

NOVEMBER 2017

Features

- 3D PRINTING IN THE FOOD PACKAGING INDUSTRY 6
- DOES YOUR BUSINESS NEED A FOOD SCIENCE CONSULTANT? 8
- GLUTEN AND OUR REGULATIONS 10
- TWEAKING NATURE'S MENU 12
- RESPONSE TO SAAFoST'S SURVEY 21

South African Food Science and Technology

VOLUME 6 NUMBER 3

fst

magazine





On the bookshelf



Books to the value of R3 008!

Protein Byproducts
Transformation from environmental burden into value-added products
Edited by Gurpreet Singh Dhillon

This book deals with the added value of proteinaceous waste by-products, discussing in detail the different sources of protein-rich by-products, and their extraction, recovery and characterisation. It provides thorough insights into different protein modification techniques for extending the product portfolio using these by-products.

Divided into three main sections, the book covers various feedstock resources, such as animal-derived/plant-derived proteins, marine waste-derived proteins, protein extraction and recovery methods, and related technical issues including modification and conversion technologies for producing high-value bioproducts. It contains contributions from experts in the fields of applied industrial microbiology, engineering, bioprocess technology, protein chemistry, food chemistry, agriculture, plant sciences, environmental science and waste management, serving as a comprehensive reference for students and research scientists in the food and agriculture industries.

Key features

- Covers various feedstock resources, protein extraction, recovery methods and related technical issues
- Presents modification and conversion technologies for producing high-value bioproducts
- Exhibits case studies and examples to illustrate both driving forces and constraints in the utilisation of these proteinaceous materials
- Contains contributions from experts in many fields
- Is a comprehensive reference for students and research scientists in the food and agriculture industries.

Soft cover, 341 pages, Academic Press imprint, Elsevier, 2016.
www.store.elsevier.com

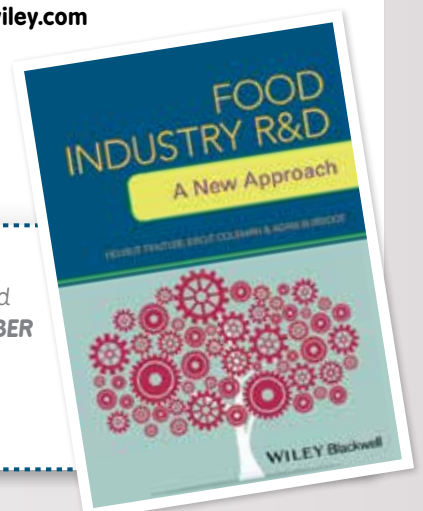
Food Industry R&D: A new approach

By Helmut Traitler, Birgit Coleman, Adam Burbidge

Research and development represents a vast spread of topics and can be an arena for controversy. In academia, such controversy may stem from conflicting interpretations of data and subsequent conclusions, the question of who was first to make a finding and whether said finding is of any value to the scientific community. R&D in corporate environments is mostly defined and driven by costs and clearly identified, consumer-focused targets. There is, however, common ground between these two approaches as both strive to maximise knowledge, though for different reasons and in different ways. The equipment and scientific rigour may be similar or identical; however, their usage, approach and interpretation are different.

This book discusses the history and background of today's food-industry R&D as seen by consumers, academia and the industry itself, with several chapters dedicated to new and disruptive approaches. A must-read for all professionals in the packaged goods industry as well as students who aspire to contribute to this new industry, forcefully driven by R&D.

Soft cover, 285 pages,
Wiley-Blackwell, 2016.
www.wiley.com



November 2017 book giveaway

FST has one copy of each book to give away. If you would like to enter the draw, please send your name, company details and postal address to editorfst@gmail.com with **FST NOVEMBER 2017 book giveaway** and **the title of the book you would like to receive** in the subject line.

Congratulations Batten Manyakaidze (Grassroots Group) and Yasdika Yolande Indurjith (DUT) who received our July giveaway books.



message from the **SAAFoST** president

The 2017 Congress in Cape Town has come and gone – and what a wonderful success it was! SAAFoST congresses are unique in the

South African food industry landscape and we have been running them since 1970 (at which time the registration fee was just R5 per member). We are justifiably proud of our Association, run by volunteers who organise a world-class, well-attended, three-day congress every two years, hosting such a wide array of local and international speakers! It takes a long time to make sure everything is in place so, while you are winding down after a busy year, we have already started to plan the next Congress, which will take place in Gauteng in 2019.

Since Amanda Minnaar's passing, I have been Acting President of SAAFoST and have continued to promote the "MySAAFoST" initiative, in Amanda's name, with tremendous support from the previous Council. Now that my term as President has officially begun, I look forward to continuing with this cause, but I also wish to link it to a new marketing and communications initiative, about which I am passionate. To ensure that SAAFoST remains relevant to its students and young professionals, and to the changing needs of all its members, and to attract new members, we have appointed a new marketing and communications committee, chaired and managed by FST editor, Tricia Fitchet. She is working with a subcommittee of younger members, drawn currently from the Cape and Northern branches, to come up with new ideas and fresh slants on marketing SAAFoST, with quite some focus on social media. After all, an organisation that has been in existence for 56 years must continue to be flexible and open to new ways, so that it meets the needs of its members.

A relatively new development in the field of food science and technology in South Africa is the requirement by the South African Council for Natural Scientific Professions (SACNASP) for all its members to participate in continuing professional development (CPD) programmes. As the legislated regulatory body for natural science professionals in South Africa, SACNASP's mission is to establish, direct, sustain and ensure a high level of professionalism and ethical conscience amongst scientists. For some time, by law, all practising food scientists and technologists have needed to be SACNASP-registered to be recognised. However, the implementation of CPD points is now a reality. Your association, i.e. SAAFoST, is the registered voluntary body that will manage this process going forward. If you have not yet registered as a natural scientist, go to <http://www.sacnasp.org.za/> for further information, so that you are ready for the CPD points implementation.

It has been a busy year and, in closing, I wish you all a good break during the upcoming holiday period and safe travels!

Best wishes,
Dr Lucia Anelich
President (2017–2019)

CREDITS

SAAFoST PRESIDENT	Dr Lucia Anelich
EDITORIAL	Editor Tricia Fitchet E-mail editorfst@gmail.com
ADMINISTRATION	Cheryl Thorburn
PROOFING	Proofreader Angela Voges
DESIGN	Graphic Designer Robyn Rochat
ADVISORY COMMITTEE	Ms Denise Metcalfe University of Johannesburg Professor Garry Osthoff University of the Free State Professor Gunnar Sigge Stellenbosch University Mr Nick Starke Private Consultant Mr Nigel Sunley Private Consultant Dr Jessy Van Wyk Cape Peninsula University of Technology Mr Johan Visser Nampak R&D

PUBLISHER SAAFoST
Postal P.O. Box 4507
Durban South Africa 4000
Phone 031 368 8000
Website www.safst.co.za

fst

SAAFoST's official magazine
Published triannually
(April, July and November)



FACEBOOK Follow SAAFoST on Facebook



TWITTER @foodscieditor
@SAAFoSTofficial



INSTAGRAM [saafost_congress17](https://www.instagram.com/saafost_congress17)



LINKEDIN SAAFoST



PRINT **Printed by** novus print,
a Novus Holdings company.

E & OE All information correct at
time of going to print.



2018 events calendar



MARCH 20-23 ANUGA FOODTEC

Energy efficiency in the food industry will be the primary focus.
Cologne, Germany www.anugafoodtec.com



JULY 15-18 IFT 2018

The focus will be on food quality, food processing industries, food technology and food security matters.
Chicago, USA www.ift.org



OCTOBER 23-27 19TH IUFOST WORLD CONGRESS OF FOOD SCIENCE AND TECHNOLOGY

Bringing together researchers, academics, professionals, policy makers and the food scientists and industries fraternity to cover the latest advances in understanding food in all its manifestations.
Mumbai, India www.IUFOST2018.com



SEPTEMBER 4-6 FDT AFRICA 2018

Brings together international manufacturers of food processing machinery, beverages technology and packaging machinery with mainly regional producers in southern Africa.
Johannesburg, South Africa www.fdt-africa.com

Cover photograph: by Tomislav Forgo/Shutterstock

contents

articles

06
3D printing
In the food packaging industry

08
Does your business need a food science consultant?
Bring your ideas to fruition

10
Gluten and our regulations
Manufacturers must take its presence seriously

12
Tweaking nature's menu
Plant genome editing

16
Broadening my food science world
Follow that dream!

18
SAAFoST Congress 2017
Pictorial moments

20
IFT's Emerging Leaders Network initiative
My experience at IFT17

21
Response to SAAFoST's survey
Call to action

regulars

02
On the bookshelf
Book giveaways

03
President's Page

05
Note from the editor

14
Postgraduate showcase
• The effect of brine injection on the quality of fresh beef

22
SAAFoST news
Branch news

24
Custodian members
SAAFoST thanks you!

Please note that the views of the authors are not the views of the publication. Articles are not reviewed by the editorial team. All queries should be directed to the authors.

In keeping with environmental awareness, FST is printed on paper whose wood content comes from sustainable forests. It is manufactured from Totally Chlorine Free (TCF) pulp, is acid free and recyclable. The paper is produced in accordance with stringent environmental protection and sustainable development standards.



note from the editor

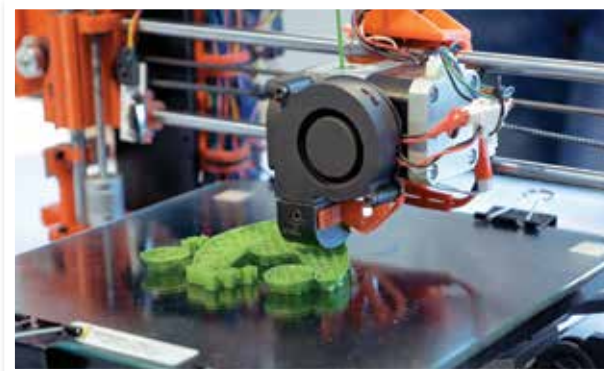
e-mail editorfst@gmail.com

Are you active on social media?

From the survey that SAAFoST conducted earlier this year, it seems many of our members use social media platforms Facebook, Instagram, Twitter and LinkedIn (see details and feedback on page 21 of this issue). Are you following SAAFoST on those platforms? We have active accounts and encourage you to join in the conversations to keep SAAFoST relevant.

In this issue

We look at how 3D printing is impacting South African companies, specifically in the packaging arena (page 6) where it has become part of daily business.



The gluten article (page 10) makes for interesting reading and manufacturers are urged to take note that it is their responsibility to take the presence of gluten in their products seriously.



Our regular IFT feature slot showcases plant genome editing (see page 12), a topical issue that reveals how genetics provides a diverse food supply to meet the needs of a changing world.



As this is our last issue for 2017, I would like to wish you all happy holidays and a good break!

Warm wishes

Tricia Fitchet
Editor

Global sorghum conference



With SAAFoST's Congress a recent memory, Cape Town will be the venue of the 2018 global sorghum conference, "Sorghum in the 21st Century: Food, Feed and Fuel in a Rapidly Changing World", on 9–12 April 2018. Through the application of emerging technologies like genomics, sorghum is regarded as the ideal crop for sustainably raising the region's agricultural productivity and providing affordable and nutritious food for all. This is the first conference of its kind in over 30 years and will see hundreds of participants from around the world, all of whom will consider sorghum's versatility as a staple nutritious food crop. The fact that South Africa has been chosen to hold the conference recognises the contribution the country has made to sorghum science and technology over more than 60 years.

For further information, visit www.21centurysorghum.com or contact Professor John Taylor, e-mail: john.taylor@up.ac.za, or call 012 420 4296.

Does your business need a food science consultant?

By Christine Vandenhede, owner of Wink Foods



Christine graduated from Stellenbosch University with a BSc Food Science degree in 1999. She started consulting in new product development in 2005 and serves a variety of different sectors in the food industry.



Bigstock/Wavebreak Media Ltd

When it comes to developing successful new products, an integrated team of experts is needed to ensure the best jump from the lightbulb moment to your first selfie alongside your new product ON. (breathe) THE. (breathe) SHELF. (flash smile). In this article, we discuss how a new product development (NPD) food science consultant can assist in bringing your ideas to fruition.

What is needed to get my new product idea onto the shelf?

A new product idea needs a bit of work before it can be handed to the production department of a food-processing facility and be successfully produced. The new product development process can be explained in the following steps:

- a. **Product brief.** The concept is described in as much detail as possible in order to compile a product brief. The client is requested to describe the ideal product in terms of the following: What are the unique selling points of the product (no added sugar, preservative-free, etc.)? Where and how is it merchandised (target market, storage ambient or refrigerated, etc.)? How is it packed (flexibles, glass, etc.)? Are there any special dietary requirements to be taken into consideration (vegan, gluten-free, etc.)? What is the ideal retail selling price? What are the ideal visual, taste and texture features? What is the ideal timeline for the project?
- b. **Technical assessment.** Sound scientific research is essential to take the concept closer to realisation. For instance: what is the pH/acidity level of the product, is it possible to do a low-acid product in a "plastic" bottle, what type of processing is needed, what type of additives might be needed to ensure stability, what moisture levels should be targeted and how is it measured? At this step, possible risks are identified

and dealt with, while keeping to the product brief as far as possible and staying within the limits of legal regulations.

- c. **Small-scale testing.** This is needed to test the theoretical scientific answers and provide a product concept with large emphasis on repeatability. During concept testing, a rough plan is created on which to base future factory production. Prototypes are mostly assessed with microbial, chemical and sensory testing.
- d. **Factory trials.** Factory production is investigated, mostly by process engineers and specialists together with the product developer, so that trials can be carried out to confirm the success of producing on a larger scale. Trial stock is used to confirm general practical aspects of the product, like travel tests and shelf-life testing.
- e. **Labelling/design.** Artwork is developed within the boundaries of labelling legislation to ensure that the product features are effectively communicated to the consumer.



Bigstock/trans961

Why do I need a food science consultant?

The aim of a food science consultant is to identify and control food safety risks while assisting in product development and recipe formulation. The beauty of using a food science consultant for this is that you do not have to employ or manage a food scientist to do the job. It is taken out of your hands and you will be part of a rewarding process of defining goals and timelines, as well as receiving regular feedback.

Is it really necessary to have a food science consultant involved when doing new product factory trials?

The answer could be yes or no. The food science consultant will help you plan factory trials properly and, during this planning phase, mistakes can be eliminated and challenges overcome. This saves time and money for your business. I have seen clients run successful trials without the assistance of a consultant but I have also seen a number of unsuccessful trials, resulting in unnecessary costs in materials, down time, labour and energy, etc – due to a lack of product and processing expertise..

How do consultant tariffs work?

Consultant tariffs are generally charged on an hourly basis as directed by the SACNASP website (<http://www.sacnasp.org.za/registered-scientists/consultation-fees.html>). The consultant should be able to give the client an indication of cost upfront – in a formal quotation – before commencing the project. If the consultant and the client wish to work out another form of longer-term remuneration, or a lack of start-up capital is experienced, a few options exist. Examples would be commission as a percentage of sales, and/or equity in the business.

Can food science consultants always identify and address all risks or problems involved in a new product?

Food science consultants should be able to identify and eliminate major known food safety risks involved to ensure a product that is safe to consume. Due to the fact that they work with agricultural products, sometimes natural interactions and changes occur that may cause unforeseen problems that are not necessarily linked to food-safety risks, but more to the quality of the product and stability related ones such as separation of soups, discolouration of vegetables and gelling of products that require a runny consistency, to name a few. It has to be understood that processing plants differ and what works with great success in one does not necessarily work in another. The benefit of having a food science consultant involved is that solutions are found efficiently.

How do I get a product to be more natural and “clean label”?

It is in line with market trends to look for alternative options to chemical additives in new products. Nowadays, we have an array of options to replace chemical preservatives and colourants if the aim is to produce a product that is perceived to be “clean label”. For instance, hot filling or pasteurisation can eliminate the need for chemical preservatives such as potassium sorbate, sulphur dioxide and sodium benzoate.

Many questions need to be asked about a product before you attempt to fine tune its concept. If you know which questions to ask, you are already halfway there.

As a food scientist specialising in new product development, the aim is to create a balance between science and creativity in order to bring the best products to market.



Bigstock/trans961

Wink Foods is a food science consultancy specialising in creative new food product development, recipe formulation and upscaling developed products in the food industry. Christine also manufactures her own range of fruit crisps under the Wink Snacks™ brand in Paarl. Visit www.wink-wink.co.za for more information.