

# Introduction

Trees are central to our lives. We eat food and fruits from trees, we use paper made from wood pulp, tools with wooden handles, and medicine extracted from tree bark. We and our animals rest in their shade and we breathe their air: one large tree produces enough oxygen daily to supply a family of four. Trees are an integral part of agricultural landscapes and are playing increasingly important roles in income provision for rural households.

Many of the species that are coming onto the market out of tree domestication programmes are new — they have grown in the forests but nobody has raised them in a nursery before. However, all too often, nurseries operate with minimal inputs and outdated techniques, and produce poor seedlings. Disappointment about slow development or even seedling death is common, and many farmers have lost interest in tree planting out of frustration over bad planting material. If the tree nurseries fail to produce high-quality seedlings, deforestation and loss of valuable genetic resources will continue and will devastate our landscapes. We have a lot to learn about the requirements of these species and about their functions in agricultural systems. This is why we do agroforestry research.

Good and meaningful research depends on quality inputs and reproducible methods. That is what this book is about. It gives guidelines for uniformly high-quality seedling production. Although undomesticated germplasm often has a high variability, nursery managers have to guarantee that seedlings are produced under uniform and optimal conditions. Only then can a researcher attribute the variability clearly to the genetic differences of the seed. Only if healthy rootstock is produced, can successful grafting experiments be carried out. And only when we know the full potential of a new species or provenance, can we start assessing how well it might develop under adverse conditions.

Tree nurseries attached to research or plantation programmes differ in one important aspect from small-scale rural nurseries: they have — or ought to have — more resources, so that initial costs for investments are not as critical as they are for many rural nurseries. Therefore, keeping high quality standards can and should become the leading principle. These nurseries can demonstrate the beneficial effects of such investments to farmers. Structured planning and quality control, appropriate substrates and containers, nursery hygiene and good equipment — all necessary in good nursery operation — are discussed in this manual.

Not all of the suggestions presented here will fit a particular location. Every nursery has its own individual environment which requires special equipment to produce healthy seedlings. Every nursery has a unique target — planting sites, climate or clients which require special seedling quality standards and standard nursery practices. For different species, different nursery strategies are needed. This book provides information so that such strategies can be developed through simple experimentation. It is written primarily for nursery managers who are keen to improve an existing nursery by using good nursery practices for quality tree seedling production.