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FINAL REPORT

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13 January 2000

Dr George Tzotzos
UNIDO
PO Box 300 A01400
Vienna
Austria

Dear Dr Tzotzos

UNIDO Contract No. 99/302 (*OW/TRANS/93/000*)

In accordance with the Terms of Reference of the contract, the following has been submitted to UNIDO:

1. A multimedia CD ROM containing the databases of the Crop Protection Compendium
2. A report describing the contents of the databases

Yours sincerely

A handwritten signature in black ink, appearing to read 'P. R. Scott', written over a large, stylized flourish.

Dr P R Scott
Director, Programme Development
(p.scott@cabi.org)



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Crop Protection Compendium

The *Crop Protection Compendium* is an encyclopaedic, multimedia tool that brings together a wide range of different types of science-based information on all aspects of crop protection. It encompasses not only pests, diseases and weeds and their natural enemies, but also the crops that are their hosts and the countries where they occur.

It is comprised of information sourced from experts, edited and compiled by an independent scientific organization, and resourced by a diverse international Development Consortium. It is published on CD-ROM, linked to the World Wide Web, and kept up to date with new editions of the CD-ROM annually.

The linked information types include:

- text descriptions
- illustrations
- geographic databases and maps
- bibliographic records
- diagnostic aids
- economic and statistical databases
- glossary terms
- external systems including the World Wide Web
- user-generated annotations
- self-training guides.

The linkages between information types form a knowledge base to help the user to:

- analyse patterns and trends
- prepare for research and decision making
- take decisions and make recommendations
- draft briefs and proposals
- deliver presentations
- self-train
- prepare training materials and deliver training

Navigation within the knowledge base is provided by a novel combination of data relationships:

- the underlying platform is a multi-dimensional relational database
- biological data is linked to a dynamic taxonomic framework
- records are indexed by scientific names, synonyms and vernacular names in many languages
- all text, including user notes, is hyperlinked to all index terms.

Users include:

- crop protection scientists and practitioners in public and private sectors

- crop protectionists and the crop protection industry
- plant breeders and the seeds and biotechnology industry
- IPM specialists
- plant quarantine officers
- policy makers

As a science-based tool, comprising material prepared by experts, groups of users may adopt the *Crop Protection Compendium* as an independent benchmark. In this respect the *Compendium* can provide an aid to effective communication, while not being restricted in its development by having a status of formal authority.

A first Module of the *Crop Protection Compendium* was published in 1997 and updated in 1998. A Global Module was published in 1999. Brief descriptions of the content follow.

Module 1 (1997)

Module 1 of the *Compendium* was developed in 2 years at a cost of \$1.5M. It includes these features:

- **Pest data sheets:** Detailed data sheets on approximately 750 pests (including diseases and weeds) and their natural enemies, written by 500 specialists. Focus on: identity, geographic distribution, biology, economic impact, control, with special attention paid to integrated pest management (IPM). Editing facilities to cut, paste, export, import and customize.
- **Crops and countries:** Further data sheets on about 150 crops and 150 countries.
- **Basic data:** Names, distribution and host range for 12,000 pests and natural enemies.
- **Pictures:** Data sheets are linked to thousands of pictures of pests, natural enemies, crops or crop damage, usually in colour.
- **Maps:** Geographic data are automatically projected as distribution maps, global and regional, which can be overlaid with the distribution of a crop or natural enemy.
- **Relational database:** Factual data are held in a multi-dimensional database, allowing retrieval of, say, all fungi causing necrosis on the leaves of rice in China.
- **Hyperlinks:** "Soft" linking allows any word in any text to be used to seek for related information, e.g. a country, a pest, a crop, a glossary definition, a reference.
- **User notes:** Every data sheet has its own personal notepad, allowing in-context local storage of the user's personal experience of that item. Every data sheet has an optional second notepad, designed for corporate networking of shared information.
- **Diagnostic keys:** A series of illustrated diagnostic keys to major groups of insects, and to nematode and weed species. Some are dichotomous; some (CABIKEYs) give multi-entry access, allowing the user to choose an approach to identification.
- **Taxonomic framework:** Every organism is placed in a taxonomic framework, which can be displayed and used for navigation.
- **Bibliographic references:** 60,000 references, most with abstracts, either cited in the data sheets or important to IPM, including inaccessible "grey" literature from several Asian countries. Powerful retrieval tool, offering natural-language searching.
- **Glossary:** Hyperlinked glossary of pest management terms. Includes data on pesticide uses and environmental impact from the *Pesticide Manual*.
- **Production statistics:** Global crop production data, by country, including land use and pesticide trade statistics; from FAO, with automatic charting facility.
- **Pesticide usage data:** Data for selected Asian countries from the *Key Markets (formerly Landell Mills) Database*.
- **Open architecture:** Modular structure allows links to be made to external information resources, such as additional bibliographic databases, and the World Wide Web.
- **World Wide Web links:** Automatic launch of Web browser, with selected links from a Crop Protection Compendium Home Page (<http://pest.cabweb.org/cpc/cpchp.htm>).

Module 1 of the *Crop Protection Compendium* has global relevance, while focusing on the

Global Module (1999)

A further 2-year development project has been completed, at a cost of a further \$1.5M. It has secured global coverage, with all the characteristics of Module 1 applied to a content of approximately double the extent, plus the following key additional features:

- **Pest data sheets:** Number of data sheets increased to cover approximately 1500 pests (including diseases and weeds) and their natural enemies, written by a total of approximately 800 specialists.
- **Crops and countries:** Further data sheets prepared to globalize the coverage.
- **Pictures:** Numerous additional pictures included.
- **Maps:** Geographic data updated and extended to match the wider range of content.
- **Diagnostic keys:** New symptom-based identification aid for plant pathogens.
- **Bibliographic references:** Extended database to match the globalized coverage.
- **Glossary:** Addition of images to the text. Extension of content to match the rest of the Compendium.
- **Production statistics:** Improved content and presentation.
- **Pesticide usage data:** Data for selected countries worldwide from the *Key Markets (formerly Landell Mills) Database*, with improved presentation.
- **GM crops data:** Data by trait and by country for the adoption of genetically manipulated crops, worldwide, with text and graphical presentation.
- **Open architecture:** Options to migrate in whole or in part to the World Wide Web are under development.

The Global Module incorporates all the features and content of Module 1, which it replaces.

Further Development (1999 onwards)

By the decision of the Development Consortium a further phase of the Programme has been initiated. The following topics have been selected for priority consideration as additional features of the Compendium.

- **Economic Impact enhancement**
To quantify the damage done by pests, diseases and weeds: pilot study
- **Plant Quarantine enhancement**
To support decision making and facilitate Pest Risk Analysis
- **Software development**
To facilitate delivery over Intranets and the Internet

Development Consortium

The project to develop the *Crop Protection Compendium* is an initiative of an international Development Consortium, whose Members are:

- AgrEvo, Germany
- American Cyanamid, USA
- Asian Development Bank (ADB)
- Australian Centre for International Agricultural Research (ACIAR)
- Bayer Crop Protection, Germany
- CAB INTERNATIONAL (CABI)
- Canadian International Development Agency (CIDA)
- Central Science Laboratory (CSL), UK
- Danish Government Institute of Seed Pathology / Danish International Development Agency (DGISP/DANIDA)
- Deere and Company, USA
- Department for International Development (DFID), UK

- Grains Research and Development Corporation, Australia
- International Center for Agricultural Research in the Dry Areas (ICARDA), Syria
- International Center for Tropical Agriculture (CIAT), Colombia
- International Development Research Center (IDRC), Canada
- International Institute of Tropical Agriculture (IITA), Nigeria
- International Maize and Wheat Improvement Center (CIMMYT), Mexico
- International Plant Genetic Resources Institute (IPGRI), Italy
- International Potato Center (CIP), Peru
- International Rice Research Institute (IRRI), Philippines
- Kenyan Agricultural Research Institute (KARI)
- Monsanto, USA
- Novartis Crop Protection, Switzerland
- Pioneer Hi-Bred, USA
- Rhône-Poulenc, France
- Rohm & Haas, USA
- Seminis Vegetable Seeds, USA
- Sumitomo Chemical Company Limited, Japan
- Swiss Agency for Development and Cooperation (SDC)
- United Nations Development Program (UNDP)
- United States Agency for International Development (USAID)
- United States Department of Agriculture - Animal and Plant Health Inspection Service (USDA-APHIS)
- United States Department of Agriculture - Agricultural Research Service (USDA-ARS)
- West Africa Rice Development Association (WARDA), Côte d'Ivoire
- World Bank
- Zeneca Agrochemicals, UK

CAB International

Background information about CAB International can be found at our website:
www.cabi.org

CABI is an international, non-profit organization. It provides information and scientific services in agriculture, forestry, health and the environment in support of research, teaching, extension, business, policy and development. In the field of crop protection, CABI is the publisher of *Review of Plant Pathology*, *Review of Agricultural Entomology*, *Nematological Abstracts*, *Weed Abstracts*, *CABPESTCD*, *PESTCABWeb* and the *Crop Protection Compendium*. Through its many programmes in knowledge management and in science-based R&D, CABI is concerned with the needs of industrial and developing countries.

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