

Contents

Contributors, xxiv

Preface, xxxv

1 Traditional chocolate making, 1

Stephen T. Beckett

1.1 History, 1

1.2 Outline of the process, 2

1.2.1 Preparation of cocoa nib – flavour development, 5

1.2.2 Grinding – particle size reduction, 5

1.2.3 Conching – flavour and texture development, 7

1.3 Concept of the book, 7

References, 8

2 Cocoa beans: from tree to factory, 9

Mark S. Fowler and Fabien Coutel

2.1 Introduction, 9

2.2 Growing cocoa, 10

2.2.1 Where cocoa is grown, 10

2.2.2 Varieties of cocoa: Criollo, Forastero, Trinitario and Nacional, 10

2.2.3 Climatic and environmental requirements, 13

2.2.4 Propagation of the planting material, 13

2.2.5 Establishment and development of the plants in the field, 14

2.2.6 Major pests and diseases, 15

2.2.7 Flowering and pod development, 16

2.2.8 Harvesting, pod opening and yields, 17

2.2.9 Environmental and sustainability aspects of cocoa cultivation, 19

2.2.10 Labour practices on farms, 19

2.3 Fermentation and drying, 20

2.3.1 Fermentation, 20

2.3.2 Microbiological aspects of fermentation, 21

2.3.3 Development of cocoa flavour precursors, 22

2.3.4 Drying, 23

2.4 The cocoa supply chain, 25

2.4.1 Internal market, 26

2.4.2 International cocoa markets, 26

2.4.3 Shipment of cocoa, 29

2.4.4 Moisture movement during shipment, 29

2.4.5	Storage of cocoa, 30
2.4.6	Infestation of cocoa, 31
2.5	The cocoa value chain: long-term perspectives and challenges, 31
2.6	Quality assessment of cocoa, 34
2.6.1	Composition of cocoa beans, 34
2.6.2	Cocoa beans: quality aspects and contracts, 34
2.6.3	Cocoa beans: sampling and the “cut test”, 36
2.6.4	Contaminants and residues, 41
2.6.5	Cocoa butter hardness, 41
2.6.6	Sensory evaluation, 42
2.7	Types and origins of cocoa beans used in chocolate, 42
2.7.1	Sources of bulk cocoas, 43
2.7.2	Côte d’Ivoire, 43
2.7.3	Ghana, 43
2.7.4	Indonesia, 44
2.7.5	Nigeria, 44
2.7.6	Cameroon, 44
2.7.7	Brazil, 45
2.7.8	Ecuador, 45
2.7.9	Speciality and “fine” or “flavour” cocoas, 45
	Conclusions, 47
	References, 48
	Appendix: Abbreviations, acronyms and organisations, 49
3	Production of cocoa mass, cocoa butter and cocoa powder, 50
	<i>Henri J. Kamphuis, revised by Mark S. Fowler</i>
3.1	Introduction, 50
3.2	Cleaning of cocoa beans, 50
3.3	Removal of shell, 52
3.4	Breaking and winnowing, 53
3.5	Alkalisiation, 54
3.6	Bean and nib roasting, 54
3.7	Cocoa mass (cocoa liquor), 58
3.7.1	Grinding cocoa nibs, 58
3.7.2	Quality of cocoa mass for the chocolate industry, 59
3.7.3	Quality of cocoa mass for the production of cocoa powder and butter, 60
3.8	Cocoa butter, 62
3.9	Cocoa press cake and cocoa powder, 65
3.9.1	Types of cocoa powder, 67
3.9.2	Quality of cocoa powder, 68
	Conclusion, 69
	Appendix: Manufacturers of cocoa processing equipment, 70
	References and further reading, 70