



PUBLICATIONS CATALOGUE 2003



Natural
Resources
Institute



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2000

Natural Resources Institute

The Natural Resources Institute (NRI) of the University of Greenwich is an internationally recognized centre of expertise and consultancy in the environment and natural resources sector. The Institute carries out research and development and training to promote efficient management and use of renewable natural resources in support of sustainable livelihoods.

The Institute has a long history stretching back over 100 years to its origins as part of the Imperial Institute in 1894. During the following years it had many changes in name and organization before becoming NRI and its predecessors include:

Anti-Locust Research Centre (ALRC)
Centre for Overseas Pest Research (COPR)
Land Resources Development Centre (LRDC)
Overseas Development Natural Resources Institute (ODNRI)
Tropical Development and Research Institute (TDRI)
Tropical Products Institute (TPI)

Prior to 1996 NRI was the scientific unit, and latterly the executive agency, of the UK Government's Overseas Development Administration (ODA), now the Department for International Development (DFID).

NRI became an Institute of the University of Greenwich in May 1996.

Further information about NRI, including details of its training courses, may be obtained by writing to the Director's Office, FAO Karen Morris, Natural Resources Institute, University of Greenwich at Medway, Central Avenue, Chatham Maritime, Kent ME4 4TB, UK. Please do not use the book order form.

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Crops and Crop Products

Crop production

[See also Development Policy and Research p.7; Food Storage Technology p.23; Markets and Market Research p.30; Pest Management p.35; Training and Extension p.50]

Order code OB76
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Seed Management by Small-scale Farmers in Zambia: A Study of Cowpea, Groundnut and Sorghum Seed in the Southern and Western Provinces

NRI Bulletin 76

R TRIPP, D J WALKER, F MITI, S MUKUMBUTA and
M S ZULU

A companion volume to OB68 presenting the findings of a field survey on seed management by small-scale farmers in Zambia in relation to seed supply and quality.

Order code OB68
1998
£7.50
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ISBN 0 85954 494-X

Seed Management by Small-scale Farmers in Ghana: A Study of Maize and Cowpea Seed in the Brong-Ahafo and Volta Regions

NRI Bulletin 68

R TRIPP, D J WALKER, A OPOKU-APAU, A A DANKYI and
L L DELIMINI

Seed management by small-scale farmers is an important aspect of national seed security in developing countries and a major consideration in agricultural development in the foreseeable future. It is estimated that up to 80% of seed is saved on farm from one season to the next. The role of the traditional farmer and the informal seed sector as a whole has not been well supported and has not been adequately understood. This Bulletin describes the findings of a field survey of small farmers and will be of interest to all those concerned with the role of small-scale farmers in managing their seed supply and quality.

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NRI
- This supplement to the Manual for Horticultural Export Quality Assurance (see CRG3) presents the legislative requirements of Middle and Far East markets and outlines importer and customer requirements highlighting the characteristics of these particular markets. Together with the Manual it will be invaluable to anyone involved in the horticultural export business in these markets.
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1994
£50.00
2 Vols
ISBN 0 85954 382-X
- Manual for Horticultural Export Quality Assurance**
NRI
- Countries exporting produce to the European Union face a highly competitive market. They also have to meet the demands of strict legislation and customers' requirements for food safety and consistent good quality. Here is a practical do-it-yourself guide to the procedures and practices that will meet the requirements of both EU legislation and major customers. It introduces the concept of total quality management and will enable exporters to establish a basic quality assurance system suited to their own specific needs. As such it will be invaluable to anyone involved in the horticultural export business.
Also available in French (order code CRG3F) and Spanish (order code CRG3S).
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- A Guide to the UK Suppliers of Equipment for Post-harvest Horticultural Crop Management**
NRI
- Lists suppliers of equipment and materials to assist growers and exporters in developing countries to meet the quality, handling and packaging demands of the horticultural industry.
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N D JAGO (ed.)
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L CURRAH and F J PROCTOR
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D E KAY, revised by E G B GOODING
- A revised and updated second edition of *Root Crops* in the *Crop and Product Digest* series. A ready-reference, particularly for non-specialists, presenting data in a concise form relating to the production and utilization of root crops of economic importance to countries in the tropics. Descriptions of over 42 different crops are given, the most important being cassava, potato, sweet potato, taro, tannia and yam. It includes particulars of growth requirements, planting and harvesting, yields, products and their uses, processing techniques, comments on production and trade and a bibliography for each crop.

Processing food crops

[See also Crop production p.1; Training and Extension p.50]

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B K DADZIE

Banana is an important agricultural crop in Jamaica, earning a significant amount of foreign exchange and providing jobs and a source of income for many Jamaicans. The international banana market is very competitive and the Jamaican banana industry urgently needs to increase productivity of high quality fruit suitable for export. Little technical information is available to individual banana growers in the island so this manual was compiled to provide current information to assist these farmers. It describes current banana production in Jamaica and recommends improvements. It also discusses environmental requirements, land preparation and plant establishment, cultural practices, safe and proper use of pesticides, disease and pest control, bunch care, harvest and post-harvest handling practices and fruit quality. The information will assist farmers as well as farm managers, quality control officers, research workers and decision-makers in the banana industry.

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Banana Fruit Quality: A Pocket Guide

B K DADZIE

Banana is an important agricultural crop in Jamaica. It produces a significant amount of foreign exchange and provides jobs and a source of income for many Jamaicans. The international banana market is very competitive and places great importance on high standards. Management of fruit quality is essential to the profitability of the Jamaican industry. Suppliers have to produce regular supplies of fruit which consistently meet quality specifications and attract competitive prices on the international market. This pocket guide describes and illustrates the most common defects. Practical recommendations are given on how to avoid or control each quality defect. It will prove a reference for extension, quality control officers, farm managers, supervisors and farmers to enable them to identify and solve fruit quality problems.

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Producing Solar Dried Fruit and Vegetables for Micro- and Small-scale Rural Enterprise Development

A BRETT, D R S COX, D S TRIM, R SIMMONS and G ANSTEE

The drying of food and crops remains the most commonly used preservation method world-wide and the drying of small quantities of higher valued foods, in particular, has the most potential for generation of income in the rural areas in developing countries. These handbooks are intended as practical guides to solar drying operations as micro- and small-scale enterprise opportunities.

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S W HEAD, A A SWETMAN, T W HAMMONDS, A GORDON, K H SOUTHWELL and R V HARRIS

Options available for processing a range of common oilseeds, commonly used in the manufacture of human food, are described and presented in this publication. The processes range from domestic to village scales of operation. The appropriate types and sources of equipment are described.

Processing non-food crops

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S DUNSMORE

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S DUNSMORE

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Biodiversity Management in Rural Development

R GRIMBLE (ed.)

This book takes a cross disciplinary approach to examine how better to accommodate biodiversity concerns in situations where poverty reduction and welfare improvement are the primary aims of development. It will be of interest to all people with a practical interest in managing biological resources or biodiversity in developing countries, those with a similar concern for economic or social development and improving the livelihoods of the rural poor, and also to staff of governments, donor agencies, NGOs and other organizations with responsibility for rural development or biodiversity conservation and management.

Pastoralism, Drought and Planning: Lessons from Northern Kenya and Elsewhere

J MORTON (ed.)

This book is based mainly on case studies from Northern Kenya, but also covers Botswana and Zimbabwe, drawing together lessons relating to drought management in the pastoral and agro-pastoral livestock sector. It covers district-level early warning systems, new technical possibilities for monitoring and forecasting drought, possible interventions in livestock marketing and grazing management, and local responses to and interpretation of drought. It will be of interest to policy-makers, planners and resource managers working in Africa.

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NEW



Dimensions of Participation: Experiences, Lessons and Tips from Agricultural Research Practitioners in Sub-Saharan Africa

A SUTHERLAND, A MARTIN and D RIDER SMITH (eds)

This book explores dimensions of practical experiences with participation in agricultural research – farmer participation, teamwork and engaging with stakeholders. It includes practitioner's candid accounts of their experience on agricultural research and extension projects in Africa, sharing the difficulties they faced along with the progress they made. This book is for those interested in the practical aspects of agricultural research and development, including practitioners, project managers, development specialists, advisors, donors, academics involved in development teaching and research and students of agricultural development.

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Decision Tools for Sustainable Development

I GRANT and C SEAR (eds)

This book brings together up-to-date techniques for the collection and management of environmental and socio-economic information. It describes practical decision-making tools for use at all levels from local to international, for rural communities, research services, the food industry and for institutional decision-makers.

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Domestic Markets for Non-timber Tree Products: Methodological and Strategic Issues

NRI Socio-economic Series 14

A GORDON

The value of growing trees on tropical farms for subsistence, commercial sale and environmental stability has been increasingly recognized in recent decades. However, there has been little research on the market potential for non-timber tree products (NTTPs). This publication aims to provide a background on markets and methodological issues in market assessment and how they affect agroforestry and forestry projects, with reference to recent research carried out by NRI in Cameroon on NTTPs. The specific characteristics of NTTPs which make the assessment of their market potential difficult are outlined, strategic options for their development are discussed and conclusions are drawn which stress the importance of informal methods. [See also *SES13 and SES11 below.*]

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28pp
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Domestic Market Potential for Tree Products from Farms and Rural Communities: Experience from Cameroon

NRI Socio-economic Series 13

N FEREDAY, A GORDON and G OJI

A summary of results of research carried out in Cameroon on the domestic market potential for non-timber tree products (NTTPs) from farms and rural communities in response to the growing concern that agroforestry projects were failing because of poor marketing strategies. (See *SES11*, below, for an inventory of products and identification of market chains.) Four case studies are used to explore issues related to value added, domestication and the role of NTTPs as sources of income. Conclusions are drawn and areas for future research are also highlighted in this booklet.

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Livestock Production Extension: Issues, Case Studies and Policy Options

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J MORTON, R MATTHEWMAN and D BARTON

In this booklet the provision of livestock production extension is assessed with reference to case studies in Burkina Faso, Kenya and India. Existing systems are reviewed and their impact evaluated. Finally, the roles of different institutions and methodologies are evaluated, and lessons for the future are discussed.

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Non-timber Tree Products: A Partial Inventory of Products Available in the Mount Cameroon Area

NRI Socio-economic Series 11

V PAPADOPULOS with A GORDON

The value of tree-growing on tropical farms for subsistence uses, commercial sale and environmental stability has long been argued, but failure of many agroforestry programmes has been attributed to 'market failures'. This inventory has been produced as part of a project in the highly biodiverse area of Mount Cameroon to explore domestic market potential from farms and rural communities, in response to the growing interest in non-timber tree products. Approximately 300 products are listed by their local name, with additional information on Latin names, end use, product source, seasonality, location of markets and availability in markets.

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Survival Strategies of Poor Women in Urban Africa: The Case of Zambia
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C O'REILLY and A GORDON

Urban poverty is increasing alongside growing urban populations in sub-Saharan Africa. Women constitute a significant proportion of the urban poor, but their role is often neglected by development projects. This publication highlights the range of strategies that women have devised for themselves in order to cope with difficult economic circumstances in present-day Zambia. Natural resources figure prominently in urban women's activities, not only as a source of food and fuel, but as a source of income through trading activities. Ways in which women's livelihoods can be improved are also discussed.

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M BLOWFIELD

Recent policy reforms and technological innovations in perennial tree crop production have implications for smallholder labour strategies, but changes in these strategies are little understood. Modification in labour decision-making among four smallholder communities in Indonesia and Ghana is examined, and the consequences for policy and technology development are explored. The study concludes that there is a need to reassess the way the family is looked at: evidence suggests that the labour strategies are often enacted over a wide geographical area, and form a theme that is hidden by current research techniques used to inform planners and field workers. This publication will be of interest to agencies and individuals concerned with development issues and policy implementation.

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Development and Dissemination of Agroprocessing Technologies
NRI Socio-economic Series 8
C CONROY, A GORDON and A MARTER

Technology development can assist in the generation of small and medium-scale agroprocessing for sustainable livelihoods in poorer communities because of the backward links to agriculture and forward links to processing. However, despite substantial support from donor agencies, past performance has revealed that failures are linked to shortcomings such as operational problems or inadequate application of appropriate procedures. This study reviews current best practices, and suggests approaches and methods that can make the technology development programme of an organization more effective. It will be useful to organizations whose primary activity is the development of technology and also to agencies that are only involved occasionally.

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Tree Resources and Environmental Policy: A Stakeholder Approach
NRI Socio-economic Series 7
R J GRIMBLE, J AGLIONBY and J QUAN

The concept of stakeholder analysis is illustrated by case studies from Cameroon and Thailand. The conflicts of interest which may arise between different stakeholder groups (small farmers, logging companies, government departments, institutions and conservationists) and the trade-offs which may have to be made between the objectives of a particular group are classified and discussed. The implications of the stakeholder approach are considered and will be of interest to anyone involved in environmental planning and research.

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**Indigenous Agroforestry in Latin America:
A Blueprint for Sustainable Agriculture?**

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D BARTON

This literature review outlines the merits of traditional agroforestry systems in the rainforests of Latin America. Possibilities and limitations to the adoption of these methods by new colonist farmers, as an alternative to large-scale forest destruction, are discussed. Research priorities are proposed for the development of sustainable agroforestry in the region from the wealth of indigenous knowledge. This booklet will not only be of interest to policy-makers and donor agencies, but also to those interested in the preservation of the rainforests.

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Gender Issues in Integrated Pest Management in African Agriculture

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C MALENA

In Africa women farmers are generally responsible for pest management activities. Research has shown that the technological needs and priorities of women farmers differ from those of men, but their specific needs are rarely addressed in the research and development of agricultural technology. Women's access to new technologies is seriously undermined owing to the failure of extension systems to establish contacts with women farmers. The book discusses the gender-related, socio-economic factors that influence the creation, adoption and effective implementation of IPM technologies.

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**The Use of Geographical Information Systems
in Socio-economic Studies**

NRI Socio-economic Series 4

P DAPLYN, J CROPLEY, S TREAGUST and A GORDON

Geographical information systems (GIS) have found wide and growing applications, as digital remote-sensing data and computer technology have become more sophisticated, more easily available and less expensive. This report describes preliminary research recently undertaken by NRI into how GIS might be used to identify and potentially describe the non-physical, 'human' environment in which people make decisions relating to resource allocation. A number of general issues concerning the availability of suitable data sets, are highlighted in case studies. Recommendations are made about how data can be made more amenable to this type of application, and the criteria that should be applied in assessing the feasibility of projects involving the use of GIS in socio-economic studies.

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The Allocation of Labour to Perennial Crops: Decision-making by African Smallholders

NRI Socio-economic Series 3

M BLOWFIELD

This literature review highlights the factors, particularly non-financial, affecting the choice and use of labour during the production of perennial crops. It includes the effects of kinship, gender, age, AIDS and natural disasters and emphasizes the importance of the decision-making process during policy planning.

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Commercialization of Non-timber Forest Products in Amazonia

NRI Socio-economic Series 2

E M RICHARDS

Extractivism, in this case the removal of tree crops from the Amazonian rainforest, is reviewed with particular reference to its impact on the welfare of collectors and to the market opportunities for specific crops.

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- This book reflects four years of intensive fieldwork by the Farming Systems Integrated Pest Management Project with resource-poor farmers in the the Blantyre Shire Highlands of southern Malawi. It reviews the major lessons learned and outlines an agenda for a follow-up project to address the smallholders' needs for food security, cash income and information about new technology. A publication which is relevant not only to those interested in Malawi but also to those concerned with the wider issues raised by the development of technology with resource-poor farmers.
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M BLOWFIELD, S GALLAT, A MALINS, B MAYNARD, V NELSON and D ROBINSON
- Ethical trade is the management of financial, social and environmental aspects of production and marketing throughout the value chain. This publication describes the markets for ethical products, how different approaches operate, and what they achieve. It is aimed at anyone requiring an introduction to ethical trade in developing countries and anyone interested in understanding what ethical trade means to developing countries.

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- Food Safety and the Developing World**
L NICOLAIDES, R COKER, P WAREING and M NAGLER
- Food-borne illnesses, especially diarrhoea amongst children, are a major public health problem in the developing world. Unsafe food can seriously interfere with both domestic and international food trade and cause unnecessary suffering and loss of income. This clearly laid-out colourful book discusses some of the major causes of food-borne disease (additives, bacteria, viruses, protozoa, mycotoxins, natural toxins) and recent approaches towards their control. Of special interest to policy-makers and researchers and those in developing countries involved in the production, utilization and international trade of foods, and in human health issues.
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J MORTON and R MATTHEWMAN
- The importance of conveying information on livestock production to farmers is increasing with growing demand for livestock products, new production techniques and possibilities for improved animal health. This clearly set-out book is based on first-hand research in developing countries, and examines the major types of institutions providing livestock production extension, for example, national extension systems, animal health services and special projects. Concrete recommendations are made for the planning of new services for crop livestock producers and for special target groups, and for the reform of existing institutions.
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- Economic Issues in Trypanosomiasis Control**
NRI Bulletin 75
J BARRETT
- Trypanosomiasis is a significant disease of man and livestock, and in sub-Saharan Africa is transmitted exclusively by the tsetse fly. Apart from the suffering caused by the disease, trypanosomiasis and its control have many direct and indirect economic consequences. This Bulletin discusses investigations carried out in Zimbabwe and Zambia into the costs of four major techniques used for tsetse control. A methodology for cost comparison based on simple economic models is demonstrated. Of interest to planners and resource managers, and all those concerned with trypanosomiasis control and rural development in tsetse-affected areas of Africa.

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Mycotoxins and their Control: Constraints and Opportunities

NRI Bulletin 73
R COKER

This Bulletin will be of special interest to policy-makers, researchers and those involved in the production of foods and animal feeds, and in the marketing of commodities, where the impact of mycotoxins on human health, animal productivity and international trade is significant. A 'systems' approach to the occurrence and control of mycotoxins is adopted, which recognizes the interactions occurring within and between conceptual models of the commodity, spoilage, mycotoxin and control systems. Mycotoxins of 'world-wide', 'regional' and 'future' importance are discussed, together with the metabolic fate of selected mycotoxins. Control measures and future research needs are also identified.

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Assessment of the Needs and Opportunities in Post-harvest Systems of Non-grain Starch Staple Food Crops

U KLEIH, P DIGGES and A WESTBY

Non-grain starch staple food crops (cassava, sweet potato, yam, cocoyam and cooking banana/plantain) provide important sources of income and food security in many countries in sub-Saharan Africa. The accurate determination of the needs and opportunities in non-grain starch staples post-harvest systems is essential if research and development are to be correctly targeted and have impact. This manual provides the information and tools required to design and carry out a needs assessment study. It is designed for those involved in research and technology transfer projects where non-grain starch staples are important commodities.

Order code ECN6
1995
£5.00
50pp
ISBN 0 85954 403-6

Tree Resources in Northern Thailand: Local Stakeholders and National Policy

M-K CHAN

A report of a study that aims to develop stakeholder analysis as a tool for natural resource management. Stakeholder approach was tested by applying it to forest resource management in the highlands of Northern Thailand, where the interests and conflicts of the stakeholders (forest resource users and managers) and the trade-offs they made were analysed. Such an approach was demonstrated to be a useful tool which can be applied to natural resource management in other developing countries and in other situations where conflicts between stakeholders are evident. Of interest to all those in government departments and institutions responsible for making policies which affect natural resource users and managers.

Order code ECN5
1995
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68pp
ISBN 0 85954 402-8

All in Good Time: Women's Agricultural Production in Sub-Saharan Africa

R GRELLIER

This bibliography is the first part of a study of women's participation in agricultural production in the semi-arid regions of sub-Saharan Africa. The study looks at women's agricultural strategies, especially their use of particular tools and crop production techniques. It focuses on ways in which the use of draught animals affects labour resource use, and generates increased income differentials at the household and community level. By bringing together existing information on women's crop production and on how women presently address critical timing issues, it is of interest to all agencies and individuals concerned with development issues, especially those relating to women.

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Food Policy in Sub-Saharan Africa: A New Agenda for Research and Donor Assistance

M J HEBBLETHWAITE (ed.)

Chapters collected in this book were all delivered at an NRI/IFPRI symposium on critical food policy issues for sub-Saharan Africa held in 1993. The symposium brought together specialists on food policy from a number of organizations to discuss current research, future research agendas and policy issues and decisions. The main issues arising from discussions were how individuals respond to incentives, the effects of technology and technology policy, the fiscal crisis of the sub-Saharan African state and its effect on agriculture, and the search for effective means to support civil society.



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Fisheries

[See also Training and Extension p.50]

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The State of Biodiversity in Lake Tanganyika: A Literature Review

G PATTERSON (ed.)

A compilation of the literature reviewed by the main co-ordinators of the three technically oriented studies included in the Lake Tanganyika Biodiversity Project, namely 'Biodiversity', 'Pollution and its Effects on Biodiversity' and 'Sediment Discharge and its Consequences'. This publication forms the latest extensive treatment on this very special lake, and as such, provides excellent resource material to institutions and those interested in pure and applied research and/or management of Lake Tanganyika and its catchment.

Also available in French, Order code F10F

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Utilization of Small Pelagic Fish Species in Asia

M PRITCHARD, A GORDON, G PATTERSON and A GRAY

This colourful A5 booklet sets out the findings of a research project to define the current status of utilization of small pelagic fish (those fast-growing species usually reaching maturity within a year) in Asia and assesses competing demands on the resource, so that appropriate strategies for future development of the fishery could be determined. The background to the fisheries, the current landings and usage (mainly human consumption and fishmeal) and trade within and outside Asia is detailed. Although exploitation was found to be a complex issue with much variation between countries, conclusions and recommendations are outlined for future research into ways in which low-income groups could continue their involvement in the trade, and how the overall impact of trading policies might affect them.

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I J CLUCAS and A R WARD

With fisheries all over the world reaching their limits of sustainable exploitation, there is a great need to ensure that the fish which are caught reach the consumer with minimal losses. The expansion of fishery products and attention to quality demanded by consumers requires policy-makers and fishery workers to have an understanding of the post-harvest aspects of fishery development. This book is a layman's guide to all aspects of post-harvest fisheries science and technology both in modern and traditional fisheries in many parts of the world. It is aimed at managers in government and industry, often non-specialists, who have to make decisions about post-harvest fisheries development.

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Handling Shellfish: A Guide to the Safe Handling of Molluscan Shellfish in Southeast Asia

NRI

Produced in co-operation with institutes and departments of agriculture and fisheries in the area, this colourful 10-page booklet outlines the basic requirements for the safe and hygienic handling and marketing of shellfish. It is intended as a guide for extension workers who advise gatherers, harvesters, processors and retailers of live molluscan shellfish. Topics covered include public health risks, classification of shellfish growing areas, hygienic handling, purification, documentation and exporting. Available in local languages at the same price under the following order codes:

F4 – Tagalog ISBN 0 85954 426-5

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Real-time Monitoring of African Aquatic Resources using Remote Sensing: With Special Reference to Lake Malawi

G PATTERSON, M J WOOSTER and C B SEAR

This publication describes work carried out on Lake Malawi. Daily, remotely sensed maps of lake surface temperature were compared with information collected *in situ*. Fisheries scientists found strong agreement between the two methods and were successfully able to monitor changes in the structure of local fish populations following changes in lake water temperatures. This booklet will not only be of interest to those concerned with the study and management of African fisheries, but also to those interested in expanding monitoring of environmental changes using remote sensing.



Food Storage Technology

General

[See also Crop production p.1; Grain After Harvest p.24; Training and Extension p.50]

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Conducting Ethnobotanical Surveys: An Example from Ghana on Plants used for the Protection of Stored Cereals and Pulses

NRI Bulletin 77

J R COBBINAH, C MOSS, P GOLOB and S R BELMAIN

Plants are well known for their medicinal and insecticidal properties, and considerable research around the world is conducted to screen plants for new compounds. Ethnobotanical surveys are often used to target research activity. Adding value to biological resources by establishing current indigenous knowledge systems could lead to financial gains and effective biodiversity conservation. In this Bulletin information is presented to show how ethnobotanical data can be used towards promoting research and conservation of indigenous plant species. It will be of special interest to those working in storage entomology, the control of insect pests, the medicinal and insecticidal properties of plant materials and indigenous knowledge system management.

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Onion Storage in the Tropics: A Practical Guide to the Methods of Storage and their Selection

J BRICE, L CURRAH, A MALINS and R BANCROFT

In most countries successful storage of onions, with minimal loss, is essential to satisfy year-round consumer demand. This fully illustrated manual, including 62 colour plates, presents a practical guide to onion storage methods and their selection in the tropics. Based on scientific findings, practical experience and traditional knowledge, this guide aims to provide those involved with onion storage with the information they might need to improve existing storage methods or develop new types of stores suited to their local circumstances.

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NRI Bulletin 69

M C GOUGH

In the marine transport of hygroscopic durable foods such as cocoa beans, from tropical and sub-tropical to temperate climatic zones, quality can deteriorate because of climatically induced moisture increases. The likelihood of deterioration occurring is assessed in this Bulletin for durable foods transported in bulk, bags and by box container. Interpretations are based upon the principles of heat and moisture transfer and on experimental observations. General recommendations for good practice are included. Of interest to commodity exporters and importers, those involved with cargo insurance claims, and scientists and engineers concerned with food quality.

Order code STG1
Forthcoming

Food Storage Manual

D J WALKER (ed.)

This completely updated fourth edition, designed for easier use in the field, provides comprehensive information on procurement, handling, storage and distribution of food-aid commodities.

Grain after harvest

A new organization, *PhAction* – The Global Post-harvest Forum, has been formed from GASGA (Group for Assistance on Systems relating to Grain After harvest). *PhAction* has a wider remit, now including perishable crops as well as durables, and a wide membership, now including several international agricultural research centres. The new forum will raise the profile of post-harvest research and development and accomplish greater impact in the post-harvest sector. The GASGA Newsletter has now become *PhAction News* and can be accessed at the INPhO website (<http://www.fao.org/inpho/index-e.htm>) and the GASGA seminar series will continue but under the heading of *PhAction*.



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Forestry

General

[See also Development Policy and Research p.7; Land Resources, Soils and Water p.27; Termites p.41]

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W HAWTHORNE

A case study of one of the few timber-rich forests in West Africa which remained unlogged until recently, where observations on plants before the first bout of logging are compared with the regeneration observed after it. The study indicates many ways to reduce the impact of logging, whilst highlighting the vigour of natural regeneration in many components of the logged forest. This report will be of interest not only to foresters, conservationists, ecologists and loggers, but to those with an interest in the impact of using mahogany and other tropical timbers on the future of tropical forests.

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Silvicultural Manual for the Solomon Islands

Solomon Islands Forest Record No. 6

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G CHAPLIN

This manual brings together current research and traditional information on growing trees for timber in the Solomon Islands, and provides a basic guide to sound silvicultural practice for establishing and caring for plantations.

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Field Guide to the Forest Trees of Ghana

W HAWTHORNE

This comprehensive guide to rainforest trees includes a section on how to use a key, a Main Key based on standard botanical families, a Main Species Key with 200 entries, and a Key to Major Groups for beginners.

Forest products

[See also Development Policy and Research p.7; Markets and Market Research p.30; Rural Technology and Biomass Energy p.47]



Land Resources, Soils and Water

[See also Development Policy and Research p.7; Forestry p.25; Training and Extension p.50]

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Non-wood Forest Products 2 (FAO)

J J W COPPEN and G A HONE

Pine trees are amongst the most widely distributed genera of trees in the northern hemisphere and are not only important for wood, but can be tapped for resin, which then can be distilled to produce gum turpentine and gum rosin. This joint publication with FAO provides information on the technical and economic aspects of pine resin production, including the tapping of trees and the distillation of resin. It also reviews recent trends in world production and markets for gum turpentine and gum rosin. The book is intended for prospective producers of turpentine and rosin and for organizations and individuals appraising projects involving production, especially in developing countries.

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Non-timber Forest Products in Southern Ghana: A Summary Report

ODA Forestry Series No. 2

J FALCONER

This report highlights the significance of forests to local people and provides a necessary first step towards the development of forest management for products other than timber. It will be of interest to foresters, extension workers and policy-makers in Ghana, and all those concerned with the true significance of forests for rural people in any developing country.

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Impact of Tsetse Control on Land-use in the Semi-arid Zone of Zimbabwe. Phase 2: Analysis of Land-use Change by Remote Sensing Imagery

NRI Bulletin 70

J PENDER, A P MILLS and L J ROSENBERG

The second part of a study which examines changes in land cover from 1972 to 1993, particularly human-dominated land use in this area of Zimbabwe, using remote sensing imagery. Seven land use cover classes were derived, and the pattern of change between the Communal Lands and between the Communal and State Lands over the period of tsetse control operations is discussed. With 19 colour figures and maps, this book will be valuable to scientists, planners and resource managers interested in the agricultural development of the area.

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A Review of Soil and Water Management Research in Semi-arid Areas of Southern and Eastern Africa

K MORSE

Research on soil and water management has been carried out in many countries since 1945. Results were reported not only in journals but in various forms of 'grey' literature, such as project reports and conference proceedings, before the use of databases. This book is a collation of all this information and is important to enable researchers to build on the results of previous work, rather than to duplicate it. The work has been carried out by NRI researchers visiting key institutions in six countries in eastern and southern Africa.

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C H POWER, L J ROSENBERG and I DOWNEY (eds)
The global demand for environmental status and impact monitoring has resulted in an increasing need for resource managers and practitioners of remote sensing and GIS technology to work closely together. In catering for this need, this publication reports on a one-day technical workshop which brought together both users and practitioners of remote sensing and GIS in natural resource management in order to gain awareness of other activities and to discuss the issues, problems and solutions they have found.
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A PERRYMAN
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ODA Renewable Natural Resources Profile Series

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Markets and Market Research

[See also Crops and Crop Products p.1;
Development Policy and Research p.7;
Fisheries p.21;

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Quality Perceptions of Parboiled Rice Marketed in Sri Lanka

NRI Bulletin 74

P A CLARKE, K B PALIPANE, L HAMMOND and
J SHERINGTON

As grain markets become more liberalized, quality and price become more important for producers and traders in securing market share. Previously, NRI Bulletin 55 reported methodology and quality/value relationships for raw paddy. This publication describes the evaluation of quality/value relationships for parboiled rice. Of use to researchers in developing countries looking to evaluate these relationships and to influencing cost-effective quality improvements, and also directly to processors wishing to raise the quality of their products.

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- Reviews some of the available methodologies, and provides guidance on their application in research studies which aim to appraise the performance of agricultural markets and recommend appropriate policy interventions. The publication draws on the experience of a study of the rice market in Indonesia, which used a number of different methodologies.

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The Market for Dried Fruit in the United Kingdom, the Federal Republic of Germany and France

NRI Bulletin 34

G HARMAN and N ANAND

This review covers dried fruits such as bananas, pineapples, papaya, apricots, figs, prunes, dates and vine products.



Pest Management

[See also Crop production p.1; Development Policy and Research p.7; Training and Extension p.50]

Integrated Pest Management

Pests are responsible for enormous losses in crop production worldwide. Synthetic pesticides however, as well as being harmful to human and animal health and damaging the environment, are very costly for farmers in developing countries. Integrated Pest Management (IPM) is a strategy which keeps pests at an economic threshold level by the integration of a number of control techniques. As such, IPM is the most suitable strategy for resource-poor farmers.

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2001
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94pp
ISBN 0 85954 526-1

IPM for Smallholders: A Researcher's Case Book from Malawi

J LAWSON-MCDOWALL, S ABEYASEKERA, B MWALE, J M RITCHIE, A ORR and C CHANZA

A collection of fifteen selected methods used over the project lifetime to identify and quantify pest problems, to test and evaluate pest management technologies, to identify recommendation domains and to estimate likely benefits for different socio-economic groups. The book is primarily for those undertaking agricultural research with and for Malawian farmers. However, together with its sister publication *Learning and Livelihoods: The Experience of the FSIPM Project in Southern Malawi*, it will be of interest to all those involved in working with farmers in sub-Saharan Africa.

NEW



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IPM Implementation Workshop for Central America and the Caribbean: Workshop Proceedings San José, Costa Rica, 1994

NRI

A record of the proceedings of the third in a series of workshops worldwide, which brought together pest management specialists and policy-makers to discuss IPM implementation issues in this region.

Pre-harvest pests of tropical crops

Order code PSTC31
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Workshop on Research Priorities for Migrant Pests of Agriculture in Southern Africa

R A CHEKE, L J ROSENBERG and M E KIESER (eds)

Brown locusts, African armyworm moths and red-billed quelea birds are the most damaging migrant pests affecting agricultural production in southern Africa. If the reasons underlying their apparently sporadic outbreaks could be better understood, then their occurrences could be more accurately predicted and better means of controlling them devised. In March 1999, more than 60 scientists and development specialists met in Pretoria to discuss the issues involved at a Workshop on Research Priorities for Migrant Pests of Agriculture in Southern Africa. This volume contains the papers presented at the workshop. The content will be of interest to specialist entomologists and ornithologists, and to those interested in migratory animals and how they interact with their environments.

Order code PANS2
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Pest Control in Groundnuts

NRI

An updated edition of this comprehensive crop protection manual for groundnut growers. It covers all aspects of pest control including insects and mites, nematodes, weeds, diseases and aflatoxins.

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Millet Pests of the Sahel: An Identification Guide

M MATTHEWS and N D JAGO (eds)

This useful pocket-sized booklet uses clear colour coding and pictogram summaries to re-inforce the diagnostic descriptions and full colour illustrations of the pests and their characteristic damage. Enables researchers and extension specialists to make initial, on-the-spot identifications.

Also available in French (order code PSTC5F).

Order code PSTC6
1993
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66pp
ISBN 0 85954 349-8

Millet Pests of the Sahel: Biology, Monitoring and Control

N D JAGO

A companion volume to PSTC5, it collects together up-to-date information on all factors relating to millet pests. An evaluation of pest damage in the context of other production constraints leads to a discussion of safe and effective control methods.

Also available in French (order code PSTC6F).

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Diseases and Pests of Sweet Potato

NRI Bulletin 46

J M LENNÉ

This popular Bulletin reviews information on biotic factors affecting the production of sweet potato in three main regions – SE Asia, the Pacific and East Africa. The most important diseases and pests are identified; the current status of sweet potato research is reviewed; and specific recommendations are made for future research.

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Pest Control in Tropical Onions

NRI

The popular comprehensive guide for onion growers in tropical regions in the *Pest Control* series. It covers weed control, diseases, nematodes, insects and mites and storage.

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Pest Control in Tropical Tomatoes

NRI

The popular comprehensive guide for tomato growers in tropical regions in the *Pest Control* series. It covers weed control, fungal, bacterial and viral diseases, nematodes, insects and mites and storage.

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Pest Control in Tropical Grain Legumes
NRI
The popular comprehensive guide for pulse growers in tropical, subtropical and semi-arid regions of Africa, Asia and Central America in the *Pest Control* series. It covers weed control, rodent pests, storage, diseases, nematodes, insects and mite pests.

Insects

Order code OB71
1997
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114pp
ISBN 0 85954 470-2

Flight Behaviour and Migration of Insect Pests: Radar Studies in Developing Countries
NRI Bulletin 71
D R REYNOLDS and J R RILEY
Knowledge of the flight behaviour of migrant insect pests is essential for an understanding of their population dynamics, which in turn determine the design of efficient management strategies. This Bulletin provides a detailed review of the development of radar entomology, spanning the last 30 years, and its contribution to the study of major insect pests of agriculture and human health in the developing world. Pests include grasshoppers and locusts, the African armyworm, rice brown planthopper and other rice pests, the Old World bollworm and some mosquito vectors of human diseases.

Locusts and grasshoppers

Order code OB54
1992
£15.00
154pp
ISBN 0 85954 305-6

A Revision of the Grasshopper Genus *Orthochtha* and its Allies (Orthoptera: Acrididae: Acridinae)
NRI Bulletin 54
G B POPOV and L D C FISHPOOL
Members of the large grasshopper genus *Orthochtha* are widely distributed throughout the Afrotropics with some representatives in India and the Far East. The taxonomy of the genus has, however, long been recognized by acridologists to be unsatisfactory. This publication provides a thorough revision of *Orthochtha* together with seven allied genera, of which three are erected here. In all, 36 species and 11 subspecies are treated, of which 16 species and 5 subspecies are described here as new. All taxa are diagnosed, illustrated, keyed, mapped and their affinities discussed. The biogeography of the group is considered and a synopsis of the available information of the biology, ecology and economic importance given for each species. This book will be of use both to taxonomists and to agricultural field workers, particularly in Africa.

Order code B10
1990
£30.00
204pp
3rd edition
ISBN 0 85954 281-5

Locust Handbook
A STEEDMAN (ed.)
This fully illustrated ringbound manual is a 'must' for locust and grasshopper control staff everywhere. Covers the desert locust, other African locusts, Sahelian grasshoppers and SE Asian locusts giving descriptive accounts of life cycles, taxonomy and distribution including colour plates and maps. Locust reporting and control are also fully covered with illustrations and diagrams. (*Available in French from the Canadian International Development Agency only.*)

Order code B7
1990
£5.00
46pp
2nd edition
ISBN 0 85954 276-9

The Desert Locust Pocket Book
NRI
A colourfully illustrated pocket-sized booklet aimed at field workers to aid in the task of locust reporting. It gives full descriptions of the desert locust, including the stages in its life cycle and its distribution, followed by sections on reporting of outbreaks and control measures.

- Order code B9
1982
£10.00
690pp
ISBN 0 85135 120-4
- The Locust and Grasshopper Agricultural Manual**
NRI
This manual brings together in a single hardback volume information on over 500 species of pest locust and grasshoppers in developing countries worldwide. Aimed at agriculturalists and extension workers, there are fully illustrated sections on identification, life cycle, ecology and behaviour, distribution (including maps), and assessment of damage/economic importance of each species. A comprehensive bibliography is also included, plus species, genera and geographical indexes.
- Order code B5
1977
£5.00
613pp
ISBN 0 85135 072-0
- Grasshoppers and Locusts: A Handbook of General Acridology (Volume 2)**
B UVAROV
Volume 2 only available of this major hardback book, covering behaviour, ecology, biogeography and population dynamics of locusts and grasshoppers worldwide.
- Moths (armyworm, bollworm, stemborer, etc.)
- Order code PSTC32
2000
£20.00
323pp
ISBN 0 85954 523-7
- The African Armyworm Handbook: The Status, Biology, Ecology, Epidemiology and Management of *Spodoptera exempta* (Lepidoptera: Noctuidae)**
D J W ROSE, C F DEWHURST and W W PAGE
The African armyworm, *Spodoptera exempta* (Walker) (Lepidoptera: Noctuidae) is a serious migratory pest of cereal crops and grasslands. It can impact upon the livelihoods of farmers in many countries of sub-Saharan Africa, Yemen, some Pacific islands and parts of Australia. Containing as much up-to-date information as possible on the biology, ecology, epidemiology and management of this pest as well as containing an extensive list of useful references, this handbook will be of interest to those working in the agricultural sector, particularly those responsible for the control of migrant pests.

- Order code PSTC24
1998
£7.50
19pp
ISBN 0 85954 485-0
- Laboratory Culture of the African Armyworm, *Spodoptera exempta***
S C SMITH
The African armyworm is a serious pest of cereal crops and rangeland in eastern Africa. However, it is notoriously difficult to rear in the laboratory, being highly susceptible to a nuclear polyhedrosis virus (NPV). From techniques developed at NRI, this handy A5 ring-bound manual is designed to help those who need to maintain a healthy culture for research purposes. Includes recipes for artificial diets, notes on recognition of disease and a list of equipment suppliers.
- Order code OB58
1993
£10.00
70pp
ISBN 0 85954 346-3
- Weather and the Epidemiology of the African Armyworm (*Spodoptera exempta*)**
NRI Bulletin 58
M R TUCKER
Summarizes work carried out in the African armyworm seasons during 1972–88 in relation to frequency of outbreaks and weather conditions. The use of trajectory analysis in estimating the migration paths of windborne moths during the season is discussed together with the importance of rainstorms in concentrating the moths to cause an outbreak. Of interest to those working in the field of predictive techniques in migration research, and those planning control operations against this serious pest.
- Termites (Isoptera) and ants (Hymenoptera)
- Order code PSTC14
1997
£10.00
52pp
ISBN 0 85954 455-9
- Laboratory Culture and Experimental Techniques using Termites**
M PEARCE
Several species of termites have become serious pests of crops, forestry and buildings. In order to find methods for controlling termites it is important to be able to culture them successfully in the laboratory for testing. Termites are also used as an important bioassay tool, e.g. for testing construction materials for their durability and new pesticides or other compounds for their environmental effects. This manual gives an introductory guide to the setting up, maintenance and use of termite colonies in the laboratory. It will be of great value to researchers into termite control and behaviour, and to pest control agencies wishing to carry out simple screening tests.

Birds

Order code PSTC20
1997
£25.00
191pp
ISBN 0 85954 464-8

The Grain-eating Birds of Sub-Saharan Africa: Identification, Biology and Management
R G ALLAN

Although birds are not normally viewed as pests, in the case of cereals and soft fruits both resident and migrant species can cause significant losses to farmers. This handbook provides the background information needed for an understanding of the birds which cause the damage, their identification, biology and feeding habits. It also presents the variety of techniques necessary to assess the likelihood and extent of crop damage and so facilitate the choice of cost-effective methods and levels of control. A comprehensive reference book for policy-makers and extensionists, and also to all public and private sector management staff who are involved in loss assessment and the implementation of control methods in cereal production.

Plant diseases

Order code PSTC28
2000
£10.00
100pp
ISBN 0 85954 513-X

The Current Pandemic of Cassava Mosaic Virus Disease in East Africa and its Control
G W OTIM-NAPE, A BUA, J M THRESH, Y BAGUMA, S OGWAL, G N SSEMAKULA, G ACOLA, B BYABAKAMA, J COLVIN, R J COOTER and A MARTIN

Cassava is an important food staple in much of sub-Saharan Africa, in part because of its resistance to drought. Cassava mosaic virus disease (CMD) occurs in all the major cassava-growing areas. However, the incidence of the disease has increased dramatically in recent years in many parts of Uganda, and most recently in Kenya and Tanzania, causing severe food shortages and necessitating emergency relief. This publication summarizes the recent history of CMD in Uganda, western Kenya and north-western Tanzania. It describes the main features of the pandemic and the various approaches to its control. It discusses the lessons learned from these control programmes and also assesses the threat to other parts of Kenya and Tanzania and elsewhere in sub-Saharan Africa.

Order code PSTC23
2000
£15.00
50pp
ISBN 0 85954 476-1

Bacterial Wilt: Laboratory Detection of *Ralstonia (Pseudomonas) solanacearum*
S SEAL and A ROBINSON-SMITH

Bacterial wilt is one of the most destructive and widely spread diseases of a large range of crops in the tropical and warmer regions of the world. This fully illustrated laboratory booklet describes the traditional isolation procedures for *R. solanacearum*, a serological enzyme-linked immunosorbent assay and a polymerase chain reaction test for the extremely sensitive detection of this pathogen. The latter two methods are suitable for direct detection of *R. solanacearum* in plant material. A valuable manual for researchers in suitably equipped laboratories, which includes choice of method and comparative costs, step-by-step protocols, results interpretation and lists of equipment suppliers.

Order code PSTC27
1997
£10.00
108pp
ISBN 0 85954 433-8

Epidemiology and Management of Rice Tungro Disease
T C B CHANCELLOR and J M THRESH (eds)

The outcome of the Rice Tungro Disease Management Workshop held 11–14 November 1993 at Alor Setar, Malaysia, where researchers (including representatives from five major rice producing countries) met to discuss the present status of the disease and the progress of research into its management. This publication outlines current options for integrated management of tungro and critically reassesses vector control strategies. Of interest to scientists and officials from national agricultural departments who have to make decisions on the management of this important disease.

Order code PSTC25
1997
£35.00
308pp
ISBN 0 85954 488-5

Proceedings of an International Workshop on Lethal Yellowing-like Diseases of Coconut, Elmina, Ghana, November 1995
S J EDEN-GREEN and F OFORI (eds)

Comprehensive accounts of the present distribution and impact of this group of diseases are presented in this publication, along with leading contributions on aspects of disease diagnostics, physiology and epidemiology of phytoplasmas. A full account of the discussions and recommendations for future actions is also provided. The Proceedings will be of particular interest to those researchers, policy-makers and palm enthusiasts worldwide who value the coconut palm for its role in sustainable agriculture, and also for its contribution to amenity and landscape plantings.

- Order code PSTC22
1997
£10.00
37pp
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- Detection of Sigatoka Leaf Spot Pathogens of Banana by the Polymerase Chain Reaction**
A JOHANSON
- This booklet describes the background to the Black and Yellow Sigatoka diseases (causal agents *Mycosphaerella fijiensis* and *M. musicola* respectively) and the traditional method of diagnosis by fungal isolation. A new, laboratory-based molecular biological technique is presented, which gives rapid and sensitive identification of the pathogens, directly from infected banana leaves. The method, developed at NRI, is based on the amplification of fungal DNA by the Polymerase Chain Reaction (PCR). Protocols for DNA extraction and PCR are given, together with details of reagents and their availability. Suitable for use in plant pathology laboratories equipped for basic molecular biology by researchers who require accurate identification to species level for these pathogens of significant economic importance.
- Order code PSTC15
1996
£10.00
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ISBN 0 85954 438-9
- Bactid: Bacteriological Identification System for Resource-poor Plant Pathology Laboratories**
R BLACK, J HOLT and A SWEETMORE
- The Bactid system has been developed to provide an accessible approach to bacteriological identification in plant pathology laboratories which are not equipped for, or used to, routine bacteriology work. The system comprises the Bactid scheme, the Bactid kit and the Bactid program. This publication provides the 'expert system' program on diskette and a manual describing the Bactid system and worked examples using the expert system which help in the identification of bacteria from test results. The hypertext in the expert system software also provides full details of media and reagents and instructions on how to do the tests. The Bactid software can be used in conjunction with the PlantClinic system (see PSTC12).
- Order code PSTC13
1995
£7.50
41pp
ISBN 0 85954 397-8
- Plant Quarantine: A Primer for Development Workers**
R BLACK and A SWEETMORE
- Designed primarily for non-specialist crop scientists, foresters and administrators in development projects, this publication provides briefing on the essentials of plant quarantine. It contains a discussion of both the principles and practical steps involved in planning and executing projects in order to avoid the potentially disastrous effects of pest introductions.

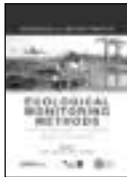
- Order code PSTC12
1995
£10.00
ISBN 0 85954 396-X
- PlantClinic: A Training System for Decision-making and Resource Management in Plant Disease Diagnostics**
R BLACK, A SWEETMORE and J HOLT
- The PlantClinic software system (disk + explanatory text) takes the user through the diagnostic process using data from real and imaginary pest management problems. This 'expert system' emphasizes logistical and budgetary factors, and includes additional hypertext guidance. PlantClinic is designed mainly for students in crop protection courses and for working diagnosticians who desire self-instructions or who are receiving in-service training. It will also be of value to managers and administrators involved in the provision of crop services.
- Order code OB63
1994
£10.00
168pp
ISBN 0 85954 356-0
- Bean Common Mosaic Virus and Related Viruses in Africa**
NRI Bulletin 63
N J SPENCE and D G A WALKEY
- A review of current research, including the results of an identification survey throughout the main bean-growing areas. Findings on the interaction between transmission rates and new viral strains with host range and resistance lead to a discussion on the implications for control practices.
- Post-harvest pests of stored food**
[See also Food Storage Technology p.23;
Grain after harvest p.24; Training and Extension p.50]
- Order code OB64
1994
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58pp
ISBN 0 85954 386-2
- Controlling Insect Pests of Stored Products Using Insect Growth Regulators and Insecticides of Microbial Origin**
NRI Bulletin 64
M J DALES
- Reviews the progress of research into alternative substances for the protection of durable foodstuffs against insect pests following concerns (such as insect resistance, residues, cost and environmental contamination) over the use of synthetic contact insecticides. Promising substances and new areas of investigation are identified, with results from laboratory and field trials outlined. A comprehensive bibliography covering relevant publications over the past 20 years is also provided. Of interest to workers in the field of storage entomology, research students and those involved in the control of pests of durable products in both tropical and temperate climates.

Pesticides

[See also Grain after harvest p.24; Pre-harvest pests of tropical crops p.36; Post-harvest pests p.45;

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86 method sheets
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NEW



Ecological Monitoring Methods for the Assessment of Pesticide Impact in the Tropics

I F GRANT and C C D TINGLE (eds)

This handbook and accompanying method sheets aim to assist developing countries build their capability in ecotoxicological monitoring. This useful binder brings together the knowledge of pesticide impact and monitoring specialists to provide guidance on the measurement, analysis and interpretation of change in animal populations and key soil functions. This handbook will be of primary interest to those in government, development agencies, donors and non-government organizations who carry responsibility for the environment, agriculture and public health. Academics and students of ecotoxicology in developing countries should find both the specialist chapters and the field methodology useful.

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DDT in the Tropics: The Impact on Wildlife in Zimbabwe of Ground-spraying for Tsetse Fly Control

R J DOUTHWAITE and C C D TINGLE (eds)

Contrary to its present insignificant use in the developed world, DDT remains a commonly used insecticide in many tropical countries. This publication presents the results of the first detailed tropical studies on the impact of DDT on wildlife, crucial to an assessment both of its general environmental impact and of the rationale for its continued use.



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Rural Technology and Biomass Energy

[See also Development Policy and Research p.7; Forest products p.26]

Biomass-fuelled Indirect Air Heater for Agro-processing Industries: Design Approach

P REUPKE and A S TARIQ

Wood or other biomass is often used as a fuel for the process heat for drying agricultural products such as tea and coffee. This book describes existing biomass-fired systems giving an outline of different air heaters commonly in use. The design procedure for a more efficient air heater with an output in the range of 300 to 400 kW is described. The performance and costs of this improved heater are compared with a traditional system. By providing a basic design rationale for efficient drying systems, this book will be of interest to engineers in agricultural processing industries in developing countries.

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62pp
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Biomass Combustion Systems: A Guide for Monitoring and Efficient Operation

A S TARIQ, P REUPKE and G SARWAR

The second in a series of publications which will be of interest to plant operators and researchers in the field of biomass combustion, and students of engineering. It is part of a continuing effort to improve the efficient use of fuelwood and where possible, to encourage replacement of fuelwood with agricultural and forestry residues such as rice husks and sawdust.

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The Development of a Multi-chambered Brick-built Furnace Fuelled by Sawdust

A S TARIQ, R J LIPSCOMBE and A P ROBINSON

Describes the development work on the combustion of sawdust in a furnace designed to be built using local materials and skills. Potential use of the system would be in sawmills and furniture workshops, where sawdust is generated and there is a process heat requirement.

- Order code ENG6
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18pp
ISBN 0 85954 328-5
- A Timber-drying System Fuelled by Sawdust**
A P ROBINSON, R C MARDER and H C COOTE
Describes the successful application of a particulate wood waste burner to a 16 m³-capacity timber drying kiln. Of interest to sawmillers and wood processors who have a timber drying requirement and a supply of particulate wood waste.
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- Survey of Equipment for Small-scale Motive Power and Electricity Generation from Wood and Agricultural Residues**
E A WILLIAMS and A P ROBINSON
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- Review of the Activated Carbon Industry and Scope for Oil Palm Kernel Shell as a Raw Material**
P REUPKE and A DUFF
Examines the different raw materials, types and applications of activated carbon, plus the processes involved in the production of various carbons. The scope for the use of oil palm kernel shell as a potential feedstock for activation is considered in detail. A critical examination of the market potential of the new product is recommended.
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- Biomass Combustion Systems: Flue Gas Losses and Equipment Efficiency**
G R BREAG, P J JOSEPH and A S TARIQ
This book contains easy-to-use graphical methods to evaluate the gas losses. It will be of use to plant operators and researchers in biomass combustion.
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- Wood Carbonization Unit: Design and Development of a Prototype with Recovery of Waste Heat**
G R BREAG, A C HOLLINGDALE, R KRISHNAN, A P ROBINSON and J COULTER
Conventional methods of charcoal production lose about half the energy in the conversion process. This publication details a carbonization unit which enables both efficient recovery of waste heat and realistic performance predictions to be made for its use in associated processes.

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G SARWAR, G A WILLIAMS and A P ROBINSON
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- Heat Production from Sawdust: Construction and Operation of a Suspension Burner for Applications in Forest Industries**



Training and Extension

[See also Development Policy and Research p.7;
Grain after harvest p.24; Pest Management p.35;

Crop production

Order code CRG4
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131pp
ISBN 0 85954 421-4

Crop Production Workbook for Arid and Semi-arid Lands V GIBBERD

This publication documents one of the first farmer-participatory applied research projects based entirely in Kenya's marginal lands. Designed for easy use in the field by extension workers, teachers, students, development workers and anyone with basic secondary school science, this A5 ring-bound handbook includes a simple theoretical background to the topics researched, as well as suggestions on how to take the work forward to provide the best solutions for increased crop yield. Useful tips on how to set up an adaptive research programme, along with clear diagrams, are presented in easy-to-read, jargon-free language.

Onion Newsletter for the Tropics

For more information contact Food Management and Marketing Group at NRI (see page ii for address). Please do **not** use book order form.

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Processing food crops

Village-Level Cassava Processing: Distance Learning Package Z BAINBRIDGE, K WELLINGS and A WESTBY

Cassava is an important staple food crop for many millions of people in tropical countries. However, the presence of cyanide-containing compounds (cyanogens) in the roots can lead to health problems. Cyanogens can be removed by efficient processing to produce safe food products. This distance learning package provides practical and detailed information on efficient, low cost village-level processing methods. It includes one Tutor's Manual, which is intended for trainers of extension workers, and 10 Field Packs (each with eight flash cards highlighting the most important steps in the process) for extension workers to use when conveying information to cassava farmers and processors.

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Methods for Assessing Quality Characteristics of Non-grain Starch Staples

Z BAINBRIDGE, K TOMLINS, K WELLINGS and A WESTBY (eds)

Non-grain starch staple foods, such as cassava, sweet potato, banana, plantain, yam and cocoyam, provide many people with their basic food supply. This laboratory manual in four parts provides a description of the methods necessary to evaluate the characteristics of these staples, and their processed products.

Fisheries

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Maintaining Fish Quality: An Illustrated Guide

S JOHNSON and I CLUCAS

This spiral-bound manual sets out to explain from basic principles the main causes of deterioration and loss of fish after capture and ways of preventing them. It illustrates simple steps that can be taken to maintain the overall quality and hence the selling price of fish. Stages are covered in detail from capture, landing and processing through to storage and marketing. The straightforward text with cartoon illustrations has been designed for use by fishermen, processors and extension workers, but would be of interest to anyone concerned with producing good quality fish for sale in hot climates.

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NRI
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Good Practice for Phosphine Fumigation: A guide to phosphine fumigation in warm climates
NRI
This video is about good practice when using the gas phosphine to fumigate durable products in hot climates. It is intended for use as a training aid to inform both pest control personnel and their managers about safe and effective technique.

Land resources, soils and water

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Managing the Weather
NRI
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Pest management

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Pest Management in Farm Granaries [with special reference to Africa]
R BOXALL, P GOLOB and R TAYLOR
This spiral-bound, fully illustrated A5 manual is intended to help extension officers in giving the best advice to individual farmers on the safe storage of grains and pulses in the light of changing storage requirements and marketing needs. It gives guidance on how to analyse farmers' storage problems; provides information on the major causes of spoilage; gives a summary of the principles of good storage practice and descriptions of the more common methods of storing grains and pulses on the farm in Africa.

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1996
£20.00*

From Dust to Maize: Overcoming the Larger Grain Borer in Africa
NRI/FAO
This video is about the Larger Grain Borer, a serious beetle pest of farm-stored maize and cassava. It has been prepared to encourage policy-makers, quarantine and phytosanitary officials and all those responsible for national and international grain movements to take suitable precautions against this pest. [*French and Portuguese language versions obtainable from FAO only.*]

Order code EXT6
1993
£5.00

Millet Pests of the Sahel – Poster set
M MATTHEWS, A KREMER and J GRUNSHAW
Comprises one large poster indicating intensity and timing of pest attack on the crop, plus 12 smaller posters individually illustrating the most important pest species. *Also available in French (order code EXT6F).*

* UK customers add VAT

Order code MSC21
1991
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246pp
2nd edition
ISBN 0 85954 282-3

Insects and Arachnids of Tropical Stored Products: Their Biology and Identification (A Training Manual)

C P HAINES (ed.)

Updated and revised, this manual includes identification keys and information on the basic biology and recognition for all the major tropical storage insect and mite pests, plus those of lesser importance. Apart from its role as a training aid, this manual will be invaluable as a reference book for researchers and those concerned with the management of pests in tropical stored products.

ECART

European Consortium for Agricultural Research in the Tropics

ECART was launched in May 1992 in response to the need for a concerted effort from the international scientific community to meet the diverse and complex demands of developing countries in natural resources management. It exists both to offer European research skills and expertise in a more accessible manner, and to encourage more effective coordination of research activities within Europe.

ECART's six members are:

CIRAD (Centre de coopération internationale en recherche agronomique pour le développement) – France, **IICT** (Instituto de Investigação Científica Tropical) – Portugal, **NRI** (Natural Resources Institute) – United Kingdom, **NRInternational** (Natural Resources International Ltd) – United Kingdom, **GTZ** (Deutsche Gesellschaft für Technische Zusammenarbeit) GmbH – Germany and **IAO** (Istituto Agronomico per l'Oltremare) – Italy

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This workshop brought together representatives from the international research community, managers and scientists from national research and donor organizations. It was to provide a forum for a rich exchange of experiences on ongoing Impact Assessment activities, and to find out in which way Impact Assessment is or could be integrated and accepted as a regular process within the organizations' routines.

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