

Book reviews

R. S. Jackson, *Wine Tasting: A Professional Handbook*, Academic Press, San Diego, CA, USA, 2002 (xvi + 295 pp., \$77.95, ISBN 0-12-379076-X).

Good wine can be described as one of life's greatest pleasures, and has therefore, merited extensive detailed scrutiny from both professional and amateur connoisseurs' perspectives. Carbohydrates of course play a major part in the production of wine and its final qualities. However, no single wine tasting procedure has achieved universal acceptance. This volume details the practical and theoretical aspects of critical wine tasting, in the context of human sensory perception, from the techniques used by professionals to assess wine properties and quality, to the physiological, psychological and physicochemical origins of sensory perception.

The opening chapter provides an introduction to the tasting process, discussing appearance, odour in the glass, in-mouth sensation, finish and overall quality. The second chapter focuses on visual perceptions, providing more detailed information on colour (perception, measurement, and origin), clarity (crystals, sediment, haze, and microbial spoilage), viscosity, spritz and tears. Olfactory sensations are discussed in the third chapter, which provides information on the olfactory system, odorants, stimulation, the chemical functionalities involved, perception and assessment, and off-odours, whilst the fourth chapter presents information on taste, perception, mouthfeel, the chemical compounds involved, and sensations in wine tasting. Sweetness in wines is primarily due to the presence of sugars, notably glucose and fructose, concentrations >0.2% generally being required to generate perceptible sweetness. Most table wines have residual sugar contents below this, and thus generally appear dry. Higher sugar concentrations increasingly contribute to body, and can diminish harsh aspects such as acidity, bitterness, or astringency.

The next two chapters are concerned with the quantitative (technical) and qualitative (general) aspects of wine assessment/tasting, respectively. The former section details the selection and training of tasters, pre-tasting organisation, tasting design, wine terminology, evaluation, and associated statistical analysis, whilst the latter presents information on tasting rooms, provided information, sample preparation, score sheets, sensory training exercises, and tasting situations. The classification of still table wines (white, red and rosé), sparkling wines

and fortified wines (sherry, port, Madeira, and vermouth) are outlined in the seventh chapter, and the vineyard and winery origins of wine quality are explored in the penultimate chapter. Vineyard factors include macro and microclimate, vine species, variety, clones and rootstock, yield, training, nutrition, and irrigation. Winery factors include winemaker, pre-fermentation and fermentation processes, and post-fermentation consequences such as blending, aging in oak, and bottling. The final chapter provides an overview of the historical origins and guiding principles of food and wine combination.

Numerous tables, charts and figures throughout this volume provide excellent illustrative material to support the detailed information presented in text. In conclusion, this comprehensive volume is highly recommended to any individuals involved in wine tasting, from professional tasters and those who train tasters and design tastings, to amateur wine connoisseurs, who want unbiased information on how to maximise their perception and appreciation of wine.

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**Institute of Medicine and National Research Council
of the National Academies, *Safety of Genetically
Engineered Foods: Approaches to Assessing
Unintended Health Effects* (2004, The National
Academies Press, Washington, USA) xvii + 235 pp.,
£25.99, ISBN 0-309-09209-4.**

Our understanding of plant crops, microorganisms, and food-animal genetics continues to grow as a direct result of scientific advances in agricultural biotechnology. Genetically modified foods and food products derived from

genetically engineered organisms are among a number of biotechnological developments intended to improve shelf life, nutritional content, flavour, colour, and texture, as well as agronomic and processing characteristics. However, there is considerable media-driven public concern regarding the potential detrimental impact of agricultural biotechnology techniques on human health. In the USA, the 'National Academies' convened the 'Committee on Identifying and Assessing Unintended Effects of Genetically Engineered Foods on Human Health' to explore the similarities and differences between genetic engineering and other genetic modifications, including conventional breeding practices, with respect to the frequency and nature of unintended effects. Potential changes in the biochemical composition of plant- and animal-derived foods and methods most useful in assessing the occurrences of unintended changes that might affect consumer health were investigated, this volume being the result.

Genetic modification refers to methods used to alter the genetic composition of plants or animals, including traditional hybridisation and breeding, whilst *genetic engineering* is one type of genetic modification that involves the intention to introduce a targeted change in a plant, animal or microbial gene sequence to effect a specific result, such as a greater carbohydrate content. While intended changes can be evaluated for their safety in food, unintentional changes in food composition may be more difficult to identify and assess. However, in contrast to adverse health effects associated with some traditional food production methods, similar serious health effects have not been identified as a result of genetic engineering techniques.

The volume begins with an executive summary. The first chapter provides an introduction to the historical background of genetic modification of food, which leads to more detailed discussion of methods and mechanisms for genetic manipulation of plants, animals and microorganisms in the second chapter. The third chapter discusses unintended effects from breeding, whilst the fourth chapter presents information on new approaches for identifying such unintended changes in food composition. This chapter includes detailed information on targeted quantitative

analysis, profiling methods, nontargeted analytical methods for metabolites, bioinformatics, genomics and proteomics. The fifth chapter focuses upon adverse impacts of food on human health, specifically safety hazards associated with genetic modification. The penultimate chapter presents methods for predicting and assessing unintended effects on human health. Topics discussed in this chapter include the application, validation and limitations of such methods, and the safety standards associated with the development and commercialisation of genetically engineered foods, including the need for clinical and epidemiological studies. The final chapter in this volume presents the framework for assessing potential unintended effects, and the overall findings and recommendations.

Improvement in currently available methods for identifying and assessing unintentional compositional changes in food could further enhance the ability of product developers and regulators to perform appropriate testing to assure food safety. Whether all such analyses are warranted and are the most appropriate methods for discovering unintended changes in food composition that may have human health consequences remains to be determined. In conclusion, this informative volume is recommended to all individuals with interests in the production and/or application of genetically modified/engineered foods and food products.

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