	182/1	Pesticide residues in food 2004 – Evaluations – Part 1: Residues, Volume 1 (E)
151	Seed policy and programmes for sub-Saharan Africa, 1999 (E F)	182/2	Pesticide residues in food 2004 – Evaluations – Part 1: Residues, Volume 2 (E)
152/1	Pesticide residues in food 1998 – Evaluations – Part I: Residues, Volume 1, 1999 (E)	183	Pesticide residues in food 2005 – Report, 2005 (E)
152/2	Pesticide residues in food 1998 – Evaluations – Part I: Residues, Volume 2, 1999 (E)	184/1	Pesticide residues in food 2005 – Evaluations – Part 1: Residues, Volume 1 (E)
153	Pesticide residues in food 1999 – Report, 1999 (E)	184/2	Pesticide residues in food 2005 – Evaluations – Part 1: Residues, Volume 2 (E)
154	Greenhouses and shelter structures for tropical regions, 1999 (E)	185	Quality declared seed system, 2006 (E F S)
155	Vegetable seedling production manual, 1999 (E)	186	Calendario de cultivos – América Latina y el Caribe, 2006 (S)
156	Date palm cultivation, 1999 (E)	187	Pesticide residues in food 2006 – Report, 2006 (E)
156 Rev.1	Date palm cultivation, 2002 (E)	188	Weedy rices – origin, biology, ecology and control, 2006 (E S)\
157	Pesticide residues in food 1999 – Evaluations – Part I: Residues, 2000 (E)	189/1	Pesticide residues in food 2006 – Evaluations – Part 1: Residues, Volume 1 (E)
158	Ornamental plant propagation in the tropics, 2000 (E)	189/2	Pesticide residues in food 2006 – Evaluations – Part 1: Residues, Volume 2 (E)
159	Seed policy and programmes in the Near East and North Africa, 2000	190	Guidance for packing, shipping, holding and release of sterile flies in area-wide fruit fly control programmes, 2007 (E)
160	Seed policy and programmes for Asia and the Pacific, 2000 (E)		
161	Silage making in the tropics with particular emphasis on smallholders, 2000 (E S)		

191	Pesticide residues in food 2007 – Report, 2007 (E)
192	Pesticide residues in food 2007 – Evaluations – Part 1: Residues, 2008 (E)
193	Pesticide residues in food 2008 – Report, 2008 (E)
194	Pesticide residues in food 2008 – Evaluations, 2008 (E)
195	Quality declared planting material – Protocols and standards for vegetatively propagated crops, 2009 (E)
196	Pesticide residues in food 2009 – Report, 2009 (E)
197	Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed, 2009 (E)
198	Pesticide residues in food 2009 – Evaluations – Part 1: Residues, 2010 (E)
199	Rearing codling moth for the sterile insect technique, 2010 (E)
200	Pesticide residues in food 2010 – Report, 2010 (E)
201	Promoting the Growth and Development of Smallholder Seed Enterprises for Food Security Crops
202	Seeds in Emergencies: a technical guide
203	Sustainable wheat rust resistance – Learning from history
204	State of knowledge on breeding for durable resistance to soybean rust disease in the developing world
205	The FAO/IAEA Spreadsheet for Designing and Operation of Insect Mass Rearing Facilities
206	Pesticide Residues in food 2010 – Evaluations – Part 1
207	Plant breeding and seed systems for rice, vegetables, maize and pulses in Bangladesh
208	The dynamic tension between public and private plant breeding in Thailand
209	The strategic role of plant breeding in Uruguay: analysis through an agricultural innovation system framework
210	Evolving a plant breeding and seed system in sub-Saharan Africa in an era of donor dependence
211	Pesticide residues in food 2011 – Report, 2011 (E)
212	Pesticide Residues in food 2011 – Evaluations – Part 1
213	Evaluation of pesticide residues - Training Manual
214	Agricultural handtools; Guidelines for Field Officers and Procurement
215	Pesticide residues in food 2012 – Report, 2011 (E)
216	Pesticide Residues in food 2012 – Evaluations – Part 1

Availability: January 2013

Ar – Arabic	Multil – Multilingual
C – Chinese	* Out of print
E – English	** In preparation
F – French	
P – Portuguese	
S – Spanish	

The FAO Technical Papers are available through the authorized FAO Sales Agents or directly from Sales and Marketing Group, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy.

