

# Contents

Preface	ix
Authors	xi
Acknowledgements	xiii
Symbols and Abbreviations	xvii
Table of Chemical Elements	xxi
Units Conversion Table	xxiii
General References	xvii
<b>1 Fertility and Fertilizers</b>	<b>1</b>
1.1 Basic food products 1 – 1.2 Historical development of agriculture and agricultural science 3 – 1.3 Physical aspects of soil fertility 15 – 1.4 Soil chemistry 27 – 1.5 Fertilizers 60 – 1.6 Statistics 82 – 1.7 Literature 85	
<b>2 Control of Plant Infestation</b>	<b>89</b>
2.1 Plant pests in agriculture 89 – 2.2 The importance of pests 92 – 2.3 The control of plant pests 103 – 2.4 Insecticides 114 – 2.5 Other pesticides 127 – 2.6 Fungicides 137 – 2.7 The control of viruses 150 – 2.8 Herbicides 151 – 2.9 The regulation of plant growth 178 – 2.10 Statistics 182	
<b>3 Structure and Constituents of Vegetable Foodstuffs</b>	<b>187</b>
3.1 Carbohydrates 187 – 3.2 Other organic foodstuffs 202 – 3.3 Inorganic food adjuncts 211 – 3.4 Literature 228	
<b>4 Cereals</b>	<b>231</b>
4.1. Cereals in general 231 – 4.2 Various types of cereals 258 – 4.3 Statistics 285 – 4.4 Literature 285	
<b>5 Crops</b>	<b>287</b>
5.1 Root crops 287 – 5.2 Brassicas 316 – 5.3 Legumes 326 – 5.4 Salad crops 338 – 5.5 Fruits 350 – 5.6 Nuts 403 – 5.7 Mushrooms and other edible fungi 410 – 5.8 Other important vegetables 418 – 5.9 Statistics 433 – 5.10 Literature 439	

6	Wheat and Rye and Their Flour Products	441
	6.1 Flour milling 441 – 6.2 Baked goods 468 – 6.3 Literature 509	
7	Starch	511
	7.1 An introduction to starch chemistry 511 – 7.2 Uses of starch 521 – 7.3 Starches of commerce 522 – 7.4 Modified starches 542 – 7.5 Statistics 555 – 7.6 Literature 558	
8	Sugars – Sucrose, Glucose and Fructose	559
	Introduction – A. Sucrose – 8.1 The history of sugar cane and sugar beet and of sucrose production 559 – 8.2 Occurrence, geographical limits, botany and agriculture of the sugar cane and sugar beet 563 – 8.3 Some botanical aspects of sugar cane 573 – 8.4 Some botanical aspects of sugar beet 572 – 8.5 The agricultural aspects of sugar beet production 575 – 8.6 Agricultural aspects of sugar cane production 579 – 8.7 Chemistry of sucrose 590 – 8.8 The manufacture of sucrose 597 – 8.9 Role of sucrose in world trade 601 – B. Glucose – 8.10 Occurrence 604 – 8.11 History of glucose production from starch 604 – 8.12 Chemistry of glucose 605 – 8.13 Nomenclature 607 – 8.14 Composition of glucose products 608 – 8.15 Commercial production of glucose syrups 613 – 8.16 Commercial production of dextrose 616 – 8.17 Uses of glucose products 618 – 8.18 Economics of glucose products 621 – C. Fructose – 8.19 Introduction 622 – 8.20 Chemistry of fructose 622 – 8.21 Commercial methods of preparing fructose 623 – 8.22 Uses of fructose 626 – 8.23 Literature 627	
9	Synthetic Sweeteners, Honey and Confectionery Products	629
	9.1 Introduction 629 – 9.2 Synthetic sweeteners 629 – 9.3 Honey 635 – 9.4 Confectionery products 638 – 9.5 Literature 643	
10	Spices, Hot Beverages, Tobacco	645
	10.1 Spices 645 – 10.2 Flavouring extracts 655 – 10.3 Coffee 660 – 10.4 Tea 672 – 10.5 Cocoa 681 – 10.6 Tobacco 690 – 10.7 Statistics 703 – 10.8 Literature 708	
11	Preservation of Vegetable Food	711
	11.1 History 711 – 11.2 Principles of preservation 712 – 11.3 Canning 720 – 11.4 Drying and dehydration 740 – 11.5 Cooling and freezing 751 – 11.6 Preservation by micro-organisms 762 – 11.7 Chemical preservation 765 – 11.8 Fruit juices 767 – 11.9 Jam manufacture 778 – 11.10 Domestic preservation of fruit and vegetables 780 – 11.11 Literature 785	
12	Alcoholic Fermentation Processes and Products	787
	12.1 History and principles of fermentation 787 – 12.2 Yeast and its uses 805 – 12.3 Brewing beer 812 – 12.4 Wine and cider making 846 – 12.5 Distilled beverages 865 – 12.6 Vinegar 878 – 12.7 Literature 883	
	Index	885