CONTENTS

Preface
§, Cauvain, Campden & Chorleywood Food Research Association, UK xi

Part I Keynote lectures

Congress welcome address
Lord Plumb of Coleshill, President of Campden & Chorleywood Food Research Association, UK

Opening technical address: Supporting the path from wheat genomics to a slice of bread
P. Biscoe, HGCA, UK 5

Part II Wheat breeding around the world 11

Evaluation of wheat quality for the UK in the HGCA recommended list system
J. McVittie, G. Jellis and A. Flux, HGCA, UK 13

Breeding breadmaking varieties for European markets
I. Foot and W. Angus, Nickerson, UK 18

Selection of breeders’ lines for wheat quality: Australian innovations
W. Rathmell and A. Kilian, Triticarte, Australia; C. Wrigley and I. Batey, Food Science Australia, Australia; N. Howes and P. Sharp, University of Sydney, Australia 24

Wheat breeding in Australia
L. O’Brien, Solheimar Pty Ltd, Australia 29

Roles of the four ARS regional wheat quality laboratories in U.S. wheat quality improvement
O. Chung, C. Gaines, C. Morris and G. Hareland, USDA-ARS, USA 34

Wheat breeding in the Great Plains of North America – past, present and future
R. Graybosch, USDA-ARS, USA; P. Baenziger, F. Hundera and I. Dwiekat, University of Nebraska, USA 39

Breeding for improved stability in bread-making quality

Part III The potential for using other cereals 49

Developments in sorghum bread making
J. Taylor, L. Hugo and S. Yetnerberk, University of Pretoria, South Africa 51
New developments in sorghum proteins
P. Belton, University of East Anglia, UK 57

Comparison of the breadmaking potential of different sorghum hybrids
E. Arendt, T. Schober, and M. Messerschmidt, University College, Ireland; S. Bean, USDA-ARS, USA 62

Integrated development of Amaranthus as a high-value commercial grain
H. Corke, University of Hong Kong, Hong Kong 68

Flavour of rye bread made with scalded flour
G. Juodeikiene, A. Venskaityte, and A. Sventickaite, Kaunas University of Technology, Lithuania; M. Petersen and Å. Hansen, Royal Veterinary and Agricultural University, Denmark 69

Pasta production from the pseudocereals amaranth, quinoa and buckwheat
R. Schoenlechner, K. Jurackova and E. Berghofer, Boku-University of Natural Resources and Applied Life Sciences, Austria 74

Food functionality of sprout rice grain, Super Rice
Y. Fujino, University Food Institute, Japan; J. Kuwata, Red Cross Blood Centre, Japan 82

Part IV Creating health benefits with cereal products 87

The role of cereals in the diet
R. Pickard and B. McKevith, British Nutrition Foundation, UK 89

Lifestyle, diet & the consumer
A. Alldrick, Campden & Chorleywood Food Research Association, UK 90

Low GI cereal foods: the role of dietary fibre and food structure
C. Brennan, L. Symons and C. Tudorica, Plymouth University-Seale-Hayne, UK 95

Cereals as a source of dietary antioxidants
G. Tucker, L. Camer, J. Simcox, H. Marson, P. Swatsitang, A. Salter and D. Gray, University of Nottingham, UK 102

Effect of processing on bioactivity of whole grain
K-H. Liukkonen and K. Poutanen, VTT Biotechnology, Finland 107

Fibre and whole grains and their role in disease prevention
J. Miller Jones, College of St. Catherine, USA 110

New methods for assessment of nutritional and health effects of cereal products
J. van der Kamp, R. van den Berg, K. Venema and R. Havenaar, TNO Nutrition and Food Research, The Netherlands 118

Part V What makes bread? 125

How much more bread research do we need?
S. Cauvain, Campden & Chorleywood Food Research Association, UK 127
Contents

Flour quality and dough development interactions • the critical first steps in bread production
S. Millar and J. Alava, Campden & Chorleywood Food Research Association, UK; C. Bar L’Helgouac’h and C. Massin, Wheat quality assessment laboratory, France 132

Bubbles in bread • the potential role of the aqueous phase of doughs in determining crumb structure
E. Mills, L. Salt, J. Jenkins and P. J. Wilde, Institute of Food Research, UK; P. Skeggs, R. H. M. Technology Ltd, UK 137

Modifying tyrosine crosslink formation in wheat dough by controlling innate enzymatic activity
M. Tilley, USDA-ARS, USA; K. Tilley, Kansas State University, USA 142

Lipopan F BG • unlocking the natural strengthening potential in dough
F. Rittig, Novozymes, Switzerland 147

Impact of microbial transglutaminase on the fresh quality and keepability of enzyme supplemented pan breads
C. Bollain and C. Collar, Instituto de Agroquimica y Tecnologia de Alimentos (CSIC), Spain 152

Microencapsulation of bakery ingredients and the impact on bread characteristics: effect of tartaric acid encapsulated with carnauba wax
O. Al-Widyan and D. M. Small, RMIT University, Australia 158

Wheat sourdough fermentation: Effects of time and acidification on fundamental rheological properties
C. Clarke, T. Schober, P. Dockery and E. Arendt, University College, Ireland 163

COVAD • The continuous vacuum dough process
J. Alava, Campden & Chorleywood Food Research Association, UK; E. Navarro, Verein Zur Forderung des Technologietransfers an der Hochschule Bremerhaven e. V., Germany; A. Nieto, Centre de Recerca i Investigació de Catalunya, Spain; O. Schauble, Werner & Pfleiderer Industrielle Backtechnik, Germany 169

Effects of mixing speed and work input on dough development and aeration
N. Chin and G. Campbell, UMIST, UK 174

The conformation and aggregated structure of gluten fractions
W. Li and B. Dobraszczyk, The University of Reading, UK; A. Dias and A. Gil, University of Aveiro, Portugal 180

The effects of dough mixing on GMP re-aggregation and dough elasticity during dough rest

Investigating the porosity of dough using ultrasound
H. Elmehdi, J. Page and M. Scanlon, University of Manitoba, Canada 188
Measurement of bread cell structure by image analysis
M. Whitworth and S. Cauvain, Campden & Chorleywood Food Research Association, UK; D. Cliffe, Calibre Control International Ltd, UK

Use of MRI for the characterization of the bread process
L. Tiphaine, T. Lucas, A. Grenier, S. Quellec, G. Collewet and A. Davenel, Cemagref; France; A. Le Bail, UMR GEPEA, France

Part VI Grain processing

In situ measurement of the rheological properties of wheat and barley grain using the SKCS 4100
B. Osborne, BRI Australia Ltd, Australia; R. Anderssen and H.-N. Huynh, CSIRO Mathematical and Information Sciences, Australia

Characterizing the maturation and germination processes in wheat by NIR methods
A. Salgó, S. Gergely and R. Juhász, Budapest University of Technology and Economics, Hungary

Physiological traits influencing hardness and vitreosity in wheat grain
R. Weightman, ADAS Consulting Ltd, UK; J. Foulkes, University of Nottingham, UK; J. Snape and L. Fish, John Innes Centre, UK; J. Alava, and P. Greenwell, Campden & Chorleywood Food Research Association, UK

Investigation of the fracture of wheat grains by Environmental Scanning Electron Microscopy
N. Zakowsky and A. Donald, University of Cambridge, UK

Rheological behaviour, structural and physicochemical characteristics of vitreous and piebald durum wheat endosperm
M.-F. Samson, M.-H. Morel, F. Mabille and J. Abécassis, INRA, France

Distribution of the aleurone layer during the common wheat milling process
V. Greffeuille, J. Abécassis and V. Lullien-Pellerin, INRA, France; C. Bar L’Helgouac’h, ARVALIS, France

Debranning technology to improve cereal-based foods
S. Pandiella, Z. Mousia and C. Webb, UMIST, UK; A. Laca and M. Díaz, Universidad de Oviedo, Spain

The practical use of the fumigant sulfuryl fluoride to replace methyl bromide in UK flour mills
M. Drinkall and C. Pye, Dow AgroSciences, UK; C. Bell, Central Science Laboratory, UK; M. Braithwaite, Igrox, UK; S. Clack, Smiths Flour Mills, UK; J. Ive, Heygates, UK; S. Kershaw, EcoLab, UK

Wheat and flour quality in South Africa. From regulation to free market
A. Fowler, Foodcorp Milling & Baking, South Africa; J. Taylor, University of Pretoria, South Africa; P. Cownie, SA Chamber of Baking, South Africa
Objective measurement of blackpoint in kernels of *durum* wheat
S. Symons and M. Shahin, Canadian Grain Commission, Canada; F. Colucci, Experimental Institute for Cereal Research, Italy

Part IX Developing new wheat-based products

Selling the science - how to ensure that good science makes successful products?
C. Huscroft, CSM Bakery Supplies Europe, The Netherlands

Bread without flour "TONUS" • a high-grade product for healthy nutrition
V. Antonov, U. Staroverov, and D. Vorobjev, Moscow

Pilot-scale isolation of glucuronoarabinoxylans from wheat bran
J. Hollmann and M. Lindhauer, Institute of Cereal, Potato and Starch Technology, Germany

Functional properties of food products from purple wheat
E. Berghofer, I. Kreilmayr and M. Rogenhofer, Boku-University of Natural Resources and Applied Life Sciences, Austria; A. Mar, Technical High School for Food Technology, Austria

Effect of disulphides in *Allium* on breadmaking properties
M. Seguchi, Kobe Women's University, Japan; M. Abe, Gakushuin Women's College, Japan

Novel ingredients in optimising gluten-free bread acceptability
E. Gallagher, D. McCarthy and T. Gormley, The National Food Centre, Ireland; E. Arendt, National University of Ireland, Ireland

Part X Bringing benefits for industry and consumers

Sustainability with sanity
A. Giesecke, American Bakers Association, USA

Fibre by the slice: bringing consumer value and market leadership
M. Croghan, National Starch Ltd, UK

An integrated approach to improve bread nutritional quality
E. Chanliaud and A. Messager, ULICE, France; F. Balfourier, F. Oury, G. Charmet, and M. Beckert, WRA-UBP UMR, France; B. Duperrier, *Mais* Angevin-Nickerson SA, France; S. Peyron, J. Abecassis, F. Leenhardt and C. Remesy, WRA, France

Post baking bread chilling; evaluation of water pulverisation on bread surface to control weight loss and cooling rate
J. Monteau, J. Cournil, P. Bransolle, N. Hamdami and A. Le-Bail, ENITIAA, France

Data mining bread quality and process data in a plant bakery
A. Wilson and M. Morgenstern, Crop & Food Research Ltd, New Zealand;
B. Pfahringer, University of Waikato, New Zealand; C. Leschi, Institut National des Sciences Appliques de Lyon, France
<table>
<thead>
<tr>
<th>Title</th>
<th>Author/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors affecting the shape of extruded products</td>
<td>R. Guy, Campden &amp; Chorleywood Food Research Association, UK</td>
</tr>
<tr>
<td>The comparison of the effects of extrusion conditions on the physicochemical properties and sensory characteristics of maize, rice and wheat-based expanded snacks</td>
<td>Q. Ding, P. Ainsworth and A. Plunkett, The Manchester Metropolitan University, UK</td>
</tr>
<tr>
<td>Structural basis of the crispy properties of cereal products</td>
<td>H. Chanvrier, L. Chaunier, P. Colonna, G. Della Valle and D. Lourdin, INRA, France</td>
</tr>
<tr>
<td>Texture and colour of pasta containing mill fractions from hull-less barley genotypes with variable content of amylose and fibre</td>
<td>J. Dexter, M. Izydorczyk, B. Marchylo and L. Schlichting, Canadian Grain Commission, Canada</td>
</tr>
<tr>
<td>Australia becomes a player in the quality durum market</td>
<td>R. Cracknell, C. Cassidy, J. Bell and T. Watts, AWB Limited, Australia</td>
</tr>
<tr>
<td>Use of the enzyme transglutaminase for developing pasta products with high quality</td>
<td>E. Kovács, University of Szeged, Hungary</td>
</tr>
<tr>
<td>Rice pasta formulation for a conventional pasta manufacturing process</td>
<td>R. Ormenese, Instituto de Tecnologia de Alimentos, Brazil; Y. Chang, Faculdade de Engenharia de Alimentos/UNICAMP, Brazil</td>
</tr>
<tr>
<td>Influence of kansui formulation on oriental noodle texture</td>
<td>D. Hatcher and M. Anderson, Canadian Grain Commission, Canada</td>
</tr>
<tr>
<td>A comparison of instrumental techniques used to discriminate the cooking quality of spaghetti</td>
<td>M. Sissons and N. Egan, NSW Agriculture, Australia; I. Batey, Value Added Wheat CRC, Australia; L. Schlichting and B. Marchylo, Canadian Grain Commission, Canada; N. Ames and C. Rhymer, Cereal Research Centre, Canada</td>
</tr>
</tbody>
</table>