Preface

Introduction

Welcome to this ecological guide for tea IPM. This guide is intended as a **reference for trainers** in tea IPM. It does not tell how to conduct a training program (because that can only be learned by attending a hands-on Training-Of-Trainers course). Instead, this guide provides basic knowledge on IPM and tea crop management.

We call this a *guide* because we do not present specific instructions or recommendations. Because tea fields and farmers differ from place to place (even within one village!), agricultural practices should also differ. Therefore, we give only general guidelines for making a decision, including some advantages and disadvantages of each option. It is then up to individual farmers to decide which action to take. Often, farmers will need to do simple experiments to test which option works best on their farm.

Further, we call this an *ecological* guide because in managing any crop we are, in all our actions, mostly concerned with maintaining ecological balances (for example, the balance between pests and their natural enemies; or between the crop plants and the soil). We try to emphasise these ecological balances when discussing advantages and disadvantages.

The main focus of the guide is IPM, which can include the careful use of agrochemicals when necessary. In addition, however, we try to make a bridge to organic agriculture. IPM and organic agriculture share many principles, but organic agriculture completely excludes the use of chemical inputs (pesticides as well as fertilisers). Although the market for organic tea is growing, not every farmer will choose to produce his or her tea organically. But, whatever the farmer's goals, the information in this guide should help him or her develop a tea production system that is safe, sustainable, and profitable.

We want your help

The authors hope that this guide will serve the needs of the trainers. However, we are also aware that, since this is the first time that such a guide is being written, there will be many mistakes and gaps in our information. Therefore, we encourage all readers to mail their comments about this guide to CIDSE. Are there mistakes? Is there a better way to explain something? Are there additional topics that we should include in a future edition? We will be very grateful for any comments or suggestions. Mail them to:

CIDSE
Tea Ecological Guide
So 6, Duong So 4, Khu A
Nam Thanh Cong
Ha Noi, Viet Nam

How to use this guide

No one will want to read this guide from front to back! You should use the book as a reference to look for the answer to a question that you have, or to help you prepare training on a specific topic. To help you find the information you need, use the detailed Table of Contents at the back of the book. Or, look for a specific word or phrase by using the Index (which is located just before the Table of Contents).

The guide starts with a brief history of tea. Next, chapters 2-4 introduce the main concepts of the ecological approach to tea cultivation: the tea ecosystem, the soil and its living organisms, and the growth and physiology of the tea plant. Next, chapters 5-7 deal with the main cultivation techniques for tea. Chapters 8-12 focus on managing insects and diseases. The final two chapters deal with tea processing and marketing.

Throughout this guide we will use the following two symbols to indicate references to field exercises that you can use for training farmers, or to indicate technical sections that will be too detailed for most training:

Reference to a training exercise in the Tea IPM Field Guide

Detailed technical information

Just for your information and deeper understanding. There is probably no need to provide farmers with this information and certainly do not lecture them about this in a FFS. It might be useful for you when talking to researchers or reading other books on tea. (Or when you want to impress your friend while sitting in the coffee shop.)

A word about measurements

When working with farmers, trainers should always use the measurements that farmers use. For example, most farmers measure land in *sao*, not in hectares. Nonetheless, we have used hectares in this book (for example, to discuss how many seedlings to plant, or how much fertilizer to use). The reason is, the size of a *sao* changes from place to place (some farmers call 500 square meters a *sao*; other farmers consider a *sao* to be 360 square meters). So, we are counting on you to convert from hectares to *sao* before discussing this information with farmers.

To convert a rate from hectares to *sao*:

1. Multiply by the number of square meters in one *sao*, and then
2. Divide the answer by 10.000 (which is the number of square meters in one hectare).

Example: If you want to plant 15.000 seedlings per hectare,
and in your village there are 500 square meters in each *sao*,
how many seedlings should you plant per *sao*?

Answer:

1. 15.000 seedlings x 500 = 7.500.000
2. 7.500.000 divided by 10.000 = **750 plants per *sao***

A word about scientific names

This is a book for trainers. So, why have we bothered to give the scientific names of insects and diseases? The reason is, only the scientific name stays the same in any language (Vietnamese, English, Swahili, or whatever). For that reason, if you want to find more information, you should probably search using the scientific name. Two places to search include

1. the internet, and
2. the "Global Crop Protection Compendium", which is a compact disk (CD-ROM) produced by CABI (Commonwealth Agricultural Bureaux Incorporated).

We hope that most PPSD's (Plant Protection Sub-Departments) will soon receive a copy of the CD-ROM. For that reason, we have tried to make sure that the scientific names in the Guide agree with those used on the CABI CD-ROM. In this Ecological Guide (as in most other books), scientific names are always written using *italics* font.

Acknowledgements

Much of the technical information in this guide comes from the following 6 books:

Barua, D.N. 1989. Science and practice in tea culture. Tea Research Association, Calcutta, India. 509 pp.

Bonheure, D. 1990. Tea. In the series entitled The Tropical Agriculturalist. Macmillan Education Ltd. London, England. 102 pp.

Cranham, J.E. 1966. Insect and mite pests of tea in Ceylon and their control. No. 6 in the series entitled Monographs on tea production in Ceylon. Tea Research Institute of Ceylon, Talawakelle, Sri Lanka. 122 pp.

Do Ngoc Quy. 1980. Trång chÌ. Nha Xu¸t B¶n N«ng Nhiöp, Ha Noi, Viet Nam. 254 pp.

Nguyen Van Hung (editor). 1998. S©u, bönh, cá d¹i h¹i chÌ: Vµ biön ph¸p phßng trõ. Nha Xu¸t B¶n N«ng Nhiệp, Ha Noi, Viet Nam. 147 pp.

Oomen, P.A. 1982. Studies on the population dynamics of the scarlet mite, *Brevipalpus phoenicus*, a pest of tea in Indonesia. H. Veenman and Zonen B.V., Wageningen, Netherlands. 89 pp.

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  FAO Inter-Country Programme for the Development and Application of Integrated Pest Management in Vegetable Growing in South and South-East Asia. 2000. *Cabbage Integrated Pest Management: An Ecological Guide.* Vientiane, Lao PDR.

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Happy reading! Let's work together to make tea production more sustainable, both ecologically and economically.

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