

# Historical Aspects of Plantation and Spice Crop Production Systems in the Tropics



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Edited by

B. Sasikumar and B. Mohan Kumar

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## PREFACE

While the origins of most crop plants, including major cash crops, are well-documented, the history of plantation crops and spices—two vital categories of plants—remains fragmented and lacks a cohesive narrative. This history is deeply intertwined with many global and regional events, encompassing global trade, daring explorations, acculturation, biopiracy, slavery, subjugation of indigenous peoples, and their economic exploitation. Plantation crops and spices embody the enduring legacies of colonialism, making their history both intricate and profoundly compelling.

Despite recent publications bridging gaps in our understanding of the historical aspects, further research is needed to explore the triple identity of these plants as crops, commodities, and cultural artefacts. Understanding their history is vital, as millions of farmers worldwide depend on them for livelihoods. In *Principles of Crop Improvement* (New York: Longman Group Ltd., 1979), N.W. Simmonds propositioned that for most crops, the centres of domestication are far away from their places of origin. Most spices and plantation crops are, however, exceptions to this hypothesis, as their centres of origin and domestication often overlap. Colonialism, migration, trade and religion were some of the major drivers of the transnational spread of these groups of crops.

This comprehensive volume organises information on plantation agriculture and spice production systems from their origins to current research. It covers crops such as allspice, areca nut, black pepper, cacao, cardamom, cashew nut, cinnamon, clove, coffee, coconut, nutmeg, oil palm, rubber, sugarcane, tea, and turmeric, besides planted forests, arranged into three sections: Section I (Spices), Section II (Plantation Agriculture Systems) and Section III (Planted Forests).

This book offers valuable insights into the sociopolitical and cultural aspects of plantation and spice crops, many of which are quintessential smallholder crops. We believe it will serve as a valuable resource for general readers interested in exploring the history, origins, and global influence of plantation crops and spices, as well as undergraduate and master's students of agriculture, botany, history, forestry, and social sciences. Although we, the

editors, and most of our contributors are not professional historians, we have made a sincere effort to present an overview of the often-complex historiographies of major plantation and spice crops, with a particular focus on the tropics. To our knowledge, no previous work has covered this subject comprehensively. While we recognise that a single volume may not fully satisfy everyone interested in such a multifaceted topic, we hope the readers will find this book insightful and useful.

The timely completion of this book was made possible by the dedication and collaboration of both the authors and reviewers. We are profoundly grateful to the reviewers for their valuable feedback and thoughtful suggestions, which significantly improved the quality of the chapters. We also extend our heartfelt appreciation to the authors, who have been a pleasure to work with. Their professionalism and patience in accommodating our numerous revision requests with tight deadlines are commendable. Once again, we sincerely thank all the authors and reviewers for their outstanding support and cooperation.

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# CHAPTER ONE

## INTRODUCTION: SHIFTING PARADIGMS AND CHANGING SCENARIOS OF TROPICAL SPICE AND PLANTATION CROP PRODUCTION SYSTEMS

B. MOHAN KUMAR AND B. SASIKUMAR

### **Abstract**

Tropical plantation crops and spices formed an integral part of human diets and innumerable ethnomedicines since ~3000 BCE. Although initially gathered from the wildland ecosystems, these commodities were eventually domesticated, which prompted their commercial exploitation. This process, driven by the colonial interests, gained momentum during the imperial era. To meet the rising global demand for tropical commodities, the European colonial powers established large-scale commercial farms in many tropical areas, which impacted the local economies and landscapes overwhelmingly, bringing in many ecological and socioeconomic changes. Historically, large plantations dominated the export sector, while smallholder family farms played a central role in the subsistence production systems. However, smallholder cultivation of spices and plantation crops gained momentum pan-tropically after World War I. Yet, many Southeast Asian countries experienced a boom in mega-plantations from the 1980s onward. A concise overview of the paradigm shifts between large-scale plantations and smallholder farming of tropical and subtropical spices and plantation crops is presented.

**Keywords:** Colonial agricultural paradigms, Domestication, Industrial plantations, Smallholder plantations, Southeast Asia

### **1. Introduction**

Spices and plantation crops represent major agricultural production systems worldwide, especially in the tropical and subtropical regions.

Spices – seeds, fruits, roots, bark, or other plant components used mainly for flavouring or colouring food, or used as ethnomedicines – were paramount in shaping global history, cultural creolization and intercontinental trade. From prehistoric to modern times, these crops have been valued for their culinary, medicinal, religious, sociological, and economic values. The history of spices dates back several millennia, with records showing their use in ancient Egypt for embalming, in India for Ayurvedic medicine, and in China for traditional remedies. Since medieval times, tropical spices like black pepper (*Piper nigrum* L.), cardamom (*Elettaria cardamomum* (L.) Maton.), cinnamon (*Cinnamomum zeylanicum* Blume), cloves (*Syzygium aromaticum* (L.) Merr. & L. M. Perry), and nutmeg (*Myristica fragrans* Houtt.) were in high demand in Europe. The search for these commodities has led to enduring innovations, besides subjugating the culture and civilisation of many ancient lands. Indeed, the discovery of maritime spice routes and the New World has drastically reshaped the world economic order.

Although the FAOSTAT and other databases provide crop-wise area and production statistics (FAOSTAT 2025; Statista 2024), there is no readily available composite figure for the global extent of spice cultivation. The vast majority of the world's spice cultivation occurs in India and other tropical Asian/African countries, making them the largest producers of spices like black pepper, chillies (*Capsicum* spp.), cardamom, clove, nutmeg, ginger (*Zingiber officinale* Roscoe), turmeric (*Curcuma longa* L.), garlic (*Allium sativum* L.), coriander (*Coriandrum sativum* L.), cumin (*Cuminum cyminum* L.), and cinnamon, etc. India contributes about 75% of the global spice production and is known as the “Land of Spices”. The Indian area under spice cultivation during 2023 was estimated to be 4.44 million ha (Statista 2024).

Plantation crops, the other category covered in this volume, generally represent intensively managed perennial tropical and subtropical crop production enterprises, well supported by organised research and scientific management. The term “plantation” is frequently referred to as a specialised type of agricultural system associated with colonial expansion in the tropical and subtropical regions (Courtenay 1980). Large plantations are typically monospecific, though sometimes polycultural, with production intended for export and generally requiring on-site or off-site initial crop processing and a specialised team managing the workforce (Stephens et al. 1998; Prokop 2018). According to Jones (1968), a plantation is “an economic unit producing agricultural commodities (field crops or horticultural products, but not livestock) for sale and employing a relatively

large number of unskilled labourers whose activities are closely supervised,” signifying the all-encompassing range of this term. Phrases such as “garden” and “estate” are also used interchangeably with it (McCallum 2021). The term “plantation” is thus somewhat ambiguous or abstract in nature, as it can refer to large-scale monocultural estates cultivating a range of crops, including sugar cane (*Saccharum officinarum* L), cotton (*Gossypium* spp.), pineapple (*Ananas comosus* L. Merr.), sisal (*Agave sisalana* Perrine ex Engelm), maize (*Zea mays* L.), etc., besides encompassing spice cultivation. In certain contexts, it carries historical connotations of the exploitation of enslaved people, indigenous populations, or indentured labourers. While plantations were historically associated with the harmful legacy of slavery, their rebranded “capitalist” form extended swiftly during the first wave of globalisation after 1850. This growth was fuelled by increased capital, labour, and trade mobility, alongside the rapid expansion of European colonial rule in Asia, Africa, and Latin America (Byerlee 2014).

European powers established large-scale commercial farms in Asia to meet the rising global demand for tropical commodities beginning in the early 19<sup>th</sup> century (Gibbs et al. 2010). This export-oriented production of tropical tree crop commodities on large plantations gained further momentum in the early 20<sup>th</sup> century or late 19<sup>th</sup> century as plantation agriculture expanded to other regions. Crops like sugarcane, coffee (*Coffea* spp.), tea (*Camellia sinensis* (L.) O. Kuntze), rubber (*Hevea brasiliensis* Muell. Arg.), oil palm (*Elaeis guineensis* Jacq.) and several spices, often relying on exploitative labour, were extensively raised on these plantations. This colonial plantation paradigm played a crucial role in moulding the social, ecological, and economic landscapes of the Caribbean, South Asian, and Southeast Asian regions. The global demand for many of these commodities has also been steadily increasing. For example, annual tea consumption in Great Britain increased fivefold in the 19<sup>th</sup> century, and it became closely linked with sugar, forming what Mintz (1985) called the “tea complex”. It denotes the unusual global dynamics in which ordinary Europeans consumed two commodities—tea and sugar—produced in plantations located in distant regions of the world.

According to De Vos (2006), spices and plantation crops go beyond trade and commerce. They left a lasting imprint on global societies, economies, and cuisines and reflect a legacy of innovation, exploration, cultural integration, and exploitation. Historically, spices and plantation crops were drivers of international trade, sustaining millions of livelihoods, and were integral to global agriculture. Area estimates and/or livelihood support of

various plantation crops covered in this volume are provided in the respective chapters. A substantial portion of the cultivated area and agricultural production comes from smallholders. For instance, in Sri Lanka, the share of smallholder tea production increased from 7% in 1960 to 72% in 2012 (Herath and Weersink 2009), despite the resurgence of mega plantations in Southeast Asia toward the end of the 20<sup>th</sup> century.

## **2. Smallholder Plantations: Challenging the Colonial Paradigm**

Modern plantations are high-input/high-output enterprises. Specialised tasks, hierarchical management, and spatial organisation form the central dogma of these enterprises, which were often seen as hallmarks of efficiency. According to Graham and Floering (1984), large monocultural plantations, managed by Europeans and integrated with global markets and capital, represented the most efficient form of production during the colonial era. Such views were particularly applied to tropical monoculture plantations. By contrast, diversified smallholder systems were often dismissed as disorganised or chaotic from the perspective of “modern” managerial ideals (Byerlee 2014).

The colonial government policies, which denied access to secure land titles, extension services, and research outputs, were particularly detrimental to the smallholder farmers. Bauer (1948) posited that in many cases, the colonial governments also forbade smallholder participation in export crops like tea and rubber. With the high-modernist ideals deeply entrenched in them, the plantation managers valued regimented labour routines and orderly layouts, and their belief in plantation superiority was overarching. This bias was so pervasive that smallholder rubber systems in Indonesia were derogatorily labelled “jungle rubber” (Penot 2010). Thailand, which was never colonised, took a different path—rejecting large land concessions and consistently supporting smallholder agriculture. As a result, Thailand emerged as a global leader in the export of rubber, cassava (*Manihot esculenta* Crantz), sugar, and oil palm (*Elaeis guineensis* Jacq.), proving that smallholders could be competitive in crops often dominated by plantations (Byerlee 2014; Cramb et al. 2016).

Indeed, the Soviet agrarian economist Alexander Vasilyevich Chayanov argued that small family farms operate more efficiently than large estates (Chayanov 1917; Booth 1988). Consistent with this, post-World War I, a significant paradigm shift occurred in Southeast and South Asia, with the

smallholders gradually replacing large-scale agricultural plantations as the primary producers of tropical export commodities. Although gradual, yet occasionally transformative, this shift remained steadfast through most of the 20<sup>th</sup> century, and the smallholder farmers assumed the role as the primary producers of tropical commercial crops (Hayami 2010). Starting in the 1960s, Malaysia and Indonesia acknowledged smallholder agriculture as a viable approach to rural development. By the mid-1980s, during the second wave of globalisation, this shift had largely been accomplished (Byerlee 2014). Throughout South and Southeast Asia, smallholders thus swiftly became the central pillars of the plantation crop and spice production sector (Bauer 1948; Lim 1977).

### **3. The Revival of Large-Scale Plantations**

Despite the long-standing shift toward smallholder systems, Southeast Asia's agricultural frontiers since the 1990s have witnessed a renewed expansion of large-scale plantations — particularly in Cambodia, Laos, Myanmar (CLM), and the islands of Sumatra, Borneo, and New Guinea (Kenney-Lazar and Ishikawa 2019). This was fuelled by the burgeoning global demand for agro-industrial products such as rubber and palm oil, and has occurred on an unprecedented scale. Although industrial plantations are often associated with negative environmental and social outcomes, many small and medium-scale farmers in developing countries have adopted the plantation model as a source of livelihood (Sharma and Barua 2017). These mega-plantations require substantial capital investment, political influence, and transnational coordination of labour, resources, and finances. This revival of plantation agriculture in the 21st century, especially in frontier regions such as Cambodia, Laos, and Myanmar, was driven by factors such as the availability of inexpensive land and the rising global commodity prices (Ingalls et al. 2018).

In addition to CLM countries, the sparsely populated, expansive islands of Borneo, Sumatra, and New Guinea also offer great potential for the revival of the plantation agriculture model. While oil palm remains the fastest-growing plantation crop, pine (*Pinus* spp.) and rubber plantations are also prominent (Gerber 2011). The CLM nations, with relatively abundant land compared to their neighbours, offer significant opportunities for expanded cultivation. Private agribusinesses have been granted extensive land concessions in all the CLM countries (Byerlee 2014) and sub-Saharan Africa (Smalley 2013). Byerlee (2014), based on commodity case studies

involving rubber, tea, and oil palm, stated that the average size of these concessions is quite substantial, typically between 8,000 and 14,000 ha.

According to Byerlee (2014), a potential negative outcome of large plantation projects, which involve the conversion of millions of hectares, is the displacement of rural communities and widespread deforestation. Laos, in response to rising concerns over social and environmental impacts, enacted a temporary ban on land concessions in 2007, which was followed by Cambodia in 2012. Despite domestic strife, Myanmar continues to grant concessions, though the pace has slowed down. Regardless of the current resurgence of large plantations, which echo the past perceptions that large-scale agribusinesses represent modernity, their long-term dominance remains uncertain. Indeed, smallholder farming patterns, shaped by local ecological, economic, and political factors, were historically favoured (e.g., Chayanov 1917). Haraway et al. (2015) coined the term "Plantationocene" to represent the present era, signifying the ecological and social transformations driven by plantation economies.

#### **4. Human Dimensions of the Plantation Industry: Ecological and Socioeconomic Consequences**

Many authors have reported that expansion of large plantations has been a major driver of tropical deforestation (e.g., Jadin et al. 2016; Prokop 2018). According to Koh and Wilcove (2008), replacing the species-rich tropical forests with oil palm monoculture has contributed to extensive soil degradation and biodiversity losses in Southeast Asia. Plantation development often drives transmigration, frequently displacing indigenous communities in forested areas (Lambin et al. 2001; Prokop 2018). According to Xaxa (1985), the expansion of plantations displaced local people in North Bengal and deprived them of access to land and forest resources. He asserted that the structural transformations brought about by capitalist plantation agriculture were the main cause of the underdevelopment of the region.

It is well-known that the British colonial government established tea estates in Assam, India, and elsewhere by clearing forestlands, which not only led to significant deforestation in the area but also limited the local communities' access to forest resources (Saikia 2011; Sharma and Sarma 2014). The local communities traditionally used much of the concessional land comprising ecologically valuable forests for long-fallow agriculture and non-timber forest product harvesting. Apart from the loss of