

## Book review

### **Yoghurt: Science & Technology**

Tamine, A.Y., Robinson, R.K.; Woodhead Publishing Ltd., 1999, xv + 606 pages, ISBN 85573 3994, £136

The second edition of Tamine and Robinson's book has been thoroughly brought up to date in the intervening one and a half decades. Indeed, it can be argued that it is long overdue. The book is true to its title and includes chapters devoted to the technology of yoghurt manufacture and the underpinning science involved in the process.

In Chapter 2, the authors examine milk as the raw material for yoghurt manufacture. Milk requires standardisation, and methods for increasing the solids-non-fat content are reviewed. The presence (and need for?) other components such as antimicrobial compounds, sweeteners, thickeners, flavour compounds and colorants are also discussed. This chapter provides an underpinning for a later chapter (Chapter 5) which reviews the new products such as frozen and drinking yoghurt that have appeared on the market in the intervening 15 years. Chapter 5 also discussed the traditional yoghurt-type products available in other parts of the world that may be unfamiliar to many of us in Northern Europe. Products such as Shankleesh, Labneh and Zabadi can now be better appreciated.

The microbiology, biochemistry and use of starter cultures for commercial production are dealt with in separate chapters. These have been brought up to date to include the probiotic bio-bacteria such as *Lactobacillus acidophilus* and species of bifidobacteria. There is perhaps a slight oversight, however, as although the

authors describe the changes in the taxonomic position of *Streptococcus thermophilus*, *Lactobacillus delbrueckii* spp *bulgaricus* and the species of bifidobacteria; they have overlooked the changes to *Lactobacillus acidophilus*. DNA homology has now split this species into four. Chapter 6 (Microbiology) also discusses genetic modification and problems of bacteriophage. Chapter 8 (Production of starter cultures) is updated to include sections on immobilised cells, concentration of biomass and the development of direct vat inoculation systems. The sections on bioyoghurt (Chapter 6) are picked up again in Chapter 9 when the nutritional value of yoghurt is reviewed. This area has particular currency as many products are marketed with a "health benefit" label.

Given the continued growth and popularity of these products, it is appropriate that students of dairy science, dairy technology and yoghurt manufacturing pay attention to plant cleaning, hygiene, effluent treatment and quality control. The authors have provided the reader with two excellent chapters with ample diagrams, photographs and examples to illustrate the principles.

Finally, there are useful appendices, up-to-date references at the end of each chapter and a good index. It is truly a welcome second edition.

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